IFLA 2025
Guiding landscapes
Nantes France

BOOK OF ABSTRACTS

IFLA World Congress
Nantes, France

10-12 September 2025

WELCOME TO IFLA 2025



Dr Bruno Marques
President, International Federation of Landscape Architects

The 61st IFLA World Congress, held in the vibrant and pioneering city of Nantes under the theme "Guiding Landscapes," marks a pivotal moment for our profession. As President of the International Federation of Landscape Architects, it fills me with immense pride to witness the culmination of years of dedicated work by the French Federation of Landscape Architects (FFP) in bringing together this global gathering.

With its forward-looking theme, this IFLA World Congress underscores the critical and proactive role our profession must play in navigating the unprecedented environmental challenges facing our planet. The impressive global response, reflected in the vast number of high-quality submissions, speaks volumes about the commitment within our community to lead the way toward a more sustainable and resilient future.

The theme "Guiding Landscapes" has resonated throughout the diverse programme, which encompasses several key thematic tracks exploring our profession's leadership. These include professional practice, examining new roles and standards for landscape architects; territorial and scale challenges, focusing on steering regional futures through integrated design; and the future of education, reimagining curricula for emerging challenges. Together with high-level representation from numerous UN agencies, the World Bank, our allied built environment organisations and local stakeholders, these and many more themes provide a vital platform for in-depth discussions and the sharing of innovative solutions.

I extend my sincere gratitude to the French Federation of Landscape Architects, especially President Henri Bava and the entire Organising Committee, for their exceptional leadership and dedication in hosting this landmark event. The tireless efforts of the various committees, sponsors, and volunteers have ensured a seamless and enriching experience for all participants.

The success of this Congress lies not only in the quality of the academic discourse but also in the spirit of collaboration that defines our global community. The connections forged and the ideas exchanged in Nantes will undoubtedly inspire and empower landscape architects worldwide to continue pushing the boundaries of our profession in service of a healthier planet. As we move forward, let us carry the momentum and insights gained from this Congress to amplify our collective impact. The challenges ahead require clear guidance, and landscape architects are uniquely positioned to provide the vision and expertise needed to shape a more sustainable and equitable future for all.

WELCOME TO IFLA 2025



Henri Bava
Congress and FFP President

The IFLA WORLD 2025 congress in Nantes will take place in the context of global climate change, where adapting and building resilience in cities and territories requires profound and systemic transformations.
The profession of landscape architects plays a central role in these efforts, promoting urban approaches that prioritize living soils, biodiversity, and sustainable water management. It operates across all scales of metropolitan, agro-forestral, industrial or/and natural territories. It helps to anticipate environmental changes through participatory project approaches that make transformative dynamics accessible to inhabitants.

To support the transformation of territories, landscape architects develop nature-based solutions: to this end, they leverage all available sources of socio-environmental information, data systems and others digital tools. Combined with artificial intelligence, these tools now complement the survey and representation methods already at their disposal for their projects. The IFLA WORLD 2025 Congress is an opportunity to share best practices and insights from practitioners and researchers around the world, aiming to make the actions of landscape architects and associated professionals even more virtuous and effective.

WELCOME TO IFLA 2025



Frédéric Dellinger,
Senior Lecturer at the National School of Architecture in Grenoble, France, Coordinator of the IFLA 2025 Scientific Committee

The question raised by 'Guiding Landscape', the International Federation of Landscape Architects 2025 Congress in Nantes, integrates two postulates: we now live in a fluctuating world of socio-environmental crises for which human activities are largely responsible; faced with this uncertainty, developing our adaptability and robustness is probably one of the most promising ways to respond.

Each of our projects (whatever their territorial scale), is part of a geographical and agronomic reality; the conditions of the site are our compass. Working with the living (and for the living) teaches us humility and acceptance. The landscape project is a promise, a vision. Our profession would have the cards in hand to accompany, to "guide" territories in their necessary transformations in response to the current and future upheavals at work. 'Guiding Landscape', therefore questions both the conditions and dynamics of the site as 'guide' of the project, but also landscape architects as 'guides' of the actors of the territory.

Ten themes organizing themes have been determined. The first five focus on the scale of the city, and the second five on the scale of the territory. These themes address both environmental conditions and societal perspectives of the project. Within these themes have been integrated nature-based solutions approaches and the new tools carried by artificial intelligence.

The landscape project is not just a synthesis of ecological solutions to meet societal needs. The aesthetic dimension and spatial quality of the projects we develop remain at the heart of our DNA. The IFLA 2025 congress presents a balance between research and project, between designers and researchers.

More than 800 landscape actors from 56 countries responded to the call for papers. The selection work has retained half of these proposals, either for oral presentations in sessions or for a poster. I take this opportunity to warmly thank all the members of the scientific committee for their contribution. I also thank all those who participated in the double review of the anonymized proposals. The congress in Nantes also includes a dozen international keynote speakers, numerous round tables, and special guests to propose a synthesis of these exchanges. At the heart of IFLA's objectives, and particularly its annual congresses, there is the desire to exchange and share, to learn from each other through the diversity of our practices. My participation in the recent IFLA congresses has made me a witness that it is indeed generosity that we find at the heart of these meetings. I hope that our exchanges in Nantes will constitute a new illustration.

Acknowledgments

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Congress topics

Topic 1: Guiding cities

Through what is alive (ecosystems, rainwater, soil, rivers)

Cities as ecosystems

On the eve of the sixth mass extinction of species, and in the face of accelerating environmental change, we need to move from observation to action and reconsider urban ecosystems: the built and the unbuilt, the organic and the inorganic, the living, whether it be human or non-human. This objective encourages the cross-fertilisation of skills between different fields: architecture, ecology, engineering, landscape, urban planning, etc. In this context, what impact can the prioritisation of living organisms pre-existing to the project have on our urban landscapes? How can we better integrate ecological processes at different scales and their constraints into our urban areas? More specifically, biodiversity issues require us to think in terms of time, seasons, growth and senescence processes, as well as ecological dynamics and acceptance of the spontaneous. How do we choose between local and 'exotic' plant species? But also, how does the ongoing progress of 3D software offer the landscape project new ways of representing the living world and its dynamics? Can AI help us increase the value of new, mass-collected environmental data?

Soil management

Understanding the soil and its condition is a fundamental step in understanding the potential of a site to host ecological and sustainable projects. Soil not only supports plant and animal life; it is also one of the main reservoirs of biodiversity on earth. It is a major carbon sink and an essential receptacle for rainfall thanks to its retention capacity (soil also acts like a 'sponge'). Together with the flora and fauna that thrive in them, soils are our main source of food and the best climate regulators. Yet for more than a century, humanity has never neglected and polluted them to such an extent. In major cities, fertile soil has become so scarce and precious that new players such as "technical soil manufacturers" are now emerging. How can landscape architects address these issues? When is the right time to incorporate these considerations into the project? How do frugal soil strategies affect landscape design? What potential can emerge to poor or to polluted soils?

Topic 1: Guiding cities

Through what is alive (ecosystems, rainwater, soil, rivers)

Rainwater and water landscapes

The successive revolutions in town planning and architecture from the nineteenth to the twentieth century, first under the influence of hygienic thinking, then with modernity, and more recently with the concept of ”smart cities”, have gradually distanced city dwellers from their geographical environment. Rainwater and waterways have been channelled and buried, while nature has more often than not been reduced to a mere decorative element. These actions, based on the efficiency and rationality of engineering, have considerably reduced the resilience of our cities to the risks of flooding and heatwaves. It is now time to adopt the porous city and ’sponge’ city models, where water is slowed down, distributed, infiltrated and purified, thanks to and with the soil and vegetation, according to the principles of regenerative hydrology. Having tried to manage our rivers, we now need to relearn how to live with them. All over the world, cities are changing their relationship with the rivers that flow through them and the wetlands that surround them. What tools and strategies can we implement to meet the challenge of water, both as a resource and as a factor of risk? How does this (re)valorisation of river routes open the way to new aesthetic exploration around the re-appropriation of landscapes? And how can new technologies such as drone scanning and point clouds enrich project approaches?

With society (art, design, consultation, uses)

Use, memory, artistic creation

The landscaping project also involves designing living and convivial spaces, promoting diversity, intergenerational exchanges and social cohesion. Today, when it is unthinkable to develop a project without incorporating contributions from local residents and stakeholders, as well as an educational dimension aimed at the general public, what role does the landscape architect's expertise play in the creation of shared spaces? And for what social justice? What place should we leave for uses or events, what place for art, for artistic creation, for what "landscape (infra)structure"? How can we reveal to residents and/or tourists what is "already there" or the memories of this area? Aren't these memories also great resources for project design? The landscape is our everyday living environment, but to what extent does it not also provide a setting for the best of our societies? If landscape architecture and art already have a rich history, how can we participate in the new synergies between art, memory and ecology?

Participatory approaches and governance strategies

The demand for residents to participate in projects relating to their living environment requires us to change our practices and apply appropriate methodologies and teaching methods, whether through information, consultation, co-design and co-construction. This is illustrated by the need for a 'bottom-up' approach in which the knowledge and opinions of local people and their perceptions of their environment are taken into account. This corresponds with the definition of the concept of landscape in the European Convention, which " means an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors " (article 1. a.) and which leads to the definition of a "landscape quality objective"´designating " the formulation by the competent public authorities of the aspirations of the public with regard to the landscape features of their surroundings " (article 1. c.). Faced with these challenges, what changes can be observed in the role of landscape architects (mediators, advisors, etc.) within multidisciplinary teams? What role should elected representatives and the technical departments under their responsibility play in these debates? What role should civil society (associations, public institutions, economic players) play? What participatory approaches should be adopted to achieve what results with the greatest possible representativeness (inclusion)? To what extent can landscape architects contribute to social equity, inclusivity, and accessibility as well as to a peaceful living together and to the health of all? What timescales should be envisaged and how should this work be remunerated?

Topic 2: Guiding territories

By changing the design of regional projects (energy landscapes, agroforestry, risks)

Tools for intervention at different scales, for multifunctional landscapes

In the context of accelerated climate change (and the risks and discomforts that go with it), in relation with the massive artificialisation of agricultural and natural areas, what role do landscape architects occupy, or should they occupy, in the planning and management of anthropized territories? How can they adopt the new technologies for data collection and AI-enabled data enhancement? Are landscape architects making a comeback in the debate on cities and contemporary urban planning issues? What skills can landscape architects bring to multi-disciplinary teams, whether to help cities expand within their own regions or to support them in their reinvention and reconstruction? We need to look at the conditions under which the profession can operate at these scales, and at the positioning of 'urban' projects as a lever for landscape projects.
The development of hydraulic, solar and wind energy is also having an ever-increasing impact on our environments. Are we at the dawn of new "technological" landscapes and a renewal of aesthetic references? How should we interpret the resistance of local populations to these changes, and what role can landscape architects play in these debates?
With regard to territorial transformations, the rise of renewable energies and the greening of territories questions the confrontation, within non-urbanised territories, between natural territories and productive territories. The search for optimisation leads to multifunctional territories. Does this greening of the countryside put the landscape architect back at the heart of the challenges facing our agricultural, fish farming and forestry landscapes? How can these landscapes be more respectful of living organisms, soils and health, and how can we participate in their emergence and deployment?

Tools for reinventing territories in situations of risk and environmental change

In certain areas, the need to take account of the impact of natural hazards (cyclones, heatwaves, fires, floods, etc.) and their environmental consequences (retreating coastlines, soil deterioration, desertification, etc.) has led to the development of tools and methodological approaches that combine different scales of consideration. How can these tools also benefit from AI in the analysis of the exploding quantities of data provided by new reading technologies? The aim is no longer simply to protect against or control these risks, but rather to support local populations in accepting them, with the timeframes and modifications they entail. The aim is to propose resilient layouts and arrangements. These transformations are also accompanied by a necessary change in people's perception of the notion of risk, inviting projects to play an educational role in understanding the dynamics of living things, which, it should be remembered, often develop over several generations. They also encourage a better articulation between built and unbuilt areas, between landscapes and territorial infrastructures. The layouts and construction need to be designed in an integrated way rather than separately. This is leading to changes in the professions and in the make-up of project management teams. Given these changes, what role could landscape architects play? Environmental change is accelerating the pace of geographical and ecological upheaval. In addition to the potential loss of emblematic landscapes, inhabited areas are being directly threatened, for example by retreating coastlines. These changes could trigger massive population movements. How can our tools and methodological approaches as landscape architects accompany these upheavals, and perhaps limit their most significant impacts?

With legislative and social advances in planning (planning law, nature and society, heritage landscapes)

Organisation of large territories

Over the centuries, regulatory texts relating to the planning and management of territories have evolved to accompany and modify their transformations. The frameworks, scales and objectives have varied, keeping pace with socio-economic developments as well as with evolving democratic aspirations and new knowledge about the complexity of the world. The approaches and situations vary widely from country to country and the different environmental geographies. What recent advances have been made and what new challenges do these documents face in terms of managing urban sprawl, integrating the expectations of multifunctional territories and integrating and/or mitigating environmental change? What differences can be observed between countries and their contexts in terms
of the development of these documents, and what impact do they have on these societies? How can landscape architects participate in these societal reflections and play a part in resolving these issues? More specifically, how can we reconcile, for example, food sovereignty, heritage 'food' landscapes, the environment and the European Landscape Convention?

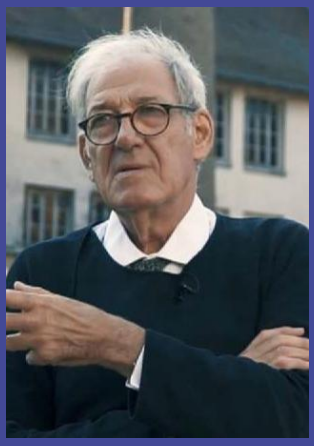
Towards a right for nature

Nature and landscape are already subject to the law and will be increasingly so in the future. In France, the Loire River is the focus of a major campaign by associations and scientists to gain recognition as a legal entity and, ultimately, to create a 'parliament' to defend the rights of this natural entity. Landscape and biodiversity issues are trying to find their place in urban planning documents and in the creation of the "right to build". But how can we reconcile the complexity of concepts such as "landscape integration" or "cohabitation with living organisms" with a land law that aspires to be clear and pragmatic? How does the presence or absence of a nature/culture dualism in a society influence the way this notion is considered in legislation? More specifically, how do differences in understanding of the notions of 'nature' and 'landscape' interact with the law and planning expectations? If the concept of 'nature alongside man' is an approach to living things that is common in Western societies, what about the concept of landscape?

Evolution of heritage landscapes

The rapid pace of global warming is already having a visible impact on all landscapes, including those deemed worthy of protection because of their natural or cultural heritage value. In addition to the changes already observed (changes in farming practices, conflicts, natural disasters, etc.), the acceleration of climate change raises new questions about what defines the value of a landscape and its ability to endure beyond the transformations it has undergone. It is becoming imperative to accompany these changes by working on the collective imagination associated with these landscapes. The concept of the "cultural landscape", adopted in 1992 by UNESCO's World Heritage Committee, has also made it possible to consider the heritage value of the "organically evolved landscape". These landscapes need to evolve to retain their heritage value, while at the same time incorporating the changes taking place in their socio-economic context and because of climate change. But what do we do if some of these landscapes are no longer able to adapt to their "new" environment*?* Wouldn't the challenge be to imagine other forms of conservation, between restoring them to their original state and replacing them in a way that preserves the spirit of these landscapes? Can virtual technologies help us to understand and communicate about historical landscapes? This also invites reflection on the protection of intangible heritage linked to know-how and the relationship between man and nature...? How can regulatory documents evolve to help regulate these issues, and what role should landscape architects play in this?

Keynote speakers



Alexandre Chemetoff (France)
French architect, urban planner, and landscape artist

Alexandre Chemetoff is a French architect, urban planner, and landscape designer whose interdisciplinary practice spans architecture, urbanism, and landscape design. He describes his approach as "polytechnic," intentionally erasing boundaries between disciplines to view each project as both a question posed and a world into which one commits.

In 1983, Chemetoff founded the Bureau des Paysages, a multidisciplinary collective of architects, urban planners, and landscape architects. Since 2008, his work has continued through Alexandre Chemetoff & associés, which oversees a network of studios in Gentilly, Nantes, and Nancy, employing around forty collaborators.

His portfolio reflects a deeply contextual and transformative urban vision—from urban centers like Boulogne-Billancourt (1996–2001) and Île de Nantes (2000–2010) to territorial redevelopments in Nancy, Saint-Étienne, and Grenoble. He also created Notable public spaces such as the Bamboo Garden at Parc de la Villette and revitalized Riverbanks In Nancy. Chemetoff was awarded the prestigious Grand Prix de l'urbanisme in 2000 for his significant contributions. Chemetoff's design philosophy places the site as a resource, and the program as an inquiry, favoring "constructing situations" over imposing form. He prioritizes attentive observation of the existing landscape—preserving heritage and responding to local context, rather than more radical tabula rasa approaches.



Antoine Picon, Engineer, Architect and Historian (France)
Closing remarks at the Closing Session

Antoine Picon is a professor at the Harvard University Graduate School of Design. He is also a member of the French Academy of Technologies and an associate member of the French Academy of Architecture. He served as president of the Le Corbusier Foundation from 2013 to 2024. He has published numerous articles and books on the history of engineers, the history of utopias, and the history of architecture, cities, and territories. Many of these works emphasize the relationships between the production of space and scientific and technical developments. He has also made a series of contributions to the history of utopias. At the intersection of these various areas of interest, his latest books focus on the impact of the digital revolution on architecture and the city, as well as on the interactions between cities, nature, and technology.

He is notably the author of: *Architectes et ingénieurs au siècle des Lumières* (1988), *Claude Perrault* (1988), *L'Invention de l'ingénieur moderne* (1992), *La Ville territoire des cyborgs* (1998), *Les Saint-simoniens* (2002), *Culture numérique et architecture* (2010), *Ornament : The Politics of Architecture and Subjectivity* (2013), *Smart cities : Théorie et critique d'un idéal auto-réalisateur* (2013), *Smart Cities : A Spatialised Intelligence* (2015), *La Matérialité de l'architecture* (2018), *The Materiality of Architecture* (2020), *Natures Urbaines: Une Histoire Technique et Sociale 1600-2030* (2024).



Ariella Masboungi, architect-urban planner (France)

Architect-urban planner, former senior civil servant in charge of the "Urban Project" at the Ministry of Urban Planning, where she directed the Grand Prix de l'Urbanisme (Urban Planning Grand Prize) and the "Urban Project Workshops," resulting in publications such as *"Penser la ville par le paysage, puis la lumière et enfin l'art contemporain"* ("Thinking the City Through Landscape, Then Light, and Finally Contemporary Art"), *"Berlin, génie de l'improvisation"* ("Berlin, Genius of Improvisation"). She explores topics such as *"L'énergie au cœur du projet urbain"* ("Energy at the Heart of the Urban Project"), *"territoires oubliés"* ("Forgotten Territories"), and currently *"l'urbanisme féministe"* ("Feminist Urbanism") at the Club Ville-Aménagement, where she leads the *"5 à 7"* evening discussions on societal themes like ecology, economics, and digital cities. She synthesized her work in *"Le plaisir de l'urbanisme"* ("The Joy of Urban Planning") upon receiving the 2016 Urban Planning Grand Prize. Her latest book, co-authored with A. Petitjean in 2022, is titled *"La ville pas chiante, alternatives à la ville générique"* ("The Non-Boring City: Alternatives to the Generic City"), and in February 2024, *"Les territoires oubliés, un futur désirable"* ("Forgotten Territories, a Desirable Future"), co-written with Guillaume Hébert.
She has been awarded the Grand Urban Planning Medal by the Académie d'Architecture and the rank of Officer of the Legion of Honor.



Bertrand Folléa Professor, Landscape Architect (France)
Topic : Transition and Resilience Through Landscape

Bertrand Folléa is co-founder and co-manager of the Folléa-Gautier landscape architects and urban planners agency. National Landscape Grand Prix winner in 2016. Since 1991, the Folléa-Gautier agency has been designing and implementing development projects in metropolitan France, overseas territories, and internationally: gardens, public spaces, eco-neighborhoods, urban renewal, infrastructure, cultural and tourist sites, natural spaces...
He is also the director of the Landscape and Energy Chair and director of the Chairs at the National School of Landscape Architecture of Versailles-Marseille. He was an associate professor at INSA Centre Val de Loire (School of Nature and Landscape in Blois) from 2013 to 2023. He has been a state landscape consultant since 1994 for the Ministry of Ecology and was a landscape consultant for the Ministry of Culture. He is a member of think tanks: Landscapes of the post-oil era (PAP), The Ecological Factory (LFE).
He is the author of "The Archipelago of Metamorphoses - Transition through Landscape," published by Parenthèses in 2019, and has coordinated the publication of several works on landscape and energy: "Landscapes and Energies, a Historical Perspective" (Sylvain Allemand, Hermann, 2021); "Energy Transition: Towards Desirable Landscapes" (methodological guide, 2022); "Landscape and Energy Image Book" (2022).



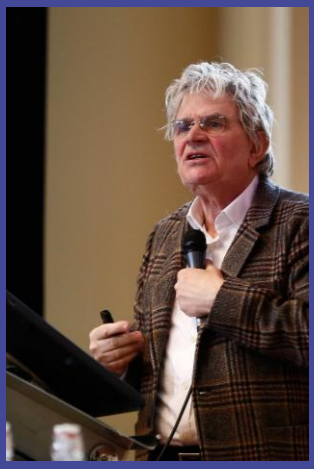
Cecil Konijnendijk Researcher (The Netherlands)
Topic: The Global Forest City Journey: From the 3-30-300 rule to Doorstep Trees

Cecil Konijnendijk has 30 years of experience studying, teaching, and advising on aspects of urban forestry and nature-based solutions. From Utrecht, The Netherlands, he co-leads the Nature Based Solutions Institute, a think tank for the evidence-based greening of cities. Cecil has held full and visiting professorships in Belgium, Canada, China, Denmark, Hong Kong, and Sweden. He has advised, national and local governments in more than 30 countries, as well as international organisations such as FAO and UNECE, on the formulation and implementation of green space and urban forestry policies and programs. He was part of the team, for example, of development urban forest master plans for the cities of Birmingham (UK) and Groningen (The Netherlands), as well as for the development of a green roof and façade strategy for Riyadh (Saudi Arabia). His books include 'The Forest and the City: the cultural landscape of urban woodland'(2nd edition in 2018) and 'Rethinking urban greens spaces' (2024). In 2021 he launched a new evidence-based guideline for urban greening, the so-called 3+30+300 rule, which is now used by municipalities, regional governments, and organisations across the world. Cecil is passionate about building meaningful relationships between people and nature to create better urban places.



Charles Waldheim, *Architect and Urbanist* (USA)
Topic: Notes on French Landscape Urbanism

Charles Waldheim is a North American architect and urbanist based in Cambridge, Massachusetts. Waldheim's research examines the relationships between landscape, ecology, and contemporary urbanism. On these topics, Waldheim is author, editor, or co-editor of numerous publications on these topics, including Landscape as Urbanism: A General Theory (Princeton University Press) and The Landscape Urbanism Reader (Princeton Architectural Press). Waldheim developed the theory of landscape urbanism in response to the industrial economies and emergent ecologies of the American city. On this topic, he curates the Harvard GSD's Future of the American City podcast series. Waldheim is John E. Irving Professor at the Harvard University Graduate School of Design where he directs the school's Office for Urbanization. He also serves as the Ruettgers Curator of Landscape at the Isabella Stewart Gardner Museum in Boston. Waldheim is recipient of the Rome Prize Fellowship from the American Academy in Rome; the Visiting Scholar Research Fellowship at the Canadian Centre for Architecture; the Sanders Fellowship at the University of Michigan; and the Cullinan Chair at Rice University. He has been a visiting scholar at the Architectural Association School of Architecture in London and the Bauhaus in Dessau, Germany.



Dirk Sijmons Landscape Architect (Netherlands)
Topic: The Future Conditions of Anthropocene

Dirk Sijmons is one of the founders of H+N+S Landscape-architects where he was mostly involved in regional plans and research-by-design commissions (1990-2015). In 2002 Sijmons received the Maaskant award and in 2007 the Edgar Doncker award for his contribution to 'Dutch Culture'. His book publications in English are *= Landscape* (1998), *Greetings from Europe* (2008*)*, *Landscape and Energy* (2014), *Moved Movement,* (2015) & *Room-for-the-River* (2017) *In the Anthropocene site matters in four ways* (2020). Sijmons was appointed first State Landscape Architect of the Netherlands (2004-2008). He held the chair of Environmental Design (2008-2011) and that of Landscape Architecture (2011-2015) at TU-Delft. He was curator of IABR—2014 themed *Urban-by-Nature.* Sijmons teached and lectured at many universities, PENN, Harvard, Brussels, Leuven, Paris, Aarhus, Malmö, Tokyo, Tel Aviv, Sydney, and Melbourne among them. At the World Design Summit 2017 in Montreal, he received the IFLA sir Geoffrey Jellicoe award. Since 2020 he is involved in research on the implications of for the design community our Anthropocene condition and leads the yearly workshop 'Citizenship in the Anthropocene' at the Independent School for the City (Rotterdam).



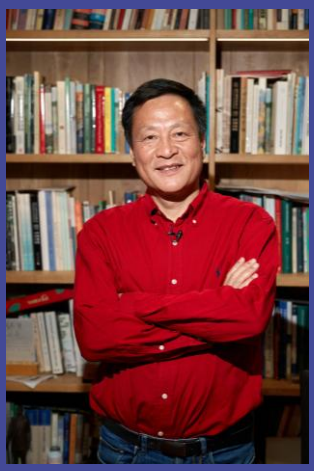
Jean Viard Sociologist (France)
Topic: Ecological Individual, Birth of a Civilization

Jean Viard is a sociologist and associate research director at CEVIPOF-CNRS (Center for Political Research at Sciences Po). He holds a postgraduate degree in economics (Aix-en-Provence) and a doctorate in sociology from the École des Hautes Études en Sciences Sociales. His areas of specialization include social time (vacations, 35-hour workweek), as well as space (urban planning, agricultural issues) and politics
As a public speaker, he regularly contributes to print and audiovisual media and also provides consulting services to businesses and local authorities
He directs a collection at Éditions de l'Aube in La Tour-d'Aigues (Vaucluse), which he founded with Marion Hennebert
Author of numerous works, his latest book, "L'individu écologique, naissance d'une civilisation," was just published by l'Aube in October 2024.



Jacqueline Osty *Landscape Architect* (France)
Topic: From the Blade of Grass to the Horizon, Sketching the City Through the Landscape

A graduate of the ENSP in Versailles, Jacqueline Osty established her agency in Paris in 1985. She taught at the National School of Nature and Landscape in Blois from 2004 to 2019. With Atelier AJOA, Jacqueline Osty works on projects of extremely varied nature and scale: urban parks, public spaces, and vast urban sector projects. Among her numerous references, her work is notably illustrated by Saint-Pierre Park in Amiens, Bonne Park in Grenoble, the Paris Zoological Park, and Martin Luther King Park, the latest large park in Paris, a true nature haven in the Clichy Batignolles neighborhood, Paris 18th arrondissement. Her public space and promenade projects are also exemplified by Feydeau-Commerce Square in Nantes, the promenades of Reims, Bellecour Square, Jacobins Square, Bachut Space in Lyon, the boulevards of Chartres' historic center, and the seafront of Les Sables d'Olonne. In urban planning, the studio designs the Flaubert eco-district in Rouen and is currently working on the urban project of Ile de Nantes and the grand canal park along the canals in Toulouse. For this diversity of achievements, Jacqueline Osty has been awarded the Urban Planning Prize, Parks and Gardens category in 1994, and the National Landscape Grand Prize in 2005 for Saint-Pierre Park in Amiens and in 2018 for the Seine riverbank developments in Rouen (Presqu'ile Rollet). She also received the Grand Silver Medal from the Architecture Academy Foundation on June 22, 2004. She received the National Eco-district Prize for Bonne Park in 2009 and the Landscape Victory Prize in 2012 for Clichy-Batignolles Park in Paris. Finally, she received the Grand Prize for Urban Planning in 2020.



Kongjian YU Landscape Architect (China)
Topic: Designing a Sponge Planet: Landscape Architecture for Climate Resilience

Kongjian Yu, a farmer's son and a Doctor of Design from Harvard, is the founding dean of Peking University's College of Architecture and Landscape. A leader in ecological urbanism and climate resilience, his "Sponge City/Sponge Planet" concept has shaped China's ecological policies and earned global recognition. He has authored over 20 books and 300 papers in landscape architecture and urbanism and founded and serves as chief editor of *Landscape Architecture Frontiers*. Yu founded Turenscape, a renowned firm specializing in eco-friendly, climate-resilient design. With over 1,000 projects across 250 cities, Turenscape focuses on nature-based solutions addressing climate challenges like flood management and urban resilience. His work has received numerous awards, including 16 ASLA Excellence and Honor Awards, 9 WAF Awards, 7 AZ Awards, and Holcim Asian Pacific Award the ULI International Excellence Award. His prestigious honors include the Cornelia Hahn Oberlander Prize, IFLA's Sir Geoffrey Jellicoe Award, and the Cooper Hewitt National Design Award. He also holds honorary doctorates from Sapienza University of Rome and the Norwegian University of Life Sciences . He is also an elected member of the American Academy of Arts and Sciences (2016).



Marc-André Selosse Professor (France)
Topic: The Microbial Fabric of Life and Landscape

Marc-André Selosse, born March 29th 1968, is professor at Muséum national d'Histoire naturelle (Paris), and at Universities of Kunming (China) and Gdansk (Poland), where he leads research teams. He has taught at Viçosa University (Brazil), and teaches at Ecole Normale Supérieure, Science Po and Hautes Etudes Commerciales (HEC). His research focuses on the ecology and evolution of mycorrhizas, a major symbiosis between soil fungi and roots of most land plants. He also has a general interest for symbiosis and its evolution. He was head of the French Botanical Society for ten years and is now president of the Fédération BioGée, member of the French Academy of Agriculture and of the Institut Universitaire de France. He (co-)edits four international scientific journals: *New Phytologist*, *Ecology Letters*, *Symbiosis* and *Botany Letter*. He published outreach books in French on microbiota (*Jamais seul*, 2017), tannins (*Les goûts et les couleurs du monde*, 2019) soil (*L'origine du Monde*, 2021), place of humans in nature (*Nature et Préjugés*, 2024).



Miguel Georgieff Landscape Architect (France)
Topic: Renaturing the City

Miguel Georgieff is a DPLG landscape architect (ENSP Versailles 1999) and founding member of the COLOCO studio.
The work of Atelier COLOCO focuses on understanding the dynamics of living systems in contemporary landscapes. Their projects seek evolution through participatory processes where the question of diversity meets practices and uses. COLOCO works at all scales, from gardens to large landscapes, with a commitment to the habitability of territories under the strong dynamics of climate change.



Mechtild Rössler, Former Director UNESCO World Heritage Center (Germany)
Topic: Evolution of heritage landscapes

Mechtild Rössler is an expert in cultural and natural heritage with a degree in geography from Freiburg University (Germany) and a PhD from the Faculty for Earth Sciences, University of Hamburg (Germany). She joined the Centre national de la recherche scientifique (CNRS) at the Research Centre of the Museum "Cité des Sciences et de L'Industrie" (Paris, France) in 1989 and in 1990/91 was a visiting scholar at the Geography Department of the University of California at Berkeley, USA. In 1991, she started working at UNESCO (Paris) in the Division for Ecological Sciences (MAB Programme) and transferred in 1992 to the UNESCO World Heritage Centre. After various positions Mechtild Rössler became the Director of the World Heritage Centre from 2015 to end of 2021. Dr Rössler has published and co-authored 13 books and more than 120 articles, including on World Heritage cultural landscapes and 'Many voices, one vision: the early history of the World Heritage Convention' (together with Christina Cameron, Routledge). After 30 years at UNESCO, she retired and went back to academia in 2022 as researcher (CNRS - UMR 8504 Géographie-cités) and lecturer (e.g. Heidelberg Center for Cultural Heritage - University of Heidelberg, ICCROM).



Pepa Moran, PhD Landscape architect and professor (Spain)
Topic: Disrupted perceptions: from event to regime in Mediterranean Wildfire landscapes

Pepa Morán Núñez is a Barcelona-based landscape architect, architect, and academic. She earned her architecture degree from ETSAV-UPV in 2001, followed by a Master's in Landscape Architecture (MAP-UPC) and another in Urbanism (DUOT-UPC). Since 2005, she has been active in landscape architecture and public space development, collaborating with notable professionals such as Manuel Ruisánchez, Anna Zahonero, and Martí Franch. From 2007 to 2012, she contributed to the River Llobregat Team at the Association of Municipalities of the Barcelona Metropolitan Area (AMB), focusing on projects and research
related to the Llobregat River and its surroundings.
In academia, Pepa serves as an Associate Professor in the Department of Urbanism at the Barcelona School of Architecture (DUOT-ETSAB-UPC). Since 2016, she has coordinated the Master in Landscape Architecture (MBLandArch) at ETSAB-UPC. During this time, she has pursued her PhD research on *Morphologies of Change*, exploring how processes are represented in landscape architecture.



Rainer Stange Professor, Landscape Architect (Norway)
Topic: Stream Urbanism of Oslo

Rainer Stange was born and raised in Ramnes, Tønsberg, southeast of Norway. He is a landscape architect educated at NMBU Ås and in ENSP Versailles, and has worked at architectural offices in Paris and Oslo. He is the founder of the landscape- og architecture office of Bokemo in Oslo. Rainer is behind a number of large park and urban projects all over Norway. He is known to turn every project into a place with high park feeling. For 25 years he has been active with day lighting the many hidden waterways of Oslo; the stream urbanism, which he will present in Nantes.

He has been vice-president and president for the Norwegian Landscape architect association for 9 years. Rainer is professor in landscape architecture at the institute of Urbanism and Landscape at the Oslo school of Architecture AHO. He has given many lectures in several countries. He is a columnist in the magazine Arkitektur and has written two books and a number of professional articles on landscape architecture.



Sylvanie Grée Landscape Architect (France)
Round Table Panelist

After studying at the École d'Architecture de Bordeaux and the École Nationale Supérieure du Paysage de Versailles, Sylvanie became a DPLG landscape architect in 2003. After stints at the TER agency, then working with Yves Lion, she now works daily
on territorial and urban planning issues. In 2006, she and Claire Trapenard founded the D'ICI LA agency. They developed a new office in Nantes, which Sylvanie has been managing since 2015. Now an OPQU-qualified urban planner, her taste for varied scales leads her to projects involving territorial development, development and requalification of public spaces, and urban and landscape project management. Sylvanie places landscape and nature at the heart of all her projects, and develops a resilient approach that integrates the challenges of regeneration and adaptation of living organisms and uses as a key input for projects.



Véronique Mure, Botanist (France)
Round Table Panelist

Botanist and tropical agronomy engineer, Véronique Mure has been exploring for 40 years the visible and invisible links we weave with trees, gardens, and landscapes, from forests
to the heart of cities. After a professional career in the public sector (Pont du Gard site, Occitanie Region, Nîmes-Métropole Agglomeration), she then worked as a botanical expert and consultant within the company Botanique-Jardins-Paysages, specializing in the study of flora and its connections with gardens and landscapes from naturalist, historical, or prospective perspectives. She has thus assisted numerous project managers and clients, both public and private, in anchoring projects through plant palettes adapted to sites and responding to current ecological challenges (water conservation, adaptation to climate change, biological diversity...).
In all her interventions, she gives a large place to living things. It is a conviction that she likes to share and transmit. She teaches botany at the École Nationale Supérieure du Paysage de Versailles, Marseille site. She is, among others, the author of "Conversations sur l'herbe" (Conversations on the Grass), "Conversations sous l'arbre" (Conversations Under the Tree), and "Evasion botanique" (Botanical Escape) (Atelier Baie).



Virginie Vial (France), SAMOA Director
Round Table Panelist

Graduated from the Paris Graduate School of Business and Sciences Po's Urban Planning Program, Virginie Vial has spent over 25 years leading major urban development projects with distinctive ambitions and models: Eurodisney in France, the redevelopment of Renault's industrial sites in Boulogne-Billancourt, and the transformation of Nantes Island. Since 2022, she has headed SAMOA, the public development agency overseeing Nantes Island's urban project and the expansion of cultural/creative industries. Her leadership focuses on rethinking conventional practices to decisively align projects with ecological and social transformation goal

Moderators



Pierre Darmet

Pierre Darmet is Director of Institutional Relations at Unep – Les entreprises du paysage, the professional organization for urban greening and renaturing. He also serves as Secretary General of the Green Cities Observatory, alongside its co-presidents Anne Marchand (Hortis) and Laurent Bizot (Unep). Passionate about connecting biodiversity and cities, he co-founded the International Biodiversity and Real Estate Council (CIBI), the low-carbon and living architecture collective Unisson(s), and supports initiatives such as the Biodiversity Impulsion Group (BIG). In his home region, Loire, he co-chairs Les Rencontres de Saint Marcel, a forum linking public, private, and civic actors. A radio host and columnist, Pierre produces podcasts and chronicles on soil, water, and biodiversity, and writes the newsletter Natures urbaines. Recognized as one of Choiseul's "100 Young Leaders" for three consecutive years, he ranks in the Top 5 of the "Sustainable & Innovative City" category in 2024.



Karin Helms

Graduated from the Paris Graduate School of Business and Sciences Po's Urban Planning Program, Virginie Vial has spent over 25 years leading major urban development projects with distinctive ambitions and models: Eurodisney in France, the redevelopment of Renault's industrial sites in Boulogne-Billancourt, and the transformation of Nantes Island. Since 2022, she has headed SAMOA, the public development agency overseeing Nantes Island's urban project and the expansion of cultural/creative industries. Her leadership focuses on rethinking conventional practices to decisively align projects with ecological and social transformation goal

Round tables plenary sessions

Wednesday, September 10, 17:00 – 18:00
Round Table "The Role of the Landscape Architects for a Common Future"
Speakers: Charles Waldheim (United States), Jacqueline Osty (France), Xueman Wang (WorldBank, United States)
Chair: Karin Helms (France)

Thursday, September 11, 11:30 – 12:00
Round Table "The Living Nature in the City"
With the participation of the Keynote Speakers
Chair: Pierre Darmet (UNEP, France)
Speakers: Marc-André Selosse (France), Miguel Georgieff (France), Cecil Konijnendjik (Netherlands), Rainer Stange (Norway), Maria Ignatieva (Australia)

Friday, September 12, 11:30 – 12:00
Round Table "Territories in Transition"
With the participation of the Keynote Speakers
Chair: Karin Helms (Norway)
Speakers: Dirk Sijmons (Netherlands), Kongjian Yu (China), Bertrand Folléa (France), Pepa Moran (Spain)

Friday, September 12, 14:45 – 16:00
Round Table "Ile de Nantes, Territories of Innovations"
(Presentation language: in FRENCH)
Chair: Ariella Masboungi (France)
Round table participants: Sylvanie Gree (France), Virginie Vial (France)

Round tables special sessions

Thursday, September 11

13:30 – 14:30
Round Table "Guiding Practice Evolution: New Roles and Standards for Landscape Architects"
Theme: Professional Practice and Standards (linking to Guiding Cities & Territories)
Moderator / Session Lead: Indra Purs, Chair of IFLA Professional Practice & Policy (PPP) Committee
Participants: Audrey Timm (AIPH International Association of Horticultural Producers), Florent Moreau (VALHOR, French inter-branch organisation for plants, President), Joel Kurokawa (CLARB Council of Landscape Architectural Registration Boards, President), Juliette Ols (FFP, chair for professional practices), Maria Teresa Veleiro (UIA, International Union of Architects), Mikko Partanen (Lappset), Egbert Roozen (ELCA Representative), Arturo Fernandez (ARUP).

14:45 – 16:00
Round Table "Guiding Territories at Scale: Steering Regional Futures through Integrated Design"

Theme: Guiding Territories - By Changing the Design of Regional Projects

Moderator / Session Lead: Maria Gabriella Trovato (IFLA Landscape Architects Without Borders / NMBU)
Participants: Roland Lin (UNESCO), Elisabeth Belpaire (ISOCARP International Society of City and Regional Planners), Giselle Sebag (ISUH International Society for Urban Health), Hervé Lançon (UNEP), Jean-Pierre Thibault (PAP-Paysage Après Pétrole), Soline Archambaut (Grands Sites de France, RAP Réseau des Acteurs du Paysage), Marianne Kettunen (Ellen McArthur Foundation), Yasin Otuzoğlu (Turkish Stone)

16:30 – 17:45
Round Table "Guiding Education for Future Guides: Reimagining Curricula for Emerging Challenges"
Theme: Education (linking to Guiding Cities & Territories)
Moderator / Session Lead: Alessandro Martinelli Chair of IFLA Education and Academic Affairs (EAA) Committee.
Participants: Alexandra Bonnet (director of ENSP), Dany Hermel (Chair of FFP Education and Academic Affairs), Frederico Meireles (ECLAS - European Council of Landscape Architecture Schools), Simone Sandholz (G20 Global Land Initiative), Roxi Thoren (LAAB Landscape Architecture Accreditation Board), Roberto Rovira (LAF-Landscape Architecture Foundation), Chingwen Chen (Penn State Stuckeman School), Carolin Göhler (Landscape Institute)

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Guiding landscapes
Nantes France

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Abstracts

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1.1-BO-S1-1

Heatwave Vulnerability of Urban Trees in Wuhan: A study Towards Climate-Resilient Urban Forest Development

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Background and Objectives: As a major metropolitan center in Central China, Wuhan faces intensifying challenges from summer heatwaves. The unprecedented extreme dry heatwave of 2022 resulted in widespread growth inhibition and mortality among urban trees across the city. Understanding the heatwave vulnerability characteristics of urban trees and their underlying mechanisms is crucial for enhancing urban forests' climate resilience in the face of escalating heatwave threats associated with global warming.

Methods and Analysis: This study quantitatively evaluated the heatwave vulnerability of common tree species in Wuhan through two dimensions: climate risk and adaptive capacity. Species-specific heatwave risk was quantitatively assessed using species distribution models and climate niche analysis. Heatwave adaptability was measured through comprehensive evaluation of trees' morphological and physiological responses to extreme heat stress. We also explored how heterogeneous urban microhabitats – characterized by typical mosaic of high-density buildings, hardscapes, and green spaces – influence trees' heatwave adaptability.

Results and Implications: Our findings revealed that in the baseline period since the 1980s, most studied species have faced high level of heatwave risk featured with low suitability in MTWM (Maximum Temperature of Warmest Month). *Cedrus deodara*, *Prunus* × *yedoensis*, *Acer palmatum*, *Metasequoia glyptostroboides*, and *Ginkgo biloba* exhibited particularly prominent risks, with projections indicating risk escalation in near and far future scenarios. Among these species, temperate-origin ones such as *P. yedoensis*, *G. biloba*, and *M. glyptostroboides* demonstrated the weakest heat adaptability during the heatwave event, manifesting in severe crown damage and transpiration disorders, thus rendering them especially vulnerable. Moreover, the heatwave adaptability of intraspecific individuals was significantly influenced by surrounding microhabitat factors, particularly building enclosure degree, canopy coverage, and impervious surface proportion. These findings provide strategic guidance for enhancing the heatwave adaptability of urban forest through evidence-based species selection and habitat optimization, which will contribute to the development of climate-resilient urban landscapes and sustainable maintenance of ecosystem services.

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Keywords:

Keyword 1: urban trees
Keyword 2: heatwave vulnerability
Keyword 3: species-specific risk
Keyword 4: adaptive capacity
Keyword 5: climate-resilient landscape

1.1-BO-S1-2

Topography-mediated ecological synergies: multi-scale landscape optimization for thermal regulation and avian conservation in mountainous cities

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Urban landscapes that are strategically planned can optimize the delivery of multifunctional ecosystem services, including microclimatic regulation, avian habitat provision, carbon sequestration enhancement, and other ecological benefits. The research domain has attracted substantial scholarly interest. However, for mountainous cities, which constitute unique territorial units, the theoretical frameworks and regulatory thresholds governing topography's role as a critical mediator of ecological service delivery remain incompletely elucidated. This gap in understanding has resulted in significant discrepancies between academic findings and the operational realities of urban ecosystems in mountainous cities. Furthermore, empirical evidence underscores the reciprocal interactions between urban thermal regimes and microclimatic systems, which collectively affect avian behavioral patterns and migratory dynamics through synergistic feedback mechanisms. As a multifunctional regulatory methodology, landscape presents significant opportunities for advancing integrative strategies that concurrently address urban heat mitigation and avian biodiversity conservation.

The central area of Chongqing is a typical “mountain city” and “furnace city” in China, with rapid urbanization, high population density, complex topographic conditions and significant urban heat island problems.Situated within the parallel ridge-valley physiography, Chongqing serves as a critical migratory corridor for raptors and a vital staging ground for transcontinental migratory birds, thereby underscoring the paramount ecological value of its biodiversity conservation. Therefore, this study investigates strategies for enhancing landscape resilience in Chongqing by anchoring its framework in topography-mediated ecological mechanisms, leveraging hierarchical multi-scale landscape optimization of "network-corridor-habitat," and integrating urban thermal regulation with avian biodiversity conservation as the overarching objective.

The main research contents are as follows:
(1) Interpret meteorological radar imagery, avian migration trajectories in the city area in four seasons were derived, and combine field research and infrared camera observation, the distribution of avian activities in key areas at a smaller scale was characterized. The land surface temperature (LST) for all seasons were obtained by interpreting remote sensing images.
(2) Establish a 3D spatial virtual model through ArcGIS 3D Analyst, and project the bird migration trajectories in the spatial model. Combined with ENVI-met for microclimate simulation, the distribution of cold islands under different topography conditions was output. Subsequently, a 3D spatial coupling map of the core area of cold islands and bird migration trajectories was produced.
(3) Construct a dynamic response framework of “topography-landscape-temperature-avian” through structural equation modeling (SEM) to elucidate the mediation mechanism of topography in thermal regulation and avian biodiversity conservation. Furthermore, multi-objective optimization algorithms were employed to derive landscape regulatory thresholds for thermo-ecological synergy under topographical mediation.
(4) Propose a “topography-mediated” landscape resilience enhancement framework and spatial governance guidelines are formulated through three integrated components: landscape network planning, corridor optimization and habitat restoration.

This study seeks to contribute novel insights into green infrastructure optimization while providing a scientific rationale for evidence-based urban landscape planning. and it also aims to offer realistic and actionable strategies for guiding the ecological planning and design of urban landscapes in Chongqing.

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Keywords:
Keyword 1: Urban Biodiversity
Keyword 2: Thermal Regulation
Keyword 3: Topography
Keyword 4: Landscape Planning
Keyword 5: Mountainous City

1.1-BO-S1-3

Ecological Urban Morphology: Integrating Spatial Structures and Landscape Processes for Resilient Cities

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Cities are becoming increasingly vulnerable to climate change, ecological fragmentation, and spatial inequalities, necessitating a more integrated and systemic approach to resilience planning. Most of the discourse on resilient cities or ecological urbanism emphasizes environmental and infrastructural solutions, but the spatial structure of cities which consists of street networks, urban blocks, and connectivity patterns stays neglected even though plays a crucial role in shaping resilience. To fill this gap, this paper explores the intersection of urban morphology and landscape processes to show how spatial structures influence ecological performance and urban adaptability.

The methodology of this research includes a comparative study of selected cities that have successfully integrated urban morphology with landscape resilience strategies, to answer how different spatial configurations and planning can contribute to more adaptable and environmentally robust urban environments and which landscape-driven strategies leads to an improved urban resilience. To assess connectivity, permeability, and spatial coherence, particularly in relation to their role in supporting landscape-based resilience measures such as biodiversity corridors, green infrastructure, and climate-adaptive public spaces, this study utilizes space syntax and spatial network analysis as key analytical tools.

Findings of this research indicate that disconnected spatial configurations of cities often Result in disrupted ecological and spatial flows. This disconnection usually manifests in urban areas through segregated green spaces, inefficient hydrological management, and socially disconnected environments such as in “The Los Angeles River” in USA or “Al-Azhar Park” in Cairo. In contrast, cities with well-connected spatial networks and landscape processes tend to be more adaptable to climate challenges, foster stronger social interactions within the urban fabric, and support greater ecological sustainability, such as in “Freiburg’s Vauban neighborhood” in Germany or “Singapore’s ABC Waters Program”. Findings also show the key to more resilient urban settings lies in design strategies that prioritize connectivity, spatial hierarchy, and permeability as they ensure ecological and infrastructural elements of a space function as part of an integrated and cohesive urban system, such as in Copenhagen’s Cloudburst Management Plan or Tianjin’s Sponge City Program, where spatial planning integrates green infrastructure with adaptive water management to enhance urban resilience. These cases illustrate how urban morphology can actively support resilience strategies rather than being a passive background element. A well-configured urban structure is an active determinant of a city's resilience capacity, affecting everything from mobility patterns to ecological integration and climate adaptation. A central argument is that resilience planning should extend beyond reliance on isolated ecological measures, such as standalone parks or stormwater management systems. Instead, it should adopt a morphologically informed approach, recognizing that a city's spatial configuration can either facilitate or hinder resilience strategies. This perspective reframes urban resilience not just as an environmental or infrastructural challenge but a fundamentally spatial and morphological one, requiring interdisciplinary collaboration between urban designers, landscape architects, and policymakers. By bridging these disciplines, this research underscores the role of urban morphology in shaping resilience and sustainable cities and contributes to a more systematic and holistic understanding of how cities can be designed for long-term resilience.

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Keywords:
Keyword 1: Urban Morphology
Keyword 2: Spatial Structures
Keyword 3: Landscape Resilience
Keyword 4: Climate Adaptation
Keyword 5: Ecological Urbanism

1.1-BO-S1-4

Urban informal green spaces: how to apply ecological principles to Nature-based-Solutions

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Informal Green Spaces (IGS) are part of urban green infrastructure and could play an important role in urban biodiversity conservation. These informal spaces not only provide habitats for diverse species but also enhance the health and resilience of urban ecosystems by strengthening ecological connectivity, improving microclimates, and facilitating ecological succession. Nature-Based Solutions (NBS) strategies in IGS include preserving spontaneous vegetation, creating new wildlife habitats, implementing phytoremediation, and designing and navigating the desired succession phases, thus making the dynamic character of urban ecosystems visible. IGS can also serve as demonstration and educational platforms for biodiversity conservation, raising public awareness and engagement in ecological protection while driving urban sustainable development. Industrial wastelands, as a critical type of IGS, exhibit distinct spontaneous plant communities that demonstrate different succession stages and their future opportunities for ecological design. Studying these dynamics reveals the patterns of vegetation structure changes, providing essential insights for guiding ecological restoration, biodiversity conservation, and landscape reconstruction of such sites. Harbin, one of the earliest industrial cities in China, contains numerous industrial wastelands that require remediation. This study employs the space-for-time substitution method to analyze the composition and stability of existing plant communities in urban industrial wastelands in Harbin with different abandoned durations (3 years, 6 years, 9 years, 12 years, and 20 years). This is pioneering research trying to understand the successional mechanism of how nature works in postindustrial landscapes and what we can learn from it. We performed field surveys and analysis including the species richness, Shannon-Wiener index, Simpson index and Godron stability index of the vegetation. By decoding the dynamic patterns of spontaneous plant communities at different succession stages, we translated ecological succession patterns into actionable landscape language. Firstly, by establishing plant communities at different successional stages within the site, ecological data like Shannon-Wiener index change curves were translated into interactive landscape installations(e.g., data-visualized pathways and succession clock landmarks). This made invisible ecological processes into spatially perceptible public experiences. Secondly, we utilized the replacement patterns of dominant species to create dynamic seasonal landscapes(such as the golden autumn withering of pioneer herbs alternating with the evergreen foliage of climax trees) to interpret natural rebirth in the background of industrial ruins. Thirdly, we repurposed industrial structures (e.g., pipelines) as three-dimensional succession substrates for climbing plants (like *Parthenocissus quinquefolia*), and transformed abandoned infrastructure into dynamic landscape archives that record natural encroachment processes through the gradual wrapping of steel texture by vines and the biodegradation of corroded structures. This NBS design paradigm based on plant succession achieves the transformation of urban informal green spaces into green infrastructure that combines biodiversity and functional stability. At the same time, this research is contributing to understanding possible nature-based solutions which are used in European countries (such as "go wild", "go spontaneous") in the Chinese context.

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Keywords:
Keyword 1: informal green spaces
Keyword 2: Nature-Based Solutions
Keyword 3: urban industrial wastelands
Keyword 4: plant succession
Keyword 5: urban biodiversity

1.1-BO-S1-5

Integration of urban meadows as independent elements into the urban green infrastructure

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The European Union Biodiversity Strategy aims to restore Europe's biodiversity by 2030 for the benefit of people, the climate, and the planet. To reintroduce nature into urban areas and incentivize local community actions, the European Commission called on cities with at least 20,000 inhabitants to develop ambitious urban greening plans by the end of 2021, focusing on green infrastructure and its structural components. However, not all cities in Latvia are expected to have these greening plans fully developed by 2025. A significant challenge in top-down planning is translating broad strategic greening goals into tangible, small-scale implementations in urban landscapes.
One potential component of green infrastructure is urban meadows, which could contribute to biodiversity conservation at the national level. Natural meadows in Latvia are classified as threatened habitats, covering only 0.7% of the country's territory, and their survival is directly dependent on human economic activities. While the development of ecologically sustainable urban environments and the integration of nature-based solutions, including urban meadows, have become priorities in Europe and beyond, their implementation in Latvian cities, including Jelgava, remains experimental. This study aims to analyze the initial outcomes of urban meadow implementation and to identify the main challenges encountered in this process in Latvia. The key objectives include examining the factors influencing the establishment and maintenance of natural meadows in urban areas. The focal case study is the city of Jelgava, which, in 2024, undertook its first intentional efforts to introduce urban meadows on an experimental basis. One of the study's most significant findings is that successful implementation requires addressing several key issues related to legislation, public-private collaboration, and interdisciplinary cooperation. Legislative considerations involve the need for clear regulations and guidelines to facilitate meadow maintenance and integration into the urban environment while ensuring compliance with environmental protection norms and urban planning requirements.
Public-private sector interaction is another crucial factor influencing the sustainability of urban meadows. Effective cooperation between municipal authorities, residents, and businesses is essential not only for securing funding and ensuring long-term maintenance but also for public education, awareness, and engagement. The study reveals that public attitudes toward urban meadows often depend on their understanding of the ecological and aesthetic benefits, highlighting the necessity of active communication and educational initiatives.
Interdisciplinary collaboration among landscape architects, urban planners, environmental specialists, entomologists, and local government representatives is also essential. An integrated approach that leverages expertise from these fields enhances the planning and utilization of urban meadows, contributing to improved environmental quality, including soil and water health, pollinator attraction, biodiversity, and aesthetic experiences. Moreover, collaboration facilitates the development of effective solutions for long-term meadow maintenance, preventing biodiversity loss and landscape degradation.
The study indicates that interdisciplinary cooperation in this domain is still in its early stages, yet its role in shaping future urban environments is crucial. For urban meadows to become a permanent and effective element of green infrastructure, systematic efforts are required to refine legislation, promote interdisciplinary collaboration, and ensure high-quality public outreach.

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Keywords:
Keyword 1: city green infrastructure
Keyword 2: urban meadows
Keyword 3: municipality management challenges

1.1-BO-S1-6

MEDITERRANEAN NATURALISTIC PERENNIAL PLANTING COMBINATIONS- Innovation for urban greenery in Madrid

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The design and maintenance of urban green spaces in Spanish cities is facing increasing challenges related to climate change, the need to preserve biodiversity, and the public's demand for satisfactory maintenance of urban greenery.

The effects of climate change are increasingly evident, with the summer of 2022 being one of the hottest on record in Spain and rainfall 35% below average (AEMET, 2022; La Moncloa, 2022). In the face of water scarcity and global warming, it is essential to rethink the current planting models for green areas to make them more sustainable.

The 2030 Agenda (United Nations, 2015) and the European Biodiversity Strategy 2030 (European Commission, 2020) highlight the key role of cities in the conservation of biodiversity and natural heritage. In this context, it is essential to develop new planting strategies with a more naturalistic approach. This paradigm shift encourages sustainable agronomic practices, such as the use of improved soils, mulching and efficient irrigation management, while promoting biodiversity and sustainability.

Although the naturalistic approach has been successfully applied in many European countries, its application in public gardens in Spain is still limited (Hu & Lima, 2024). In the few experiences that have been made, foreign models have been used with variable results. This demonstrates the need to develop an own model adapted to the Spanish Mediterranean climate and, in particular, to the conditions of Madrid.

To address this challenge, the Head Office of Urban Regeneration of the Madrid City Council and the Rey Juan Carlos University have launched a research project focused on the development of low-maintenance herbaceous planting mixtures with reduced water requirements. The trials will evaluate combinations of herbaceous plants of Mediterranean origin, different types and depths of technical substrates, as well as different types and thicknesses of mulch that favor moisture retention. In addition, the optimal irrigation doses will be analyzed to guarantee vegetation development and reduce maintenance needs.

The methodology was developed in close collaboration between the research team at the Universidad Rey Juan Carlos and municipal technicians, establishing technical specifications for materials, plant mixtures and monitoring protocols with indicators to evaluate their evolution.
The trials will be carried out between the autumn of 2025 and 2027 on plots of around 300 m² in the Madrid City Council grounds. Once implemented, they will be monitored according to defined protocols, with specific maintenance tasks.

The final objective of the project is the elaboration of "Mediterranean ornamental planting mix sheets", which will serve as a reference in urban regeneration projects. These sheets will include detailed technical specifications, recommendations for implementation and an adapted maintenance protocol.

The results of this research will be published and disseminated to the academic and professional community in order to promote their applications in other Mediterranean urban environments.

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Keywords:
Keyword 1: urban greenery
Keyword 2: urban planting design
Keyword 3: Mediterranean cities
Keyword 4: climate change
Keyword 5: low maintenance

1.1-BO-S1-7

Point, Line, Field: A Citizen's Guide to Restoring Habitat for the Hine's Emerald Dragonfly

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This project focuses on the Hine's emerald dragonfly, a federally endangered species in the United States that serves as an indicator of a healthy ecosystem. Dependent on fragile groundwater-fed habitats, this dragonfly is critically tied to the hydrological and ecological health of its environment. The project takes place in one of its critical habitats along the Des Plaines River in northeastern Illinois, envisioning a future of coexistence by repurposing energy infrastructure through three interconnected layers: point, line, and field.

- Point refers to groundwater supply wells, essential for sustaining the dragonfly's larval stage
- Line represents energy transmission corridors, which can be optimized to enhance wildlife connectivity and provide uninterrupted flight paths for the dragonfly.
- Field involves the collective participation of communities and citizens, fostering a future of coexistence as a process driven by local involvement.

Historically, this region functioned as the industrial hinterland that fueled Chicago's rise as a metropolis. The extraction of dolostone for fireproof construction—exemplified by the Water Tower on the Magnificent Mile, one of the few structures to survive the Great Chicago Fire—played a pivotal role. However, industrial expansion and growing water demand have placed increasing strain on local ecosystems, exacerbating a looming water crisis, particularly in Joliet. Despite being within the largest watershed in the U.S., the region faces the risk of groundwater depletion by 2030, prompting cities to seek alternative sources such as Lake Michigan.

This project explores how existing energy infrastructure can be repurposed to support ecological restoration. Groundwater wells, instead of being sealed, could be transformed into groundwater recharge zones, with redesigned structures inducing rewetting processes to restore dragonfly habitats. Energy transmission corridors—often seen as sites of habitat fragmentation due to maintenance and safety restrictions—could be vegetated and reconnected to surrounding landscapes, fostering ecological continuity.

Crucially, the project also acknowledges the potential failure of certain interventions. Not all sites may successfully support dragonfly habitats, but they will still contribute to the long-term groundwater recharge of the region—an essential step toward restoring hydrological balance. Through a citizen science program and community engagement, these efforts would help rebuild a landscape of coexistence. Over time, the return of the Hine's emerald dragonfly would mark the site as a thriving public space. Every summer, swarms of dragonflies would become a celebrated spectacle—an ecological indicator of a restored balance between human infrastructure and the natural world.

Beyond its ecological objectives, this project offers a multi-scalar approach to rethinking the more-than-human Anthropocene by centering often invisible insect agency in landscape design. It challenges the traditional singular use of infrastructure systems, proposing an integrated, multi-functional framework that accommodates both human and non-human needs. By bringing the perspective of the more-than-human into infrastructure design, this project contributes to a broader disciplinary shift—one that recognizes ecological interdependencies and reimagines landscapes as shared, adaptive spaces rather than sites of extraction and control.

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Keywords:
Keyword 1: Non-human
Keyword 2: Ecology
Keyword 3: Infrastructure
Keyword 4: Climate change
Keyword 5: Participatory Design

1.1-CO-S1-1 - Urban habitat rewilding: from sp. choices to infrastructure models (Part 2)

1.1-CO-S1-1

Methodological Approach for Assessing Rewilding Potential of Park the Rewilding Areas in Qingdao, China

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During the phase of horizontal urban expansion, a large number of urban and surrounding green spaces were developed in a disorderly manner, threatening biological habitats, sharply reducing urban population diversity, and causing the gradual disappearance of wild urban landscapes from public view. Urban rewilding areas play an irreplaceable role in protecting biodiversity, maintaining urban ecological processes, and reconnecting people with nature. However, there remained a research gap in the selection and evaluation methods for small- and medium-scale urban rewilding areas. Therefore, using Taipingshan Park in Qingdao as a case study, this paper proposed a framework for identifying urban rewilding areas based on the wilderness mapping principle and GIS spatial analysis methods, and constructed a methodology for evaluating the rewilding potential of these areas using multi-source data, including naturalness and community vitality. Seven indicators, including biophysical naturalness and appearance naturalness, were selected to build a wildness characteristic model for Taipingshan Park. The park's wildness was classified into core wildland areas, buffer zones, and peripheral areas using a fuzzy membership function, and 12 sample points were selected for investigation. Additionally, an evaluation framework for the rewilding potential of parks in Qingdao City was developed, consisting of six dimensions and 22 indicators, with the weights of the indicators determined. The results showed that human disturbance, regeneration seedling conversion capacity, and diameter class structure were the key factors affecting rewilding potential. The rewilding potential scores of the 12 quadrats in Taipingshan Park ranged from 5.42 to 7.45, with an average score of 6.309 and a comprehensive evaluation grade of III. This method provided a targeted strategy for the protection of rewilding areas in Qingdao's parks and offered new ideas for the protection and design of wild landscapes in urban parks in the future.

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Keywords:
Keyword 1: Urban rewilding
Keyword 2: Park rewilding area
Keyword 3: Wilderness mapping
Keyword 4: Evaluation index system

1.1-CO-S1-2

Guiding the City: Site-sensitive and Ecology-sensitive Park Design for new Parks on the former Tegel-Airfield in Berlin

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Neighborhood-Park and Landscape-Park will be built on the airfield of the old Tegel Airport in Berlin, the former will be the center of new neighborhood while the latter connecting to the surrounding landscape. The new parks also provide ecological contributions in terms of planting application, rainwater management, recycled material utilization.

1. Local Vegetation as Genius Loci of Site and Climate-adapted Plants as Identity of Place
The local vegetation of the heath landscape predominates over the flat expanse of the Tegel-Airfield site, a phenomenon that can be attributed to the dry and warmer climate characteristic of the region. The design proposes a “bridge of local vegetation” which consists of first: **heath areas,** extensive ones leading to the landscape and intensive ones in the neighborhood park, build up an ecological and aesthetic backbone. Second, **pine groves**, developed as outdoor lounges where residents can relax, guide from the urban area into the landscape. Third, areas of plants of the north American **prairie** and Asian **steppe** accentuate the local landscape. Additionally, **climate-adapted trees** and **native trees** reinforce this contrast in the lawn areas. Finally, **shrubs** along some edges of the neighborhood-park attribute the biodiversity of flora and fauna. The design process incorporates not only an in-depth discussion of new plant species but also great attention to **soil quantity and quality** and **maintenance** in the long term.

2. Evaporation and Infiltration: Multiple Techniques for Rainwater Treatment
As the destination of the rainwater from the whole neighborhood, the Neighborhood-Park receives the collected rainwater via pipes at different places, quantities and levels. To ensure that the rainwater is infiltrated into the ground within 24 hours and to prohibit an accumulation of ponding water higher than 30 cm for a 5-year rainfall, several methods including **evaporation areas**, **infiltration basins** and **trenches** have been combined with designed topography, specialized planting and specific details in an aesthetic and functional way. Furthermore, rainwater will be used for **irrigation.**

3. Reused Materials as Mnemonic of the Former Airfield and a Cost-effective Approach
To leave a trace of the former airfield, reduce the CO_2 footprint and build the new parks economically, materials will be reused and recycled in different ways. **Man-made materials**, such as asphalt, can be utilized as the supporting layer beneath asphalt surfaces. While **natural stones**, including granite and slate, will frame the parks as curbs or mark specific areas with edging (e.g., evaporation areas). The utilization of a combination of materials, incorporating both recycled and newly manufactured components, such as small granite pavement, has been identified as an approach in sustainability efforts.

The parks on the former Airfeld Berlin Tegel support the future developed neighborhood as an ecosystem. This support is demonstrated through the implementation of various sustainable practices, including the **integration of planting applications**, **the management of rainwater**, and **the utilization of recycled materials**. Collaborations with other facilities are in place to ensure the long-term sustainability of the ecosystem through the utilization of **green energy sources**, including geothermal and solar energy and the use of smart city monitoring.

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Keywords:
Keyword 1: landscape architecture
Keyword 2: Berlin Tegel Airfield
Keyword 3: local heath landscape
Keyword 4: rainwater management
Keyword 5: recycling of materials

1.1-CO-S1-3

Urban trees : from nurceries to urban environment, how to prepare plants productions for urban constraints ?

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Urban tree planting is crucial for enhancing environmental quality and human well-being in cities (Pataki D.E. and al, 2021). However, the success of urban forestry initiatives depends significantly on the local production of trees adapted to specific urban constraints (Castagneyrol B., and al. 2024). This approach ensures better tree establishment, survival, and long-term performance, ultimately maximizing the multiple benefits of urban trees for communities (Dorneay J.R. 1984). Subject to numerous constraints when transplanted into urban environments, trees face limitations in root system development due to the structure and composition of their growing medium, infrequent irrigation, and other urban stressors (Cermak .G. and al, 2000). Consequently, their growth is often reduced. These conditions also shorten the lifespan of urban trees by one third compared to those in rural environments (Gillig C-M. and al. 2008).

Project's objectives and organization: The objective of the program *Urban trees : From Nursery to Urban Environment*, launched in December 2019 for a three-year duration and finance by CasDar a national strategic agricultural research founds, is to address three main goals: (i) Develop new nursery plant products predisposed for urban implantation, facilitating their establishment and meeting the specifications of urban planners; (ii) Assess different compositions of urban planting pits by developing new technosols to address emerging challenges (lack of natural soil, valorization of urban co-products); (iii) Promote the transfer of these technical production processes and encourage their adoption by growers.
This program, bringing together Astredhor, the French National Technical Institute of Horticulture, and the start-up Up4Green as project partners, consists of four key actions: Action 1: Development of technical itineraries to improve tree growth in urban context (2 species were tested : *Tilia cordata* and *Carpinus betulus*). Action 2: Evaluation of various technosols to identify the most efficient options (based on crushed concrete, waste soil from construction site, compost from food or green spaces and biochar; with or without mycorrhization). Action 3: Validation of technical itineraries for growers by testing tree preparation methods in real operational environments (airpots, traditional pots, textile pots, wood containers). Action 4: Coordination, dissemination, and transfer.

Main results :

- Overall, little difference in circumference between technosols and topsoil in tested conditions.
- Regarding elongation and the number of nodes, conventional pots and Airpot yielded better results.
- The concrete compost Technosol produced better results concerning the average internode length.
- No significant effect of mycorrhization on trees growth.

Perspectives :
A new project as just begun : The ClimArbre research program started in 2024 will select a suitable route while monitoring the effects on the physiology and aesthetics of trees in nurseries. These trees prepared in this way will be planted in a community and their development will be monitored.

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Keywords:
Keyword 1: Urban trees
Keyword 2: Nurcery production
Keyword 3: Technosols
Keyword 4: Urban waste

1.1-CO-S1-4

Biodiversity Positive Design Frameworks for Unique Urban Ecosystems: Regenerative Ecological Approaches for Australian Cities

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Urban ecological design in Australia operates within a unique biological and cultural context, presenting both distinctive challenges and opportunities for biodiversity enhancement (Yang, 2024). This paper evaluates existing biodiversity-focused urban design methodologies (Hernandez-Santin, Amati, Bekessy, & Desha, 2022; Ignatieva, 2017) through the lens of Australia's exceptional ecological characteristics, examining their appropriateness and transformative potential in Australian cities. With distinct evolutionary pathways (Prendergast, Tomlinson, Dixon, Bateman, & Menz, 2022), Australia's remarkable biodiversity requires approaches that enhance endemic ecosystems while addressing habitat fragmentation caused by postcolonial urbanisation and development (Rastandeh 2018). In this paper, we develop a matrix approach to enhance biodiversity outcomes across a range of urban ecosystems, including cases integrating grasslands, woody meadows, wetlands, forests, dune systems, and heathlands and extending to novel ecosystem projects. These examples explore how nature-based solutions can be effectively adapted to Australia's distinctive conditions. Our analysis reveals that successful biodiversity interventions in Australian cities require careful consideration of unique seasonal patterns, fire adaptation mechanisms, and drought resilience that characterise the continent's ecosystems.

The paper advocates for a "no net loss" approach to urban biodiversity, advancing regenerative, net-positive outcomes. We argue that Australian cities can become sanctuaries for endemic biodiversity through innovative design within existing urban footprints that make space for both humans and a diversity of other species. This necessitates solutions that reconnect fragmented ecosystems, establish functional ecological networks across urban landscapes, and enhance indigenous biodiversity value in even the most developed areas.

We propose a framework for biodiversity-positive design that integrates Traditional Ecological Knowledge with contemporary scientific understanding, creating culturally and ecologically appropriate interventions. The framework emphasises: (1) celebrating and prioritising endemic species and ecological communities; (2) designing for climate resilience appropriate to Australia's variable conditions; (3) optimising ecological connectivity within complex urban matrices; (4) embedding biodiversity within built environments through innovative infrastructure; and (5) fostering community stewardship through design that connects Australians with their unique natural heritage.

The research illuminates how biodiversity-positive approaches in Australian cities can contribute valuable insights to global urban ecological practice while addressing the continent's unparalleled biodiversity conservation challenges. By reconceptualising cities as potential biodiversity sanctuaries, we can transform urban design practice to actively contribute to biological conservation while creating more liveable, resilient urban environments.

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Keywords:
Keyword 1: biodiversity-positive-design
Keyword 2: biodiversity-friendly-design
Keyword 3: urban ecology
Keyword 4: nature-based solutions

Keyword 5: endemic biodiversity

1.1-CO-S1-5

Fifteen Faces of Urban Nature: Typologies, Temporality, and Ecological Empathy

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During the sixth mass extinction and intensifying environmental crises, the traditional view of cities as isolated from nature is no longer tenable. Instead, we must begin to understand urban areas as living ecosystems—hybrid landscapes where the built and unbuilt, the human and non-human, the organic and inorganic coexist in layered, evolving relationships (Elmqvist et al, 2021; Kennedy 2022). This shift calls for moving beyond passive observation toward a deeper integration of ecological thinking into urban design and planning. The Finnish framework *The Nature Types of the Built Environment and the Assessment of Their Ecological Condition* provides a structured foundation for this transition. Developed collaboratively by researchers, ecologists, and urban practitioners, this typology identifies 15 urban nature types—ranging from wooded parks and thickets to constructed wetlands, ruderal zones, and even green roofs. Each type is evaluated through ecological condition indicators tailored to its structure and species composition. Importantly, these nature types are not static categories, but dynamic systems shaped by time, ecological succession, and human interaction—encompassing the full spectrum of nature within built environments in Finland. Their recognition enables urban planning to move beyond surface-level greening to engage with the deeper processes.

Central to this approach is the reconciliation of ecological time with human development timelines. Urban planning often operates on short cycles of implementation and renewal, while ecological processes—such as growth, senescence, decay, and regeneration—unfold over months, years, or even decades. Integrating biodiversity into urban areas requires patience, flexibility, and a willingness to engage with spontaneous, sometimes unpredictable, ecological change. The *The Nature Types of the Built Environment* framework supports this by advocating for a process-based understanding of urban green spaces, where elements like deadwood, uneven vegetation, or volunteer species are seen not as failures but as signs of ecological vitality.

To make these abstract concepts more accessible and emotionally resonant, each of the 15 nature types is accompanied by a unique illustration: a human-like character that “carries” its typical vegetation, associated animal species, and common human activities on its shoulders. These depictions serve three important functions. First, they help differentiate the types as distinct, recognizable identities—making the typology more understandable and memorable. Second, they foster ecoliteracy (McBride et al, 2013) by portraying each type as a vital ecological actor within the urban system, showing their value not only to biodiversity but also to human wellbeing. Third, by anthropomorphizing the types, the illustrations encourage empathy toward urban nature, presenting it as something living, dynamic, and deserving of care.

This visual and conceptual approach supports a cultural shift: understand nature types as co-inhabitants of the city— with their own needs, rhythms, and contributions. By embracing ecological temporality and acknowledging the diverse roles of different urban ecosystems, we can begin to design cities that are not only more resilient, but also more deeply connected to the living world. In doing so, urban environments can become not just sites of survival for biodiversity, but spaces of encounter, empathy, and co-evolution between humans and nature.

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Keywords:
Keyword 1: Process-based design
Keyword 2: Ecoliteracy
Keyword 3: Urban ecology
Keyword 4: Human-nature interaction
Keyword 5: Care

1.1-CO-S1-6

Towards biodiversity-friendly urban grasslands. Implementation of ecological principles into practical landscape design in Global North and Global South

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Different types of post-glacial semi-natural grasslands and pastures were the inspiration in Europe for creating a lawn, a very special type of plant community designed exclusively for aesthetic purposes and human pleasure. Over time, it became a status symbol and a sign of wealth and prosperity.
This presentation will discuss the periods of European lawn development such as biodiverse meads (meadows) in Medieval gardens, manicured French parterres, meadows, pastures and lawns in English landscape parks and finally frequently mowed lawns in urban public parks with low biodiversity that also demand high resource inputs for maintenance. In the last two decades of the 21st century, biodiversity loss and the dramatic decline of semi-natural grasslands led to the development of various grassland restoration practices, including nature-based solutions (NBS) for lawns in urban areas (e.g. urban meadows and pastures, high grass lawns, grass-free lawns and pictorial meadows for parks and private gardens). In many European countries (Germany, the UK, Sweden, France, Switzerland, Finland, the Netherlands, and Belgium) these NBS as new alternative solutions are visible in urban landscapes and even become landmarks (Ignatieva et al., 2020).
Lawns arrived in colonial cities of the Southern Hemisphere with European settlers as a symbol of "civilisation". For 150 years, lawns became a compulsory part of all urban green spaces. The dramatic loss of unique biodiversity in the biodiversity hotspots of South Africa, Australia, and New Zealand resulted in the development of a strong movement to protect and restore native ecosystems (grasslands, forests, wetlands, etc.). Lawns in the cities of the Global South can also provide important ecosystem services (cooling, recreation and other services to support human well-being, habitat provision for some native wildlife). However, they also have a whole range of disservices. The movement towards sustainable and biodiverse lawns here is supported by different principles and theories (Müller et al., 2013).
In this paper, we will discuss the dynamic nature of urban grassland plant communities, their unique characteristics, the influence of the maintenance regimes on the structure and species compositions in the cities of Global North and Global South. This paper is based on empirical data and practical design applications of alternative solutions for lawns (including NBS) in public parks and university campuses. As a result, we will provide recommendations for landscape design and maintenance of urban green spaces (e.g. sustainable lawns).

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Keywords:
Keyword 1: biodiversity-friendly urban grasslands
Keyword 2: nature-based solutions
Keyword 3: urban lawns
Keyword 4: Global North
Keyword 5: Global South

1.1-CO-S2-1 - Urban habitat rewilding: from sp. choices to infrastructure models (Part 3)

1.1-CO-S2-1

Bridging Land and Sea: Seascape Character Assessment for Sustainable Nature Conservation and Management in Coastal Cities--Insights from Zhuhai, China

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Establishing protected areas is a core method in nature conservation of cities, fundamentally involving delineating boundaries to implement strict management in areas with high ecological value. However, extensive areas beyond these boundaries also provide critical ecosystem services and should not be entirely neglected. In coastal cities, marine dynamics intensify ecosystem challenges, as their ecological function hinges on internal protection and significant interactions with surrounding areas (Kremen & Merenlender, 2018). Methods for establishing isolated protected areas fail to buffer external risks or ensure comprehensive protection (European Environment Agency, 2015).

Multiple organizations have advocated innovative methods to integrate coastal protected areas into broader seascape management frameworks (Coates, 2016; Convention on Biological Diversity, 2022; Dudley et al., 2013; Shafer, 2015). Incorporating protected areas into managed seascapes enhances ecological connectivity, reduces habitat fragmentation, supports species conservation, and facilitates the coordinated management of large-scale ecological processes (Carmenta et al., 2020; Ervin et al., 2010; Murphy et al., 2021). Consequently, the conservation of coastal cities requires holistic methodologies that extend management considerations beyond the boundaries of protected areas.

The realization of the goal of ecosystem protection lies in the identification of ecologically interconnected zones, where the critical challenge lies in delineating spatial units aligned with conservation objectives (Swaney et al., 2012). Internationally, diverse methodologies have been developed for coastal spatial zoning (Balaguer et al., 2008; de Andrés et al., 2018; Eliot I et al., 2011; López Rodríguez & Angela Cecilia, 2006; Milanés Batista et al., 2017). Expanding on Landscape Character Assessment (LCA) foundations, Seascape Character Assessment (SCA) has evolved as a systematic tool to characterize and assess coastal natural, cultural, and social factors.

Take Zhuhai, China, as an example; this study presents a three-phase methodological framework integrating SCA with ecosystem metrics for coastal management: 1) the delineation of seascape units, 2) the development of a function-risk assessment system, and 3) the formulation of the conservation strategy. At the city scale, we selected 15 variables across five natural dimensions (geomorphology, coastal characteristics, water types, bathymetry, habitats) and one anthropogenic factor (island development) based on local characteristics and existing classifications (Fiona Fyfe Associates, 2020; MMO, 2015). Using 500m×500m grid cells and two-step cluster analysis, we identified 169 seascape units across nine characteristic types. The assessment revealed that 31% of units required priority conservation actions, with 69% necessitating restoration or habitat creation measures.

Our framework advances coastal management by combining SCA with quantitative function-risk assessment. The methodology offers a transparent, replicable approach to characterizing seascape while addressing the limitations of qualitative conservation strategies. The integrated assessment system enables the identification of primary risk sources and prioritizing management interventions through combined ecological function assessment and risk analysis. This method better captures regional ecological complexity and facilitates conservation-development balance than single-dimensional assessments. The resulting spatial prioritization complements existing protected area networks and provides an evidence base for coordinated coastal management. This study demonstrates the potential of SCA-based methods to enhance the conservation of ecological systems in rapidly developing coastal cities through science-informed spatial planning.

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Keywords:
Keyword 1: Coastal ecosystem
Keyword 2: Natural conservation
Keyword 3: Landscape management
Keyword 4: Landscape units
Keyword 5: Seascape character assessment

1.1-CO-S2-2

Reimagining Urban Riverfront development in India: A critical realist approach to ecological and urban imperatives

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Rapid urbanisation in India has amplified pressures on river ecosystems, leading to land scarcity, severe pollution, flooding, and ecological fragmentation. Critical realists believe that rivers have objectively measurable attributes like hydrology, seasonal variations, sediment dynamics, and ecological habitats, but their planning and management are influenced by subjective human perceptions, power structures, cultural contexts, and socio-political factors. In India, land adjacent to rivers, especially in urban areas, are contested places. This is because of the place's history, culture, traditions and political economy that govern the structuring and development.

This research proposes a critical realism-based integrative planning framework that values river landscapes' objective (biophysical) and subjective (social, cultural, political) realities, recognising the conflict between ecological necessity and urban development imperatives. Given urban constraints, reverting to pre-urban ecological conditions is impractical and engineering interventions remain inevitable. This research demonstrates how philosophical position (theory) and design approach (practice) can lead to sustainability. This is done through a comparative study of India's Sabarmati and Mula-Mutha riverfront projects. In comparison, Sabarmati exemplifies an engineered, global image-making and infrastructure-driven approach, while Mula-Mutha's ongoing development attempts at river rejuvenation by integrating streamlined embankments and incorporating ecological sensitivity by improving water quality and retaining native vegetation. In both these urban projects, place-making is at its core, as lands adjacent to rivers in urban areas are of prime importance to people. While designing along urban river landscapes, landscape architects focus on ecological integrity, while urban planners/designers consider usability, aesthetics, and socioeconomic viability. These conflicting approaches often harm ecological resilience and urban liveability.

The study proposes "reading landscapes," an innovative, empirically-grounded methodological framework (mixed method) that uses transect studies, quadrant analysis, longitudinal ecological mapping, and advanced technologies (GIS, remote sensing) to fill the information critical gap. Integrating qualitative socio-cultural assessments and iterative community input enhances the depth and precision of data collection, informing more sustainable and responsive design iterations. This study will demonstrate how recording and analysing using the above methods have influenced design decisions for Sabarmati and Mula-Mutha riverfront development projects In India. This shows practical intersections of theoretical and methodological frameworks, demonstrating the need for interdisciplinary collaboration to translate ecological realities and cultural perceptions into adaptive and resilient planning decisions.

Adopting critical realism as the philosophical foundation is advantageous, as it recognises the overlapping subjective urban-social interpretations and objective environmental patterns. Ultimately, this integrative approach reframes urban riverfronts as adaptive ecological corridors rather than merely as engineered infrastructures or aesthetic urban spectacles.

Involvement of landscape architects, urban designers, and planners is central to this discourse. They can mediate between ecological imperatives and urban demands by leaving buffers for living corridors along rivers to thrive. This supports biodiversity, mitigates flood risks (at the regional scale), and creates adaptive, multifunctional public spaces (at the urban scale). This can be accomplished effectively by adapting to technological advancements (to generate data), utilising the knowledge of all allied professionals, and engaging in collaborative practice, rather than merely duplicating design decisions.

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Keywords:
Keyword 1: Landscape urbanisum
Keyword 2: Urban Riverfronts
Keyword 3: Critical Realism
Keyword 4: Ecological Resilience
Keyword 5: Reading Landscapes

1.1-CO-S2-3

A selection of indigenous italian flora for rain gardens' implementation

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Climate change and urbanization are two worldwide major threats to human and ecosystems' health. Among their multiple consequences, their combination results in an increasing difficulty of managing stormwater quantity and quality in the built environment. Sustainable stormwater management tecniques arose in the last decades in many countries around the world, under different names (e.g., Low Impact Develpment, Water Sensitive Urban Design, Sustainable Urban Drainage Systems) and at different scales. Ranging from rain gardens and tree trenches to constructed wetlands, the majority of these infrastructures, as part of the urban greenery, offer multiple aknowledged benefits: besides stormwater regulation, they enhance biodiversity, improve the microclimate, and trap harmful pollutants. Vegetation is a fundamental component of each feature, with a key function in its qualitative and quantitative positive effects. This understanding is nowadays well aknowledged, even if the multiple variables involved in plants' functioning and interactions imply a high level of complexity and an intrinsic criticality in modeling and studying them. Nevertheless, the correct species' selection and arrangement plays a pivotal role in enhancing the ecosystem services provided, determining at the same time another key aspect which is the sustainability of the deisgn. Indeed, plants' appropriateness has implications reflected in favourable economic and ecological costs, deriving from their evolution and interactions over time. It means on the one hand the creation of reduced mantainance regimes in the harsh conditions of the built environment, on the other hand the enhancement of the local biodiversity, enriching the faunal and floral variety and minimizing the risk of biological invasions. Of course this involves not only a deep understanding of the biological community's functioning, but also a site-specific approach considering the local environmental conditions and flora. The leading role of the United States in sustainable stormwater management, together with their attention to the use of the indigenous flora, has led to a prevailance of North American species in literature and implementations around the world, as the better-known species also tend to be preferred for their predictable behaviour. European natives, instead, were only partially explored and documented. This fact represents a major research and applicative gap, which should be filled to ehance the ecological network, exploit local adaptations, and avoid undesired threats to biodiversity. The present study analyzed the international scientific and grey literature on the selection of plant species for rain gardens, grouping the taxa by geographical range, and on climatic, ecological, and taxonomic criteria. The combination of these elements was used to derive indications on affinities and characteristics to be searched within the flora of Italy. The results presented consist of a selection of species' and floral communities for the different climatic conditions of the italian peninsula, ranging from the cooler northern environments to mediterranean settings, together with their implications and benefits. This proposal intends to support further research and testing, and innovative applications of rain gardens, which in Italy are still a quite unexplored field.

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Keywords:
Keyword 1: rain gardens
Keyword 2: sustainable urban drainage
Keyword 3: biodiversity
Keyword 4: plant species
Keyword 5: native species

1.1-CO-S2-4

Thinking on next generations: Nature-Based Solutions in public schools to Climate Change Mitigation

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In 2022, the Fundación de Patrimonio Natural de Castilla y León launched a competition for the renaturalisation of school playgrounds. Our studio, with a team of four landscape designers, was selected to work on thirteen schools in the provinces of Burgos and Soria, on the Castilian plateau, and has completed the work this year.
Our public school playgrounds in Spain are usually paved with concrete, without a single tree or plant. The general objectives of this project are to increase adaptation and resilience to climate change through the application of nature-based solutions in public schools through the implementation of the following general actions
- Reducing the outdoor heat island effect - increasing shade, reducing solar radiation, natural temperature regulation and heat absorption of materials.
- Improving and/or increasing the permeability of the ground, treating built surfaces (pavements) and replacing them with permeable pavements or green areas.
Irrigation water management and increased drainage capacity by improving surface run-off. - Enhancement of vegetation and other local biodiversity, with particular emphasis on local agro-food varieties, pollinators and insectivorous birds.
In this way, this ambitious project aimed to address the main consequences of climate change, which have a particular impact on one of the most vulnerable groups of the population - children - through education and awareness-raising through the new playgrounds.
The budget for each school was limited, but the objectives were met with a dose of imagination and creativity. Using the landscape as inspiration, and working closely with school teachers, pupils and parents, we have designed and built new schoolyards where pupils can interact with and enjoy nature. Perhaps the best tool in these times of climate emergency and uncertainty is to raise awareness and educate from these new nature classrooms. Because to know is to love. and to care.

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Keywords:
Keyword 1: Schoolyard naturalization
Keyword 2: Nature-based Solution
Keyword 3: Nature education
Keyword 4: Climate adaptation

1.1-CO-S2-5

Pocket Forests: Cultivating Resilient Urban Landscapes

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Rapid urbanization often leads to the disorganized development of cities, resulting in vacant, barren patches of land among urban areas. These spaces are frequently used for dumping debris or garbage or become neglected areas with overgrown vegetation that can harbor pests and diseases. In developing countries, they may also turn into slums due to insufficient oversight by civic authorities. The question arises: Can these overlooked pieces of land be transformed and add value to the urban spaces? We identified such spaces in 10 cities; Thane, Pune, Kalyan-Dombivali, Ambernath,Ulhasnagar, Panvel, NaviMumbai along the coast near Mumbai, Maharashtra, India, and some in the interior with extreme climates like Jalgaon, Shirdi, and Nanded. The project was funded by the Central Government under the AMRUT Scheme (Atal Mission for Rejuvenation & Urban Transformation). Once the space was identified, we determined ownership, selecting only those owned by civic authorities.

The process began with a SWOT analysis to understand the strengths, weaknesses,opportunities, and threats of each space. Demographic and psychological analysis
established the potential users, their ages, and other attributes. Topographic and sunshade analyses enabled scientific transformation into sustainable spaces. The aim wasto make the spaces accessible and inclusive. Transforming them into gardens would require long-term maintenance. Given that 'AMRUT' in Hindi means nectar or fruits, we explored whether we could create spaces with edible fruits, attract butterflies, insects, and birds, thereby establishing a sustainable biodiverse ecosystem. This led to the design of pocket forests in different locations, each incorporating indigenous symbiont species. Polyculture was implemented to prevent disease
outbreaks during growth. Natural trails were created within each forest. Tree spacing minimized rank vegetation growth, reducing the need for weeding. Defoliated leaves provided mulch to decrease transpiration losses and ultimately enrich the soil as
manure. Our design focused solely on trees—flowering trees offering fragrance and improving bird habitats. A resilient ecosystem that thrives primarily during monsoon
seasons and sustains itself thereafter was achieved.

As the forests matured, microclimates developed, attracting rare birds and creating spaces for social gatherings, fitness activities, and passive recreation such as painting.

Pathways made of compacted soil allowed for percolation and easy walking. Proper signage and ergonomic seating encouraged frequent visits. Previously infertile soil
became fertile naturally, providing shade and shelter from rain.

Some forests were themed, and named accordingly : Sanskriti Udyaan (Heritage Forest), Ayurveda Van (Medicinal Trees), Saptrangi and Navrangi Vans (Forests with seven or colourful blooms), and Healing Forests (Medicinal Trees). The design and implementation
spanned from 2015 to 2019, and today, the oldest pocket forests are nearly 10 years old.

These forests act as carbon sequestration hubs, biodiversity pools, reduce soil erosion,integrate various fields like architecture, ecology, engineering, landscape, and urban planning. They have increased property values, reduced crime rates, fostered recreational legacies, and preserved genomes of different indigenous tree species. The total area covered in 10 cities by us is 1069300.87 sqm or 115 million sqft which is quite
significant. Future exploration includes rainwater harvesting and the generation of carbon credits

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https://www.youtube.com/watch?v=xtQmxW762I

Keywords:
Keyword 1: Urban Landscapes
Keyword 2: Pocket Forests
Keyword 3: Biodiverse Ecosystems
Keyword 4: Resilient Landscapes
Keyword 5: Microclimate

1.1-CO-S2-6

Thriving on Disturbance: Rethinking Disturbance as an Ecological Design Tool

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Urban green spaces are often managed to suppress dynamic development, reinforcing an ideal of stability and control. However, ecological research has long shown that **disturbance is a fundamental driver of biodiversity and ecosystem dynamics** (White/Pickett, 1985; Jentsch et al., 2022). Rather than eliminating disturbance, this presentation, based on my PhD research, argues for explicitly integrating disturbance dynamics into landscape design.

Drawing on disturbance ecology and an ecological aesthetics (ibid.; Böhme/Thibaud, 2017), my research therefore develops **disturbance-based design as an approach that recognises cities as evolving milieus**. I propose **'meshwork accounts' as a research and design tool** to make visible how human and non-human life constantly intertwine and co-produce dynamic urban landscapes. **Two case studies illustrate how disturbance can be mobilised in landscape design:**
* post-industrial site where repeated disturbances have created a habitat for amphibians (Puy-blanc, Occitanie, France).
* A research garden that uses controlled disturbance (e.g. selective mowing, soil disturbance) to enhance biodiversity in harmony with visitors aesthetic experience (Hermannshof research garden in Germany).

By moving from stability-based maintenance to process-based monitoring, **this research challenges the conventional division between the design and maintenance phases**. Instead, it **proposes an approach in which landscape design becomes a long-term engagement that mediates lines of life and cycles of disturbance and growth** (Ingold, 2015). Three key principles emerge:

- Recognizing urban disturbance regimes as active ecological forces.
- Designing in alignment with the disturbance dynamics of the plant community.
- Establishing adaptive work processes rather than fixed design displays.

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Keywords:
Keyword 1: Disturbance ecology
Keyword 2: Ecological design
Keyword 3: Adaptive landscape design
Keyword 4: Process-based design

1.1-CO-S3 -.Socio-ecological strategies (Part 1)

1.1-CO-S3-1
Rivers as Living Entities and Landscape Practice

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An understanding of a river as a complex 'living entity' is a cross-cultural concept that has generated new approaches to urban river landscapes. In this presentation, an Australian landscape architect who has been intimately involved in redesigning understandings of a major waterway presents new methodologies for achieving significant change in cities, cultural reconciliation, First Nations co-design, biodiversity and river management and design. What do governance, planning and design look like if you lead with the idea of the river as a living entity? One explanation comes from the late aboriginal elder Aunty Margaret Gardiner of the Wurundjeri Woi-wurrung people, who said: "if the river is healthy our people are healthy". This presentation will provide an overview of, and detailed insight into, the collective practices required to achieve change in how our rivers are understood and cared for through planning, design and management. We will explore these issues through three interconnected case studies that each deal with the same river—the Birrarung (Yarra River) in Melbourne—from a different perspective.

Part 1 – Yarra River Protection (Wilip-gin Birrarung murron) Act 2017 – laying a legal and cultural foundation for change in river management
We will examine the role of legislation in the development of new ways of seeing and working with water in our urban cities. The main case study is a new law that acknowledges the Birrarung as an "integrated living entity" that almost (but not quite yet) meets the requirements legal personhood. The law acknowledges that rivers are entities, not borders, not owned by any one group and home to a vibrant dynamic ecosystem.

Part 2 – Reimagining Birrarung Design Concepts for 2070 – a Public Exhibition
Looking fifty years into the future, *Reimagining Birrarung: Design Concepts for 2070* was an exhibition and website that presented a series of design provocations for the lands and waters of the Birrarung. Focusing on advocacy for ecological regeneration, public access and connectivity across the catchment, the exhibition asked what it might mean to acknowledge a river as a living and integrated natural entity. This section will explain the speculative design program that formed the core of the exhibition and provided a roadmap for future governance and development.

Part 3 – The Greenline Project - An Urban Project
The Greenline Project is a 4km revitalisation project of Melbourne's urban Birrarung riverfront. The master plan builds on a community-driven roadmap for this transformation. It envisions connected riverfront promenade and public spaces, in tandem with ecological repair and the celebration of Traditional Owner culture. Building on the shifts outlined in the first two sections, the Greenline project recognises the Birrarung as a living entity with Traditional Owner values, underpinning opportunities for reconnecting people with a diversity of experiences.

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Škerl, Urška, 2025, Futures of the River by Landscape Architects: Reimagining Birrarung, Landezine

Keywords:
Keyword 1: River
Keyword 2: Design speculation
Keyword 3: First Nations
Keyword 4: Urban ecology
Keyword 5: Law

1.1-CO-S3-2

Breathing Heritage: Deep Learning-Driven Synergy of Perception，Pollution and Vegetation in Tianjin’s Historic Blocks

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Under the dual challenges of rapid urbanization and escalating environmental pressures, historic districts are confronted with the imperative to preserve cultural identity while enhancing environmental resilience. As a typical high-density heritage city in northern China, Tianjin has consistently recorded elevated air pollutant indices in recent years, with nitrogen oxide (NOx) levels particularly exceeding standards. The conflict between cultural preservation and air quality has emerged as a core contradiction in urban renewal. This study develops an integrated framework combining visual perception analysis, microclimate modeling, and machine learning to propose heritage-compatible environmental optimization solutions for Tianjin's historic districts. Leveraging multi-source urban data and explainable AI technologies, it reveals the dynamic complex mechanisms linking streetscape greening, visual perception, and NOx pollution within cultural-sensitive contexts.
The research first decodes green space perception experiences in Tianjin's representative historic-cultural districts through deep learning-based streetscape image analysis and the Urban Street Perception Index (USPI). Using DeepLabV3+ model for semantic segmentation of streetscape images, it extracts vegetation structural elements. By integrating VGGNet and TrueSkill algorithm, quantitative relationships are established between visual comfort (sky view factor), spatial permeability (architectural continuity), and multi-level vegetation patterns (canopy coverage rate). Spatial distribution characteristics of six perceptual indicators (safety, vitality, aesthetic quality, etc.) are analyzed, revealing significant disparities in environmental perception quality.
Secondly, an integrated methodology combining ENVI-met microclimate modeling with explainable machine learning is proposed. The three-dimensional computational fluid dynamics model ENVI-met simulates NOx dispersion patterns in historic districts. Machine learning algorithms process explanatory variables including wind speed/direction, vegetation configuration, and street canyon aspect ratios to quantify spatial impacts of urban morphology and green infrastructure on near-road pollutant distribution. This provides precise landscape architectural parameters for balancing ecological performance in heritage contexts.
Finally, machine learning models and SHAP (SHapley Additive exPlanations) analysis elucidate interaction mechanisms among vegetation configuration, NOx pollution, and pedestrian perception. Interpretable combination rules and weight ratios are extracted to identify synergistic thresholds for heritage-friendly streetscape elements.
This study reconceptualizes historic urban districts as living systems integrating cultural memory and ecological functions. By decoding nonlinear relationships between built heritage, vegetation dynamics, and environmental experience, it provides transferable strategies addressing heritage-climate challenges. The integrated approach demonstrates innovative pathways for transforming cultural landscapes into climate-adaptive ecosystems through advanced urban analytics while preserving historic authenticity.

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Keywords:
Keyword 1: Historic districts space
Keyword 2: GVI
Keyword 3: Air pollution
Keyword 4: Vegetation combination
Keyword 5: Microclimate modeling

1.1-CO-S3-3

Health as a resource for renewing the practice of landscape urbanism

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Accelerated environmental change, and more specifically the sixth mass extinction of biodiversity, is prompting wide-ranging action on the ecosystem of cities and the multifunctionality of open spaces for human and non-human life (Clergeau and Blanc, 2013; Ahern 1991). In addition, the COVID 19 pandemic has highlighted the importance of these ecological networks for human health, from the perspective of health-generating urban planning approaches (PFVT, 2024; Health in Action, 2022; Benzoni 2020).
Our hypothesis is that landscape architects rely on a renewed reading of the geographical environment to build a project for human and non-human living beings (human health and biodiversity), operating both within the framework of inter-professional work and multi-actor exchanges for the operational implementation of the project.
Through the evocation of projects developed by the landscape and urban planners of the AIA Territoires agency within the Paris metropolis, we will highlight the structuring role of open spaces associated with architectural projects for healthcare facilities (Chabrol, 2022) connected to ecological networks. These projects include the UGECAM rehabilitation center in Lieusaint, the Institut Pasteur campus in Paris and the Institut du Cerveau de l'Enfant, Hôpital Robert Debré in Paris.
When hospitals are modernized, outdoor spaces are often seen as purely utilitarian (parking, logistics, technical). Yet these spaces are key to the reception and management of flows (pedestrians, hospital entrances, logistics) and to the management of nature (biodiversity management, walks, etc.). Today, the challenge is to give back a place and a role to these spaces as vectors of environmental quality and well-being. In addition, as a public facility, the hospital project is intended to contribute to the renaturation of the city and the improvement of the living environment, by integrating the project's landscaped areas in interaction with the other vegetated areas of the district and in a vision of urban resilience. This quality-of-life strategy and biophilic approach thus contribute to the process of sustainable health and well-being.
These 3 projects, inspired by the “One health” approach, apply the results of research carried out by the AIA Foundation on interactions between environment and health (https://www.aiafondation.fr/), focusing on three areas: the foundation (geo-historical and climatic structure), the living (ecosystems of the non-built with the built, soil, water, plant species and cycles, fauna), and activation (participation, appropriation, uses). This approach is integrative of various types of knowledge, and is useful for multi-actor work and project evolutivity in concertation processes. This analysis will enable us to place the landscape project approach carried out in a particular context within the approaches to projects carried out around the geographical environment, characteristic of the history of landscape approaches (Berdoulay and Soubeyran, 2002; Magnaghi, 2014; Callens, 2023).
This reflexive analysis of a professional practice aims to discuss and contribute to an emerging field of reflection on the links between biodiversity, health and landscape (Les carnets du paysage n°37, 2020), from the angle of project methodologies, at the service of planning professionals.

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Keywords:
Keyword 1: health
Keyword 2: living environment
Keyword 3: hospital
Keyword 4: biodiversity
Keyword 5: biophilic approach

1.1-CO-S3-4
In Pursuit of Sunlight in a Growing Metropolis

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As landscape architects, we understand cities are part of their natural environment, as living systems that evolve over centuries and rely on the metabolic processes of nature to sustain life. Just like plants and animals need access to sunlight, water, clean air, and contact with other species, humans are sophisticated animals that rely on our urban habitat to survive. The current housing affordability crisis in Toronto has polarized public debates on quality of life issues like sunlight in the growing city, often deeming them less critical than maximizing density to deliver more housing. Access to sunlight has emerged as a contentious issue in this debate. Some defend it fiercely, others argue that in our warming climate and housing crisis, our concern for sunlight should be replaced by a preference for shade. The difference between the seasonal shade provided by tree canopies vs. the permanent cold shadow cast by buildings is significant in winter cities like Toronto. However, with our changing climate, both sunlight and shade need to be designed for in the planning regulations and design guidelines that shape the transformation of our cities.

In recent years, the housing crisis in Canada has driven an unprecedented pace of change in government policies and deregulation to drive up housing supply by private development in hopes of achieving affordability. Even design culture has shifted from a focus on quality and sustainability toward efficiency and standardization to accelerate housing delivery. This shift in priorities and deregulation is increasingly compromising the qualities that make cities livable—green space, sunlight, sky view, heritage, and even mixed uses. The dramatic market response to this temporary crisis will have long-term implications for the livability of our cities and our future quality of life.

Landscape Architects have a critical role to play in Urban Design and Planning to cultivate a more balanced, long-term perspective, and relational systems thinking about urban landscapes as living systems, and to embed design intelligence in regulations and methodologies toward better outcomes. How performative phenomena like sunlight - critical to ecosystem vitality - should be regulated and encoded in urban design masterplans and planning policies is an evolving debate. From form-based codes, to policy language, to performative parametric methodologies like solar envelopes, there is a long history and diverse collection of regulatory and design approaches to choose from. Technological advancements in parametric tools like Grasshopper and Ladybug now make possible much more informed and intentional iterative design, instantly understanding the microclimatic impacts of massing decisions. These new methodologies should be integrated in workflows of landscape architects, urban designers, and city planners to make more informed outcome-based decisions.

The topic of sunlight regulation in urban design and planning will be explored by co-presenters Sonja Vangjeli and Matthew Canaran, through a series of research and urban design projects from Toronto, demonstrating how parametric modelling and microclimate analysis tools are shifting the paradigm of urban design methodologies and planning policies that guide landscape transformation in growing cities.

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Keywords:
Keyword 1: Sunlight regulations
Keyword 2: Microclimate analysis
Keyword 3: Parametric modelling
Keyword 4: Urban design
Keyword 5: Quality of life

1.1-CO-S3-5

From Grey to Green: Modelling European Industrial Cities through Native Ecosystems and Digital Landscape Innovation

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The vegetation of a native ecosystem predates human settlement in a specific region and interacts with the animals and microorganisms of that region in a manner that ensures their self-sustenance (Wilson et al, 1991). The manufacturing-predominant nature of industrial cities does not only define their economy, physical habitat and social interactions, but also results in high levels of environmental pollution. (Richard Harris, 2020). Green and blue infrastructure have been utilised as crucial proponents for the renewal and development of European cities and rural areas (Biscaya & Elkadi, 2023). As European industrial cities aim for sustainability, urban landscapes could be redefined by incorporating native ecosystems and utilizing digital innovation. This paper aims to ascertain (i) whether natural rehabilitation methods and technology, can develop a comprehensive strategy for reviving the landscape of degraded cities and urban areas undergoing industrial decline, rapid urbanization, or climatic stress, and (ii) if and how artificial intelligence could be used to enhance our understanding of native environmental patterns in order to optimize landscape interventions. The methodology would be a comparative case study analysis of papers which discuss the role of technology on preservation of native ecosystems and the use of Artificial Intelligence in landscape architecture, while the conceptual framework would focus on ecological urbanism, nature-based solutions, and digital landscape innovation.

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Keywords:
Keyword 1: Sustainability
Keyword 2: native ecosystems
Keyword 3: urban landscapes
Keyword 4: digital
Keyword 5: European cities

1.1-CO-S3-6

Blue-Green Landscape through Nature-Based Solutions; Case Study of Grønnallmenningen in Mindemyren, Bergen

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Nature-based solutions in urban development are increasingly recognized for their role in mitigating the impacts of climate change while enhancing urban ecology and social sustainability through the creation of green public spaces. Bergen, a city characterized by high precipitation, has developed several strategies to adapt to climate change, such as the Nature Strategy, Green Strategy, and Waterbody Restoration Strategy, with a strong emphasis on integrating blue-green infrastructure. The Mindemyren area development plan in Bergen municipality exemplifies the incorporation of blue-green infrastructure into urban planning. This development plan transforms a former industrial area into a socially sustainable, mixed-use zone, emphasizing pedestrian experience enhancement, canal reopening, and integration with city-rail throughout its phased planning process.
This paper presents a case study of the Grønnallmenningen project in Mindemyren, focusing on prioritizing blue-green infrastructure in the design process. The framework for the case study is derived from a literature review on nature-based solutions in urban contexts and public spaces. Grønnallmenningen, translating to 'the green commons', is rooted in the Norwegian concept of a public space, encompassing both urban and natural elements.
The study identifies the challenges of the project area's transformation and explores how nature-based solutions address these challenges from social, environmental, and economic perspectives. The Grønnallmenningen project aims to create a green axis across the area, fostering urban biodiversity, introducing rain gardens, permeable pavements, and restored natural water channels amidst the newly developed and proposed residential blocks. The planning strategies, local participation, and societal sustainability goals influence the design process and guide the selection of nature-based solutions in the project at a local scale.
In an urban context, nature-based solutions are carried out through interdisciplinary involvement and the participation of various stakeholders. By exploring the design process of Grønnallmenningen in Mindemyren, this paper aims to provide insights into the application of nature-based solutions in design practice, contributing to a broader understanding of sustainable urban planning practices through the agency of landscape architecture.

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Keywords:
Keyword 1: blue-green infrastructure
Keyword 2: nature-based solutions
Keyword 3: climate adaptation
Keyword 4: urban biodiversity
Keyword 5: rain gardens

1.1-BO-S2 - Socio-ecological strategies (Part 2)

1.1-BO-S2-1

Coastal Brownfield Regeneration as a Climate Adaptation Strategy : Evaluating Synergistic Social and Ecological Benefits

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Background: During the industrial era, numerous brownfields—polluted and abandoned sites—became concentrated in coastal cities due to the demands of production and transportation. However, climate change is exacerbating the risks associated with these coastal brownfields. Studies show that rising sea levels and extreme weather events could accelerate pollutant migration, undermine the stability of remediation efforts, and heighten socio-ecological vulnerabilities. In response, brownfield regeneration through green strategies can improve urban resilience and enhance landscape performance. For example, resilient shoreline designs mitigate flood risks, climate-adaptive vegetation reduces urban heat island effects, and pollution remediation helps prevent social losses for vulnerable populations. Despite its potential, the role of coastal brownfield regeneration in climate governance has yet to be systematically assessed.

Objectives: This study aims to elucidate the synergistic mechanisms of coastal brownfield regeneration in climate change adaptation by developing a comprehensive evaluation framework encompassing both social and ecological dimensions. It seeks to identify key spatial intervention strategies that contribute to climate risk mitigation and improved socio-ecological systems.

Methods: The research adopts a comparative case study approach, analyzing three exemplary coastal city brownfield regeneration projects: Millennium Park in Sydney, Houtan Park in Shanghai, and Hudson River Park in New York City. Key factors such as pollution remediation technologies, vegetation configurations, stormwater management capacity, and environmental education opportunities are examined to establish a landscape performance-based climate governance effectiveness assessment system. The evaluation framework includes two main dimensions:
1. Social dimension: public education opportunities, disaster risk reduction, green industry development, and employment opportunities.
2. Ecological dimension: carbon sequestration enhancement, stormwater retention, temperature regulation, and ecological buffering.
The study utilizes methods such as literature review, case studies, InVEST evaluation, SWMM analysis, and social surveys to quantitatively assess the overall climate governance benefits of transforming brownfields into green spaces.

Findings: The results demonstrate that brownfield regeneration in coastal cities provides significant multifunctional benefits in addressing climate change:
Social benefits:

1. Reducing health risks from climate change and pollution, enhancing the resilience of social systems.
2. Converting contaminated sites into green spaces enriches recreation, supports climate education, and promotes sustainability.
3. Advancing the green economy through renewable energy, creating jobs and driving low-carbon urban transition.

Ecological benefits:

1. Acting as an ecological buffer, mitigating storm surges and sea-level rise impacts on cities.
2. Employing resilient strategies like phytoremediation and permeable paving to transform degraded sites into green infrastructure, enhancing climate adaptability.
3. Using in-situ remediation to treat contaminated soil minimizes carbon emissions and helps mitigate climate change.

Conclusion: Brownfield regeneration in coastal cities enhances urban climate change adaptation capacity by simultaneously delivering social and ecological co-benefits. It offers valuable insights for climate-resilient urban planning and sustainable socio-ecological system restoration.

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Keywords:
Keyword 1: Coastal Cities
Keyword 2: Brownfield Regeneration
Keyword 3: Climate Change
Keyword 4: Landscape Performance
Keyword 5: Socio-Ecological Systems

1.1-BO-S2-2

Scattered Shields or a Single Fortress? Rethinking Green Infrastructure for Urban Floods

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As climate change accelerates, urban areas increasingly face the threat of extreme weather events(IPCC, 2023), particularly urban flooding, which poses significant physical, economic, social, and environmental challenges(Depietri & McPhearson, 2017; Pamukcu-Albers et al., 2021). Green infrastructure (GI) has emerged as a sustainable strategy for mitigating urban flood risks; however, discussions on the optimal scale and configuration of GI deployment remain limited.
This study aims to empirically analyze the flood mitigation effects of GI configurations from a micro-scale ecological perspective in Gurye-gun, Republic of Korea. Utilizing the InVEST Urban Flood Risk Mitigation (UFRM) model, this study assessed urban flood risk under a 100-year return period rainfall event and examined how different GI placement strategies influence flood risk reduction. The research proceeded in three phases: (1) identifying high-risk flood areas, (2) implementing GI either as a single large-scale infrastructure (one 100,000 m² GI) or multiple small-scale infrastructures (ten 10,000 m² GIs), and (3) comparing the impacts of these strategies on urban flood mitigation. The results indicate that both GI deployment strategies effectively reduced urban flood risk, but their impacts differed in scale and distribution.
The findings indicate that both GI deployment strategies effectively reduced urban flood risk, but their impacts differed in scale and distribution. Deploying multiple small-scale GIs resulted in a broader reduction of flood risk across the area, decreasing flood risk levels in both the deployment sites and adjacent regions. Specifically, the total area where flood risk levels decreased amounted to 539,972 m² with multiple small-scale GIs, compared to 225,604 m² with a single large-scale GI. The difference plot analysis revealed that multiple small-scale GIs provided a more balanced reduction across various flood risk levels, while the single large-scale GI had a concentrated effect, significantly reducing flood-prone areas at specific risk levels but with limited influence elsewhere.
These results suggest that the configuration and scale of GI significantly influence its effectiveness in urban flood mitigation. A distributed approach with multiple small-scale GIs may enhance overall urban resilience by addressing flood risks more uniformly across the urban landscape. In contrast, a single large-scale GI may be more effective for targeted mitigation in specific high-risk zones. Therefore, a hybrid approach that combines both strategies could offer optimal benefits, targeting significant high-risk areas while also providing widespread flood risk reduction. This underscores the importance of strategic planning and customized GI deployment based on local topography, hydrology, and urban development patterns.
The study contributes valuable insights for urban planners and policymakers by demonstrating the differential impacts of GI configurations on urban flood risk. It emphasizes the need for integrating GI strategies into flood risk management plans and highlights the potential of GI as a sustainable and effective tool for enhancing urban resilience against extreme rainfall events. Additionally, the findings support the growing body of literature that advocates for nature-based solutions in urban flood mitigation, reinforcing the role of GI in sustainable urban development.

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Keywords:
Keyword 1: Green Infrastructure (GI)
Keyword 2: Urban Flood Mitigation
Keyword 3: Micro-Scale Resilience
Keyword 4: Nature-Based Solutions (NbS)

1.1-BO-S2-3

Residential and shared greenspaces contributions to biodiverse and permeable cities

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Cities adopt efficient policies which increasingly rely on nature based solutions (NBS) to conserve, restore and improve urban soils and vegetation to address urban challenges such as overheating or flood mitigation, improvement of physical and mental health of residents, reduction of pollution, as well as protection and restoration of functional biodiversity and ecosystems. Such urban planning policies are central to the ecological transition to sustainable cities. However, excessive land-take by cities, i.e. urban sprawl, has negatively impacted biodiversity and food production, affected social structures and increased the emissions of greenhouse gases from transportation networks. Compact city models implemented through legislation such as the net-no-land-take 2050 in France might conflict with green models by densifying extant as well as planned housing. The residential greenspaces (RGS) of single- and multifamily homes are often considered artificialized and responsible for urban sprawl, and therefore at risk. RGS have been shown to have the potential to deliver the services expected in a sustainable, green city. But are they good enough when considering the damages caused by sprawl[1]? The objectives of the VILLEGARDEN project are (1) to assess the ecological performance of RGS[2] (2) to evaluate environmental and social factors determining performance, in order to find solutions to improve RGS planning, design and management[3], (3) to confront the results from spatially explicit models to current planning documents.
These objectives will be carried out by a 9-city (Angers, Dijon, Lyon, Marseille, Montpellier, Nancy, Nantes, Paris and Toulouse) nationwide consortium of social scientists (sociology, geography, urban planning), soil scientists and ecologists, working with urban stakeholders including territorial authorities, associations, social housing landlords, private companies and most important, citizens, as residents, owners or users of RGS. Performance of ecological processes can be measured and its explanatory factors explored at different scales and their constraints into our urban areas: WP1 looks at city scale processes and factors, based on vegetation, ownership, environmental and social geographic layers joined in a project GIS covering six cities. In WP2, performance will be measured using soil and biodiversity indicators as well as performance perception by stakeholders, in 200 RGS in six cities. In WP3, neighborhood-scale processes such a relationship with public greenspaces, gardening and landscaping practices, features of ecological networks invisible from aerial photography (e.g. walls, domestic animals) will be explored. Understanding performance and its determining factors will allow innovative modeling of RGS ecological services (e.g. biodiversity support, soil permeability, evapotranspiration, Human well-being) at city-scale. This, when confronted with planning documents, could improve the performance of the entire green infrastructure and have deep-reaching impacts on city livability for Humans and biodiversity. VILLEGARDEN is also about co-constructing knowledge and methods with stakeholders: this will be addressed using long-term online and in-person exchange hubs we call forums (on urban feedbacks and perspectives, on soils and on biodiversity).

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Keywords:
Keyword 1: boidiversity
Keyword 2: soils
Keyword 3: residential gardens
Keyword 4: urban planning
Keyword 5: citizen science

1.1-BO-S2-4

Evaluating the Functional Synergies of Urban Ecological Space and Public Space in High-Density Urban Environment

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The rapid development and uncontrolled expansion of cities have led to ecological degradation and declining vitality in public spaces[1], [2]. In high-density built environments, spatial constraints the optimization of ecological and public spaces[3] ,[4], necessitating innovative approaches beyond mere spatial expansion. Traditionally, ecological and public spaces have been regarded as competing entities[5], [6]. However, in urban contexts, these spaces partially overlap in space and share certain functional similarities. Previous studies have shown that certain ecological spaces also serve recreational functions[7], enhancing public engagement and urban vitality[8], while the environmental comfort of public spaces influences their attractiveness[9] and residents' livability[10] ,[11]. Nevertheless, existing research has primarily focused on the multifunctionality of either ecological or public spaces in isolation, lacking a comprehensive assessment of the complex trade-offs and synergies between the two systems. To address this gap, this study systematically analyzes the spatial configuration and evaluates the complex interrelationships between ecological and public spaces from a functional perspective, exploring opportunities for their coordinated and integrated development.

Based on the spatial layout of ecological and public spaces, this study constructs an evaluation index system for ecological benefits and spatial vitality to assess the service efficiency of various spatial patches in Nanjing's main urban area. An unsupervised clustering approach is employed to classify spatial patches, followed by multi-dimensional spatial mapping and statistical distribution analysis to identify dominant spatial patterns, analyze category composition, and reveal intricate spatial synergies. The findings indicate complex yet promising synergies between ecological and public spaces from a service efficiency perspective. Four specific findings collectively support this conclusion: (1) Four distinct ecological benefit types (high ecological benefit, biodiversity-dominated, carbon sink-dominated, and low ecological benefit) and three spatial vitality types (high vitality, population density-dominated, and low vitality) coexist within the study area, though their distribution and proportions vary. (2) High-value indicators exhibit diverse combination patterns, including carbon sink-dominated and high vitality, carbon sink-dominated and population density-dominated, as well as high ecological benefit and population density-dominated types, illustrating multiple pathways of spatial synergy. (3) The synergy levels assessed from a service efficiency perspective differ from those derived from a single-space perspective. Notably, overlapping ecological and public spaces do not necessarily indicate high synergistic efficiency, underscoring the complexity of their interactions. (4) Furthermore, when maintaining a constant level of either ecological or public service provision, improving the efficiency of the other—whether from low to medium or medium to high—does not negatively impact the former. This suggests substantial flexibility and room for optimizing existing spatial coupling relationships.

This study critically challenges the traditional notion of conflict between ecological and public functions. Instead, it categorizes these spaces based on specific functional indicators, revealing their intricate and dynamic coupling relationships rather than simply classifying them as high or low. By integrating quantitative assessment and spatial analytics, it offers a model for integrated, synergistic development of ecological and public spaces in built-up areas with limited spatial resources, optimizing ecological and public services to enhance spatial efficiency, resilience, and long-term urban sustainability within constrained urban environments.

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Keywords:
Keyword 1: synergistic development
Keyword 2: ecological benefits
Keyword 3: spatial vitality
Keyword 4: high-density urban environment

1.1-BO-S2-5

Pocket Parks as Urban Ecosystems: Sustainable Solutions for Biodiversity and Community Empowerment

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On the eve of the sixth mass extinction and amid accelerating environmental change, cities must evolve into resilient ecosystems by integrating ecological processes and fostering cross-disciplinary collaboration. This paper explores how urban gap-sites and pocket parks can serve as community-driven tactical solutions that enhance biodiversity, promote climate resilience, and empower stewardship. By emphasizing the sponge city concept, it demonstrates how these micro-interventions can address climate challenges while fostering inclusive urban districts and strengthening social cohesion.

Urban gap-sites, often overlooked and underutilized, represent significant opportunities for transformation into ecologically rich spaces. These spaces can support urban biodiversity and enhance ecosystem services while fostering community well-being. By embedding Biodiversity Net Gain (BNG) principles, they offer multi-functional benefits, including improved habitat connectivity, stormwater management, and improved social engagement. Pocket parks provide not only recreational opportunities but also serve as ecological stepping stones, bridging fragmented urban habitats and reinforcing natural networks across the city.

A critical aspect of this paper is the implementation of sponge city strategies in pocket parks to address urban water challenges through nature-based solutions. Features such as rain gardens, bioswales, permeable surfaces, and native planting schemes play a crucial role in absorbing, filtering, and slowly releasing rainwater, mitigating flood risks, and enhancing urban microclimates. Research has shown that incorporating such strategies into public space design not only reduces urban heat islands but also promotes ecological diversity by providing microhabitats for insects, birds, and small mammals (Xie & Yu, 2021).

The study examines urban case studies in Scotland, highlighting successful pocket park projects that integrate rain gardens and participatory governance models. These projects demonstrate how local engagement, facilitated by landscape architects, ensures the long-term maintenance and success of urban green spaces. Through participatory design approaches, local communities can take ownership of these spaces, fostering active stewardship and long-term sustainability (Davies et al., 2020).

Furthermore, this paper underscores the importance of participatory governance strategies in creating and maintaining resilient urban landscapes. Successful interventions align municipal policies with grassroots initiatives, ensuring that community-driven efforts receive necessary support. By embedding funding frameworks and policy incentives, municipalities can facilitate the upscaling of pocket park interventions, transforming scattered urban voids into networked ecological assets. Research suggests that integrating landscape-led planning policies with bottom-up urban interventions can significantly enhance environmental resilience and social inclusivity (Jones & Brown, 2019).

In conclusion, the revitalization of urban gap-sites into sustainable, biodiverse pocket parks presents a compelling opportunity to address contemporary urban challenges. By integrating ecological processes, community engagement, and adaptive governance, cities can transform into more resilient ecosystems that prioritize both human and non-human life. This research contributes valuable insights for policymakers, urban planners, and community groups, advocating for a strategic shift toward nature-based solutions that foster urban resilience, biodiversity, and social equity.

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Keywords:
Keyword 1: Urban Gap-Sites
Keyword 2: Pocket Parks
Keyword 3: Sponge City Strategies
Keyword 4: Biodiversity Net Gain
Keyword 5: Participatory Governance

1.1-BO-S2-6

Becoming with Many: Ecological Niche Thinking for Post-Anthropocentric Urbanism

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The paradigm of traditional city planning has been questioned by the ramifications of ruptured urban conditions where dormant infrastructures, fragmented habitats, and socio-economic disparities are in abundance. These landscapes, shaped by obsolescence and environmental degradation, require new spatial frameworks that integrate both anthropogenic and non-anthropogenic forces into a cohesive urban ecosystem. Anne Spirn (2014) suggests that cities are/as ecosystems, entangled with metabolic flows and subtle but undeniable interspecific interactions. However, being anthropocentric from the beginning, urbanization has altered territories for human use, disregarding the share of other cohabiting species and depleting resources. This human-centered model brought about a decline in urban complexity regarding infrastructure, biodiversity, resource distribution, and developmental issues.

The concept of the ecological niche allows for reimagining cities as ecosystems formed by numerous biotic and abiotic elements interacting and affecting one another. Hutchinson's (1957) "N-dimensional Hypervolume" model provides a basic framework for understanding the possibility of coexistence of multiple-species via various strategies such as environmental grain, niche differentiation, resource partitioning, and symbiotic interactions. On this basis, it would be possible to achieve an ecocentric urban planning via categorizing various urban processes operating interactively with their surroundings. In order to categorize those processes, it will also be needed to transfer some biological concepts into urban terminology so that creating a meaningful parallel between these two domains could be possible. This perspective could create a chance for a shift from human-centric planning to a dynamic urban metabolism that accommodates diverse organisms, facilitates ecological resilience, and embraces adaptive rewilding. Haraway (2007) reconsiders the idea that "to be one or not to be at all" is the only option; instead she argues that, we must "learn to be many." so that urban environments can be shifted from sites of exclusion to spaces of metabolic collaboration, where wastelands, brownfields, and infrastructural voids become regenerative landscapes capable of sustaining biodiversity. Methods such as parametric ecologies, environmental proxies and metabolic simulations help operationalize this vision and respond to urban complexities effectively. Therefore, Post-industrial landscapes, often dismissed as obsolete, can be converted into functioning biotopes where interspecies cohabitation is facilitated through niche-informed design interventions.

A niche-informed city-making practice offers a shift in anthropogenic paradigm by recognizing cities as ecosystems in which interspecific interactions inform both spatial design and the distribution of resources. Rather than reinforcing human dominance over urban ecosystems, this research posits that cities can function as interspecies landscapes, where cohabitation, biodiversity, and environmental affordances shape spatial organization. Contributing to emerging discourses on post-anthropocentric urbanism, the study advocates for a methodological synthesis of ecological science, computational design, and urban theory—guiding cities toward a future where spatial intelligence emerges from metabolic interdependencies rather than anthropocentric optimization.

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Keywords:
Keyword 1: Ecological Niche
Keyword 2: City-Making
Keyword 3: Urban Metabolism
Keyword 4: Interspecies Cohabitation

Keyword 5: Ecocentric

1.1-BO-S2-7
Climate Adaptation Masterplan for Stadtraum Basel Ost

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Stadtraum Ost, between the Rhine, Badischer Bahnhof and Riehen, is one of the last major development areas in the city of Basel. The area around the historic Allmende and the Hirzbaden district currently has a highly fragmented typological character and is in danger of degenerating into a storage area for urban infrastructure. The Climate Adaptation Masterplan sought an overarching vision for the future that would address these very deficits. Together with LAND and ASTOC, Drees & Sommer developed a holistic Masterplan for the district, which focuses on ecological sustainability but is closely linked to innovation, economic prosperity and social services. The Climate Adaptation Masterplan for Stadtraum Basel Ost offers an overarching development vision for the transformation into a future-oriented, sustainable, social and innovative district.

Project steps:
Analysis of spatial deficits
Analysis of spatial potentials
Development of hypotheses
Development of content-related programmatic aspects of the idea study
Planning and graphic design

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Keywords:
Keyword 1: Climate adaptation
Keyword 2: Urban infrastructure
Keyword 3: Masterplan
Keyword 4: Ecological sustainability

1.1-BO-S2-8
The parc du Vallon in Metz : water shapes the landscape

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Metz Technopole has been growing rapidly since 1984. More than three hundred firms and multiple teaching hubs have settled in the direct area. Along that formidable development, the mission of this site states the same: to become a pioneer hub, dedicated to environmental innovation. **Arpentère** studio drew plans to integrate this new district into the surrounding urban fabric, with the ongoing challenge of making it an example of a technological, ecological and sustainable neighborhood. Among other things, a housing zone and the development of service sector areas are planned.

A strong choice has been made: to promote nature in the city. Hence a major public space will be created. A twelve hectares park, which will be called the Vallon, will take place in direct proximity with the buildings. Composed with three successive soils, from the wettest to the driest, it will be crossed by a web of paths that let pedestrians enjoy a continuity of agricultural landscape. Reed beds, meadows and pastures, orchards and gardens, will cover the floor and form an ecological corridor. All of it will respect and develop the conclusions of the fauna-floral study that was delivered on site in 2017. Along with sports trail, some observation points will be disseminated around the park, so that visitors can have a discreet and respectful look at the lively environment that flourish around water.

Water management is quite original here. We decided to collect and pool all the upstream water from the district to create a system of basins, ditches and reed beds that form the heart of the Parc du Vallon. This solid network has been created in the remnants of an existing and imperfect landscape. Indeed this area had already been utterly damaged by archeological excavation: in the middle of this former farmland lying fallow, a Roman villa was found. Hence, ground levels were uneven, offering a range of different levels. We used this specificity as an asset, and developed these horizons to connect the park to the rest of the district.

This network of waterways will let the flood from the city reach retention ponds, created in soil crevices. These ponds are thought to stay emerged all year long so that a decantation can occur. All of them will lead to the reed breeds, whose role is to purify the air thanks to the phytoremediation of plants. Reeds and marsh iris will be perfect refuges for tree frogs, salamanders, dragonflies and ducks. There’s absolutely no doubt they’ll rapidly settle in the environment.
Another keyspace of this project is the brand new Grigy plaza. Located in between the already inhabited hamlet and the new district, it will constitute a visual eye-catcher that acts as a graft. Floors, lights and trees have been used as tools to develop a frugal space with multiple possible uses, and one everlasting purpose: being a welcoming place.

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Arpentère paysages et projets urbains, Archibooks, 86

Keywords:
Keyword 1: hub
Keyword 2: park
Keyword 3: corridor
Keyword 4: ponds
Keyword 5: groundlevelling

1.2-CO-S1 - Soil management

1.2-CO-S1-1

Reclaiming Post-Mining Landscapes:An Integrated Approach to Ecological Restoration and Sustainable Design: Case Study: Landscape Assessment of Open-Pit Mines in Istanbul

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Urban expansion and industrial activities have led to significant environmental degradation, particularly in post-mining landscapes. These areas face complex challenges, including soil degradation, biodiversity loss, and socio-economic disconnection. This study explores innovative approaches to landscape reclamation, integrating ecological restoration, sustainable design principles, and community engagement to transform degraded mining sites into resilient and multifunctional landscapes.

The research begins with a theoretical framework, reviewing literature on open-pit mining activities, their ecological impacts, and the reclamation of disused mining areas. The study examines the role of human-induced landscape transformation, assessing its environmental and social consequences. Additionally, it discusses landscape conservation, reclamation planning, environmental legislation, and the role of public-private partnerships in facilitating effective restoration efforts. Emphasis is placed on the integration of these elements to mitigate environmental damage and rehabilitate abandoned mining lands.

The second phase of the study adopts a practical approach, assessing land remediation strategies for abandoned mining areas while evaluating the existing conditions of Istanbul, Turkey. Focusing on the northern coastline of Istanbul's European side—an ecologically significant region with a high concentration of abandoned mine lands—the research develops a sustainable recreational plan. The study employs a multidisciplinary methodology, including field surveys and stakeholder consultations, to assess site conditions, ecological potential, and socio-cultural dynamics. Comparative international case studies on post-mining landscape rehabilitation provide insights into best practices and scalable solutions.

A reclamation framework is proposed, prioritizing biodiversity restoration, soil rehabilitation, and adaptive land-use planning. Nature-based solutions—such as afforestation, wetland restoration, and habitat reconstruction—are explored to enhance ecological resilience. Additionally, participatory design strategies ensure that local communities actively contribute to and benefit from the reclaimed landscape.

By referencing the thesis *"Open-Pit Mining and Its Landscape Management: A Case Study on the Landscape Assessment of Open-Pit Mines in Istanbul,"* this study provides a comprehensive evaluation of Istanbul's landscape transformation over the past 20 years within the context of its unchanging urban boundaries.

In conclusion, the study underscores the critical role of landscape planning in addressing environmental and societal challenges associated with post-mining landscapes. It highlights the necessity of an interdisciplinary approach, integrating expertise from public policy, law, ecology, biology, economics, political activism, engineering, and landscape architecture. The findings contribute to the theoretical discourse on post-industrial landscape transformation, providing a replicable framework for reclaiming degraded landscapes while fostering ecological integrity and socio-economic revitalization.

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Keywords:
Keyword 1: Post-mining reclamation
Keyword 2: Ecological restoration
Keyword 3: Adaptive reuse
Keyword 4: Sustainable landscape design
Keyword 5: Urban resilience

1.2-CO-S1-2

How urban soil renaturation will help shaping sustainable cities?

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Soils play a major role in climate change adaptation and city habitability. As cities expand, soils are increasingly artificialized and sealed, reducing their ability to support vegetation, regulate temperature, and manage stormwater. Soil renaturation is at the center of numerous studies highlighting the potential of urban soil refunctionalization to enhance its physico-chemical and biological properties.

For city planners and landscape designers, de-sealing or depaving urban soils is a key process in soil renaturation. Impermeable surfaces contribute to the urban heat island effect and increase the risk of flooding by preventing water infiltration. Various de-sealing strategies (Vieillard et al., 2024) are being implemented in major cities worldwide, ranging from small-scale to large urban projects. De-sealing cities is a way to create multifunctional landscapes and adapt urban areas to a broader range of climatic and usage challenges.

It is also possible to reuse part of the sealed soils to develop constructed Technosols. Within the Dessert research program : results from experimental observations conducted in Nancy, Angers, and Cannes (France) showed that it is possible to create functional soils for plant growth when part of the in-situ materials (gravels) is mixed with green waste compost.

Urban soils function as ecosystems and can host a wide variety of living organisms, ranging from microorganisms to macrofauna (earthworms, arthropods). These organisms are essential for ecosystem functioning and for the ecosystem services provided by soils. They contribute to nutrient cycling, carbon sequestration, and plant health. Recent studies focus on the biodiversity of urban soils and the effects of urban landscapes on their ecological functions (Beaudet et al., 2021). The BISES project investigated nearly 200 sites across four French cities (Nantes, Paris, Nancy, Montpellier). The results show that land use (parks & gardens, roadsides, urban farms) and management practices have diverse impacts on biological processes within soils. This will help establish guidelines on how to better design and maintain urban landscapes to promote soil biodiversity and functions for more resilient cities.

With the scarcity of natural soil resources in urban environments—linked to zero-artificialization policies and strategies—studies are also exploring innovative approaches to soil creation using recycled materials. Constructed soils are engineered from urban waste such as composted organic matter, demolition debris, and industrial by-products. These soils can be tailored to support different types of vegetation (trees, grass) while addressing waste management challenges. The SITERRE II research program is evaluating the rate of soil refunctionalization in different constructed soils located in several cities (Rennes, Aulnay-sous-Bois, Chelles, Lyon, and Homécourt). It also focuses on assessing the environmental benefits of reusing recycled materials instead of importing natural soil resources from agricultural lands. Additionally, the project aims to develop a web application to assist city planners, managers, and landscape designers in making informed choices when constructing urban soils.

The management and restoration of urban soils are essential for creating climate-resilient cities. Landscape design must take into account soils and their ecosystem services. Future studies and interdisciplinary collaboration will be crucial in optimizing soil-based solutions for sustainable urban development.

References: No references

Keywords:
Keyword 1: Urban Soils
Keyword 2: Constructed Technosols
Keyword 3: Soil de-sealing
Keyword 4: Biodiversity
Keyword 5: Ecological functions

1.2-CO-S1-3
Urban waste use for urban edible landscapes

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Background and objectives: The creation of natural spaces in the city, and urban agriculture in particular, often involves the use of materials taken from outside the urban system, such as agricultural land, to create agronomical support for plants. At the same time, large urban centers are facing major challenges in terms of waste management (ADEME, 2015). One of the solutions is urban metabolism (Barles, 2005), where urban waste is then considered as a resource. Although a functional soil or technosol can be recreated from urban residues (Grard & Al., 2015 & 2018), questions remain about the real robustness of agronomic functions and their durability, as well as their potential contamination with heavy metals. Based on these issues, ASTREDHOR, the French Agricultural Technical Institute of Horticulture, has developed a research program funded by the Ministry of Agriculture: the CasDar Techn'AU.

Experiments: Trials were set up at the ASTREDHOR experimental station in Saint-Germain-en-Laye (78) in 2017 and 2018. Cropping systems have been evaluated to produce aromatic and vegetable plants (cherry tomatoes and basil). A system in large volume 36 l containers with 14 substrate modalities composed of combinations of organic residues (green and/or food waste), allowing the nutrition of the plant by degradation, and mineral residues, from the building sector (granite and aerated concrete), providing structure to these supports. All the materials and products tested were subjected to a sanitary safety analysis by the Analytical Chemistry Laboratory at AgroParisTech.

Results: The formulated mixtures all had characteristics that were relatively far from horticultural standards: high density, greater air availability, reduced water reserves, higher pH levels and organic nitrogen. Depending on the materials used and their proportions, productivity levels may have varied greatly. For example, the use of green waste compost in large quantities has led to fertility problems (nitrogen hunger), resulting in low yields.
On the other hand, mixtures combining 80% bio-waste compost (green waste and food waste) with 20% aerated concrete gave the best productivity results, thanks to food waste containing higher nitrogen reserves, and more quickly mineralized than the green waste compost used.

Conclusion: The results of experiments on urban waste products for the creation of growing media confirm the ability of edible landscape to recover these residues. Some aspects of societal acceptability still raise questions. A more in-depth inventory of reusable materials and a global economic analysis are to be developed soon.

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Keywords:
Keyword 1: Edible landscape
Keyword 2: Urban agriculture
Keyword 3: Circular economy
Keyword 4: Urban waste
Keyword 5: Substrates

1.2-CO-S1-4
Research by design: Open Ground, depaving urban surfaces

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Increasingly, the sealed surfaces of our cities are being transformed, either through spontaneous processes of degradation and neglect or through soil desealing interventions aimed at regenerating the ecological functions of the soil. Design operations are still limited in this field, yet they are growing. European cities are increasingly dealing with the redevelopment of small and scattered areas, sealed surfaces such as parking lots, infrastructure cutouts, or decommissioned warehouses. These spaces constitute both a resource of space and opportunities for design and a management challenge.
The Open Ground IDEA League International Summer School aimed to investigate creative forms and processes of de-paving and material reuse from a design perspective in the decommissioned area in the Porto di Mare area in the South of Milan. This research-by-design initiative tested and experimented with representation methods through maps, sections, and metabolic schemes, with spatial compositions, triggering new aesthetics and ecological processes, and with field experimentations, breaking, coring, and cutting the concrete pavement in the area. The chosen lenses adopted to address the topic were: ‘materials,’ including reuse on site of waste material and debris from desealing operations, ‘soil,’ e.g., engaging with cut & fill strategies and with the construction of new soils, and ‘ecosystems,’ experimenting with excavating and reusing materials to construct new habitats.
The outcomes of the summer school reflected and enhanced the disciplinary backgrounds of the participating MSc and PhD students from Politecnico di Milano, TUDelft, ETH, Aachen University, and Chalmers, ranging from architecture, landscape design, and urban planning to engineering, physics, and computer science. It was hosted by the Politecnico di Milano in July 2024 and jointly organized by researchers from the Department of Architecture and Urban Studies of the Politecnico di Milano and TUDelft, in collaboration with Latitude Platform, Italia Nostra Centre for Urban Forestation, and the research projects National Biodiversity Future Center (NBFC) and Nati00ns.
This contribution aims to present the results of the summer school to provide reflection and examples of landscape design approaches focusing on circularity that is increasingly relevant in today's context when initiatives on depaving are increasing. Moreover, several implemented international landscape architecture projects engaging with soil desealing will also be presented to provide a variety of strategies.

Notes
The Open Ground Idea League Summer School, funded by IDEA League, was jointly organized by researchers from Politecnico di Milano and TUDelft in collaboration with Latitude Platform, Centro Forestazione Urbana – Italia Nostra, NATI00NS and NBCF – Spoke Urban Biodiversity. It opened up new research on the topic by the authors, respectively, within NBFC and NATI00Ns frameworks.
NBFC
Funder: Project funded under the National Recovery and Resilience Plan (NRRP), Mission 4 Component 2 Investment 1.4 - Call for tender No. 3138 of 16 December 2021, rectified by Decree n.3175 of 18 December 2021 of Italian Ministry of University and Research funded by the European Union – NextGenerationEU. Award Number: Project code CN_00000033, Concession Decree No. 1034 of 17 June 2022 adopted by the Italian Ministry of University and Research, CUP, H43C22000530001 Project title “National Biodiversity Future Center - NBFC”

References:
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Keywords:
Keyword 1: Depaving
Keyword 2: Landscape design
Keyword 3: Soil
Keyword 4: Circularity
Keyword 5: Research by design

1.2-CO-S1-5

Regeneration of the Dry Hills and Stream of La Gavia

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The project is part of the strategic action of **the Metropolitan Forest of Madrid**, a key initiative for the city's climate adaptation over the coming decades. Covering 14,200 hectares and with a perimeter of 75 km, this project aims to strengthen the city's green infrastructure by completing the existing network of green spaces and connecting them with nearby natural areas. Its goal is to contribute to the Sustainable Development Goals set out in the 2030 Agenda, promoting environmental resilience, biodiversity, and territorial integration.

In its southern sector, known as ***The Southern River Parks***, lies the Manzanares River and one of its tributaries: the La Gavia Stream, which runs through gypsicolous hills. This area, predominantly agricultural and pastoral, was gradually transformed into extractive due to the exploitation of gypsum quarries, which were eventually filled with inert waste. In recent decades, fragmentation caused by infrastructures required for the city's growth (roads, energy and sanitation) led to the disconnection of the stream and the Colada del Santísimo cattle track, encouraging informal settlements and illegal dumping, which distorted the path and reduced the ephemeral stream to a runoff ditch between polluted lands.

The advance of desertification affecting Mediterranean regions, along with the intense human impact on Madrid's periphery, has led to the disconnection of historic cattle tracks and access routes to the city, soil degradation, loss of fertility, erosion, alteration of watershed sub-basins, and the consequent disappearance of rich natural habitats.

The primary goal of the **Regeneration** is to recover degraded soils, restore the seasonal watercourse, and revive the cultural value of the area. In doing so, the project seeks to return the stream to its role as an ecological, hydraulic, and social backbone, reconnecting Madrid's residents with their natural environment through the floodplain and riverbanks of the Manzanares River.

The large size of the area and economic constraints require a focus on optimizing local resources and implementing various strategies to recover a fertile and resilient territory.

Using nature-based solutions to slow runoff and allow water infiltration into subsurface layers, the project aims to reduce erosion and direct as much rainwater as possible toward the stream, creating an environment with varying degrees of moisture levels to restore water-related habitats, such as reed beds, poplar groves, willow stands, and tamarisk thickets. Additionally, the option of delaying the discharge point of regenerated water from the WWTP is considered to increase the stream's temporary flow.

To recover and enhance soil quality, the plan proposes organic amendments, the promotion of herbaceous cover and regenerative agriculture to gradually improve soil conditions. Additionally, reforestation is considered a key measure to restore ecological balance.

This regenerative approach not only promotes ecological values by revitalizing the landscape and boosting biodiversity, but also socially reactivates the space by restoring historic paths, transforming them into accessible routes for pedestrians and cyclists, and creating gathering and recreational areas for residents. Consequently, it reconnects them with their cultural and environmental heritage, reclaiming the site's identity and memory.

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Keywords:
Keyword 1: Erosion and desertification
Keyword 2: Regeneration
Keyword 3: Green Infrastructure
Keyword 4: Runoff and Infiltration
Keyword 5: Cultural landscape

1.2-CO-S1-6
Soil Biodiversity to Serve Landscape Activities

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Soil is an ecosystem that provides ecosystem services essential to realise functioning and balance of the Earth. Soil results from a long and complex interactions between climate, geology, vegetation and biological activity, but it is a non-renewable resource that is used extensively by human activities on a global scale (MEA, 2005). However, soil is subject to multiple anthropogenic pressures linked to urban spread / population growth, artificialization or sealing, soil degradation and pollution, carbon loss and storage, and declination and erosion of biodiversity, which disrupts its natural functioning and contributes to global warming (IPCC, 2020).

Long time considered as a physical support and chemical reservoir, soil has been attracting growing interest for several decades as a major adaptation strategy to climate change. Soil regulate and express various functions, such as supplying nutrients to plants, retaining and filtering water, breaking down pollutants and sequestering carbon. More than the soil itself, this is soil organisms that provide these processes.

To act for the climate and responding to the various strategies defined by the European Commission, such as zero net artificialization of soil, soil management in landscaping activities become a top prioritie. We propose to change conventional landscape/planting practices, based on importing and exporting earthy materials, to go to reuse and recover earthy materials by integrating the ecosystem services provided by soil biodiversity (Anikwe and Ife, 2023).

Through our work on ligneous plants and their microbiota, we have developed biostimulation using indigenous and local micro-organisms for the landscape sector (Foulon et al., 2014). Help of towns, researchers and companies, allowed us to developed an innovative method for selecting, isolating and multiplying soil microorganisms. Our knowledge in microbial engineering of the rhizosphere is a serious tool for improving plant adaptation to a wide range of urban constraints and environmental disturbances, while mitigating the effects of climate change.

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Keywords:
Keyword 1: Soil
Keyword 2: Ecosystem services
Keyword 3: Climate change
Keyword 4: Soil biodiversity
Keyword 5: Rhizosphere

1.3-BO-S1 - water landscapes

1.3-BO-S1-1

INTERVENTION PLAN WITH NATURE-BASED SOLUTIONS FOR THE SÍTIO SÃO JOÃO POLO DE LAZER IN THE JANGURUSSU NEIGHBORHOOD IN FORTALEZA, BRAZIL

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In 2023, a total of 399 Global Disasters related to natural causes were recorded, affecting 93.1 million people around the world and generating an economic loss of US$ 202.7 billion (CRED, 2023). Mapping of the most severe floods in Brazil shows a concentration in the most populated regions, which have undergone rapid urbanization and are located along the Brazilian coast (CRED, 2024). In Fortaleza, the document “Climate Change Vulnerability Index and Adaptation Plan”, prepared by the City of Fortaleza in 2020, presents quantitative data from the number of responses to climate disasters between 2013 and 2016. During this period, 4,419 occurrences related to climate events were responded to, such as flooding, landslides and inundations caused by high-intensity torrential rains, affecting 11,578 families (Fortaleza, 2020). The São João Polo de Lazer, on a macro scale, is located in the Jangurussu neighborhood, on the outskirts of the coastal city of Fortaleza, in Ceará. According to the Brazilian Institute of Geography and Statistics (IBGE), the neighborhood has a population of 70,651 inhabitants in an area of 8.011 km², resulting in a density of 8,819.25 inhabitants/km² (IBGE, 2022). The Jangurussu neighborhood has demographic characteristics of a growing population, but with poor infrastructure conditions, such as lack of basic sanitation, public lighting, streams and open sewers, among other socio-environmental problems (Fortaleza, 2015a). Despite this, the planning of guidelines focused on promoting multifunctional and integrated technologies in the management of urban rainwater to combat flooding still occurs in a predominantly indicative rather than proactive manner in Fortaleza, which has the absolute separator system as its municipal sanitation infrastructure. The application of Nature-Based Solutions (NbS) is tested and implemented in flood-prone areas in climate adaptation projects and has proven to be relevant to achieving the goals of achieving healthy soils. The objective of this article is to develop an Intervention Plan for the Linear Park of the Sítio São João Polo de Lazer, in the Jangurussu neighborhood. The methodology is defined according to basic requirements and assumptions, presenting quantitative concepts, such as the collection of data related to the morphological conditions of the studied space, and qualitative concepts, through documentary research in available databases. The Sítio São João Polo de Lazer, already existing in the Jangurussu neighborhood, has an urban design that provides suitable spaces for the application of NbS, expanding the socio-environmental benefits for the community. The application of the NBS proposed in the Intervention Plan can contribute to the protection of the existing Environmental Preservation Zone downstream, in the management of surface water flow and in the mitigation of diffuse pollution carried, as well as being an instrument for requalifying the ecosystem. The debate about the paradigm shift in the production of stormwater management infrastructure, which improves flood management and water quality, becomes increasingly urgent, especially when the NbS already applied around the world prove their efficiency.

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Keywords:
Keyword 1: Solution based-Nature
Keyword 2: Intervention Plan
Keyword 3: Flooding
Keyword 4: Sítio São João
Keyword 5: Restoration of Ecosystems

1.3-BO-S1-2

Lessons from transforming Chennai into a Sponge City: How to build agency for the landscape approach to stormwater infrastructure

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Chennai is a coastal megacity of more than 12 million people facing elevated climate risks including floods, droughts, and extreme heat. As one of the fastest growing cities in India, the Chennai metropolitan area lost significant green cover and degraded more than 85% of its wetlands in the past decade. Following a cycle of historic flood events during the monsoons and extreme water scarcity between 2015 and 2017, Chennai resolved to invest heavily into the integrated management of stormwater. The investments largely went towards gray infrastructure based on the traditional engineering approach of flushing stormwater away as quickly as possible. However, this approach could only manage flood events from 5 year return period storms and did not mitigate water scarcity or heat risks. The founding partners of Sponge Collaborative - a multidisciplinary firm using the landscape approach to address the challenges of climate change and sustainable development - introduced the idea of the Sponge City to Chennai through an open-source publication in 2019. Sponge City is a landscape approach to urban stormwater management that leverages existing ecosystems by protecting or restoring forests and wetlands and constructing blue-green infrastructure inspired by nature to store, filter, and recharge the aquifer with runoff.

The presentation will cover the range of multi-scalar projects undertaken in Chennai as a proving ground over the past 5 years that range from advocacy to implementation. Following the publication of a comprehensive manual titled 'The Sponge Handbook: Chennai' that was made freely available to practitioners and academics in India, Sponge Collaborative led India's first detailed feasibility study for blue-green infrastructure that revealed the cost-effectiveness of supplementing gray infrastructure with nature-based solutions within a 170 acre peri-urban neighbourhood. By collaborating with reputed hydrologists and engaging the local community, a pilot project for an Integrated Sponge Park was designed to withstand extreme floods by storing more than 1.65 million liters of stormwater around a football field and recharging 3.8 million liters into the aquifer from a 25 year storm event. The scientific approach to this project unlocked climate financing from the central government disaster management authority to build the park. Following this, the Chennai Metropolitan Development Authority invested more than US$ 3.5 million towards a 16 acre Climate Park and a 16 acre eco-wetland Sponge Park. Both projects transformed a degraded landscape and a fragmented wetland respectively into restored habitats with blue-green infrastructure integrated with unique community amenities. To ensure the scalability of this approach, Sponge Collaborative developed a more technical manual with capacity building using the built projects to train more than 60 municipal engineers in Chennai and officials from more than 40 urban local bodies in the larger state of Tamil Nadu.

The presentation will feature key takeaways from advocacy efforts, strategic communication, technical collaborations, and stakeholder engagement for landscape architects to situate themselves as change agents to reform infrastructure in cities exposed to multi-hazards. Specific political and technical challenges towards implementing large urban nature-based solutions in the global south will be highlighted.

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Keywords:

Keyword 1: Nature-based Solutions
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Keyword 4: Sponge City
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1.3-BO-S1-3

Restoration of Samcheongdongcheon Stream in Historic Downtown Seoul, South Korea

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In Seoul's historic city center, ancient waterways shaped the urban landscape and influenced residents' lives, contributing to a rich social and cultural heritage. Efforts to restore these waterways, like the Cheonggyecheon restoration project, aim to improve urban environmental quality and reinforce historical landmarks. Although Cheonggyecheon is considered a successful redevelopment, it revealed challenges in historical restoration, ecological recovery, and urban development. This has led to the need for restoring its tributaries, but research on this topic remains insufficient.
The intensifying urban challenges caused by the climate crisis highlight the need for a new approach to waterway restoration, especially for Cheonggyecheon's tributaries, which are linked to urban flood and drought mitigation. Historic waterway restoration should be part of a broader climate strategy to address urgent urban issues. This study proposes a restoration strategy for Samcheongdongcheon, a historic waterway, to overcome the limitations of the Cheonggyecheon restoration and contribute to climate change adaptation. The study examines theories on historic waterway restoration, establishes a framework for planning restoration in historic urban centers, and analyzes existing restoration plans for Samcheongdongcheon to identify limitations. Based on this analysis, it offers a revised restoration direction.
Key findings of the study are:

1. Samcheongdongcheon's restoration should consider both historic urban landscape restoration and critical restoration, acknowledging its evolution over time. Since its development was shaped by social and cultural needs, it remains integral to the city's heritage and continues to serve as part of the modern urban system. Restoration should address heritage conservation, urban water systems, and waterfront planning to generate multifaceted value.
2. Restoration sould be defined across three dimensions. Topographical and heritage restoration could be limited to areas where road reductions are feasible. However, hydrophilic spaces should integrate adjacent public spaces to overcome spatial constraints. Water system development should cover the entire watershed to ensure alignment with urban stormwater management.
3. Specific strategies include conserving and utilizing buried cultural heritage, like stone embankments, through restoration and exhibition. In areas where preservation isn't feasible, critical restoration should create new landscapes and water-based cultural spaces. Urban planning should ensure sufficient space to integrate the waterway with pedestrian networks. Waterway restoration should also be framed as a climate adaptation strategy, necessitating stormwater-based water supply and drainage systems.

This study proposes a direction for Samcheongdongcheon restoration that addresses both the Cheonggyecheon restoration's limitations and urban climate adaptation. It provides a reference for restoring other historic urban waterways, such as Baekundongcheon. However, the study doesn't fully examine flood risk management, which should be addressed in future research to refine the restoration approach.

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- and more

Keywords:
Keyword 1: Stream-related urban design
Keyword 2: Climate adaptation
Keyword 3: Landscape as urban-heritage
Keyword 4: Cheonggyecheon tributary restoration
Keyword 5: Samcheongdongcheon Stream

1.3-BO-S1-4

Guiding Urban Resilience: Adapting to Environmental Pressures Through Green Stormwater Infrastructure and Water-Conscious Design

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Urban areas face increasing environmental pressures that challenge stormwater management and urban resilience. These pressures necessitate a shift toward sustainable solutions, with green stormwater infrastructure (GSI) playing a crucial role in mitigating risks and enhancing urban adaptability (Benedict and McMahon, 2006). This study evaluates the effectiveness of GSI systems in addressing stormwater management challenges by analyzing their suitability across different environmental conditions. The research focuses on identifying key factors influencing GSI performance and assessing how climate-sensitive design strategies can optimize their functionality in urban settings.

A critical analysis of existing GSI practices was conducted through case studies representing four distinct Köppen–Geiger climate regions (Geiger, 1961). By examining these regions, this study explores the relationship between environmental conditions and GSI effectiveness, classifies common impediments to implementation, and identifies best practices tailored to specific climate conditions (Chen and Chen, 2013). The evaluation considers GSI elements such as bioswales, permeable pavements, green roofs, constructed wetlands, and rain gardens, assessing their capacity to manage stormwater effectively while offering co-benefits such as heat mitigation, water quality improvement, and biodiversity support (Matthews and Byrne, 2015).

Findings from this research underscore the importance of context-specific GSI strategies and highlight four key insights: 1) *Environmental conditions significantly influence GSI design and implementation:* Successful stormwater infrastructure must account for region-specific factors such as precipitation patterns, soil permeability, and seasonal variability to ensure long-term functionality and resilience. 2) *GSI implementation reduces environmental stresses in urban communities:* By integrating GSI practices into urban planning, cities can manage stormwater more effectively, mitigate urban flooding, and address prolonged dry periods, contributing to overall ecological balance and public well-being. 3) *Combining diverse GSI strategies enhances system adaptability:* A hybrid approach incorporating multiple GSI techniques improves resilience across a range of environmental conditions, ensuring effectiveness in both extreme drought and heavy rainfall scenarios. 4) *GSI solutions offer multifaceted benefits beyond stormwater management:* In addition to enhancing water retention and infiltration, well-designed GSI systems contribute to urban cooling, carbon sequestration, habitat creation, and overall community well-being, strengthening urban resilience.

Place-based approach to GSI design is essential for fostering sustainable urban landscapes. Recognizing the interplay between environmental conditions and stormwater infrastructure enables planners, designers, and policymakers to implement more effective and adaptive solutions. As cities continue to navigate environmental uncertainties, integrating GSI practices that respond to local conditions will be critical for shaping resilient and livable urban environments.

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Keywords:
Keyword 1: stormwater management
Keyword 2: green stormwater infrastructure
Keyword 3: landscape systems
Keyword 4: ecosystem services
Keyword 5: green cities

1.3-BO-S1-5

Developing adaptive planning methods as a response to to changing waterscapes in the context of Danish coastal cities

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LAVA (Landscape and Water /LAndskab og VAndet) focuses on adaptive urban planning to address the challenges posed by climate change, particularly in Denmark's coastal urban landscapes.
Global warming comes with changing waterscapes, flooding, and drought. In a Danish context, climate change means rising sea levels, increased extreme rains, rising groundwater table, and flooding becoming prevalent. This landscape architectural research through design and interaction research project has its key objective in how landscape practices such as reading the landscape as a foundation for planning the much-needed adaptation in coastal cities while embedding an adaptive approach to the uncertainties embedded in climate change. The interaction research project is based on interdisciplinary collaboration between landscape architectural research and planners and decision-makers in a larger Danish Municipality with the city water company. Thus, taking on an integrative approach where landscape and water are sought to be integrated into existing processes, planning practices and policies of the municipality and water company. The aim is to develop methods for holistic urban development that can adapt to the evolving conditions coming with climate change. By fostering cross-sectoral collaboration and integrating diverse knowledge, LAVA aims to reshape urban planning practices by utilizing landscape and water as critical elements in adaptive strategies. One of its primary goals is to create synergies among existing municipal resources and projects, leveraging water catchments as a foundational principle for cohesive urban development. The main case study is centered around a larger watershed and the municipality's coastal zone, which exemplifies the multifaceted challenges of flooding and water management.
Furthermore, the project explores dynamic land use strategies, partnerships, and public engagement to ensure that climate adaptation measures are effectively implemented. By emphasizing the interconnectedness of water sources and promoting sustainable planning, LAVA intends to provide visual understandings through mapping and fieldwork, tools and frameworks that aims to provide knowledge that can guide municipalities across Denmark in navigating climate-related uncertainties within existing processes of the municipality. The objective is to explore, in a real-world, 1:1 context, how to develop methodologies for adaptive planning at a practical level to enhance collaboration among stakeholders, fostering a more resilient urban landscape adaptable to future climatic variations. Ultimately, LAVA aims to transform urban planning into a proactive, inclusive process that aligns with environmental sustainability and community needs.

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Keywords:
Keyword 1: adaptive planning
Keyword 2: waterscapes
Keyword 3: landscape practices
Keyword 4: interaction research
Keyword 5: climate change adaptation

1.3-BO-S1-6
The water way

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Humans have always worked in symbiosis with nature, adapting to one another and reshaping the Earth we inhabit. However, our collective ego has pushed the boundaries of this balance, creating a system that heavily favors human growth, development and economics. Nature is speaking louder, reminding us that humanity cannot thrive on this planet without living in harmony with it.
Since the dawn of urban development, water has been perceived as an opportunity – a source of transportation and trade. Maritime cities emerged as centers of economic and political power. Today, most cities are built near rivers or coastlines, creating beautiful and strategic locations, from Rome and Paris to New York, Copenhagen and Shanghai. To build these cities, we reshaped waterways to suit our needs. But today, with rising sea levels and increasingly frequent extreme weather, nature is reclaiming its space back.
How can we redefine our relationship with water in ways that protect both people from flooding and nature from exploitation? This question became very relevant after Hurricane Sandy struck New York, just a year after some of our team settled in BIG's Manhattan office. Experiencing such an event firsthand made the urgency to respond to climate change more immediate. BIG entered the Rebuild by Design competition, collaborating with other architects and landscape architects to explore ways to shield the city from future floods and storm surges. We saw an opportunity to transform traditional infrastructure into a social and ecological connector. Instead of creating barriers, we envisioned bridges – spaces that invite water in while extending possibilities for community engagement and ecological integration. Through our explorations, we've been drawn to projects that embrace water not as something to be kept at bay but as an integral part of life, almost returning to a historical relationship with water, when it was valued for its role in social development.
Our recent project in Bhutan, the Gelephu Mindfulness City, explores a city designed to allow rivers to flood naturally. Located at the foothills of the Himalayas in southern Bhutan, close to the Indian Plains, the site is divided by 35 large rivers and over a thousand streams. During a site visit, we realized these rivers were the breathing lungs of the landscape, essential for its life and character. Recognizing this, we began by mapping the hydrological systems and giving the rivers the space they need to flood naturally. The urban areas were then designed around these spaces, forming pockets of development that coexist with the waterways. The city relies on a network of bridges to connect neighborhoods. More than just pathways, they are spaces for social and cultural interaction. Suspended above waterways and elephant corridors, bridges will host key city functions and landmarks, connecting people and nature, tradition and modernity, local and global. This project highlights how nature, culture, engineering and architecture can interweave to create harmony and embrace water rather than displace it.

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Keyword 2: Biodiversity corridors
Keyword 3: Mindfulness

1.3-BO-S1-7

Port Saint Roch : a fresh new harbor along the Briare canal

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Just a stone's throw away from the Loing, a river that joins the iconic Seine downstream, the Canal de Briare crosses one of the numerous so-called French Venices. This one, often named the Venice of the Gâtinais, after the local natural region, is Montargis, a heritage town for many reasons. On the one hand, this city comprehends several items of architectural and urban importance. On the other hand, one asset offered by the landscape enhances its preciosity: here we speak about water. Water runs through the heart of the town and constitutes an essential part of its development. Through centuries, it helped shaping the gentle transitions between the city and natural spaces, between quays, waterways and ponds.

Focusing on the historical center of Montargis, the municipality has developed a series of urban projects that reflects a vision of overall development and urban revitalization for both residents and tourists. **Arpentère** closely worked with the city to magnify the shapes of water with the creation of the Port Saint-Roch, or Saint Roch harbor. Here we drew a large esplanade, a harbor master's office and a basin to accommodate river navigation. Its banks will be designed so that up to sixty boats can be parked there.

Following the Briare canal, the creation of the harbor just nearby Montargis will extend the zones of interest and the town centre's appeal perimeter. This helps linking up with natural areas of the Loing loops and the wilder banks. Here, nature is invited in the city.

Another purpose of this project is to offer a coherent itinerary between the different spaces that punctuate the harbor. The latter is turned into a scenographic urban space that brings together river tourism and the city. The great esplanade, a key space of the project, is thought as a mineral stone tile, a plaza that welcomes diverse events. A pedestrian trail articulates along the banks, intertwined with existing trees and gardens. The bike lane we develop there will be one of the links in a major trans-European cycle route.

This alley is completed with new plants and bushes, and existing structures along the canal, such as quayside stones extracted from the Souppe stone quarry or cobblestone floors, are put forward as important heritage features. Indeed the choice of landscaping materials was guided by several objectives such as a good adaptation to the uses and to the character of the site. In addition, preference is given to natural materials that were extracted close to the site. For instance, the sidewalks of the promenades and esplanades are made of sawn sandstone pavers, identical to those we can find a few streets away.

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Références, Arpentère, Paris, 2025, Port Saint Roch valorisation des rives du canal de Briare, Arpentère, 15

Keywords:
Keyword 1: harbor
Keyword 2: heritage
Keyword 3: canal
Keyword 4: bikelane
Keyword 5: stonequarry

1.3-BO-S1-8

Reservoir landscapes: space, meaning, and climate anxiety within historic waterscapes

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Although primarily recognised for their most evident components at water impounding sites, reservoirs within the British Isles have figured prominently across wider rural and urban areas since at least the late 18th century[1]. Initially constructed to feed canal networks in the early industrial period and before the emergence of railways, impounding schemes extended via aqueduct lines into industrial metropolises to transform living standards, modes of production, and ultimately open spaces of Britain's cities in a direct display of the underlying concerns of health, economy, and a rapidly changing public life. Planning of large-scale water schemes continues into the present, but many of the earliest reservoirs remain part of the UK water supply system and of its historic environment. Apart from current anxieties around water security against anticipated droughts, reservoirs play a role in mitigating flood risk as well, whereas recent reports on relevant policies in the United Kingdom[2] put the historic stock of these landscapes into a discourse on disuse and efficiency. Reservoirs are dynamic landscapes, offering uses beyond the primary one, and their continued function in water supply, coupled with the extensiveness of the networks and the novel set of conservation challenges faced, requires a rethinking of what reservoir landscapes represent. The notion of cultural landscapes, coupled with the historic landscape characterisation methodology pioneered in England in the 1990s, provides several clues as to how to approach a complex site (series) whereby the questions of boundaries, interplay of landscape and built elements, as well as of secondary feature sets resulting from reservoir construction in both cities and river valleys, remain largely unanswered.
Water impounding systems are epitomes of cultural landscape as expressions of an evolving relationship with scarcity and supply, and are therefore catalysts of change, both positive and less so. Whilst having revolutionised people's access and right to clean drinking water, as well as facilitated industrial development alongside other resources for more than two centuries now, reservoirs have not always been a symbol of progress – indeed, schemes put forward by the city of Manchester towards the water-rich area of the Lake District in the late 19th century, altogether led to some of the earliest environmental movements and to a rethinking of water access for communities along the main water distribution lines[3]. And although reservoir sites are known to have given rise to new ecosystems locally, their re-evaluation is timely in an era in which extensive water bodies are subject to inevitable political, environmental and social scrutiny. How these issues interact with an updated definition of reservoirs, as well as with their heritage significance, may help resituate them within ongoing discussions on the significance of historic waterscapes.

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Keywords:
Keyword 1: Reservoir
Keyword 2: Water supply
Keyword 3: Urban geography
Keyword 4: Cultural landscape
Keyword 5: United Kingdom

1.3-CO-S1 - hydrological landscape

1.3-CO-S1-1
The Guadalmedina in Malaga

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The city of Málaga is divided by the Guadalmedina River, which now exists as a dry concrete channel for most of the year. For approximately 350 days, the river remains dry, with occasional flow only on rare days. The phenomenon known as *´riadas´* occurs once or twice a year, when the channel fully fills with water. An example of this occurred in November 2024 in Málaga.
Originally designed in the 1970s, the channel no longer serves the needs of a city that has undergone significant transformation over the past 20 years. The 2011 PGOU (General Urban Planning Plan of Málaga) introduced a special plan for the Guadalmedina River, but this plan has not yet been fully realized. The current administration has launched a competition (December 2024, with submissions open from January to March 2025) aimed at providing shade for the central section of the river. The objectives of this competition include maximizing the capitalization of urban land, encouraging gentrification, and obscuring the natural element of the river beneath hardscaped plazas.
On the other hand, ArquitectonicaGEO EU, in collaboration with *Estudio Segui Architects* and other professionals, has proposed an intervention aimed at extending green areas and enhancing water connectivity on multiple scales. This vision seeks to transform the channel into a natural feature, where landscape and revegetation would offer a revitalized appearance. The project proposes the creation of a green corridor linking Málaga's park, the promenade by the sea (coastline) with De la Concepcion Botanical Garden and the Limonero Reservoir, which could become one of the most significant elements in the city today. This initiative aligns with the PGOU's special plan and focuses on sustainability, combating climate change, and drawing inspiration from nature to guide design solutions.
The project is based on principles of biomimicry and Nature-Based Solutions (NBS), providing a natural approach that serves as a constant guideline for those who experience space. It considers connections and urban systems while ensuring a respectful integration of various strategies. The design is organized into three main components: enhancing the greenery of Málaga, storing water within the city, and uniting the community around the Guadalmedina River.
This green corridor offers the potential to transform the city's landscape, integrating different levels of mobility and promoting biodiversity. Additionally, blue infrastructure and Sustainable Urban Drainage Systems (SUDS) could capture and store water during dry periods, providing irrigation for the city. Rather than allowing water to be lost, Málaga could begin storing this vital resource, which is essential during the dry summer and autumn months.
The goal of this approach is twofold: addressing both the city's systems and its natural environments. These relationships have the potential to foster community unity around this natural feature, respecting the cultural heritage of the area. The Guadalmedina River could become a unifying element for the entire city.

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Keywords:
Keyword 1: Guadalmedina river
Keyword 2: coastline
Keyword 3: sustainable drainage
Keyword 4: ecological structure
Keyword 5: Mediterranean landscape

1.3-CO-S1-2

Saisons du Rhône: towards a living observatory of the rivers's changing landscape

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As the landscape backbone of the Geneva basin, the Rhône gives rise to a multitude of landscapes. It is a major socio-ecological territorial continuity, offering many qualities to a densely populated conurbation. The complexity of climatic and environmental issues, as well as the intensification and diversification of stakeholder types and uses in multifunctional, open spaces, calls for new forms of management and/or governance that transcend both the silos of sectoral policies and administrative boundaries.
As part of the Swiss Confederation's 2020-2024 Program Conventions, the Paysage Projet Vivant research group of HEPIA's landscape architecture program (HES-SO Genève) is working in partnership with the two cantonal offices, for agriculture and nature (OCAN) and water (OCEau), to set up a Landscape Observatory for the Rhône in Geneva, as part of the *Saisons du Rhône* project.
This project places the landscape at the heart of an approach designed to bring together present narratives, listen to the intimate voices of the Rhône and question the mutations and visions for this territory. Landscape is considered here not only as a physical, functional and experiential reality, but also as a unifying notion that brings together individual and collective perceptions and representations of the living environment. It's a mechanism for sharing, concerting and co-constructing in order to discuss the future living conditions of the Rhône-Geneva region. In this sense, the *Saisons du Rhône* project, notably through the Observatoire paysage, adopts an applied research approach based on landscape mediation. More than a simple tool for monitoring landscape transformations, the Observatory is a space for sharing and reflection, where the views of a wide range of players (experts, residents, politicians, territorial actors) come together, thus federating a variety of values and aspirations.
In this sense, demonstrating fluvial landscapes meets a threefold objective: to raise awareness and care for the river as a rich and fragile environment and ecosystem; to question it as a structuring element necessary to the adaptation of an urban society to climatic, political and socio-economic dynamics; and finally, to consider the major role of landscape architects in the health of territories, and more generally in their habitability.
The aim of this paper is to explore the role of Geneva's landscape architects in integrating river landscapes as vital arteries for urban balance and inter-species harmony in the long term.
Through the sensitive, landscape-based approach adopted by the PPV team over the last few years, this paper will present the methodology employed (traces, cartographies, networking, Rhône-tables, etc.) in this applied research project. The aim is to show the complex systems of the Rhône not from the point of view of an external observer, but from an entangled point of view, in order to account for the interrelationships and interdependencies of shared living environments. This paper will also question the relevance of the tools selected (drawings, sounds, photographs, exchanges mobilizing the various senses, etc.) and the difficulties encountered in implementing the project.

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Keywords:
Keyword 1: Rhône
Keyword 2: Landscape mediation
Keyword 3: Observatory
Keyword 4: Socio-ecological perspectives
Keyword 5: Livability

1.3-CO-S1-3

Bridging the Gap: Industrial Landscapes as a Tool for River Engagement

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In 2002, Gilles Clément introduced the concept of the “Third Landscape,” highlighting the potential of post-industrial sites to enhance biodiversity while preserving their cultural and historical significance (UNESCO, 2001). Beyond their ecological value, these spaces can reconnect communities with their neglected or polluted rivers, increase public access, and contribute to flood mitigation.
Historically, water played a crucial role in industrial development—powering machines, transporting goods, and serving as a vital resource (Curulli, 2013). However, industrial expansion often reshaped waterfronts, limiting public access and polluting water sources. Despite this, water remains a central force in shaping cultural landscapes, playing a significant role in both climate resilience and heritage preservation (The Ribeira Sacra Declaration, ICOMOS, Galicia, 2023).
This presentation explores post-industrial sites, which are often fragmented and underutilized, along urban waterways as strategic opportunities for landscape connectivity, ecological restoration, and urban resilience. Adaptive reuse integrates historical structures into contemporary urban contexts, fostering a sense of place and cultural continuity. Converting these spaces into flood retention zones, wetlands, or permeable landscapes helps reduce runoff, mitigate flood risks, and support climate adaptation. These interventions not only improve river health but also create inviting public spaces that strengthen human connections to water.
The James River in Richmond, Virginia (USA) serves as a case study. Once central to industry, commerce, and recreation, its banks now contain underutilized post-industrial sites. Redevelopment has often prioritized real estate over resilience, relying on rigid flood-control infrastructure. By connecting key post-industrial sites along the river into a cohesive system and emphasizing landscape adaptation over time, the authors propose an alternative vision for the James River in Richmond. This vision integrates these sites into a broader urban strategy that enhances the river as a unique ecological corridor while fostering transformative riverine processes that intertwine the landscape with its inhabitants. It offers an adaptive strategy to mitigate severe flooding in Richmond’s urban area. This integrated approach balances ecological restoration with cultural memory, using water as a mechanism for both adaptation and community engagement (Kaplan & Kaplan, 1989).
In this way, post-industrial landscapes can be transformed into powerful tools for reconnecting people to rivers, fostering resilience, ecological health, and a renewed public connection to the waterways that shaped their history.

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Keywords:
Keyword 1: urban rivers
Keyword 2: industrial waterscapes
Keyword 3: resilience
Keyword 4: public engagement

1.3-CO-S1-4
Water Adaptability of Historic Urban Landscape in Suzhou, China

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Suzhou, the Water City, was founded in 514 BCE, and has been the southeastern granary and economic capital of the nation.[1] The city is crisscrossed by waterways, and in the 13th century *The Travels of Marco Polo* praised Suzhou as 'the Venice of the Oriental'. The ancient people of Suzhou invested significant human and material resources in the construction, maintenance, and management of hydraulic engineering for both production and living needs.[2] This presentation focuses on the relationship and interaction between macro-scale hydrological geographical changes and the meso- to micro-scale historical urban landscapes, especifically how hydrological landscapes guided urban landscape development and the reverse regulatory processes.
The study integrates research findings and data from climate history, historical geography, landscape history, and urban history to construct a series of historical hydrological scenario models of urban landscape. It introduces the indicator of *water adaptability* to reveal the evolutionary mechanism of historic urban landscapes and their adaptive designs in response to changes in the hydrological environment. The conclusion is that Suzhou's historic urban landscape is an adaptive landscape to its surrounding water environment. The fluctuation of the value of *water adaptability* demonstrates a relatively stable relationship between artificial and natural works. It points out that the current static, specimen-like protection methods in Suzhou's historic urban landscape conservation[3] are detrimental to the activation and transmission of landscape heritage. Based on the *water adaptability* indicator, the study proposes a revitalization plan for Suzhou's historical water bodies.

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Keywords:
Keyword 1: Historic Urban Landscape
Keyword 2: China
Keyword 3: hydrological landscape
Keyword 4: water adaptability

1.3-CO-S1-5
New Sublime Waterlandscapes of the Netherlands

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The river landscapes of the Netherlands have undergone a major change since a near-flooding event in 1995. That near-disaster showed how vulnerable the civil engineering oriented strategy of raising dikes was. A change to a landscape-based solution of widening the floodplains was made in the program Room for the River. As a consequence of other biodiversity goals and the new strategy of flood defense, the new wide floodplains were reinstated as natural floodplains, as opposed to mostly agricultural uses before. Many minor and major and a few very costly solutions were planned, designed and executed, the Dutch again making their own landscape, in a very (im)modest way, changing the face of the planet. Given the energy provided by the river flow and the fertile soils, some of these areas developed over time into wild places in the otherwise very tightly managed Dutch landscape.
My paper explores whether the wilder river-landscapes that developed afterwards can be experienced as sublime and how this can be represented in photographs, drawings and paintings.
This leads to a plethora of philosophical questions. What does it mean for a landscape to be sublime? How can we decide whether a landscape is sublime? is this not a very personal experience? Kant states that it must impress us and leave us in awe, either by its scale or dynamics. Often the component of fear is mentioned, but it is mostly an imagined fear, as the situation should still leave room for aesthetic reflection. For the paper I have chosen to follow a theoretical perspective developed by Burke. Burke gives us a list of several components that can contribute to an object being perceived as sublime. With this list in mind I have explored during several visits a part of the floodplain between Doorwerth and Wageningen and I have tried to document and analyze places and moments of the sublime. Because on a warm summers day the floodplain is simply a beautiful place. But as Wordsworth has noted an object can be both beautiful and sublime, but not at the same moment. And there are also plenty of places and moments that the floodplain is a mysterious, dark and awe-inspiring place. Especially when the floodwaters come and take their grip on the floodplain, the sublime character of the landscape shines through.
Through documentation in photographs and subsequent reworking in drawings and paintings the particular version of the Sublime of a Dutch river landscape can be shown to match several if not most of the qualities as given by Burke as specific for the Sublime. My place as inhabitant of these landscapes, landscape architecture academic, philosopher, and landscape artist provides a privileged view into the folds of the tightly organized Dutch landscape, where wildness can still play out and sublime experienced can be had. It offers a glimpse of how nature restoration and flood protection can combine to shape aesthetically interesting places., this creating trivalent places as described by Ian Thompson.

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Keywords:
Keyword 1: Water
Keyword 2: Rivers
Keyword 3: Flooding
Keyword 4: Aesthetics
Keyword 5: Sublime

1.3-CO-S1-6

Analyzing the key influencing factors of urban blue space on mental health: Using AI image semantic segmentation and XGBoost-SHAP approaches

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Many studies have shown that urban blue space significantly affects human mental health. Most of them used the linear modeling method to analyze data and explore the effects of blue space factors on human mental health. However, the traditional data analysis method makes it difficult to reveal the nonlinear effect of multidimensional environmental factors on mental health, and cannot quantify the relative importance of each factor as well.
In this study, we innovatively introduced a methodology that used AI semantic segmentation of street view images and XGBoost machine learning algorithm combined with SHAP interpretation framework to generate a landscape feature dataset covering the 16.5km urban section of Yongding River, Beijing. Based on the analysis of this dataset, we ranked and analyzed the relative importance of different blue space environmental factors on mental health.
AI constructed a landscape database of the Yongding River urban section integrating physical environment and functional evaluation through millimeter-level identification and extraction of blue space elements. The SHAP value showed that after controlling for self-selection bias, the influence factors of cultural identity (SHAP=0.1249) and facility entertainment (0.1117) had a greater impact on mental health than our traditional understanding of natural elements.
These results demonstrate that AI can realize the whole-area-real-time-quantitative collection of riverine waterfront landscape elements through multi-source perception technology, cracking the data barriers of large-scale riverine landscape research. Different from the traditional environmental determinism, the SHAP explanatory model demonstrates that the mental health benefits of blue spaces are significantly “human-led” by revealing the non-linear interaction between people and the environment, which suggests that the way people perceive and use the space (How) has more influence on their mental health than the physical attributes of the space (What), which suggests that the “human factor” is more influential than the “human factor” in the mental health of blue spaces. This shows that cultural factors have an important influence on people in the triadic coupling effect of “people-environment-culture”.

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Keywords:
Keyword 1: blue space
Keyword 2: mental health
Keyword 3: machine learning
Keyword 4: Yongding River

1.3-CO-S2 - urban water resilience

1.3-CO-S2-1

Urban-Lake Symbiosis: Understand the Sustainability and Resilience of South China's Historic Municipal Landscape through a Historical Political Ecology lens

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Human-nature harmony has been deeply rooted in China's culture. As reflected in the concept of "shan (mountain) shui (water) city", the natural environment context, particularly mountains and waters, is significant for urban sustainability. China has a history of thousands of years in shaping and managing the landscapes around urban areas. In recent years, an increasing number of studies have shifted from the design of small-scale exquisite gardens to the management of large-scale urban landscapes, through which Chinese traditional knowledge has been continuously revealed.
The southern region of China, including the modern Chinese subdivisions of Guangdong, Guangxi, Hainan, Hong Kong, and Macau, was called "Lingnan" in history. In this region, over 2000 years of development progress of cities has represented the synergy of the urban areas and their surrounding landscapes. Lingnan is in the subtropical zone, characterized by a hot and humid summer with copious rainfall and frequent typhoons, causing tough drought and flood events for human settlements. Zhou-fu areas, known as the administrative divisions in Chinese history, were economically and socially well-developed. Zhou-fu areas are normally adjacent to river intersections, making them vulnerable to flooding. Therefore, it was crucial for Zhou-fu authorities to manage the water systems and to create flood water detention and retention spaces, which was the key motivation for shaping and managing Lingnan Zhou-fu Landscape. It suggests that studying Lingnan Zhou-fu Landscape is valuable to reveal Chinese traditional wisdom for sustainable and resilient urban development.
The objective of this paper is to answer two research questions. (1) as an important green infrastructure, what functions did Lingnan Zhou-fu Landscape offer in the perspectives of environment, economic and social (the three pillars of sustainability) and disaster resilience? (2) From the political ecology perspective, how did local authorities' management support the multi-functions of Lingnan Zhou-fu Landscape?
This paper conducted a diachronic analysis of typical cases of Lingnan Zhou-fu Landscape through a historical literature review. These cases include Chaozhou West Lake, Huizhou West Lake, Zhaoqing Star Lake and Leizhou West Lake in Guangdong Province, Guilin West Lake in Guangxi Province, and Haikou West Lake in Hainan Province, covering most subdivisions in Lingnan region. It examines the evolution of Lingnan Zhou-fu Landscape and identifies its remarkable period in China's Tang and Song dynasties (618-1279 C.E.). This period is the focus of this paper.
The results indicate that the lake and water systems, the major parts of Lingnan Zhou-fu Landscape, have multi-functions: rainwater detention for flood and drought mitigation, agriculture irrigation, food production, disaster risk reduction and public recreation. Evidence shows that the shaping and management of Lingnan Zhou-fu Landscape were led and funded by local authorities, and involved a wide stakeholder engagement. The traditional wisdom embodied in Lingnan Zhou-fu Landscape is significant for the mitigation of projected worsening drought and flood events in the background of climate change, the integration of food-producing with recreational space in the emergence of the "productive landscape" idea, and the representation of local culture and aesthetic in green infrastructures in improving human well-being.

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Keywords:
Keyword 1: political ecology
Keyword 2: disaster resilience
Keyword 3: urban sustainability
Keyword 4: landscape history
Keyword 5: municipal management

1.3-CO-S2-2

Restore the Roots of Sinking Grounds: A Water-sensitive Landscape Plan for the City of Meycauayan in Bulacan, Philippines

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The rapid population growth in cities has driven urbanization and industrialization, leading to a surge of built infrastructure and a decline in open green spaces. This transformation disrupts natural environmental processes, particularly the hydrological cycle. The increase in impervious surfaces threatens the process of naturally recharging the aquifers— one of the primary sources of groundwater. In the City of Meycauayan, Bulacan, Philippines, groundwater extraction poses a significant threat to these resources, exacerbating the occurrence of land subsidence. The city experiences one of the highest rates of subsidence in the country with a record of 5.50 cm to 6.00 cm per year. In this study, the application of landscape architecture emerges through the proposal of a water-sensitive landscape plan focused on recharging aquifers through the Water-sensitive Urban Design (WSUD) approach to mitigate land subsidence. Biotope mapping was done to analyze spatial patterns of potential critical and supporting recharge zones. The data gathered were used to develop three planning scenarios: status quo, regulated extraction, and no extraction. Through a series of computations for recharge rates and assessments, the best water-sensitive landscape plan is chosen as the most suitable option. The study proposes specific interventions and guidelines within the chosen water-sensitive landscape plan, along with implementation and maintenance guidelines. The study further demonstrates the potential of integrating water management solutions in guiding the planning of a city, addressing their environmental, social, and economic aspects.

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Keywords:
Keyword 1: land subsidence
Keyword 2: aquifer recharge
Keyword 3: Water-sensitive Urban Design
Keyword 4: landscape planning

1.3-CO-S2-3
Free the Wai

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The trajectory of modern colonial urban planning, including the suppression of natural water systems through the draining of wetlands and the piping of streams, was a long and fraught process. The founders and subsequent bureaucrats of these cities in the Americas and Australasia spent much time, effort, and treasure on this endeavour. However, with the environmental effects of climate change becoming more pressing, especially pluvial flooding, the indigenous landscape of wetlands and waterways has often been revealed as the original waterways find their paths to the sea regardless of the roads, pipes, or housing that has been built in their way.
This paper explores this history through a discussion of suburban development in Auckland/Tāmaki Makaurau and the effects of a recent catastrophic flood on Anniversary Day, January 2023. A case study in Tāmaki Makaurau, Aotearoa, New Zealand, focuses on the suburb of Avondale, which was badly flooded during the Anniversary Day floods of 2023. The Avondale racecourse, a 35-hectare empty site in the centre of an early 20th-century suburb, is the focus.
The site has a proposed urban plan suggesting a new urbanist grid with high-density housing and highly impermeable surfaces. The paper discusses the likely consequences of such a plan, including the exacerbation of present flooding due with over 80% proposed site impermeability.
The paper then discusses an alternative design proposal for the local community that aims to privilege the underlying landscape. This proposal acknowledges the existing complex landscape of gullies and wetlands that were erased in the construction of the racecourse. Building on this area's landscape ,the design approach uses landscape architectural strategies to turn the flood zone into new green space for the community to absorb runoff and detain flooding. At the same time, the study explores ways to avoid increasing runoff from the new housing by reducing the footprint of the new housing.
The design study uses GIS modelling and the rational method to measure the effects of the Anniversary Day flooding and assess different design scenarios, starting with the proposed master plan. The alternative master plan proposes a green landscape that enhances soakage and creates new public spaces for the community.
The proposed design methodology emphasizes the importance of landscape architectural solutions by integrating environmental catchment planning with urban design techniques. This approach aims to create resilient communities that can better withstand future flooding events. By transforming flood zones into green spaces, the community can benefit from improved water management and enhanced public spaces.
In conclusion, the case study of Avondale racecourse highlights the need for a holistic approach to urban planning that considers the natural landscape and water systems. The Anniversary Day floods of 2023 serve as a stark reminder of the consequences of ignoring these elements in urban development. By adopting innovative design methodologies and prioritizing environmental sustainability, Auckland/Tāmaki Makaurau can build a more resilient and sustainable future for its communities.

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Keywords:
Keyword 1: Climate change
Keyword 2: Pluvial Flooding
Keyword 3: Catchment planning
Keyword 4: GIS
Keyword 5: Community design

1.3-CO-S2-4
Oslo Hydropolis – Envisioning Watershed Urbanity

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Contemporary cities are increasingly facing the effects of detachment from their hydrological environment. The Oslo region, with its rich historical connection to water, exemplifies this challenge, especially as it confronts weather extremes and seasonal irregularities that threaten the functionality of its urban and cultural landscapes. With a unique catchment topography characterized by limited habitable valley surfaces between forest and fjord, Oslo grapples with issues of water excess—manifested by flooding—and scarcity—evident by drought. These challenges are exacerbated by increasing urbanisation and the associated pressure on drinking water and wastewater systems.

In response, the Oslo Hydropolis project is being developed as part of an ongoing landscape master studio at the Oslo School of Architecture and Design. For nearly a decade, faculty and students have employed artistic methods to conceptualize and elevate contemporary municipal water management initiatives. The vision of Hydropolis aims to introduce a supplementary layer to the prevailing compact city planning model, advancing a conceptual framework termed "Watershed Urbanity." This approach recognizes catchments as socio-ecological planning units and design contexts. Central to this concept is the goal to re-invest water with social content (Linton, 2009) and overcome the notion of water simply as a ‘resource’, stripped of any cultural, or even political and ethical connotations. (Roberts & Phillips, 2018).

The project's outcomes reveal the potential to reimagine the Oslo region through the lens of its watersheds. Here, the dynamics of water flows—both qualitative and quantitative— land management, and daily practices are inextricably linked. By promoting water as an active agent through social practices, the vision pioneers a participative and bodily outdoor urbanity in already developed areas and advocates for regenerative frameworks in development sites. Examples of this approach include daylighting small streams to promote bodily experiences of bathing, enhancing rural water and, therefore, food quality through run-off filter spaces for day-out activities, and establishing decentralized water supply systems that create communal spaces around water sources and ensure public access to the fjord. Additionally, the project creatively engages with elements of landscape heritage, such as ice ponds, rehabilitating them into pools and bogs that include outdoor spaces fostering multicultural community interactions. Furthermore, the project promotes the role of low-density communities as stewards of well-moistened soils and flood prevention measures and positions logistic parks as facilitators for groundwater replenishment.

While the speculative nature of this academic project presents limitations for immediate application, the visually compelling outcomes underscore the intrinsic connections between territory, water, and social interactions. Water flows emerge as a vital force shaping the landscape, locality, and culture. Developed from the specific context of the Oslo region, the project aspires to ignite discussions about integrating watershed logic into regional planning and urban design processes. This methodology can be adapted by other metropolitan areas seeking to reconnect with their hydrological systems as a necessary step toward climate adaptation. Ultimately, the Hydropolis project aims to foster a cultural shift, recognising the management of water catchments as the lively foundation of a regional urbanity.

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Keywords:
Keyword 1: Watershed
Keyword 2: Social practices
Keyword 3: Urbanity
Keyword 4: Urbanism

1.3-CO-S2-5

A Landscape-based Approach to Exploring Transformative Capacities of Danish Coastal Cities in the Light of Sea Level Rise

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Human-induced climate change is intricately linked to the Great Acceleration and fundamentally rooted in landscape practices. It manifests, among other things, in changing waterscapes with heightened storm surges, rising sea levels, extreme rain events, changing groundwater tables, prolonged droughts, and the emergence of urban heat islands (AR6 IPCC 2023)(*IPCC Report*, 2022; Warrick & Oerlemanns, n.d. [i]). Moreover, the critical biodiversity crisis denotes ecosystem collapses. This is a call for renewed landscape practices integrative to urban transformation and the needed climate adaptation and mitigation.

This paper explores the untapped potential of reinterpreting coastal landscapes in relation to settlement patterns in a long-term perspective. It is a starting point for discussing the transformative capacities of coastal cities and their landscapes, adopting an intergenerational perspective, and using Design with Nature and ecological planning methodologies (McHarg, 1969; Spirn, 2012; Steiner & McHarg, 2019)[ii] aiming to foster landscape literacy (Spirn, 1991, 1998) in urban transformation. The paper draws on an ongoing research project (2023-2025), "What are we building on the edge of the future?" which studies 54 Danish coastal cities and towns.
The case studies build upon reports on flood risk, costs and urban development and adaptation strategies (COWI, 2017, 2022; Fryd, et al., 2023; Fryd, et al., 2023)[iii], aiming to augment economic calculations with a visual and landscape-based spatial dimension. The research uses landscape architectural analysis in case studies conducted using mapping (GIS, historical maps) and visual analysis (field studies and desktop research) of the spatial features of coastal and central low-lying areas within the 54 coastal cities.
The research studies the following questions: How are these cities situated in the landscape? What spatial characteristics define urban development in the flood risk zone? What transformative capacities can be rendered when an intergenerational perspective is considered?
The objective is to uncover tendencies and under-utilised potentials in the existing landscape and built environment based on a cross-scalar approach in a temporal and geographical sense. The research presents (a) a comprehensive overview of contemporary urban development tendencies along Danish harbourfronts, (b) examines their relationship with larger landscape characteristics, and (c) identifies landscape-based transformative capacities over time. The result of the research project and the paper for IFLA seeks to contribute to discussions on transforming coastal cities amidst rising sea levels, considering human and non-human aspects for future generations.

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Keywords:
Keyword 1: climate change adaptation
Keyword 2: sea level rise
Keyword 3: landscape practices
Keyword 4: coastal cities
Keyword 5: transformative capacities

1.3-CO-S2-6

Public space as a barometer of the urban-water cultural relationship

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Water is one of the most basic elements of Landscape. While the processes associated with water are intrinsically dynamic and inconstant, it is water that gives rise to the most enduring engravings on the landscape. Yet the same way a landscape of a river is not just water or associated water systems but also the enveloping relationships with communities, it is no surprise how plainly landscapes can be differentiated considering the distinct ways water systems and processes have been managed and shaped in line with evolving cultures and corresponding ecological, social, and economic priorities. Transversally in all municipalities of Lisbon's Metropolitan Area (LMA) there has been a progressive implementation of parks and other public spaces on watercourses and riversides, sometimes motivated by infrastructural works and stream regularization, which include rest areas, soft mobility paths, vegetable gardens and recreational equipment. Under the scope of "MetroPublicNet" research project (Santos, 2020), over sixty (60) public spaces along watercourses, developed from 1998 through 2023, were identified. Eighteen (18) selected cases are examples of this new paradigm in the relationship between urban areas and water, where the hydric functions of floodplains are complemented with other valences, such as climate change adaptation, flood mitigation or public encounter (Ana Beja da Costa et al., 2022).
Considering public space design as a good descriptor of the urban-water cultural relationships (Brown et al., 2008), this paper seeks to explore recent public space interventions at LMA where one can note a paradigm shift in the design principles associated with water systems and processes.

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Keywords:
Keyword 1: Water landscapes
Keyword 2: Urban waters
Keyword 3: Public space design
Keyword 4: Lisbon Metropolitan Area
Keyword 5: Public space network

1.4-BO-S1 - Art for reduced consumption

1.4-BO-S1-1

Public planning of a village square in Drôme district, area of my roots

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The project concerns the development of Place de la Fontaine in Piégros-la-Clastre, a rural village of 900 residents, in Drôme area, south of France. The main challenge is to rethink new ways of living in rural place with modest means and environmental sobriety in solutions provided. In detail, project solutions are multiple : move back a wall to free up public space at the foot of an old factory which was used for spinning silk, make this history visible, highlight the patrimonial listed church enthroned on the square, enhance the fountain and the war memorial which are now off-centre, shift a road to create terraces for long-term use at the only café of the village, de-waterproof the ground surfaces with filtering coverings, increase the vegetal presence. An underground pit for collecting runoff water irrigates the line of new trees. The existing plane trees, all diseased, were the subject of a phytosanitary analysis. Only two suspended plane trees with a sculptural appearance are preserved, the new trees were chosen with a diversified and drought-resistant plant selection. A public consultation was carried out with the residents, from the program made by a project management assistance, to the project process validated by public meetings and consultation workshops. A project for a village hall in the center of the square was abandoned as part of this consultation. The sketch mission began at the end of 2022, the operational mission resumed in March 2025 with an ambition to begin works at the end of 2025.
I wanted to highlight this project because it describes several specificities of the landscape architecte practice today in France:

- Uncertainty of landscape project at a time of budgetary restriction of public funds from French state : difficulty for project owners to collect public funds, revision by half of the project scope
- Access to public procurement for small project management structures: as a landscaper, I partnered for this project with an architect, Florent Rougemont for AAPR architectes, and a road and network design office, Jean-Louis Buisson for STADIA. This association was made possible thanks to very active local networking of collectives of project managers
- Resonance of the place in relation to its own history: after more than 20 years of professional experiences in Paris suburbs, this project tells a form of activism in independent practice. I applied for the Piégros project less than 6 months after my move to this region, for which I would later discover that my ancestors came from the adjoining village, me the exile who was born 50 years ago in the United States. If this area was initially a choice out of opportunity, how i was surprised to live in the village of my ancestors, four generations ago. This project gives me opportunity to devote myself to work on the resonance of places, the connection between places and its own history.

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Stéphanie Mallier, SM, 2025, Public planning of a village square in Drôme district, area of my roots
I'm landscape architect qualified since 2000 of Blois School, after studying art history in Sorbonne University. I created in 2013 'SMall' as landscape entity. I claim an artisanal approach with a form of creativity in all projects. At the same time, I work in the arts and crafts sector, and created garden furniture with craftsmen association 'Fe56'. In 2022, I moved and worked in Drôme, on the border of Provence.

Keywords:
Keyword 1: Public project management
Keyword 2: Rural development
Keyword 3: Environmental sobriety
Keyword 4: Memory place

1.4-BO-S1-2

Santiago's Civic Heart: Reclaiming Public Space for Climate Resilience and Social Unity

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Santiago's most emblematic public space, historically significant yet functionally obsolete, undergoes a transformative redesign to address climate change impacts, social fragmentation, and pedestrian neglect. This project reimagines a vehicular roundabout as a vibrant civic plaza, reconnecting three urban parks and fostering a cooler, ecologically rich environment.

Originally designed in 1928 as a sequence of gardens and monuments on the edge of Santiago, the site once fostered neighborhood recreation and identity. However, a century of metropolitan expansion, the increase in vehicular traffic and the fragmentation of multiple interventions eroded its pedestrian-friendly character. Although this space became the city's main civic meeting space, its degradation, particularly after the social unrest of 2019, ended up completely weakening its condition as citizen meeting space.

Recognizing its history as symbol of social division, the project prioritizes participatory design. Since the 2015 competition win, extensive public engagement has been central to its evolution. Navigating shifts across three national, four municipal, and four regional administrations, the design has fostered cross-political collaboration, ensuring diverse perspectives shape its transformation. This process has achieved a delicate balance between radical urban transformation and the preservation of the site's historical identity. Public surveys confirm broad support for the civic plaza, reinforcing the project's goal of promoting social unity.

The design prioritizes pedestrian and ecological restoration, reclaiming land from vehicles. A vast open space now links key cultural landmarks, facilitating large-scale events and daily community use. A shaded plaza with enhanced walkways restores pedestrian flows, promoting active mobility and fostering a sense of belonging. To mitigate urban heat, over 200 climate-adapted trees, infiltration gardens, and permeable surfaces are strategically integrated. These elements provide shade, enhance wind corridors, and improve stormwater infiltration, strengthening the ecological corridor along the Mapocho River. The project introduces innovative solutions, such as pavement support system over the Metro station, enabling tree growth in shallow soil and creating inviting spaces for public interaction.

A core focus of the redesign is sustainable mobility. By improving walking and biking, integrating cycling lanes, and enhancing public transport efficiency, the project actively discourages car use. These interventions not only reduce emissions but also promote equitable access to public space.

To ensure environmental and economic sustainability, the project employs several key strategies. Locally sourced basalt stone, crafted by regional artisans, provides durability while minimizing transportation emissions. Passive cooling strategies, such as shaded pathways and permeable surfaces, enhance pedestrian comfort and reduce urban heat retention. Furthermore, an ecological reforestation strategy, guided by the site's proximity to the river and parks, strengthens biodiversity, attracts pollinators, and improves air quality.

The design carefully balances a radical transformation of metropolitan scale with the preservation of historical identity. The elliptical lawn surrounding Baquedano monument maintains its urban presence, providing space for restoration and ongoing public dialogue regarding its future. This area remains a platform for civic discussions, acknowledging the site's evolving significance.

Blending historical preservation with contemporary urban life, the project reclaims the space as inclusive, vibrant, and contextually rich civic landmark, promoting social cohesion and climate resilience.

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Keywords:
Keyword 1: Climate Resilience
Keyword 2: Public Space
Keyword 3: Sustainable Mobility
Keyword 4: Urban Regeneration
Keyword 5: Social Cohesion

1.4-BO-S1-3

he Impact of Spatial Transformation on Place Attachment: The Case of Haliç Sadabad Park

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Historically and culturally significant parks play a crucial role in shaping urban identity, collective memory, and place attachment. They serve as living archives of a city's heritage, providing spaces where historical events, cultural expressions, and social interactions intertwine to create a shared sense of belonging. These spaces are not only physical landscapes but also cultural artifacts that embody historical narratives and societal values. As cities evolve, these parks often undergo spatial transformations, which can influence users' emotional and psychological connections to them. Such changes may enhance or disrupt the park's original character, affecting how individuals perceive, experience, and relate to these historically and culturally significant spaces. The balance between preserving cultural heritage and adapting to contemporary urban needs raises critical questions about the sustainability of place attachment in transformed spaces. This study investigates how the spatial evolution of Haliç Sadabad Park affects users' sense of belonging and the extent to which this attachment remains connected to the park's historical identity. By exploring users' perceptions and experiences, the study reveals whether the park's transformations reinforce its historical essence or create a new, evolving identity within the urban fabric.

To explore this relationship, a combination of research methods is employed. Historical analysis is conducted by examining old maps, photographs, and restoration projects to understand the park's spatial transformation over time. Surveys and in-depth interviews with visitors capture their perceptions of place attachment, focusing on their emotional and psychological connections to the park. Ethnographic research and participant observation provide insights into spatial usage and social interactions, shedding light on how users engage with the park in its current form. Content analysis and cultural memory studies further explore historical narratives and the ways in which collective memory influences contemporary experiences of the space. Additionally, frequency analysis of visitor profiles and spatial usage patterns helps to understand the evolving relationship between users and the park over different periods.

The findings of this study will contribute to a deeper understanding of how spatial transformations affect the emotional and social connections individuals develop with historically significant parks. By examining how users interpret and interact with the transformed space, this research sheds light on the broader dynamics of cultural heritage preservation, environmental consciousness, and urban reflections. Additionally, the study highlights the role of landscape architects in mediating between conservation and change, emphasizing their influence in fostering a sustainable sense of belonging. The outcomes will provide valuable insights for future studies on sustaining identity and collective memory in historically significant parks, while also offering perspectives on urban design strategies that support the continuity of cultural landscapes in evolving cities.

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Keywords:
Keyword 1: environmental consciousness
Keyword 2: place attachment
Keyword 3: urban reflections
Keyword 4: collective memory
Keyword 5: cultural heritage

1.4-BO-S1-4

Reframing Urban Memory through Public Space: The Case of Nalbantoğlu Street

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Urban spaces serve as the physical manifestations of collective memory, where historical narratives, artistic expressions, and social interactions converge. Within this context, streetscapes function as dynamic public realms that sustain the continuity of urban identity while adapting to contemporary urban interventions. Bursa's Nalbantoğlu Street, a historically significant urban corridor, has recently undergone a series of spatial modifications. This study critically assesses these interventions, situating them within the broader discourse on public space transformation, and participatory landscape design.

The integration of natural and built elements in urban environments is pivotal for both ecological sustainability and spatial memory retention. Green infrastructure and artistic interventions contribute to the sensory experience of a place, reinforcing its identity and fostering emotional connections among users. Beyond ecological and functional concerns, the street's transformation raises important questions about social inclusivity, and intergenerational engagement in shaping urban narratives. The design of public spaces today increasingly necessitates the involvement of local stakeholders, designers, and residents, ensuring that projects not only reflect community values but also serve as platforms for cultural expression and social cohesion. In the case of Nalbantoğlu Street, the role of memory as a design resource is particularly relevant: How can landscape interventions reveal the layers of history embedded in the site? How do such interventions shape user experiences and perceptions of place?

This research emphasizes the necessity of the relationship between urban memory and design approaches that bring together ecological and cultural dimensions. By framing the interventions on Nalbantoğlu Street within a broader discussion on landscape infrastructure and collective memory, this study contributes to current debates in landscape architecture. The study aims to examine the relationships between social, cultural, and natural components, space, urban memory, urban identity, and society through field surveys, while also conducting structured interviews with the area's users to gather their perspectives. The findings emphasize the importance of public spaces that embrace urban memory as a fundamental component of urban identity. As a result, this research advocates an integrated approach that respects historical continuity while enabling new synergies between landscape architecture, urban memory and community.

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Keywords:
Keyword 1: Urban memory
Keyword 2: Public space
Keyword 3: Landscape design
Keyword 4: Collective identity
Keyword 5: Bursa

1.4-BO-S1-5

Bridging Memory and Contemporary: Street Disco as a Socio-Ecological Public Space

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In contemporary cities, landscape projects must transcend singular functions to become inclusive, multipurpose, and sustainable spaces that serve diverse communities. As landscapes shape our everyday living environments, their design should balance ecological resilience, social cohesion, artistic creation, and collective memory, ensuring that each aspect contributes equally to the vitality of public spaces. By integrating history, culture, and ecology, landscape interventions can transform underutilized spaces into dynamic public realms that support community engagement and environmental stewardship.

This study explores the design of a contemporary urban space through both research and a design proposal, presenting a methodology for achieving a balanced approach to ecological resilience, social engagement, and cultural continuity in urban landscapes. The project area, on the Liesenbrücken Bridge in Berlin, a historically significant yet underutilized urban landmark that connects two parks and neighborhoods. Currently, the bridge is hindered by limited accessibility, lack of visibility, and a fragmented green system, which disrupts its potential as a vibrant public space can physically link the parks. The objective of the project is to reveal the potential of the Liesenbrücken Bridge by transforming it from a lost state into a usable condition while enhancing connectivity, celebrating its historical and cultural significance, and integrating ecological sustainability. The design aims to transform the space into an inclusive, multipurpose urban area that fosters community engagement, ecological balance, and artistic expression.

The research focused on the site's historical and cultural significance, with the Liesenbrücken Bridge symbolizing Berlin’s divided past. To enhance its visibility, the design incorporates lighting and artistic installations that highlight its connection to the nearby Berlin Wall segment. Inspired by Berlin’s UNESCO-recognized techno culture, Street Disco reimagines the abandoned bridge as a pedestrian-friendly space, linking two parks and reconnecting neighborhoods. The design also includes Discotechque, a cultural kiosk and music collection space celebrating the city's musical heritage.This feature transforms the space into a vibrant and inclusive social hub that fosters community interaction, encourages collective experiences, and enhances its role as a cultural gathering place and community center.

Second key part of this research was a plant study, where a detailed survey of the existing vegetation and ecological features was conducted to understand the natural habitat. This led to the creation of a map to guide the ecological design, ensuring that the proposed changes would enhance the area's biodiversity and environmental sustainability. Informed by the findings, the design incorporates ‘Terraluma’, a green installation beneath the bridge, featuring air- and soil-purifying plants that foster ecological continuity, integrate native species, and create a habitat for local wildlife. This space also provides a visual and sensory experience for visitors, enhancing the urban landscape's ecological value.

Through thoughtful integration of ecological design, historical significance, and artistic expression, the project reestablishes the Liesenbrücken Bridge as a key urban space that connects communities, enhances public engagement, and celebrates both the past and future. The design exemplifies how landscape architecture can create multifunctional, sustainable spaces that contribute to the broader social and environmental fabric of the city.

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Keywords:
Keyword 1: Urban Design
Keyword 2: Ecological Resilience
Keyword 3: Public Engagement
Keyword 4: Memory
Keyword 5: Co-existence

1.4-BO-S1-6

Terrain, Territory, Cartography: Chronomapping Urban Landscape Evolution for the Socio-Ecological Transition

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Contemporary cities grapple with unprecedented climate and ecological challenges that demand innovative approaches to landscape planning. Traditional frameworks often prioritize immediate climate adaptation needs but overlook historical depth, cross-jurisdictional complexities, and the cultural dimensions of urban transformation. This research introduces *Chronomapping*, a novel methodological framework that integrates evolutionary landscape mapping with adaptive planning strategies, embedding artistic creation and collective memory into urban design processes.

The study hypothesizes that effective landscape planning is constrained by three key shortcomings: a lack of historical continuity in understanding landscape systems; difficulties in reconciling diverse planning frameworks across jurisdictions; and limited acknowledgment of how past territorial strategies shape contemporary possibilities. By applying *Chronomapping*, this research analyzes landscape transformations across multiple temporal scales, focusing on how cities have been shaped by evolving cultural narratives, artistic representations, and historical memory, particularly in cross-border contexts.

The methodology consists of three interconnected components: (1) exploring how mapping conventions and artistic representations influence perceptions of landscapes and territorial planning; (2) examining the resilience of landscape patterns shaped by technological, social, and perception evolution; and (3) investigating how cartographic and ecological practices have not only documented but also actively shaped urban landscapes through visual storytelling and power dynamics.

By integrating LiDAR technology with historical cartography, artistic interpretation, and archival research, this approach generates layered chronological visualizations that reveal otherwise imperceptible patterns of urban and ecological transformation. These insights offer a more holistic perspective on how memory and creative expression can inform resilient urban planning strategies that honor historical continuities while accommodating contemporary climate and ecological imperatives.

This research challenges conventional approaches that treat jurisdictional boundaries as rigid constraints, instead advocating for an interdisciplinary framework where historical memory, artistic creation, and ecological resilience converge. By embedding cultural narratives and visual methodologies into landscape planning, this project proposes new pathways for adaptive, historically informed, and creatively engaged urban transformation in the face of accelerating environmental change.

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Keywords:
Keyword 1: landscape architecture
Keyword 2: historical cartography
Keyword 3: territorial planning
Keyword 4: climate adaptation
Keyword 5: Imagination

1.4-BO-S1-7

A path system as a landart project : an experiment in art and ecology on Kogelberg (Burgenland, Austria)

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Landscape architecture never designs on a white page : there is always a (designed) space that is already there, with its own richness and complexity, created by the intertwinning of human intention, neglect, and natural dynamics. Observing and learning from what is *already there* before starting to design is an important part of landscape architectural know-how.
The goal of this talk is to present an experimental course in « experiential observation » and design that I developed as a guest professor at BOKU in Vienna (Austria). The site of the course is the Kogelberg (hill) in St. Margarethen im Burgenland near Vienna. It is inspired by research on experiental notation systems (Szanto, 2010) and by the Landscape Laboratory in Alnarp (Sweden) (Nielsen et al, 2023). It aims at increasing students' awareness of their own perception, so that they can develop it as a tool towards more sensitive design.
The Kogelberg is an area where geology, wilderness and cultural artefacts coexist. Part of the hill is a still functioning stone quarry, part of it is a venue for open-air opera productions, but most of it is a nature-protected area, with dispersed stone sculptures created between 1959 and 1986 during a series of international sculptors' residencies. After several decades of neglect, the hill is now managed by the Esterhazy NOW Foundation for contemporary art. The hill is thus a unique place that can be thought of as a global landart project, where ecology and art intertwine to reveal the memory of its past and propose a (landscape) vision for its future.
But thinking of the whole hill as a global landart project implies an attention towards not only visual experience, but polysensory experience that *unfolds in motion*. To grasp this multilayered experience, students should develop a minute attention to the artistic artefacts (the sculptures) *in their setting*, with the spatial qualities created by the topography and the living vegetation, and an understanding of the potentiel experiential richness of their successive appearances, as one walks over the hill. Thus, designing a path system should be thought of as an artistic proposal : it should not only lead visitors from one objet to the next, but aim at offering them a powerful spatial experience unfolding over time. Designed with appropriate understanding and care of *what is already there*, it should help reveal the combined artistic-ecological meaning of the place.
Designing a path may seem a modest endeavor, but it carries an ambitious vision for landscape design: by revealing to people the diversity and complexity of a landscape they can experience daily, it encourages the development of a richer perception of space, which is the precondition for the appreciation and understanding of more sustainable landscapes.

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Keywords:
Keyword 1: path system
Keyword 2: landart
Keyword 3: walking
Keyword 4: experiential observation

1.4-BO-S1-8
25 SAMPLES OF TURN UP PARADISE

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Doing landscape need patience. Doing something for the earth need more patience. This year, LA TERRE FERME, our society of Laurence ROBERT and me, Sébastien ARGANT, spend 25 years patiently to treat some morceaux of landscape, some morceaux of earth close to Nantes, the Loire river, the region and some time further away.
This exhibition will show you a sample of 25 project drawing since 2000 when we create LA TERRE FERME to 2025, today.
Thoses 25 project drawing show different strategy to give more attention to the earth in landscape.
A possibility to garden the earth and turn up as paradise. 25 samples of turn up paradise.

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Doing landscape need patience. Doing something for the earth need more patience. This year, LA TERRE FERME, our society of Laurence ROBERT and me, Sébastien ARGANT, spend 25 years patiently to treat some morceaux of landscape, some morceaux of earth close to Nantes, the Loire river, the region and some time further away.
This exhibition will show you a sample of 25 project drawing since 2000 when we create LA TERRE FERME to 2025, today.
Thoses 25 project drawing show different strategy to give more attention to the earth in landscape.
A possibility to garden the earth as paradise.

01 - THE LONG PATHWAY / ROUANS (44) / 4750 m3 of embankment to do a pathway and spare the landscape
02 - THE JUNGLE / NANTES (44) / rebuild a garden as a jungle with a patio into the wild
03 - A CHICKEN ON A WALL / FÉGRÉAC (44) / a school garden around an ochard enclosed by henhouse.
04 - SLIPWAY-MOORING ROPE / PORT-SAINT-PÈRE (44) / access to the water in a submersible camping
05 - THE PALM TREE / PORNIC (44)
06 - FULL EARTH / SAINT-NAZAIRE (44)
07 - SEA BREEZE / SAINT-MICHEL-CHEF-CHEF (44)
08 - SMALL HAPPINESS / BOUVRON (44)
09 - CEDAR & TARMAC / SAINT-NAZAIRE (44)
10 - ISLE & HER / ÉTEL (56)
11 - LOIRE VIEW / LE PELERIN (44)
12 - DOING PUBLIC PLACE / PLOUGUENAST (22)
13 - WELL AIR / SAINT-NAZAIRE (44)
14 - LOVELY SUN / QUESTEMBERT (56)
15 - LANTERNE / SAINT-NAZAIRE (44)
16 - BABYLONE / SAINT-NAZAIRE (44)
17 - SOLARIS / / SAINT-NAZAIRE (44)
18 - POND PLATFORM / SAFFRÉ (44)
19 - NATURE-PLATFORM / PLOUGUENAST (22)
20 - ARBOR / VERTOU (44)
21 - 110M HEDGE / SAFFRÉ (44)
22 - UNDER THE TARMAC / DONGES (44)
23 - BOSQUET'BALL / AVRILLÉ (49)
24 - BOSQUET'BALL / CHÂTILLON-SUR-THOUET (79)
25 - MELLINET / NANTES (44)

An opportunity to celebreat the 25 years old of LA TERRE FERME together, close to the turn up paradise.

Keywords:
Keyword 1: EARTH
Keyword 2: TURN UP
Keyword 3: PARADISE
Keyword 4: SAMPLES
Keyword 5: 25

1.4-CO-S2 - Heritage as a participative tool (Part 1)

1.4-CO-S2-1

The Triple Weaving in the Renewal of Industrial Heritage-type Communities —— Memory, Art and Participatory Production

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Global industrial heritage-based communities are facing a double crisis: the physical decay of material space and the social loss of collective memory in the post-industrial era. The open spatial structure of Chongqing's Central Bay community, formerly the largest special steel factory family compound in southwest China, has fallen into the typical predicament of lack of vitality of public space and dilution of community spirit due to the aging of the population. This project explores the unique path of flexible renewal of industrial heritage communities through the triple "weaving" of memory, art and community.

1. Physical translation of industrial heritage memories: The red Heart of Special Steel sculpture stands in the entry plaza of the Center Bay community, built to commemorate the history and community spirit of the Special Steel Factory, carrying the steel memories of the industrial era of the residents of the Center Bay community. The community art installation is placed under the canopy of the community entry tree, next to the Heart of Special Steel sculpture, using red and orange interlocking colors of the rope net, and the Heart of Special Steel sculpture to form a space-time dialogue.

2. Spatial activation mechanism of art weaving: As a part of the planning scheme of the community art festival, the art installation establishes key forms such as shelter umbrellas, nests and other symbols of the home, which are towed on the old tree by high-strength nylon ropes. A combination of hanging, weaving and interlocking designs are woven with 6mm thick ropes to form a multi-perforated mesh with a density of about 5cm and an area of about 65m². This lightweight structure ensures the stability of the installation, while the flexible materials and lighting settings visually present a light and transparent beauty, intended to maximize interactive perception with minimal intervention, achieving the goal of artistic weaving for spatial revitalization.

3. Community Participatory Production: The community realizes spatial governance innovation through the mechanism of "Special Steel Sage Workshop" , realizing the transformation from a production unit to a governance community. Veteran workers guide the weaving and hanging of rope nets with the experience of workshop collaboration, and children hang ping-pong balls with community stories within their reach. This intergenerational collaboration reproduces the collective DNA of "compound production" in the planned economy era, but replaces assembly line labor with artistic co-creation to build a new model of community governance.

Landscape architects play the role of "memory translator" in this project-transforming workshop collaboration into a rope network topology through spatial art techniques, and reconstructing the old industrial plaza into a memory container for intergenerational dialog. This micro-renewal practice proves that when art creation becomes a memory reproduction tool, industrial heritage communities can break through the limitations of material restoration and realize the sustainable activation of social relations, forming a virtuous cycle of "spatial restoration-emotional connection-cultural regeneration".

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Keywords:
Keyword 1: Community renewal
Keyword 2: Industrial heritage
Keyword 3: Artistic weaving
Keyword 4: Participatory production
Keyword 5: Flexible intervention

1.4-CO-S2-2

Finding the balance between historical heritage and climate issues in the public spaces

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In France, monuments protected under the Monuments Historiques designation are subject to strong legal protection. Since the law of February 25, 1943, a 500-meter perimeter around these monuments – known as "les abords" (the surroundings) – has also been preserved, ensuring visual and landscape coherence. This regulation requires heightened surveillance of development projects near the monuments, which in turn necessitates a constant and necessary dialogue with new stakeholders: landscape architects and ecologists. Historically, heritage preservation followed a 19th-century logic, focusing on the work of architects and favoring open spaces around monuments – paved forecourts, open squares – to the detriment of vegetation, which was seen as an obstacle to the architectural enhancement of the site.

Today, in the face of climate challenges, this approach is being questioned. The greening of heritage public spaces, which is essential for cooling cities and strengthening ecological continuity ("green and blue networks"), is disrupting the practices of heritage protection authorities. There are many case typologies that highlight the complexity of this reconciliation: freeing rivers while preserving the mills, dams, and weirs that obstruct them; ecological management of listed gardens; or the coexistence of biodiversity and built heritage, such as the occupation of the joints in 17th-century rampart walls by geckos or swallows. The greening of cathedral forecourts also faces archaeological constraints, raising the question of a new approach to historic urban landscapes.

Since 2002, the ARCHE research program, supported by the Plante & Cité association and led by landscape architects Sandrine Larramendy and Jean-Philippe Teyssier, has been exploring the synergies between heritage preservation and ecological transition on a national scale. The goal is to find solutions that reconcile these two issues while respecting the identity of the sites and addressing current environmental challenges. Through an in-depth analysis of the leeway available to field actors and the obstacles encountered, ARCHE proposes concrete action levers. Notable examples, such as the transformation of the Richelieu Library courtyard into a garden in Paris, the ecological management of the national domain of Marly-le-Roi, and the greening of the Colmar Cathedral forecourt, illustrate both the progress made and the challenges that remain. It is important to note that there are converging viewpoints and cultures between landscape architects, ecologists, and heritage institutions (architects, conservators, etc.), who all share the idea of highlighting craftsmanship, harmonizing the sites with local materials, and creating conditions for passing these places on to future generations. This study, based on over 150 projects, interviews, and site visits, highlights not only the points of convergence between these two issues but also the limits, difficulties, and levers necessary to overcome the remaining differences.

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EPITROPAKIS R., COHEN M. Les Echos- 2020, Végétaliser pour atténuer les îlots de chaleur: quelle place pour le patrimoine

LOUSTALET A., PIERRE d'ANGLE, ANABF - 2023, Verdir le vieux Lyon

Keywords:
Keyword 1: Heritage
Keyword 2: Public spaces
Keyword 3: Cooling cities
Keyword 4: Ecological continuity
Keyword 5: Greening

1.4-CO-S2-3

Genetic Identification and Public Participation Mechanism of Industrial Landscape Based on Place Attachment: Xuhui Riverside Heritage Belt in Shanghai

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Under the background of the shift from human land conflicts to cultural spatial rights gamblings driven by new urbanization, the value of regional culture and local memory preservation is increasingly prominent. As an important carrier of industrial heritage, industrial landscapes face the dual dilemma of cultural gene breakage and lack of governance mechanisms. The symbolic collage of landscape forms dissolves the spirit of place, the homogenization trend of functional updates weakens regional characteristics, and the intergenerational memory gap exacerbates the crisis of local identity. This study takes the theory of place attachment, which explores the relationship between society and human geography, as the starting point. Taking the Xuhui Riverside Industrial Heritage Belt in Shanghai as the empirical object, it systematically sorts out the historical evolution law of its industrial landscape, explores historical genes and contemporary regeneration paths, and explores the dual mechanism of public emotional identity and social interaction. Research has shown that Xuhui riverside has undergone stages of industrial agglomeration, functional decline, and cultural regeneration since the beginning of the port industry in the late 19th century. It has fully presented a spatial reconstruction trajectory from an "industrial embroidery belt" to a "lifestyle show belt". However, it has also been found that there are historic landscape contradictions such as the coexistence of protective decline and developmental destruction, excessive intervention, and rigid patterns. Based on these, this study proposes the concept of "memory anchor point - functional patching - participation empowerment". Through the virtual reconstruction of the digital twin platform landscape and the augmented reality interaction of physical space, spatial syntax technology is used to optimize the accessibility and narrative coherence of heritage corridors. A public participatory design toolkit is created to stimulate the creative momentum of community building, and a dynamic cycle of "social identity - landscape production - behavioral feedback" is constructed. This study not only expands the explanatory dimension of place attachment theory in the reproduction of historic landscapes, but also provides an operational evaluation framework and technical path for the protection of industrial heritage in the context of urban renewal, which has important practical value for building a new type of humanistic urban cultural landmark.

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Keywords:
Keyword 1: Industrial Landscape
Keyword 2: Place Attachment
Keyword 3: Genetic Identification
Keyword 4: Public Participation Mechanism

1.4-CO-S2-4

Tradition or betrayal of memory: the impact of chromatic interventions on the facades of Largo da Ordem in Curitiba-BR

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This research examines urban interventions in brazilian historic centers, focusing on landscape transformation and cultural homogenization. The (re)creation of urban landscapes is framed as a complex and controversial phenomenon, wherein urban areas are stylized and commercialized to attract visitors and stimulate the economy (Debord, 1997; Lipovetsky & Serroy, 2013). While these interventions bring economic and aesthetic benefits, they also raise concerns about the loss of local identity and cultural mischaracterization (Brunel, 2009). In this context, cultural heritage and landscapes in Brazil, as well as globally, are threatened by homogenization and chromatic "carnivalization." These interventions not only erase historical marks but also lead to pictorial degradations that damage the landscape, heritage, and identity of these cities (Aguiar, 2012; Vitiello, 2012).

The study explores various approaches to the concept of landscape and its relationship with memory and the preservation of cultural heritage, viewing landscape as a collective legacy rich in historical value and memories, bearing traces of the past (Nogué, 2007). Landscape is also interpreted as a text full of meanings and symbols (Duncan & Duncan, 1988; Bellentani, 2016), shaped by cultural, historical, and social contexts (Andreotti, 2012). Each individual's interpretation of landscape is influenced by personal experiences and cultural backgrounds, essentially making it "a way of seeing the world" (Cosgrove, 1998). As such, landscape becomes a subjective poem narrating the city's history and evolution over time.

Focusing on Largo da Ordem in Curitiba, Brazil, the research investigates local perceptions of these interventions and their impact on cultural heritage preservation and the construction of local identity. The findings reveal a lack of historical and heritage recognition among residents and merchants, as well as approval and encouragement for the use of vibrant colors in the landscape. These results underscore the urgent need for an approach that prioritizes the value of cultural heritage. Implementing heritage education programs is crucial to strengthen a sense of identity and belonging, ensuring the preservation of this legacy for future generations. Raising awareness among the population of Curitiba, and Brazilian society at large, is essential to protect and respect the history, culture, and landscapes that make our cities unique and meaningful.

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Keywords:
Keyword 1: Landscape
Keyword 2: Cultural Heritage
Keyword 3: Memory
Keyword 4: Color
Keyword 5: Urban Interventions

1.4-CO-S2-5

Revitalizing the Junk Playground - Skrammellegepladsen i Emdrup 2.0

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Skrammellegepladsen i Emdrup, The Junk Playground in Emdrup (Copenhagen, Denmark), opened in 1943 as a first of its kind - a place promoting free play and minimal adult intervention. Designed by C. Th. Sørensen the playground was meant to emulate the kind of experiences childhood in rural settings might offer - just in a much more concentrated form.[1] This idea was highly innovative at the time and the international movement of adventure playgrounds can be traced back to this location.

Construction of dwellings, in one kind of another, was always a central part of Skrammellegpladsen and has come to largely dominate the story of the place. It is today mostly known for building small cabins that are then managed by the children. This might be the most obvious shift in the spirit of the place, a reorientation from open ended play with materials to a more construction oriented theme. Unfortunately, much of the original concepts are gone and the site is today a rather typical Danish after school institution, albeit in an interesting surrounding with much history This speaks both to how the ideas of Skrammellegepladsen have, to a certain extent, become part of the wider culture but also to how the core concepts have been hard to keep in the face of institutionalisation.

Thanks to a grant awarded by the Danish Arts Foundation we were able to make a preliminary study of how a revival of Skrammellegepladsen could be done. Through interviews and interactions with key actors (parents, employees, management, children) we could form a picture of dreams and motivations of the place. This, together with a literature study led to our publication “Skrammel 2.0” which stakes out a path towards what could be the future of this institution. Some of our key messages are:

1. Positioning it as a local hub for material flow - Skrammellegepladsen was always built on used materials and donations. As the societal move towards circular material use increases, institutions like this one should be part of the flow. Partnering up both with private businesses and municipal efforts will be necessary.

2. Tapping into the flow of organic materials - we believe that a focus on nature, and building for nature, is a logical next step in the evolution of Skrammellegepladsen. This can be thought of much as the flow of used construction materials, only with organic ones instead. By using the surplus of local parks the playground could be amply provided with branches, mulching and even planting materials by becoming part of the municipal flow of such materials.

3. Seriously considering the polarity between free play and committed adult supervision. At its core, Skrammellegepladsen is not about construction but about children creating their own worlds and having autonomy. However, in this process there are great opportunities for those participating children to seek out and be given knowledge from the adults around them. We believe that both are needed at a higher degree - more hands off when possible and more focused hands on when required.

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Keywords:
Keyword 1: Skrammellegepladsen
Keyword 2: Adventure Playground
Keyword 3: Pedagogy
Keyword 4: Circularity
Keyword 5: User involvement

1.4-CO-S2-6

Perceptual Morphology and Human Use: A Fine-Grained Mapping Framework Based on Point Cloud Analysis in Urban Green Spaces

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Urban green spaces serve as key venues for daily outdoor activities, shaping both the physical routines and emotional associations of residents and visitors. The spatial quality of these environments plays a critical role in influencing how people interact with public landscapes, contributing to their collective use and lasting memory. However, the dynamic and complex morphological structure of such spaces has often been understudied in quantitative terms.

To address this gap, this study proposes a refined analytical framework that examines the relationship between spatial morphology and visitor activity preferences, with an emphasis on human perception and behavioral response. The method integrates multi-source data and advanced 3D spatial modeling techniques across three core stages: (a) extracting and mapping typical spatial feature indicators based on human visual perception, using 3D point cloud models; (b) capturing the spatiotemporal distribution and behavioral characteristics of users through in-field observation, visitor tracking, and panoramic image analysis; and (c) conducting data correlation through mapping , and regression modeling to reveal how spatial morphology influences users' behavioral tendencies.

A total of 3,191 instances of visitor activity were documented across 30 representative green spaces using panoramic cameras and ground observation. Visual perception indicators—including openness (OP), depth modulation (DM), and enclosure (EN)—were simulated through point cloud data. Using ArcGIS for spatial analysis and Origin and SPSS for quantitative processing, 3,371 sets of variable combinations were analyzed. The results demonstrate that visitor preferences are shaped by a set of interrelated spatial variables, with edge degree and spatial richness having a greater impact on activity presence. Notably, three key indicators exhibited preferred value ranges: OP = [0, 50], DM = [2, 12], and EN = [0.45, 0.95].

The multi-level regression models and threshold analyses provide deeper insight into how diverse user groups—based on age, gender, and activity type—respond to spatial configurations. The proposed framework allows for a more granular and predictive approach to evaluating and optimizing urban public spaces. By anchoring behavioral mapping in spatial structure, this study offers practical strategies for refining design, informing participatory renewal, and guiding responsive management and maintenance practices.

By linking fine-scale spatial features with real-time patterns of human use, this research offers a more precise understanding of how green space design influences public behavior and interaction, offering an approach that supports both evidence-based design and the evolving experiential needs of urban societies. It contributes to a deeper understanding of how space becomes meaningful through use, and how design can adapt to support memory, identity, and artistic expression in the landscape.

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Keywords:
Keyword 1: Urban green space
Keyword 2: 3D Spatial morphology
Keyword 3: Visitor behavior
Keyword 4: 3D point cloud
Keyword 5: mapping

1.4-BO-S2 - Heritage as a participative tool (Part 2)

1.4-BO-S2-1

Liminality, hybrids, and the reconstruction of Aberdeen's unique floating landscape through storytelling with digital visualisation tools

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In a contemporary world saturated by digital media, cities struggle to reimagine themselves in the face of global competition for capital and the ubiquitous forces of homogenisation. On the other hand, the recent concern of the landscape architectural discipline on resilience and biodiversity in response to the urgent problems of climate change seems to have left a gap between ecological and cultural landscape practices awaiting to be filled. As a starting point, this paper attempts to revisit the 'myth' of Hong Kong's origin as a fishing village and how the liminal in-betweenness of land- and seascapes have historically given rise to a hybridised 'borderscape' that is positioned at the intersections of different cultures and ecologies. Of Hong Kong's various liminal landscapes, the Aberdeen Typhoon Shelter is a case-in-point where a unique floating landscape had organically evolved out of its specific geographical context, social organisation, and cultural confluences reflecting the inhabitant's long-time relationship with the natural environment. In the heyday of Hong Kong and Aberdeen's seafood tourism in the 1980s and 1990s, a series of Chinese-style floating restaurants lined up to form the harbour's floating villages made up of fishing boats and the glamorous nightscape of opulence. After two decades of decline, however, this cultural heritage is now facing complete disappearance especially after the COVID pandemic and the capsizing of Jumbo, the last floating restaurant in operation, in 2022. With plans to renovate and reopen the older Tai Pak, the community is engaged in dialogues about how Aberdeen's tourism landscape can be reimagined and revitalised. The purpose of this paper is to reconstruct the origins and making of Aberdeen's floating landscape through the social dynamics of different time periods and explore how memories and artistic creations have played an active role in the contemporary understanding and reimagination of this heritage landscape. Methodologically, the research employed historical mapping, archival research, oral histories, long interviews, and literary analysis to carry out this reconstruction and preliminary attempts have been made to visualise this reconstructed landscape through AI-enabled AR/VR tools to produce technologically-enhanced tourism experience to guide the revitalisation plans that aim to return the harbour area to its former glory. The paper argues that the reconstruction of historical narratives and images with the aid of digital tools can make important contributions to guide the conservation and revitalisation of heritage landscapes and instil new energy into the reimagination of heritage landscapes and tourism destinations. The development of location-based storytelling applications creates a platform that allows for personal memories and artistic creations to be actively used in generating renewed understandings of the processes and meanings of cultural landscapes. Importantly, experimentations with immersive digital technologies have the potential to significantly change how landscapes can be experienced in multidimensional ways and reconcile some of the challenges of reconnecting built-up urban areas back to their natural roots by re-examining human relationships with local ecology in light of the immediate changes in coastlines and coastal habitats in the context of global climate change.

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Keywords:
Keyword 1: Liminality
Keyword 2: Cultural landscape
Keyword 3: Heritage
Keyword 4: Visualisation
Keyword 5: Tourism

1.4-BO-S2-2

Integration of Data Visualization into the Urban Environment Through Augmented Reality

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Landscapes as shared common spaces serve a significant potential to support communicative acts for sharing information. By making information sharing an intentional part of landscape design, the existence of an information infrastructure that enables the dissemination and acquisition of information to become a part of daily urban practice can be ensured. Furthermore, these practices can become a shared experience for the public. Two important components to incorporate sharing and acquisition of information into landscape are the content and the means to display this content.

Through its representation, data becomes the content to convey various topics to the public, such as local issues (Claes & Vande Moere, 2013), energy consumption (Valkanova et al., 2013), and local people's views (Koeman et al., 2015). On the other hand, the means to display data visualization, such as chalkboards (Vande Moere et al., 2011), street signs (Claes & Vande Moere, 2013) or touch-enabled public displays (Coenen & Vande Moere, 2021), while displaying data visualization and information, also shape the way to engage and interact with them. Overall, sharing data visualizations with the public can enhance social awareness (Valkanova et al., 2013) and encourage reflection (dos Santos et al., 2024). Based on the premise that public spaces hold potential for information-sharing and acquisition of information, this paper presents the design concept and initial design exploration of the proposed information communication system, which aims to disseminate information in public space to enable casual learning and raise public awareness.

The proposed system is an add-on that can be integrated into diverse locations in a city. It utilizes augmented reality technology to display data visualizations. It consists of digital components, which are augmented reality data visualizations, and physical components, which are signage elements placed in urban landscapes to indicate the system, give information about the system, and activate augmented reality to display data visualizations. The key design considerations of the system are: spatial requirements and adaptability to different spaces; guiding the user experience and enabling interaction between users; user experience and usability of digital components; and changeability and differentiability of digital components. Through these considerations, an easily adaptable information communication system that enables regular engagement to obtain information is aimed to be achieved, which can ultimately facilitate the development of information acquisition habits in public spaces.

The initial design exploration of the system is conducted in three sections: the design of the concept, the design of the physical components, and the design of the digital components. The design concept was developed through brainstorming, sketching, and usage scenario development which set the road map for the design of the physical components and digital components. The iterative design and prototyping approach was followed for both physical components and digital components separately, as well as for the system as a whole. Overall, the initial design exploration and testing prove the concept, provide a set of design parameters, and create a roadmap for further exploration of the topic.

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Keywords:
Keyword 1: public visualization
Keyword 2: data visualization
Keyword 3: augmented reality
Keyword 4: landscape architecture
Keyword 5: public space

1.4-BO-S2-3

Cultural Landscapes Reimagined: Memory, Art, and Sustainability in Tianjin's Five Avenues Public Spaces

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This research critically examines the cultural and historical significance of four key European-inspired public spaces within Tianjin's renowned Five Avenues area: Minyuan Square, Marco Polo Square, Liberation Park, and Zhongxin Park. Originating under British, French, and Italian architectural influences during the foreign concession period (1860–1945), these spaces embody significant intersections of historical memory, artistic expression, and cultural hybridity. This study investigates how these landscapes, initially crafted with distinct aesthetic and social intentions, continue to actively shape Tianjin's urban identity by fostering cultural dialogue, social cohesion, and ecological sustainability in the context of contemporary urban life.

Utilizing qualitative analysis combined with extensive field research and empirical data collection, this paper systematically evaluates these public spaces across multiple critical dimensions: design characteristics, historical contexts, social functionalities, artistic interventions, and intercultural integration. Methodologically, the study incorporates direct observational data, structured interviews, and comprehensive surveys involving local residents, tourists, urban planners, and landscape architecture professionals. These methods provide nuanced insights into contemporary usage patterns, community perspectives, and the sustained social and cultural relevance of these historical public spaces.

Furthermore, this paper examines the transformative role of landscape architects in mediating the interplay between memory, artistic expression, ecological principles, and urban sustainability within heritage environments. It identifies and evaluates specific adaptive strategies implemented in these spaces to address contemporary urban challenges, including climate change mitigation, biodiversity enhancement, and the promotion of community health and well-being. The analysis demonstrates how historically significant spaces, once private gardens and colonial-era parks, have been effectively repurposed and adapted to meet current urban ecological and societal demands.

In conclusion, this research proposes a holistic and integrative approach towards the preservation, reinterpretation, and adaptive reuse of historical landscapes, underscoring their enduring relevance and significant contributions to contemporary urban ecosystems. By effectively combining cultural memory, artistic creativity, and ecological responsiveness, these heritage spaces transcend mere historical preservation, emerging as dynamic platforms for the creation of inclusive, sustainable, and culturally vibrant public realms.

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Keywords:
Keyword 1: Cultural-Natural Landscape
Keyword 2: Heritage Conservation
Keyword 3: Urban Sustainability
Keyword 4: Landscape Memory
Keyword 5: Social Cohesion

1.4-BO-S2-4

Intergenerational Collaboration in Inner City Dublin: Methods for Ecological Restoration.

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In the age of climate crisis, the need to develop innovative, community-driven approaches to ecological restoration in urban environments is undeniable. This presentation explores how socially engaged environmental art can serve as a catalyst for reconnecting communities with nature while addressing biodiversity loss, climate resilience, and public well-being.

Drawing from over 20 years of experience as an artist and landscape architect, Von Maltzan will present methodologies that integrate art, ecology, and community engagement. Her practice fosters intergenerational collaboration, encouraging diverse stakeholders—children, residents, artists and professionals—to work together in shaping more biodiverse and meaningful public spaces. The presentation will focus on two current projects in inner city Dublin: “A Greening Strategy for the Tenters” and “St. Anne’s Road Pocket Park” in Drumcondra.

In the “Tenters”, Von Maltzan is currently collaborating with local schools, nature experts, and resident groups to develop a greening strategy for the area. Through immersive fieldwork, creative exploration, and hands-on design activities in the neighborhood, children engage with urban ecology, learn from botanists and entomologists, and develop their own improvement proposals. This participatory process not only enhances environmental literacy but also gives young people agency in shaping their public spaces— settings where their voices are often ignored.

Adjacent to the railway station, St Anne’s Road Pocket Park in Drumcondra was initiated by the local community and Von Maltzan in 2015. Today, an unfenced biodiverse ‘green’ environment on a narrow site and diverse habitat for flora and fauna, it was hitherto an unloved strip of mown grass by a busy road. The pocket park is not gated and open to the public at all times. The local residents have formed a community group that maintains the Park. Von Maltzan remains closely involved, organising socially engaged initiatives in and around the park in partnership with the community.

Public spaces need not merely form backdrops for urban life but can be active, evolving ecosystems that can foster deeper relationships between people and nature. By embedding artistic and ecological thinking into urban design, we can create more resilient, inclusive, and biodiverse cities—ones that are shaped not just for communities, but by them.

In her presentation, Von Maltzan will ask what are the best practices for integrating environmental art with urban greening efforts? How can ecological and social priorities be balanced, securing institutional support, and sustaining long-term community engagement? And how can these methodologies can be adapted and scaled for use in other urban and rural contexts?

Key themes:

- Revegetating Cities: How small-scale urban interventions can contribute to broader ecological restoration.
- Art as a Tool for Climate Action: The role of creative placemaking in fostering environmental awareness and resilience.
- Community-Led Design: How participatory models empower local groups to shape their own neighborhoods.
- Intergenerational Learning: The value of involving children in public space design and environmental stewardship.
- Socially engaged environmental art: Incorporating the lived experiences of communities

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Keywords:
Keyword 1: Revegetating Cities
Keyword 2: Art and Climate
Keyword 3: Community-Led Design
Keyword 4: Socially engaged art
Keyword 5: Intergenerational Learning

1.4-BO-S2-5
Landscape notations and performative tools

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How can we explore the qualities and characteristics of local landscapes? How can we create tools a notations that enable shared reflections about what is perceived as unique in a given landscape?

In this presentation, I will share a log-book exercise tool developed to curate engagement with the landscape through embodied awareness and drawing notations. The log-book consist of a series of pre-printed pages that prompt certain actions and behaviors in the landscape allowing the user to immerse into specific perception modalities. Like a performance, the protagonist follow recopies for positioning, sensing observing and recording landscape site qualities.

This exercise is about looking and sensing - immersing yourself into the landscape and unpacking the spatial characteristics through our embodied encounter - without judgment or evaluation of what is good or bad. We simply engage with a 'beginners mind' open and curious observing 'what is'. You focus is on observation registering material and immaterial qualities and characteristics and how it feels to be an embodied human in this space. You discover the site through your own eye level experiences tracing materialities, patterns, shapes, atmospheres, and fluxes. Through drawings, diagrams and notations you capture and communicate discovered sensed and hidden characteristics.

The exploration is personal and introvert focusing merely on the individual perception to intensify awareness of embodied relation to the landscape. But when the group regather the multiple individual discoveries become a collective recording of what is particular to a given landscape. The many journeys unfold as a plethora of observations capturing both commonalities and unique characteristics. The log-book pages can be read and presented both along as individual journeys and across the themed notations.

The tool enable individual in depth discoveries as well as shared reflections of what a particular site is and what some of its core values are. It allows for a perspective and connection to site that goes beyond pre conceived assumptions and enable all participants to go deep on their own and to share their discoveries collectively.

The log book exercise draws on performance art as well as phenomenological approaches to landscape discoveries. The tool was created in 2011 and has been continuously evolved and adjusted to allow for new types of explorations and notations. The tool has been tested on landscape architecture students in both Denmark and USA as well as groups of international performance artists.

Next step is to create ongoing workshops investigating a peri-industrial site in transition with both residents and visitors as a way to discover what essential and noteworthy qualities and heritage memories are at play and give voice to what should be kept and cared for in future scenarios for the site.

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Keywords:
Keyword 1: Drawing
Keyword 2: Perception
Keyword 3: Notation
Keyword 4: Performance
Keyword 5: Landscape

1.4-BO-S2-6

The New Angono Cultural District: Proposing a Cultural District Network for the Culture-Led Regeneration of Angono, Rizal

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As one of the most quickly urbanizing countries in the Pacific region, the Philippines benefits economically, leading to increased productivity and poverty reduction. However, urbanization also drives changes in local culture, changing the place identity and genius loci of old towns. These changes in urban landscape patterns are observable in the municipality of Angono in Rizal, often referred to as the "Art Capital of the Philippines" due to its rich creative culture concentrated in its old town center. This thesis explores culture-led regeneration, a concept that utilizes the unique cultural attributes of a city to guide efforts in its cultural upliftment. Through the proposal of a cultural district network in the municipality, its cultural landscape will be enriched to combat the destructive effects of urbanization, strengthening and preserving the cultural character of the town. Landscape design and management of various cultural elements of Angono creates new cultural experiences to be shared by locals and visitors alike, anchored on the existing attributes of the core cultural area of the municipality. This was achieved through interviews and surveys with Angono locals to gather their insights on their culture and evoke key cultural experiences. With the residents' contributions, three spaces within Angono were designed, bringing various existing cultural attributes to the forefront to uplift, enrich, and supplement existing cultural practices. Through the cultural district network, memories and experiences of both people and place are reflected, providing sites that highlight natural forests and community celebrations that incorporate artistic culture in all aspects. With this, a stronger cultural narrative of the municipality can be formed for its residents and in their shared landscape alike.

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Keywords:
Keyword 1: culture-led regeneration
Keyword 2: cultural districts
Keyword 3: cultural placemaking
Keyword 4: place identity

1.4-BO-S2-7

‘Encroachment’ that Enriches : Reimagining India’s Streetscapes through Diffuse Design

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Indian cities, already home to millions of aspirational Indians, are rapidly growing and constantly negotiating identities and inequities across the urban phenomenon. One such highly contested design element is the sidewalk. An “ideal” sidewalk, as seen in multiple design guidelines, is wide and clear of obstructions. The streetscapes in Indian cities, however, are ripe with activity - all sorts of vendors, hawkers, and social interactions are observed on the sidewalk. As India moves towards design standards for walkability, the most observed effort is violently labelling these stakeholders as ‘encroachments’, disregarding their value, and then ‘sanitizing’ the sidewalks by removing the said encroachments. I argue that what is seen as ‘encroachment’ is actually a marker of resilience in Indian cities - sidewalks that host essential services and serve as third spaces already exist as the foundations for India’s “15 Minute Cities”. Through documentation and stakeholder interviews, I studied Pune’s sidewalks and the communities that are supported by them. It is important for us, as designers, to acknowledge the people-led design of the sidewalk as a legitimate act of placemaking, and thus reimagine a new template for Indian sidewalks where pedestrians and vendors can coexist. Diffuse Design is a participatory design model proposed by researcher Ezio Manzini where the expert designer’s role is to assist and execute the existing genius of the public to create resilient spaces. Future of Indian streetscapes and urban places, I contend, lies in celebrating the nuances, functions, and social networks that make them dynamic!

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Keywords:
Keyword 1: Placemaking
Keyword 2: Walkability
Keyword 3: Participatory Design
Keyword 4: Encroachment
Keyword 5: Resilience

1.4-BO-S2-8

Mobilizing the history of landscape as a resource for urban planning: the experience of the GrandAlpe project

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This paper focuses on the mobilization of landscape history in contemporary urban planning. Pre-existing landscape and artistic heritages have been only partially considered in urban projects (Bodénan and Béchet, 2023; Blanchon, 2021; Pôle ressources, villes et développement social, 2021; Hertzog, 2015). However, we believe that these are crucial to achieving the ambitions of ecology, well-being and participation of residents and users.
We will present insights from a program currently under development: Grenoble's GrandAlpe project, which involves already-recognized twentieth-century heritage landscape ensembles such as the Villeneuve de Grenoble park designed by Michel Corajoud, “remarkable contemporary architecture”) and others less recognized such as Ingrid Bourne's landscape for the Villeneuve d'Echirolles (Blanchon, 2018; Bourne, 2000), or not considered such as the open spaces of urban plans including business parks (Novarina, 2023). Our applied research involves a university research laboratory (IPRAUS), landscape and urban planning agencies (Agence AIA Territoires, Atelier Foïs) and a local authority (Grenoble Alpes Métropole) within the framework of the GrandAlpe urban project. We are experimenting with a methodology involving local actors, users and residents in the Grenoble Grandalpe project. Our hypothesis is to develop this diagnosis based on conceptual tools for interpreting the urban landscape by inhabitants: landscape entities, landscape motifs (Raymond, Luginbühl, Seguin and Cedelle 2015; Callens, 2023; Delbaere, 2017).
Our aim is to make better use of the landscaping and architectural heritage at the heart of GrandAlpe's urban renewal project, by improving its recognition, drawing on the extensive consultation process and the ambitions of the Grenoble Metropolitan Authority with regard to the greening of the city (canopy plan). Our ambition is to revive the initial conception of urban ensembles known as “grands ensembles” inherited from the second half of the twentieth century, which were in part led by landscape architects, often accompanied by artists (Blanchon, 1999) and based on a strong structuring by open spaces (understood here as undeveloped spaces where nature predominates). Approaching the project through open spaces enables us to respond to current social demand for public spaces and nature, as well as to biodiversity issues (Clergeau, 2020).
The experiment consists in developing a renewed knowledge of open spaces based on archives, field surveys and interviews, synthesized through landscape entities and landscape motifs. Graphic documents will be produced, including cartographies based on research and projects in this field (Chemetov, 2010; Khirfan, 2010; Callens, 2020). This knowledge will be incorporated into operational documents (guide plan, sector study, specification booklet) and used to co-construct the project narrative with stakeholders and residents.

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Keywords:
Keyword 1: history of landscaping
Keyword 2: urban renewal
Keyword 3: open space
Keyword 4: art
Keyword 5: landscape mediation

1.4-CO-S1 - Spatial justice through Urban landscape

1.4-CO-S1-1

Research on the Correlation Between Design Practices and Social-Emotional Benefits in Urban Industrial-Nature Landscapes

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In the post-Fordist era, urbanism has entered a new phase. With cultural globalization and lifestyle transformations, inefficient industrial wastelands and historical parks in cities have gradually faded from public attention, becoming underutilized urban voids. How should these “vague terrains” and inefficient spaces evolve? A more socially, ecologically, and economically sustainable perspective suggests that, unlike the mere preservation of historical artifacts or the homogenized commercial landscapes, the regeneration of these sites—imbued with the vivid memories of previous generations—should act as **a medium for reactivating their latent potential**, facilitating the understanding and appreciation of their material heritage and cultural significance, and **embedding them into emerging lifestyles** with multiple future possibilities through creative design strategies.

One particularly notable typology within this discourse is the **post-industrial landscape**, where material remnants bear distinct characteristics, encapsulate collective memories, and are intertwined with ideological narratives shaped by nostalgia. Furthermore, industry and nature have been intrinsically linked throughout history, making the ecologically driven revival of industrial sites not only a practical approach to environmental remediation but also a form of emotional compensation through ecological restoration [1-2]. The evolution of such landscapes provides a **micro-scale lens for observing the co-development of social-ecological systems**.

Scholarly discourse and practice in **post-industrial urban landscape regeneration** have established certain theoretical frameworks and methodologies. For instance, employing a **structuralist cognitive approach** and the **minimal intervention design** strategy has been proven to be both economically and culturally efficient.[3] Some scholars argue that the environmental "restoration" of post-industrial landscape should involve h**ealing both the external and internal worlds**[4]. Through e**mbodied design interventions**—such as the creation of experiential narratives[5] and sensorial "mind walking" experiences[6]—a **higher regenerative quality** can be achieved.

However, due to variations in local culture[7], policy frameworks[8], and practical conditions, the **localized translation** of these international theories remains a challenge. Thus, it is imperative to **continuously refine or reconstruct** the guiding theoretical framework through long-term empirical observations and practice-based feedback in diverse contexts.
This study conducts a comparative analysis of four post-industrial landscape projects—**Landschaftspark Duisburg Nord (Ruhr, Germany), Ballast Point Park (Sydney, Australia), Riverside Passage (Shanghai, China), and Shougang Park (Beijing, China)**—examining key design elements such as **site perception, creative design strategies, industrial heritage preservation approaches, adaptive reuse intensity, natural succession dynamics, and maintenance models.** By tracking the evolving patterns of site usage and their **social effects over time**, this research aims to derive the following conclusions:

1. **Creative design strategies and practical methodologies** that integrate social-ecological systems.
2. The impact of **varied design interventions** on the **continuation of industrial heritage** and the **revitalization of new public recreational cultures**.
3. **Differences in social-emotional benefits** (e.g., **recreational and social value, cultural preservation, educational significance, and scenic quality**) across different regional contexts and the underlying factors influencing these variations.

Through this analysis, the study seeks to establish an **adaptable conceptual framework** and **reference design strategies** that can accommodate **context-specific variations** in the practice of post-industrial landscape regeneration.

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Keywords:
Keyword 1: Post-industrial Landscape
Keyword 2: Industrial Nature
Keyword 3: Design Theory
Keyword 4: Process-Oriented Approach
Keyword 5: Creative Design

1.4-CO-S1-2
Contemporary public space: practices in Latin American urban landscape

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Public space is a fundamental element of urban space in Western cities, where it is impossible to imagine the city without its existence (Kostof, 1991). It is understood that public spaces are prominent elements in the composition of the urban landscape (Rosaneli, 2019). The socio-spatial relevance of their material expression constitutes an important component in the landscape vocabulary, as “it is in the DNA of urban life” (Madanipour, 2020, p. 7) and can be considered a “visible ethical compass of society” (Mitrasinovic and Mehta, 2022). The growing interest in issues related to this category reflects an increasingly urbanized and heterogeneous world. Moreover, public spaces offer the possibility of addressing the consequences of the three greatest global crises of humanity (climate emergency, social injustice, and public health). Thus, it constitutes a crucial spatial concept to understand contemporary urban life and is an essential means of promoting fairer, more inclusive, equitable, healthy, innovative, and sustainable cities. This article will discuss the results of research guided by the Lefebvrian triad (Lefèbvre, 2013), which focuses on two analytical dimensions: the symbolic, which helps understand one of the constitutive essences of public space, and the environmental, connected to issues of combating and adapting to the effects of the climate emergency. The results present a groundbreaking study on the design, management, and planning practices of public space in Latin America, with the collection, analysis, and evaluation of spatial proposals, legal and regulatory frameworks, and types of control that characterize public space. Two questions guided the investigation: How are the projects, built works, and planning processes of public spaces in Latin American countries in the 21st century? What can be considered singular, general, and particular in the practices of this context? Latin American public space shares common characteristics but it is also shaped by local political, cultural, social, and environmental particularities. Although there are several international efforts to promote public spaces (UN-HABITAT 2020a, 2020b, 2016), recognizing the necessity of public domain to achieve the “Sustainable Development Goals” (SDGs), there is still a scattered set of efforts from administrative entities in Latin America (MDU, 2009; SMDU-SP, 2016; DADEP, 2019; SEDUVI, 2022; MINVU, 2017), and no comprehensive publication on design practices. Thus, this paper presents a set of data and practices systematized in an unprecedented way and could help in the expanded understanding of the state of the art formed in the landscape of this part of the Americas. At the same time, it will reveal the specificities and similarities between this socio-spatial reality and its counterparts around the world, also highlighting the relevance of its theories and practices.

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Keywords:
Keyword 1: Public space
Keyword 2: Urban landscape
Keyword 3: Design
Keyword 4: Planning
Keyword 5: Latin America

1.4-CO-S1-3

Research on Community Public Space Renewal Strategies from the Perspective of Spatial Justice: A Case Study of Caoyuan Community, Beijing

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In the context of global urban renewal returning to human-oriented values, the balance between justice in spatial resource distribution and cultural heritage has become a key issue. As a special area carrying the core functions of the capital and the memory of city life, Beijing Old City is located in the Cao Yuan community of Beixinqiao Street in Beijing Old City, which is in the core transition area of the sacred and secular cultural axes constituted by Yonghegong (a Buddhist holy place) and Guijie (a modern commercial street). Currently, it is facing three major public spatial justice dilemmas: the conflict between the protection of historical street texture and the modernization of functional adaptation, the imbalance in the distribution of public resources across groups, and the tension between planning control and community autonomy. Based on the theoretical framework of spatial justice, this study firstly analyzes the material form and behavioral characteristics of the community's public space through the PSPL research method, and analyzes the phenomenon of spatial justice deficiency and its causes; secondly, combining with the ERG theory, we constructed a four-dimensional evaluation system of “material-environmental-communication-social equity”, and found that, through quantitative analysis, the public space justice of Cao Yuan community is as follows. Through quantitative analysis, it is found that the overall level of public space justice in Cao Yuan community is low, and the main problems are concentrated in the aspects of material justice, interaction justice and social fairness. Finally, the four strategies of balanced spatial supply and distribution, reconfiguration of spatial environment and order, activation of spatial vitality and interaction, and protection of spatial respect and rights and interests are put forward for the evaluation dimensions, and through the paths of historical spatial function superposition, compensation of facilities for disadvantaged groups, and the construction of digital participation platforms, we can promote the shift from “efficiency priority” to “fairness priority” for resource allocation. Through the overlaying of historical space functions and compensation of facilities for disadvantaged groups, and the establishment of a digital participation platform, we have shifted the allocation of resources from “prioritizing efficiency” to “prioritizing fairness”, and shifted the governance mode from unidirectional control to multi-party collaboration. This practical framework not only enhances the spatial justice of the community and the well-being of the residents, but also provides an operable model for the progressive renewal of high-density historic urban areas around the world, balancing cultural heritage and social equity.

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No references

Keywords:
Keyword 1: Spatial Justice
Keyword 2: Beijing
Keyword 3: Community Public Space
Keyword 4: Renewal Strategy
Keyword 5: Caoyuan Community

1.4-CO-S1-4

Guiding Landscapes: Landscape Architecture in Post-Apartheid South Africa the Sublime and the Pragmatic

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Since South Africa's democratisation, the country has experienced unprecedented change across all facets of society, including science, politics, and environmental concerns. This transformation extends to landscape architecture, mirroring the nation's political emancipation and the profession's evolution.

The Legacy of Apartheid and Public Space

Before 1994, landscape architectural commissions were predominantly private-sector-driven, with government investment in public spaces being both inadequate and misdirected. As a result, the value and meaning of public spaces were severely neglected. The surviving public landscapes lacked significance for the majority of South Africans, as the Apartheid regime's segregation policies prevented the formation of common spaces where communities could unite.

Common ground—essential for community identity—exists in shared public domains, including streets, plazas, neighbourhood parks, regional parks, and heritage sites. In a sustainable and thriving society, such spaces should be multi-functional, personalized, productive, safe, human-scaled, and resource- and energy-efficient. However, under Apartheid, these spaces remained underdeveloped and inaccessible to large segments of the population, particularly in townships where parks were virtually non-existent.

The Post-1994 Transformation

The political transition of 1994 ushered in a period of intense national flux, with all aspects of governance and society up for debate. One critical discourse centred on the function, meaning, and relevance of public open space in the new South Africa. This conversation highlighted the necessity of such spaces for community development, particularly in underprivileged townships and heritage projects.

The role of designed public landscapes became increasingly significant, demanding socially, culturally, and environmentally responsive solutions. New commissions sought to create spaces that embodied identity and common ground, serving commemorative, memorial, cultural, recreational, and functional purposes. Gradually, landscape architecture began to take on newfound importance, aligning with the broader societal shift toward inclusivity and transformation.

The Emergence of a Distinct African Landscape Architecture

This paper examines several public landscape projects as key milestones in the evolution of post-Colonial and post-Apartheid landscape architecture. Each project has pushed the profession beyond its historical boundaries, reinforcing its role in shaping the emancipated landscape. These developments have guided the discipline from a Western-centric model toward an African approach that prioritises identity, authenticity, and communal ownership.

By addressing social and environmental challenges, the profession has played a crucial role in defining the landscapes of a new South Africa. The emergence of these new public spaces has paralleled the political emancipation of African communities, reinforcing the ideals of an African Renaissance and fostering a collective sense of identity and belonging. Through these landscapes, South Africans continue to negotiate their place within an evolving national narrative, solidifying the role of landscape architecture in the country's transformation.

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Keywords:

Keyword 1: Landscape Architecture
Keyword 2: Post Colonial
Keyword 3: Post Apartheid
Keyword 4: African Identity
Keyword 5: South Africa

1.4-CO-S1-5

Study on the Influencing Factors in Walking Spaces of Subway Stations Areas in Cold Regions Based on Commuters' Behavioral Needs

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The subway, as a key mode of green transportation, significantly influences urban residents' daily commutes. Walking spaces of subway stations areas play a crucial role in addressing the "last mile" issue, drawing attention to the importance of enhancing walking environments. In cold regions, however, the development of these areas remains underwhelming, with generic designs failing to meet the unique demands of harsh climates and diverse commuter behavior needs. Focusing on walking spaces within cold-region subway station areas, this study applies the PSPL survey method to classify and analyze commuters' necessary, optional, and social behavioral needs, constructing an indicator system through the Delphi method, AHP, and multi-source data integration. Grey relational analyses and linear regression analyses identified key spatial factors influencing commuter behavioral needs satisfaction. Results show that necessary behavioral needs are addressed through improving pedestrian network integration, street canyon ratio, and effective sidewalk width; optional behavioral needs are met by optimizing resting and shelter facilities and pavement surface; and social behavioral needs are supported by optimizing POI density and pedestrian route directness. To better meet commuters' behavioral needs, this study proposes optimized design suggestions for walking spaces within cold-region subway station areas.

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Keywords:
Keyword 1: commuters' behavioral needs
Keyword 2: walking space
Keyword 3: subway stations area
Keyword 4: cold region
Keyword 5: Influencing factors

1.4-CO-S1-6

Hwangto-gil, Korea's Barefoot Clay Paths Guiding to Health and Nature

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In Korea, there are **clay paths** in cities, suburbs, and mountains where you can walk barefoot. These paths are called "**Hwangto-gil**," and "**Hwangto(黃土)**" refers to **yellow (and red) soil**. Hwangto-gil is a narrow and long path that can fit one or two people, is not paved, and has a surface made of clay. At the beginning or end of the path, there are facilities for storing shoes and washing feet, so anyone can use it for free at any time without any preparation.

These paths are built in open spaces or parks near urban residential areas, so they are widely used by citizens. There is also a Hwangto-gil path built in a mountain. This path was built by a businessman at his own expense for the health of his employees on a mountain outside Daejeon, a major provincial city in Korea. This path is built quite long from the entrance to the mountain to the peak. This path is open to the general public and has become a nationally famous attraction.

Hwangto-gil is a path that adds the aspect of barefoot contact with the soil to walking, and has three virtues. First, in relation to the **climate crisis**, 1) walking helps to alleviate the climate crisis by reducing vehicle use. 2) By not paving the road, it contributes to the ecological aspect. 3) It contributes to fostering citizens' pro-nature, eco-friendly, and pro-ecological tendencies through direct physical contact with the natural material, soil.

Second, in relation to **citizens' health**, 1) It stimulates the nerves and blood vessels of the soles of the feet, promoting blood circulation and strengthening muscles. 2) Walking barefoot in nature helps relieve stress and provide emotional stability. The surface of the mud is soft and smooth, which relaxes the mind, but at the same time requires mental concentration while walking, which has a meditative effect. 3) It removes toxins from the body through sweat and strengthens the immune system. Koreans have been making houses with clay since ancient times. In particular, Hwangto houses are known to treat diseases and contribute to improving health. Hwangto-gils are an open space version of Hwangto houses.

Third, the **philosophical meaning of soil** is also deep and rich in its physical properties. The ancient Greek natural philosopher Empedocles viewed water, earth/soil, fire, and air as the fundamental substances of the universe, and the modern French philosopher Gaston Bachelard inherited this and developed the material imagination of soil.

Korean houses have a floor heating system called Ondol, so Koreans spend their time barefoot indoors, so walking barefoot on the Hwangto-gil is especially familiar to Koreans. However, considering the environmental, mental and physical health, and humanistic depth of this path, I hope that this eco-friendly Hwangto-gil will spread more domestically and internationally, so I'd like to introduce it here. Furthermore, I hope to gain inspiration for various types of barefoot walking soil path designs from landscape architects from various countries.

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Keywords:
Keyword 1: Hwangto-gil
Keyword 2: soil
Keyword 3: clay path
Keyword 4: walk barefoot
Keyword 5: de-pave

1.5-BO-S1 - Ecological and social issues addressed using public consultation tools

1.5-BO-S1-1

LANDSCAPING ON THE EDGES OF BRAZIL: Proposition for an Urban Project along the Oiapoque Quay

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At COP30, the world's attention is focused on Brazil, which is suffering the greatest deforestation of all time and faces contradictions regarding its environmental management. The question that arises is how cities react to poor urban management that leads to climate change and, consequently, to the poor quality of life of their populations? To answer this question, we contextualize the situation of Oiapoque, a city located in the extreme north of Brazil bordering French Guiana, one of the French overseas territories. In northern Brazil, the wetlands, also known as ressacas, is in a constant process of maintenance in the form of revitalization by the government. The Oiapoque River, which is 360 km long, forms a natural and geopolitical border with the French Guiana, in the state of Amapá. This is an exploratory study in which we investigate the relationship between the population and different elements of the landscape, such as urban trees, the river, the Binational Bridge (the only one connecting a South American country to the European Union), mining and the prospect of future oil exploration in the municipality (expectations of receiving millions of reais in royalties). The themes of illegal mining, oil, prostitution, indigenous peoples, the environment, and immigration seem mandatory in a space of confinement, exploration and occupation of borders. This work allows us to observe different types of borders and landscapes, where a dialectic between nature and culture, natural, urban and human landscapes is present. The research focuses on some key elements: the river x the bridge x the forest x the urban trees, highlighting their symbolic aspect and defining the residents' emotional relationships with these elements. The Oiapoque River and his coast are present in the population's imagination, just as the vibrant vegetation of the Amazon rainforest is also part of this. In the urban context of the city, however, trees do not seem to have such a defined role. What is the most strongly felt affective landscape for the population of the city of Oiapoque? The river, the bridge, the forest? This research sought to understand the relationship between “affective landscape” in Amazonian cities and propose a project for the city’s waterfront with a new use for this city, providing spaces for contemplation, tourism, leisure, and preserving the natural landscape, proposing a green and tourist corridor as a tool to enhance the urban context. The objective of this work is to analyze the current problems and propose a landscape project that is viable, contemporary, and at the same time meets the demands of tourists and residents. To obtain the proposed results, a design strategy divided into four stages: field visit, diagnosis, conceptual plan, and design. The relevance of the research lies in the inclusion of landscape in a space of confinement, exploration, and occupation of frontiers, a Brazilian “wilderness.” The project points to a problem surrounding the contamination between reality and the stereotypical views constructed about this little-known Brazil, contributing to the process of historical, cultural, economic and tourist development of Oiapoque.

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Keywords:
Keyword 1: linear park
Keyword 2: urban waterfront
Keyword 3: ecological landscaping
Keyword 4: borders Oiapoque
Keyword 5: Amapá

1.5-BO-S1-2

Narrative-Driven Participatory Governance: Reconstructing Microclimatic Justice in Shanghai's Community Green Spaces

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As cities around the world face the twin crises of a democratic deficit in urban planning and rising thermal inequality, this study explores how narrative-driven participatory governance can transform micro-landscapes into arenas for social climate justice. Through an in-depth analysis of the 0.6 hectare Habitat Garden on Xinhua Road in Shanghai, regenerated through community co-design, we show how grassroots thermal storytelling can reshape technocratic climate governance while delivering measurable ecological benefits.

At the heart of this transformation is the institutionalisation of narrative infrastructure, where residents' lived experiences become the basis for spatial decision-making. Oral histories from older participants revealed underlying thermal inequalities: firstly, afternoon temperatures in south-west facing alleys were 2.8°C higher than in shaded courtyards, and secondly, Universal Thermal Climate Index (UTCI) values at exposed bus stops consistently exceeded 38°C. Through a participatory mapping workshop, these narratives were systematically translated into a design intervention that directly influenced the placement of 73% of the vegetation. Concretising these stories into shade corridors and thermal rest benches reduced localised UTCI to 31.5°C, empirically validating how community-driven placemaking can implement Fainstein's (2010) Just Cities framework at the microclimatic scale.

Through the narrative mediation described above, the governance structure of the urban community itself underwent a democratic realignment. Municipal technicians and residents negotiated through rotating climate forums governed by a tripartite code of ethics: prioritising the spatial needs of the thermally vulnerable, adapting to technological feasibility constraints, and ensuring compliance with regulatory requirements. Community-trained 'narrative facilitators' play a key role in bridging the knowledge gap, for example by translating meteorological data into local thermal knowledge, while encoding residents' mobility patterns into a GIS-based intervention matrix. This hybrid approach increased design acceptance by 41 per cent, and the pre-emptive conflict resolution mechanism reduced implementation delays by 32 per cent compared to traditional processes.

Post-intervention results suggest an unexpected synergy between narrative depth and ecological performance. A self-organised maintenance consortium, empowered by a blockchain management protocol, achieved 89 per cent plant survival during the heatwave, 22 percentage points higher than the city-managed garden. The site's evolution into a thermal commons is embodied in daily rituals in which shade allocation prioritises elderly and childcare workers, countering Hardin's (1968) narrative of tragedy by embodying climate care practices.

The theoretical contribution advances two key paradigms: 1) narrative epistemology positions hot storytelling as a form of situated knowledge production that transforms residents from policy recipients to diagnosticians; and 2) participatory materialisation redefines co-design as an iterative process in which community narratives actually reconfigure community microclimates. In practice, this research develops replicable protocols for cities seeking to democratise climate adaptation, from narrative justice assessments that ensure equity in the translation of stories into space, to hybrid governance models that balance technical rigour with grassroots ecological wisdom. While rooted in the socio-political context of Shanghai, the findings of this study can provide replicable strategies for cities around the world in the tension between participatory legitimacy and climate urgency, demonstrating that socially-driven micro-climate governance can flourish beyond Western democratic norms.

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Keywords:
Keyword 1: narrative governance
Keyword 2: thermal commons
Keyword 3: participatory materialization
Keyword 4: microclimate justice
Keyword 5: situated knowledge

1.5-BO-S1-3

Promoting landscape quality for the well-being of populations. From knowledge to implementation of the “Well-being and landscapes in Brittany” survey

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In line with regulations, European and national commitments and local landscape issues, local authorities are responsible for setting **landscape quality objectives in their urban planning** documents, in line with **the aspirations of inhabitants**. Yet these “everyday” landscapes are valued differently by everyone.
Preserving quality landscapes for the individual and social well-being of all requires considering these differences in perception and developing solutions that reconcile the various issues with a view to social and territorial equity.

The aim of **France's first regional survey on everyday landscapes** and their impact on inhabitants is to help local decision-makers understand how people feel and take action accordingly. Entitled “Well-being and landscapes in Brittany”, this survey was carried out by the Brittany Environment Observatory and its partners. It answers three questions: What are the links between well-being and landscape? What is it that makes landscapes qualitative today? What are the challenges for improving the quality of the landscapes of tomorrow?

After an introduction to the regulatory and political context that led to the launch of the survey, the first part explores **the results in terms of landscape knowledge**. For example, the results concerning landscapes linked to homes provide us with information **on socio-spatial inequalities**. Appreciation of well-being shows major differences according to age and living situation.
Often wrongly judged as a non-operational concept because it is “too” subjective, the landscape is nevertheless a gateway **to defining shared values**: 75% of inhabitants believe that the priority action is to maintain the bocage. The bocage is the symbol of a conquest of a desirable rural landscape: it refers to the regional identity through its farming history and its ecological multifunctionality. As for the urban environment, it is seen as a laboratory for a variety of actions to be implemented in response to environmental issues.
The results of the survey also show where **the emotional relationship is weakest**, and that's in workplace landscapes considered above all as functional and evoking a variety of nuisances. These are landscapes that need to be investigated to improve well-being. To get to work, 78% of the people surveyed pay attention to landscapes on a daily basis. Almost half have daily tactics for improving their travel route in terms of landscape quality.
The importance of landscape quality when travelling, the importance of plants and animals, and the invisibility of energy landscapes are all results that feed into the ways in which landscape architects build territories.

The second part outlines **the operational impact** in Brittany. The results are disseminated **in sectoral policies** (energy, climate, biodiversity). Local authorities are using the data as part of **their planning documents**. Finally, because the first result of the survey is the enthusiasm of citizens for the landscape issue, the results of the survey are transcribed **into plays for distribution to inhabitants**.

The talk will conclude with a discussion of the ongoing “**health and landscape**” project, echoing the forthcoming publication of the Council of Europe's report on the subject.

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Keywords:
Keyword 1: Public policy
Keyword 2: survey
Keyword 3: inhabitants
Keyword 4: health
Keyword 5: Action

1.5-BO-S1-4

Revitalizing Urban Village Public Spaces: Fostering Community Engagement and Environmental Awareness through Participatory Micro-Interventions

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Urban villages, unique spatial forms amid rapid urbanization, often suffer from inadequate infrastructure and a lack of recreational and communal spaces, negatively impacting residents' daily experiences. This issue is particularly acute in high-density cities like Shenzhen, where safe and inclusive public spaces for families are scarce, and environmental concerns are often overlooked. Consequently, improving public space quality in urban villages and fostering residents' environmental awareness have become critical research areas in resource-constrained settings.

This study explores the potential of small-scale, cost-effective spatial interventions to enhance public space quality and community environmental awareness. Six participatory micro-intervention activities focused on children's installations were conducted in Shekou Weizai Urban Village, Shenzhen, employing an Action Research approach that integrates on-site observations, public opinion surveys, and interviews. The site, characterized by limited social infrastructure, provided a setting for temporary installations and interactive initiatives. Resident feedback was collected to assess the impact on public space utilization, social engagement, and environmental awareness.

Findings indicate that these interventions significantly increased public space usage and social interactions, fostering a stronger sense of community. Observations and interviews revealed that the installations not only engaged children but also facilitated interactions among family members and neighbors, strengthening social cohesion. Additionally, residents demonstrated greater concern for public space quality and expressed aspirations for long-term improvements. The study highlights how flexible, shared spaces can be established through agile, temporary interventions in resource-limited urban villages.

This research underscores the viability of community-participatory micro-updates for public space enhancement in urban villages, offering insights for policymakers, designers, and community groups seeking cost-effective urban revitalization strategies. It emphasizes the role of landscape designers as both spatial strategists and community facilitators, advocating for adaptable, modular, and eco-friendly design solutions. By integrating ecological considerations, residents' preferences, and socio-cultural contexts, landscape designers can create more inclusive and resilient public spaces. Moreover, fostering community participation in the design and maintenance process can instill a stronger sense of ownership, ensuring the long-term sustainability of these spaces.

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Keywords:
Keyword 1: Urban Villages
Keyword 2: Public Space Revitalization
Keyword 3: Participatory Micro-Interventions
Keyword 4: Community Engagement
Keyword 5: Environmental Awareness

1.5-BO-S1-5

Reconstruction of local subjectivity in rural tourism: Sustainable development and community embedding of Nuanquan Ancient Town

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China's rural tourism industry is experiencing rapid growth under the national rural revitalization strategy (Li et al., 2024; Fang et al., 2025). However, many historic towns are witnessing the large-scale outmigration of indigenous residents, which threatens local cultural continuity and challenges the long-term sustainability of these heritage sites (Gao et al., 2023; Geng et al., 2024). Focusing on Nuanquan Ancient Town in Hebei, with a 700-year history and rich cultural traditions. Although many indigenous residents remain, tourism-led resident relocation, insufficient community participation, and cultural marginalization have reduced the town's sustainability. This study investigates the underlying reasons why indigenous people struggle to integrate into new economic and social networks, and explores governance strategies to ensure their participation and long-term residency. The core issue examined is how to create conditions that encourage indigenous people to stay and contribute to tourism-driven local development.

This study adopts a semi-structured interview method , conducting 30 in-depth interviews from November 2024 to January 2025 with key stakeholders, including 10 indigenous residents, 5 investment developers, 8 tourists, 3 government administrative departments and 4 cultural protection experts. The interviews focus on four key areas: (1) the evolving role of indigenous people in tourism development. (2) the impact of tourism on local social networks and community identity (Wang et al., 2024). (3) the effectiveness of existing local governance structures in supporting the socio-economic inclusion. (4) policy and practical intervention to reintegrate indigenous people into local economic and social networks (Sánchez-Soriano et al., 2024).

The results indicate that the outmigration of indigenous people is not driven solely by economic factor, but by the gradual deconstruction of local social network during tourism development. First, economic benefits are concentrated in the hands of external investment and local governments, with indigenous people excluded from key segments of the tourism industrial chain, limitng their financial incentives to remain. Second, governance structures have become increasingly technocratic, the decision-making mechanism of tourism development tends to be standardized, and the lack of respect and tolerance for local culture and indigenous lifestyles leads to limited living space for indigenous people. The community governance system is inadequate, and the response to the views of indigenous people and the needs of local communities is not timely and adequate. Third, tourism has restructured local social capital, replacing traditional reciprocal network with market-oriented relationships. As a result, indigenous people face weakened social support systems, increasing the likelihood of outmigration.

This study shifts the discourse on rural tourism sustainability from a purely economic perspective to one that emphasizes the interaction between local social capital and economic-social embedment. Sustainable development in historic towns requires participatory governance mechanisms that enable indigenous people to gain meaningful economic roles in the tourism sector and rebuild local social capital networks. By fostering community-driven decision-making, inclusive policy frameworks, and locally embedded tourism models, the study offers new perspectives and pathways for global historic towns facing similar challenges of sustainability and indigenous socio-economic integration.

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Keywords:
Keyword 1: Rural tourism
Keyword 2: Historic town
Keyword 3: Cultural Heritage Conservation
Keyword 4: Sustainable Development
Keyword 5: Community Embedding

1.5-BO-S1-6

Detroit Regenerative Futures: Revive, Thrive, and Level Up – A Gamification Strategy for Vacant Land Activation in Detroit

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Detroit's extensive vacant land—more than 4,000 acres citywide—presents both a challenge and extraordinary opportunity to advance ecological resilience, social equity, and economic revitalization. In collaboration with the City of Detroit Office of Sustainability, this University of Michigan School for Environment and Sustainability Master's Capstone Project supports the Detroit Regenerative Futures pilot: a multi-phase initiative designed to activate 100 acres of vacant land through sustainable, community-led design.

Our project develops a modular design framework and outreach toolkit that empowers Detroit residents, community organizations, and nonprofits to reimagine and reclaim vacant land. The toolkit combines gamified and interactive formats—such as a physical "punch-out" design guidebook and an online drag-and-drop interface—with data-driven tools for calculating ecological and economic benefits. The system is designed to be accessible, scalable, and adaptable across parcel, block, and neighborhood levels.

This project is organized around three key phases: (1) investigative research and community engagement, (2) design and development, and (3) analysis and reporting. Through GIS analysis, precedent review, and stakeholder collaboration, the first phase identifies three target neighborhoods with high vacancy and unmet revitalization needs. In the second phase, design interventions tailored to each neighborhood are transformed into modular components, supported by an immersive Augmented Reality experience to promote public engagement and participatory visioning. The third phase includes the development of benefit calculators and policy-relevant data to inform decision-making by residents and city officials.

Workforce development is a critical pillar of this initiative. In support of the City's goal to prepare the next generation of green career professionals, the toolkit and associated implementation strategies are aligned with emerging opportunities in sustainable land management, urban agriculture, green infrastructure, and ecological restoration. Our project includes a green workforce strategy that maps toolkit modules to specific job categories, skill sets, and existing training pipelines—helping residents not only envision their neighborhoods' futures but also see themselves as agents of that transformation. This supports long-term economic empowerment while advancing equitable climate resilience.

Detroit Regenerative Futures aligns with the City's broader climate action goals: clean energy transition, sustainable mobility, waste reduction, energy efficiency, prioritization of vulnerable residents, community engagement, and data-driven planning. By centering community voices and offering practical, creative tools for land activation, this project builds capacity for self-determination and neighborhood stewardship.

Ultimately, this capstone project offers a replicable model for participatory planning, vacant land activation, and workforce integration. It repositions Detroit's vacant land as a regenerative resource and invites new narratives for post-industrial cities worldwide—where equitable climate adaptation, local agency, and green job creation go hand-in-hand.

References:
This project is in-progress as a Master's Capstone. Team members Jessica Soulliere, Shea Vatalaro, Anya Nona, Marsalis Jolley and Jwen-Zijua Xiao

Keywords:
Keyword 1: Community-Led Design
Keyword 2: Vacant Land Activation
Keyword 3: Urban Regeneration
Keyword 4: Climate Resilience
Keyword 5: Green Workforce Development

1.5-BO-S1-7

Master Plan and Heritage Tree Management at Chulalongkorn University: A Prototype for Urban Tree Governance

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Chulalongkorn University, ranked third in Thailand in the 2019 UI Green Metric World University Ranking, exemplifies urban ecological sustainability. With 29.55% of its area covered by tree canopy—surpassing Bangkok's average of 20.43%—its trees hold historical, cultural, and environmental significance. However, climate change and urban environmental challenges threaten tree health and longevity, evidenced by 27 tree failures in the past three years. In response, the university has initiated a prototype urban tree management project focusing on three core objectives: ensuring a safe and sustainable environment for people and trees, establishing a governance model for urban tree management, and fostering stakeholder participation.

The Master Plan and Heritage Tree Management Project, covering 92 hectares, aims to develop a strategic framework for tree conservation and planting. This research examines master planning methodologies, evaluates historical, social, and environmental factors, and analyzes ecological conditions to anticipate climate shifts. It also establishes criteria for selecting tree species for new and replacement plantings to maintain ecological balance and sustainability.
The project employs a structured methodology, beginning with a review of urban forestry and university tree master plans. A systematic analysis of Chulalongkorn University's existing master plans ensures alignment with broader campus development goals. Physical site surveys assess key variables, including tree inventories, historical significance, soil properties, shade patterns, landscape typologies, and hydrological conditions. Stakeholder engagement is integral, involving students, faculty, administrators, and operations personnel through participatory workshops.
Findings emphasize the need for an integrated governance model, combining top-down policy support with grassroots engagement. Effective tree management must incorporate landscape architecture, planning, and engineering solutions for both above- and below-ground infrastructure. Key challenges include a shortage of trained arborists, budget constraints, and procurement delays. Survey results indicate 73.8% of stakeholders support increasing tree canopy coverage, especially along high-traffic pedestrian routes. The community also calls for enhanced wellness spaces, such as meditation areas, shaded workspaces, and edible landscapes.
Aligned with the university's "Global Thai University" vision, this initiative aspires to position Chulalongkorn as a model urban forest. It sets goals to increase tree canopy cover to 50% within 25 years and eliminate tree-related safety hazards. By integrating interdisciplinary knowledge, technology, and community engagement, this project advances sustainable urban forestry, providing insights adaptable to academic and metropolitan landscapes worldwide.

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Keywords:
Keyword 1: Campus tree plan
Keyword 2: Urban forest
Keyword 3: urban tree management
Keyword 4: canopy cover
Keyword 5: participatory design

1.5-BO-S1-8

Landscape Architecture Criticism : a way to make the projects going on...

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One of the most singular aspect of the Landscape Architecture Project is that it needs a long time to be achieved. Not only because it is made of living materials, and especially plants that need time to grow, but also because the way people and societies appropriate public spaces is a long time action. But strangely, most of the Landscape Architecture offices show their project as they are some months. after their building, and very rarely many years after. Art the same time, the Landscape Architecture Institutions ask since several decades for a reform of the designers' contracts in order to integrate a long time mission after the building site, but they aren't successful.
The question that we would like to ask here is : how could Landscape Architecture create such new missions although they cannot be integrated in the professional contracts? And the answer we'll propose and illustrate is that this new instance could (and should) be the critical one. Indeed, critic is a way of considering projects not from their designers'point of view, but from the users' one, in the ordinary time of their every day life. Because it shows and analyse projects as they become several years or decades after their building, LA critic could become a way of make them going on by exploiting their social and biological dynamics, revealed by analysis.
This communication will be based own the works led since 2018 by a French team of LA critics, all teachers and researchers in the different French LA schools. This "Critic and Landscape project Network" has experimented some aspects of what could be a coherent and useful LA critic. Need, criticizing Landscape project can't be like criticizing a movie or a painting : public spaces involve specific problems that must be faced and studied. We will show some aspects of this work and hope that it will bring a lot of questions answered suggestions from our colleagues.

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Keywords:
Keyword 1: Landscape Architecture Project
Keyword 2: Public Space
Keyword 3: Time
Keyword 4: Critic
Keyword 5: Design contracts

1.5-BO-S2 - Taking communities into account in public consultation

1.5-BO-S2-1

[TRANSVERSAL CARE] Networking of community spaces for active and healthy aging in Lima, Perú

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The false neutrality of urban design due to deficiencies in urban policies and progressive absence of the community have resulted in a loss of agency's population that inhabits the space, making it impossible to develop dignified quality of life related to healthy and active aging. This results in a lack of sustainable tools, opting for autonomous solutions to survive.
While in San Juan de Lurigancho, a district with the largest population in Metropolitan Lima, has highlighted the deficient quality of dignified life in the population, emphasizing on elderly people considered vulnerable. Without understanding there is a profile's complexity about this group. However, invisible traces are reflected when we talk about autonomous-economic alternatives from their daily experiences showing their agency's capacity from activities that looks for neighborhood's care. For all that, it is necessary to redefine neighborhoods by providing agency to the elderly and applying a concept of intersectional care from the urban space to the population. Thus, the network of community care spaces is an alternative urban model that responds swiftly to the immediate needs of elderly population, from three dimensions: physical from the rehabilitation of slopes of inefficient accessibility in one hectare of the current garden within the walls of the school through a sequence of safe ramps and spaces within the new neighborhood landscape and by eliminating previous barriers, an ecological scenario is created; mental, through the development of calm scenarios towards active-social recreation, under the implementation of flexible modules, as the first seed stage, respond and allow their appropriation of public space. For all this, the care network is managed through organizational relationship with the community and support from institutions. Therefore, the TRANSVERSAL CARE project constitutes a critique of the city from the lack of agency of its population and promoting alternatives for a dignified quality of life from collective participation together with an architecture designed from them and for them.

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Keywords:
Keyword 1: healing landscape
Keyword 2: elderly and city
Keyword 3: inclusive urban planning
Keyword 4: community care

1.5-BO-S2-2

Research on the Renewal Design of Public Space in Xingfeng Street, Beijing from the Perspective of Age friendly Perspective

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China's urbanization has reached a new stage of high-quality renewal. As the capital of China, the renovation of old urban areas in Beijing is one of the core tasks for the development and construction of the capital city. Xingfeng Street is located in the southern part of Beijing's Daxing District. Xingfeng Street is the core urban area of Daxing District and is a typical unit based community. In the 1980s, there were many residential areas built with the investment of factories and enterprises. The aging trend of Xingfeng Street community is obvious, as most of the factories and enterprises in the 1980s have stopped production or moved to more suburban areas of the city for production. The retired residents generally have lower incomes, and the funding for community renovation mainly comes from government funds. Improving the quality of public space in the community has become a key issue for urban renewal in Daxing District. The residential population of the community includes indigenous people, migrant workers, and population from the core area of the capital. The public space of the community includes the entrance and exit of the community courtyard, the green square inside the community, and the original bicycle parking area. These areas are usually used for the entry and exit, parking, and daily leisure of the elderly and children. How to update and transform them to ensure safety, usability, adaptation to the natural environment of the region, and inheritance of regional culture is the key problem to be solved in the design of the community's public space renewal. Public participation is an important source of basis for the design of community public spaces. Due to the complex composition of community members and the diverse age composition of families, we conducted public participation through methods such as visits, surveys, questionnaires, and stakeholder discussions. A total of 286 visits were conducted, covering different ages, occupations, and community space distribution, providing important support for the design of community public spaces. After the renovation and transformation, the efficiency and effectiveness of community residents' space utilization have been significantly improved. The questionnaire shows that residents' satisfaction has reached 86%, providing a reference implementation path for the design of old community renewal.

References:
No references

Keywords:
Keyword 1: Community renewal design
Keyword 2: age friendly
Keyword 3: Beijing
Keyword 4: public space

1.5-BO-S2-3

Engaging Young Voice: Co-Creating Recovery Spaces Through A Participatory Approach to Child-Friendly Green Space in Post Disaster-Context

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The study investigates the design of child-friendly school environment in post-disaster context focusing on the role of green spaces in supporting the recovery of children affected by natural disasters in Indonesia. Recognizing the vulnerability of children in aftermath of natural disasters, the research highlights the potential of green spaces in facilitating their recovery. The research employs a comprehensive methodology, including creatives workshops, observatuions, interviews, and focus group discussions primarly enging children as active participants to capture their unique perspectives and needs. Adults, inculding parents, teachers, and stakholders supllement this data by providing the insight into policy frameworks that could facilitate the integration of these environments into broader disaster recovery strategies. Through participatory activities such as drawing, mapping, and writing, children articultate their visions of and ideal school green space, providing qualitative data that reflect their needs and perspective. These creative expression reveal a strong desire for spaces that promote happiness and social interaction, underscoring the intrinsic link between joy and recovery. The finding indicate that children prioritize elements like playgrounds, plants and areas for social interation between pupils, which contribute a supportive and nurturing school environment. The study also addresses the role of stakeholders in operationalizing these child-centrict spaces. By involving children in the design process, the research advocates for empathetic strategies that prioritize their emotional and physical recovery. The involvement of adults complements this approach by ensuring that the design guidliines align with existing policy frameworks and can be effectively integrated into disaster recovery strategies. The strategic frameworks developed from this research aims to create landscape design guidelines that are contextually responsive and prioritize children's needs. By incorporating thee deisgn strategies, the study advocates for environments that supports children recovery. Ultimately, the goal is to develop child-friendly landscape that resonate with children experiences and promote their well-being in the aftermath of natural calamities. This research contributes to filling teh gap in current practices by providing actionable insights for stakeholders involved in post-disaster recovery efforts.

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Keywords:

Keyword 1: Participatory Design
Keyword 2: Child-friendly Landscapes
Keyword 3: Post-disaster Recovery
Keyword 4: Creative Workshops
Keyword 5: Children

1.5-BO-S2-5

Contested landscapes, migratory movements and the everyday actions of care and repair

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Global catastrophic events have posed significant challenges to numerous regions. The repercussions of global unrest on our physical and social structures, coupled with the deterioration of cultural identity, conflicts, and military occupations, have initiated crises that have led to various forms of contested landscapes. These incidents, which alter geopolitical dynamics, generate significant yet frequently overlooked consequences for community well-being and the spatial organization of our environments. Conflicts, violence, and crises occurring at the borders of Europe have led to an increase in the population of migrants and displaced persons. The Mediterranean region has historically served as a place for the exchange of goods and cultures and witnessed a persistent movement of populations across its diverse regions. Migrants' continued mobility across the Bassin, despite the risks and barriers, recalls the sea's long history of movement and the ways different actors have projected their power across it to control mobility throughout history (Braudel 1995a; 1995b). However, In recent decades, the rise in irregular migration has drawn attention to the increasingly dangerous routes used and the alarming number of migrant fatalities (MHUB, 2015). Individuals seeking refuge in Europe via maritime routes pass through various places of transit and temporalities before, if fortunate, being assimilated into urban environments. These spaces of temporary stasis – makeshift camps, parks, streets, and detention centres – significantly influence urban landscapes characterised by elevated levels of socioeconomic vulnerability and high exposure to natural and anthropogenic hazards. The transformative impact of mass migratory fluxes, often stemming from improvisation rather than thorough planning measures, is altering places, localities, and cities, creating contested landscapes that necessitate more focused urban research. This prompts a dialogue on topics such as rights, justice, equity and democratic governance.

The paper examines contested territories in the Mediterranean region, offering reflections on contemporary conflicts and violence in Lebanon and Palestine that inflict considerable damage and lead to the deterritorialisation of individuals and cultures. It emphasises the everyday creative social forces directed at reconstructing fractured relationships and damaged ecosystems within communities affected by internal displacement and migration movement. This endeavour is facilitated through a clear acknowledgement of the capacities for agency and practices that encompass not only humans but also animals, objects, and various materials. This complex interrelationship is referred to as ecologies of repair.

Within the wider framework of deterritorialisation and resettlement, reparation is understood as continuous initiatives, practices, and methods designed to address perceived or experienced injustices. It is against this backdrop of care that life expresses itself with creative vigor, even amidst destruction and ecological decline.When solutions lack sustainability and temporariness is a fundamental aspect, repairs are seen as both fleeting and dependent, incorporating spatial and material efforts that bypass expansive theories and conventional standards.

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Keywords:
Keyword 1: contested landscapes
Keyword 2: migration
Keyword 3: everyday actions
Keyword 4: care
Keyword 5: repair

1.5-BO-S2-6

Co-Design Community Resilience Alliance: a case in Harrisburg, Pennsylvania, USA

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Co-Design is a participatory approach that actively involves diverse stakeholders, including end-users, experts, and marginalized communities, in the research process to ensure equity, inclusiveness, and justice to collaboratively create research inquiries and solutions. Unlike traditional top-down design methods, Co-Design fosters collaboration, shared decision-making, and mutual learning, making it a people-centered and place-based approach. Co-Design aligns with the principles of diversity, equity, and inclusion which are interconnected with addressing the four dimensions of justice stated above.
This study applies a *Co-Design Research Framework* emphasizing the importance of a co-design approach that meaningfully involves community members and a transdisciplinary team to co-produce knowledge and applied solutions. This framework aims to scale and adapt co-design methodologies to ensure that research inquiries align with community needs, foster local knowledge, and produce actionable nature-based solutions. The co-design process is structured to embed community voices in shaping research questions, methodologies, and outcomes, thereby addressing equity and ensuring that strategies do not exacerbate existing disparities by integrating community health goals with resilience strategies.
The study area of Harrisburg, Pennsylvania, USA, includes largely historically-redlined communities and are identified as highly socially vulnerable and under-resourced today, especially when facing climate change-associated hazards such as extreme floods and heat. Consequently, the communities bear the inequitable burdens of environmental quality, disasters, health, and environmental injustice outcomes.
To implement the framework, a workshop is conducted that aims to bring together community representatives, policymakers, researchers, and organizations to co-design sustainable actions that leverage local assets and partnerships for lasting impact. The primary goal of this workshop is to understand Harrisburg community needs in order to co-develop action items to establish a Community Resilience Alliance, a network dedicated to sustaining climate action in communities. By strengthening partnerships between Penn State, local communities, government agencies, and nonprofits, we aim to develop long-term strategies that harness community power through a coalition that leverages the network of communities to support one another and address climate challenges and social inequities. A key focus will be identifying and leveraging existing community assets to build resilience, economic sustainability, and adaptive capacity in the face of funding and political uncertainties.
This research advocates for sustainable living environments and an enhanced quality of life. The outcomes are reciprocal to the community and generate positive impacts. The *Co-Design Research Framework* critically examines how community-based research can be conducted to co-create knowledge and solutions amongst communities, stakeholders, scientists, engineers, and designers, to foster resilient, just, and healthy communities in the face of climate change.

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Keywords:
Keyword 1: Co-Design Research
Keyword 2: Community Resilience
Keyword 3: Climate Justice
Keyword 4: Community Planning
Keyword 5: Advocacy

1.5-BO-S2-7

Climbing the ladder of citizen participation, the partnership between designers and residents as a new project paradigm

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Public landscaping seems likely to remain the domain of experts. Despite a certain enthusiasm, participatory urbanism struggles to convince in its modern form. The public is suspicious and disengaged, and the obtained results are scarce and rarely used. Planning experts themselves struggle to articulate project and participatory processes.

Far from the counterpower defended by the 1960s' urban social movement, participatory urbanism has become institutionalized and a tool for legitimizing the established power. Struggles to protect and develop democratic participatory spaces have been gradually monopolized and channeled by planning professionals.

Arnstein compared the citizen participation degrees to an eight-level scale divided into three categories: Non-participant, Tokenism, and Citizen Power.

Urban designers expect the consultation to provide solutions or validate the project, dismissing divergent or belligerent statements. Thus, participatory urban planning does not seem to deliver on its promise of collaboration between residents and the designers of their living space.

This leads to a doctrine of "doing for" rather than "doing with," totally opposed to modern democratic aspirations. And yet, people represent an extraordinary database, both quantitative (the sheer sample size) and qualitative (diversity of lived experiences, social classes, and ways of experiencing the same site). Their site experience is particularly valuable given the project management's pace over a relatively short period.

What legitimacy do we have in deciding, among experts, what the future entails for a living space for decades to come, without ever questioning its inhabitants, those directly affected? Many projects are challenged by their users, not only in the “how” but also in the “why”. Many more fail to grasp the usage's challenges in all their dimensions, particularly human and social, limiting themselves to purely technical considerations.

To restore participatory urbanism's ambition, we must imagine new institutions and logic leading regional planning. To create a society that places the partnership between designers and residents at the center of the project approach, we must identify the landscape architect's role.

We're advocating for a participatory urbanism based on the "democracy of the most concerned" model. Concretely, all stages of the urban project, particularly the planning process, would be carried out for, with, and under the control of the inhabitants impacted by the design or political issues under discussion. These users must be mobilized and trained in advance so that their opinions are enlightened by a global understanding of the issues, enriched by the contributions of their experiences.

In this study, we will try to characterize a new model of negotiated coordination, allowing all voices to express themselves and all visions to be confronted on a common basis, an urbanism of compromise.

Such a paradigm shift raises many questions, but there are plenty of benefits: strengthening the legitimacy of political decisions, improving the project's quality, fostering civic engagement and social cohesion... Not to mention the emergence of streets and neighborhoods defined in their atmosphere by the community from which they sprang. What co-designer could be more committed and relevant than the one who will inhabit the project for the next 30 years?

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Keywords:
Keyword 1: Urban counterpower
Keyword 2: Participatory urbanism
Keyword 3: Negotiated coordination
Keyword 4: Democracy
Keyword 5: Popular empowerement

1.5-BO-S2-8
Design spaces for new stories through a culture of collaboration

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Community-initiated landscape architectural projects and developments are multifaceted endeavors made more complex by the fact that many communities often find it difficult to secure initial funding, develop comprehensive stakeholder groups, and align diverse programmatic needs with actionable design feedback. This panel will explore the 'build-up' process of supporting a community-rooted vision through the design process, identifying and securing financing, and sustaining community support through extended design and implementation phases.

The panel will discuss this "build-up" or "community-led" design methodology through the lens of two in-progress St. Louis-based (USA) community-led neighborhood park projects — Love Bank Park in south St. Louis and Peace Park in north St. Louis. The panelists, who represent the steward organizations, supporting institutions, and the design team, will speak to the uniquely iterative community engagement processes and methods that were utilized to develop park visions and phased construction projects.

Love Bank Park, formerly an empty lot, was partially activated by community members who placed basketball hoops there in 2015, instantly creating an active community destination.
Building on this grass-roots momentum, Love Bank Park underwent a nearly decade-long community-led design process. Opening to the public in 2024, the park features an open plaza space with seating, chess tables, shade trees and planted areas provides a welcoming place for neighbors and visitors to gather and relax - or during community festivals, provides a place for concerts, dances and other activities. Designed with permeable pavers, permeable asphalt, rain-gardens and planted areas, the entire park site is a community programming asset but also a demonstration landscape for sustainable design and sustainable storm-water management.

Located in the economically depressed College Hill neighborhood of North St. Louis, Peace Park consists of multiple adjacent lots that sit along the eastern edge of a major roundabout which hosts one of the city's most recognized landmarks at its center, the Grand Avenue Water Tower – the oldest water tower in the city and the world's largest Corinthian column. The overgrown site had been informally used as a community gathering point and donation site. Working together to enact an extensive community engagement and design program, a collaborative coalition of neighborhood residents, 4 Municipal Departments, 4 regional or local nonprofits, a cohort of faculty from a local university, and the Design Team came together to develop the park vision.

Both parks have a long-view in mind, so while the literal physical "build-up" symbolizes one finish line, the maintenance and on-going ownership strategies for the space are key to the longevity of effective placemaking and continued trust amongst the community and partners involved. To that end the panel will discuss how the two projects have sourced capital to build and maintain the spaces, the land ownership models created to ensure neighborhood access, and the coalition-based institutional agreements that make it all possible.

References:
2024
Merit Award / AIA Central States
Citation Award / AIA Central States
Honor Award / AIA St. Louis
Honor Award / AIA St. Louis
Distinguished Award / AIA St. Louis
Distinguished Award / AIA St. Louis
Preserve Missouri Award

2023
Metamorphosis Award (1st Place) / Retrofit Magazine
Award of Excellence / ASLA Central States
Merit Award / ASLA Central States
Regional & Urban Planning Award / AIA National
Award of Excellence / ASLA St. Louis

Honor Award / ASLA St. Louis
Merit Award / ASLA St. Louis

2022
Preserve Missouri Award
Most Enhanced Award / Landmarks Association

2021
Merit Award / ASLA Central States
Award of Excellence / ASLA St. Louis
Honor Award / ASLA St. Louis
Honor Award / AIA St. Louis
Merit Award / AIA St. Louis

2020
Honor Award for Excellence / SCUP

2019
Honor Award / ASLA St. Louis

2017
Honor Award / ASLA St. Louis
Housing Award / AIA National

2015
Merit Award / ASLA St. Louis

Keywords:
Keyword 1: Community engagement
Keyword 2: Participatory Design
Keyword 3: Social Architecture
Keyword 4: Engaged Practice
Keyword 5: Design Process

1.5-BO-S2-4

A Feminist Standpoint in Game-based Community Landscape Planning Toolkit Development: A Case Study for Artex Compound in Malabon City, Philippines

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Women's perspectives and narratives in community development are critical in assessing the needs of a community, offering a better understanding of the lived experiences of marginalized groups. To improve the decision-making process and integrate women's lived experiences in informal community development, the use of feminist standpoint theory and game theory in developing a community landscape planning toolkit is imperative. The study utilizes key informant interviews to gather data on the lived experiences of women, which is later integrated into the development of a community landscape planning toolkit. Using game theory, the developed toolkit allows players/stakeholders to go through multiple games until they reach the Nash Equilibrium, which will provide a higher payoff for the majority of the players. This can be achieved by laying out cards that consist of the same strategy and decision from the majority of the players after the provision of information sets. The game output serves as the basis for planners in designing the development of the informal communities. Expert consultations and sample community testing are conducted to further refine the toolkit before a project case study at Artex Compound, a marginalized low-lying community of Malabon City in the Philippines that has been living with water since 2004 and is dubbed the "Venice of the Philippines". The case study assesses the toolkit through a focus group discussion with the stakeholders of Artex Compound, helping the community visualize a community landscape development plan, while also providing recommendations for future improvements of the toolkit. Overall, the study provides a basis for how community planning toolkits can be developed from a feminist standpoint with integration of game theory, providing recommendations on how to further develop and strengthen community planning toolkits, especially for informal communities.

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Keywords:
Keyword 1: participatory planning
Keyword 2: women's studies
Keyword 3: community landscape planning,
Keyword 4: game theory

1.5-CO-S1 - Ecological issues addressed using public consultation tools

1.5-CO-S1-1
The Likoto Project: Guiding European cities by their Infrascape

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The Likoto project is delt since 2011 by a scientific team including landscape architects, geographers, ecologists, anthropologists as well as engineers, architectes, reporters and photographers. It aims to create a dense green grid by using the aforestations, wastelands and other abandoned sites that can be observed along the great transport infrastructures network. Indeed, those unconsidered environments have often become important refuges for the regional flora and the urban biodiversity, as well as for social practices forbidden into the cities (like dwelling, camping, prostitution...) or not (walks, running, cycling...). They introduce large strips of woods and meadows into the cities and are often considered by their inhabitants as a complete part of their usual landscape. They are also an important ressource for wood extraction in order to produce energy but also wood for construction.
By mapping such unseen green grids and by increasing their ecological, urban and landscape potentialities, the Likoto project experiment a new way of governing the great ecological infrastructures required by the climate change. Instead of trying (without success most of the time) to create new green infrastructures by planning them, we propose to transform the effective native green grids that have spontaneously grown where nobody could expect them! Strangely, the great infrastructures, which have often destroy natural areas and important cultural landscape have also create the condition of a new kind of "infrascape" that we must be able to think and design as an important aspect of the ecological transformation.

From 2011 to 2024, this project has concerned the territory of Likoto (Eurometropolis Lille-Kortrijk-Tournai) between France and Belgium. This laboratory has help to confirm most of the team's intuitions. It has also permit to organize a set of building sites to experiment new ways of maintenance for those environments. It has shown that a multifunctional maintenance of those environments could bring benefits to the infrastructures authorities, although at this time they have to pay for it.

The message that we would like to address during the IFLA congress is that this approach of landscape governance could be enlarged at a much higher scale. A recent research travel through Europe has permit to present this approach in many Landscape architecture schools and to understand how each cultural area in Europe develop its own way of living with its infrascape. This complexity is also an occasion to improve the Likoto project. On this basis, we think that this great and very simple landscape project could inspire the idea of an European Spontaneous Green Grid, whose ways of governance are to be discussed.

References:
No references

Keywords:
Keyword 1: Infrastructures
Keyword 2: green grid
Keyword 3: Ecological planning
Keyword 4: Europe
Keyword 5: Landscape

1.5-CO-S1-2

Leading Landscape Design with the Forest Edge Community Participation : An Ecological-Social Path to Sustainable Cities

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In the face of ecological fragmentation in the process of global urbanisation, this study proposes a participatory landscape design pathway that takes forest-adjacent communities as the main body of practice, and explores the ecological-social resilience synergistic development of sustainable urban transformation. Based on the practical experience of Japan's 'Tohoku-style healing forest', a theoretical framework of 'community participatory landscape design' is constructed, the core of which lies in the establishment of a mechanism for endogenous recycling of forest resources, and the realisation of sustainable ecosystem gifts through in situ management.At the level of practical strategies, this study proposes three innovative paths: (1) in the spatial dimension, adopt participatory design methods to reconstruct inter-subjective relationships, transform residents from resource consumers to ecological co-builders, and establish a human-forest symbiosis interface through community-driven buffer zone planning (3) In the social dimension, the study innovates the dual-track cultivation mechanism of 'cognition-perception', coupling the cultivation of ecological protection awareness (cognitive dimension) and forest healing experience (perceptual dimension) with an immersive healing space as a carrier, so as to realise the deeper transformation of environmental protection from policy-driven to value-recognition. For the first time, the study proposes to define the forest system as a three-dimensional 'physiological-psychological-social' health infrastructure, and activate its dual attributes of ecosystem service provision and humanistic spirit cultivation through spatial narrative.Empirical studies have shown that when community members change from 'beneficiaries of ecological services' to 'decision makers of landscape construction', the ecological regulation, cultural reproduction and community education functions of forests can be effectively stimulated. This model of activating natural capital with social capital provides a practical and humanistic solution for sustainable urban development.

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Fuji Healing Forest Research Institute、14th October 2020、<Ways to create a healing forest>、Tsukiji Shokan

Keywords:
Keyword 1: Forest edge communities
Keyword 2: participatory landscape design
Keyword 3: ecological-social resilience
Keyword 4: cultural-ecological nodes
Keyword 5: sustainable urban governance

1.5-CO-S1-3

Strategic Planning and Green Urban Renewal Strategies – The Role of Landscape Architects in Developing Green Urban Renewal Strategies

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Strategic planning in the Republic of Croatia is defined by the Act on the System of Strategic Planning and Development Management, which is based on the principles of integrity, effectiveness, sustainability, partnership and, finally, on the principle of transparency. In recent years, Croatia has begun to develop strategies for green urban renewal, documents that are relevant for local authorities to achieve the goals of developing green and blue infrastructure, developing strategies for the application of nature-based solutions (NbS), improving energy efficiency and circular economy of spaces and buildings, and finally promoting adaptation to climate change and strengthening resilience to risks. The strategy represents a medium-term act of strategic planning aimed at guiding spatial development on the basis of clearly defined objectives and activities in order to achieve the desired vision.

The content of the green urban renewal strategy is defined by the guidelines and methods developed by the Ministry of Spatial Planning, Construction and State Property of Croatia and consists of a spatial-analytical and strategic framework with a vision, goals and activities. The spatial-analytical part includes several interconnected spatial analyses that serve as guidance for the strategic part, and includes analyses aimed at exploring political-territorial potentials and limitations, an analysis of demographic-spatial characteristics, an analysis of historical-geographical characteristics, an analysis of terrestrial and marine habitats with a focus on rare and endangered habitats, an analysis of green, blue and grey infrastructure, an analysis of flood risk, an analysis of climatic characteristics with an analysis of land temperature characteristics, an analysis of spaces and buildings suitable for urban transformation, and others. In addition to the above analyses, the strategy includes extensive field research and opinion surveys and workshops with different stakeholders (authorities, civil society, public). The aim of this extensive research and surveys is to understand the spatial problems and potentials, but also to confront the analytical results with the involved stakeholder in order to better guide future spatial development. The strategic framework of the strategy includes the formulation of a vision and the definition of objectives and activities to be undertaken to achieve the desired spatial development. The final part includes an administrative procedure that allows the public to have access to the entire document to comment on it for a period of thirty days, after which it is submitted to the City Council for approval and adoption.

The City of Zadar, a territorial unit consisting of fifteen (15) settlements or thirty-seven (35) local committees, started developing a Green Urban Renewal Strategy in 2024 according to the methodology described above. Given the scope of spatial issues covered by the strategy, the presentation will present the results of the research conducted, focusing on the role of landscape architects in the development of spatial strategic documents, the role of landscape architects as mediators between local government and the public, and finally the role of landscape architects as a result of the spatial complexity faced by today's spatial challenges, which very often requires multidisciplinary approaches with very clearly defined methods and approaches.

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Keywords:
Keyword 1: Strategic planning
Keyword 2: landscape architects

1.5-CO-S1-4

Differences in perceptions of urban meadows in post-Soviet cities

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Recent initiatives aimed at developing urban green infrastructure, enhancing biodiversity, and implementing greening plans increasingly encounter challenges related to raising public awareness. Past and present societal experiences are not always positive or receptive to new green initiatives. The introduction of urban meadows is becoming increasingly popular in Latvia; however, this initiative faces several limitations. One of the primary challenges is related to the perception and acceptance of urban meadows in post-Soviet societies, where such landscapes are often associated with degraded and overgrown areas.

The importance of public participation is underscored by the Aarhus Convention. Similarly, the fundamental principles of the "New European Bauhaus" reflect contemporary challenges in integrating public outdoor spaces in ways that are not only sustainable but also aesthetically and socially inclusive. Modern public engagement models are evolving to move beyond traditional formal involvement. These new challenges necessitate an expansion of the landscape architect's competencies while simultaneously fostering interdisciplinary collaboration. Municipal public relations specialists must broaden their scope of activities, while landscape architects and project managers must consider the need for comprehensive time-schedules and planning processes that include extensive public engagement.

The public possesses specific knowledge and experience regarding the meaning and functionality of particular landscapes, influenced by numerous factors. A detailed study of public perception is crucial within the context of urban meadows, particularly in post-Soviet societies where such initiatives may not always be well received. Researching public opinion requires identifying both opportunities and constraints in residents' perceptions when developing urban meadows in private and public urban areas. Key questions include: What factors encourage public acceptance of new green solutions in the urban environment, and what barriers exist? How can the public be effectively involved in planning processes to enhance their understanding of the role such solutions play in improving the urban ecosystem?

This study aims to identify the key factors influencing public perception and engagement in the development of urban meadows in post-Soviet cities. To achieve this, examples of urban meadow implementation in post-Soviet cities across Europe and Latvia are examined, alongside an analysis of public attitudes and the role of local governments in their execution. The focal case study is the city of Jelgava, Latvia, which in 2024 undertook its first experimental effort to establish urban meadows, conducting surveys among municipal specialists and the public.

The findings indicate that the effective development of urban meadows requires a multidisciplinary approach, involving landscape architects, environmental specialists, sociologists, and local government representatives working in collaboration with the public to create inclusive and sustainable landscape spaces. Additionally, successful public engagement depends on targeted communication strategies, clear planning processes, and efforts to enhance public understanding of the ecological and aesthetic value of meadows.

The study concludes that there is a need to improve public engagement mechanisms, strengthen interdisciplinary collaboration, and expand the role of landscape architecture in fostering resilient and sustainable urban landscapes.

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Keywords:
Keyword 1: urban meadows
Keyword 2: public perception
Keyword 3: post-soviet city

1.5-CO-S1-5

The Sheffield Street Tree Partnership: An Alternative Approach to Planning and Managing Sheffield's Urban Forest

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Abstract In its recent past Sheffield has seen poor decision-making lead to poor street tree management which in turn has led to civil unrest (Dempsey, 2023). Sheffield City Council received vitriolic and bitter backlashes from residents angry about how street trees were managed. In response, a new governance model was developed: the Sheffield Street Tree Partnership (SSTP). This partnership represents a transformative approach to urban forest governance - one that fosters civic trust, integrates diverse expertise, and prioritises climate resilience and community participation.
This paper explores how the SSTP provides a model for participatory governance that moves beyond traditional municipal decision-making structures. The SSTP brings together local government, private contractors, academics, and community representatives to co-develop strategies for the long-term management and expansion of Sheffield's urban forest. This governance model has facilitated consensus-building and is in the early stages of addressing long standing inequities in tree distribution across the city, particularly in areas of lower socioeconomic status where tree cover—and thus ecosystem service benefits—are disproportionately lacking.

A key output of the partnership is the development of a **Spatial Street Tree Palette**, a tool designed to guide strategic tree planting in Sheffield's streetscapes. Unlike conventional species lists, this palette will integrate ecological, climatic, and social considerations into decision-making. By focusing on spatially responsive planting strategies, the tool aims to:

1. **Enhance Climate Resilience** – By guiding the selection of species that will thrive in Sheffield's projected climate future, accounting for hotter summers, wetter winters, and increased pest pressures.
2. **Improve Social Equity** – By supporting initiatives that address disparities in tree distribution to ensure all communities benefit from urban greening.
3. **Maximise Natural Capital** – By aligning tree planting efforts with broader ecosystem restoration and urban biodiversity objectives.
4. **Foster Community Empowerment** – By providing a transparent, evidence-based framework that allows residents and community groups to engage in decision-making processes.

This research situates the SSTP's approach within broader governance and participatory planning discourses. It examines how a co-created governance structure enables the city to move beyond conflict and toward a shared vision of urban resilience. Drawing upon participatory workshops and targeted stakeholder engagement, the paper demonstrates how participatory governance, that emphasises collaboration, knowledge exchange and co-production, can facilitate systemic change in urban tree management.
The findings show that the Sheffield model holds lessons for other cities facing similar challenges. This includes how achieving 'success' or 'progress' is not only a function of appropriate planting strategies but also of effective governance frameworks that enable change.

This paper concludes by reflecting on the next steps for the SSTP, including the implementation of the Spatial Street Tree Palette. The Palette is a potentially replicable framework for cities globally, illustrating how participatory governance strategies can transform urban forest (street tree) management in the face of climate change.

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Keywords:
Keyword 1: Urban Forestry
Keyword 2: Street Trees
Keyword 3: Participatory Governance
Keyword 4: Climate Resilience
Keyword 5: Partnership

1.5-CO-S1-6
New Streets for Vienna

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This contribution focusses on the transformation of dense inner city quarters towards climate justice. In Vienna, data show increasing urban heat effects in the context of climate change for many historic working class neighbourhoods. Some parts of the urban population are more vulnerable than others: neighbourhoods with little green infrastructure, small children, elderly and people with chronic illnesses, manual workers and persons with low socio-economic status suffer from urban heat.
This was the starting point of a research on urban climate justice in an interdisciplinary cooperation with traffic planners from con.sens mobilitätsdesign funded by AK Vienna (Staller et. alt. 2022). A vision for climate resilient streets was worked out, based on analyses of the current situation in Vienna and strategies of the City of Vienna to minimize urban heat. In addition, innovative approaches of other European cities were collected. Five new street typologies were developed, with space for active mobility, play and rest, with trees and spacious shade, with concentrated underground technical infrastructure and minimized sealed surface. With “New Streets for Vienna“, a systematic transformation towards climate justice is proposed and visualized on the example of two selected neighbourhoods.
Building on these outcomes, tilia has worked on several projects for the City of Vienna: A handbook for cooling measures in public space (tilia 2023 a), developing concepts for public space in several inner city districts (tilia 2023 b) and planning projects of new Viennese streets (City of Vienna 2024 and 2025 a).
To meet raising summer heat, Vienna has started to change its streets by reducing space for cars and by providing streets with greenery, places to rest and play. The urban development plan STEP 2035 (City of Vienna 2025 b) introduces a new street typology the “Garden Street” as an innovative green element for dense urban quarters.

For further information see https://www.tilia.at

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Keywords:
Keyword 1: urban streets
Keyword 2: urban heat effects
Keyword 3: climate justice
Keyword 4: climate adaption

1.5-CO-S2 - Social issues addressed using public consultation tools

1.5-CO-S2-1

Is Inclusion Possible? Exploring the Forms of Foreign Migrant Workers in Urban Third Spaces

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This study delves into the transformative power of foreign migrant workers congregating in Taichung's herb Alley. It analyzes how these individuals reshape the neighborhood's spatial characteristics, inspiring a reevaluation of the feasibility of inclusive urban design.
As Taiwan experiences a steady increase in its foreign labor population, certain urban districts have gradually evolved into exclusive "territorial spaces" for migrant communities. Due to a lack of formal district planning, these areas often exhibit exclusivity, leading to spatial conflicts with residents' needs. The primary objective of this research is to understand how such spaces emerge and, through the lens of inclusive design, assess the interaction between the built environment and social dynamics in the regeneration and transformation of urban third spaces.
To achieve this, the study focuses on Herb Alley in Taichung, Taiwan. The literature review draws upon urban public space theories, including 'The Social Life of Small Urban Spaces' (William H. Whyte, 1980) and 'The Eight Qualities of Pedestrian- and Transit-Oriented Design' (Reid Ewing, 2013), as a foundation for spatial analysis. The research employs qualitative methods such as participatory observation and photo-elicitation interviews to examine various local communities' emotional and physical preferences within the study area from an inclusive design perspective. By integrating theoretical insights with empirical data, this study analyzes how the neighborhood's narrow streets, adaptable shading structures, and flexible spatial configurations influence use patterns and behavioral interactions among different groups.
Findings indicate that the unregulated evolution of Herb Alley has resulted in its transformation into an informal gathering space for foreign migrant workers. While its spatial characteristics effectively cater to the daily social and economic needs of these communities, the high degree of informality has also led to territorial exclusivity,

hindering spatial sharing and interaction with residents. By approaching the issue from the perspective of social inclusivity, this study aims to highlight both the challenges and opportunities of inclusive public space design, proposing a framework that balances physical spatial planning with socio-cultural needs. The proposed strategies seek to facilitate multifunctional street spaces, offering a forward-thinking reference for future urban renewal and public space planning while fostering inclusivity as a core principle of spatial practice.

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Keywords:
Keyword 1: Foreign Migrant
Keyword 2: Inclusive Design
Keyword 3: Territorial Space
Keyword 4: Urban Third Space
Keyword 5: Neighborhood Study

1.5-CO-S2-2

Migration, the Pursue of Territorial Justice and city transfiguration: a Landscape Architecture approach

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Demands arising from the global political agenda, in the face of the effects of urban growth, climate change, food insecurity, loss of biodiversity, population displacement and the war, underline the relevance of the ongoing environmental crises spreading with no limits and urging for the search of committed innovative solutions to guide the ongoing transfiguration of our cities. (Bellalta, M. 2021) Landscape architects can provide such solutions from a holistic, multi-scalar and polyfunctional vision. Migration, a global phenomenon, has increasingly resulted in shifting communities and the proliferation of temporary and permanent refugee and migrant encampments. The precariousness of people's health is affected by the lack of safety territories and living conditions. While in the move or once reaching new destinations, the vulnerability of these human groups considerably escalates, as well as the rise of psychosocial and territorial justice conflicts. (Bauböck, R. 2006) (Miranda, M, 2023)
The role of Landscape Architecture in the process of migrant's integration into the new environment is vital. What happens after people leave the landscape that they identify themselves with? What do people do to affect existing and new landscape profiles once they arrive? (Cepic, S.2011). To what extent do migrants pass on their customs and tradition in their new surroundings, transforming cities' physiognomy? (Hou, J. 2013). Which is the impact of these forces reshaping and exerting pressures for land use change due to the different types of migration? Garcés, A. (2006) (Díez A, et al, 2021). Landscape is the natural living space for people, rooted in one place, nomadic or migrant. Human groups have a right to landscape. Diverse communities with unique needs and desires will have differing visions and pursue different outcomes. OIM. (2024). This inevitably leads to conflicting expectations and interests. Global change, land degradation, social unrest, ethnical issues and warfare further aggravate these potential conflicts. It is the challenge for landscape architects to find valid solutions, also to preserve a new "Genius loci" dimension, a new spirit of the place and sense of belonging for identities' ongoing transfiguration.
Landscape is a unique opportunity to strengthen resilience since it integrates; all forms of biodiversity with the identity of human groups that seek a new encounter with nature, food security and territorial justice. In this regard, the potential role of productive landscape in migrant's settlements and farms might provide solutions capable to transform them into permanent communes, with capacity of providing goods and resources for their subsistence promote adaptability and resilience as well as strengthening identity and social integration. (Jankilevich, C. 2023)
Rather than describing a state of facts, this paper aims to contribute to set up an action-oriented interactive strategy. By doing so, poses that landscape architecture's role in addressing the challenges arising from migration and population displacement might and ought to become a positive driving force in the dynamics to face current urgent demands. In doing so, a case study in Central America within the Costa Rica-Nicaraguan border is summarized

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Keywords:
Keyword 1: Lanscape
Keyword 2: Migration
Keyword 3: Territorial-Justice
Keyword 4: Social-ecologycal resilence
Keyword 5: Community-envolvement

1.5-CO-S2-3
Just Turn Up: the Social Infrastructure of informal sport

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The 'Just Turn Up' research project explored the multiple ways in which informal sport activities in everyday urban spaces support different forms of sport practices, wellbeing and urban belonging in socially and ethnically diverse cities. This paper focuses on the social infrastructure of supporting informal sport and ensuring that it is genuinely inclusive. What is the role of design in relation to community organising and health or greenspace policy actors? To test the nature of participation in 'less governable' and often 'un-guided' forms of greenspace use, we have adapted a Pattern Analysis approach (Alexander et al., 1977, Felstead and Thwaites, 2023) to integrate physical, social and organisational requirements.

The research was an interdisciplinary and inter-sector project, integrating expertise and methods from landscape architecture, sociology, sports management, public health and performance poetry. Drawing on case studies in London and Sheffield, UK, this two year Economic and Social Research Council (ES/W008343/1) funded research project has examined how informal sport activities in everyday city spaces support social interaction and forms of urban belonging in diverse communities. We worked with six case study groups chosen to represent a range of different types of sport: cricket, cycling, urban walking and a migrant women's yoga group, as well as basketball and ecuavoley (ecuavoley is the Ecuadoran variant of volleyball). We used qualitative methods of observation, interviews, participation and arts engagement, and also interviewed 34 local and national stakeholder organisations across different areas of policy and practice.

Our findings show that informal sport has many positive benefits for wellbeing and inclusion yet is not equally accessible to everyone. From an organisational, design or policy perspective, it can feel difficult to know how to support informal sport because it is… informal. We have drawn on the fieldwork from our research into a range of informal sports to create a list of 33 'patterns of requirement'. These collectively define the scope of social infrastructure relating to informal sport, ready to be adapted to different typological contexts, demographic groupings and types of sporting activity.

Patterns are varied solutions to problems around taking part in sport in informal settings.

- Participation: we need to enjoy the sport, we need to know what is happening
- Place: we need somewhere to do this, we need extra or different stuff
- Social sustainability: we need to feel part of a group, we need external support.

Different types of sport and groups of participants will have higher or lower needs in these areas. Patterns may be organisational, social or related to the physical environment, and sometimes a combination. Example of the patterns are: adaptable complexity (no.3), open level surface (no.12), DIY markings or adaptation (no.20), non-participants watching (no.24), negotiating with other park users (no.33). We conclude by demonstrating how using the patterns as tools for questioning can help both participants and facilitating organisations resolve some of the tensions in informal sports including supported vs Do It Yourself, close knit vs socially porous, competitive sport vs healthy activity.

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Keywords:
Keyword 1: Leisure
Keyword 2: Greenspace
Keyword 3: Participation
Keyword 4: Inclusion
Keyword 5: Health

1.5-CO-S2-4

Participatory Design Strategies for Community Gardens in Transitional Peri-Urban Districts of the Pearl River Delta Region

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Community co-governance, an approach emphasizing public participation, is gaining traction in China amid integrated urban-rural development initiatives. Community gardens have emerged as focal points of interest due to their dual capacity to deliver ecological benefits and strengthen social cohesion. As one of China's most economically vibrant regions with the highest urbanization rate, the Pearl River Delta (PRD) region has experienced rapid urbanization that has led to the emergence of Transitional Peri-urban Communities (TPC) in urban fringe areas. These hybrid settlements retain vestiges of traditional rural spatial structures while absorbing institutional and cultural transformations driven by urbanization. Although experimental community garden projects have been initiated in the PRD, research on their role in fostering urban-rural integration remains nascent. Existing research has primarily focused on functional development, infrastructure construction, and landscape environment improvement, with insufficient attention to three critical dimensions: (1) leveraging local cultural resources, (2) establishing multi-stakeholder participation frameworks, and (3) designing sustainable operational models. The heterogeneous stakeholder dynamics in TPCs raise a core design challenge: For whom should community gardens be designed? This question underscores a broader operational dilemma: How can planners strategically reconcile three interdependent goals—physical landscape modernization, cultural preservation, and place identity cultivation—during urban-rural integration? This study employs the Shunde Shatou Community Garden project, a representative TPC in the PRD, to examine tensions between top-down public space planning and bottom-up community needs. Participatory design is proposed as a methodology to bridge this divide. Through four months of participatory observation combining fieldwork and interviews with residents, community workers, and managers, using semi-structured and unstructured interview methods. The research developed a tripartite collaboration framework: designers (providing technical expertise), grassroots organizations (facilitating coordination), and residents (implementing and maintaining gardens). The design and construction process of the Shatou Community Garden integrated nature-based aesthetic education initiatives, public art interventions, and stakeholder collaboration models, which were implemented through activities such as community walks, the plant inspiration collection, the stone painting workshops, and nature printing garden co-construction.

Findings reveal that participatory garden construction enhances both environmental quality and social capital. By synthesizing natural assets, local landscapes, and community labor, the project improved green spaces while strengthening residents' place attachment. Notably, long-term TPC residents—despite environmental urbanization—retain distinct resource perceptions shaped by rural livelihoods. Compared with the exquisite green environment of urban communities, they crave the "practical efficiency" of gardens rather than the landscape elements of "formal aesthetics". For example, the hardened impervious ground has become a popular scarce resource because of its more diversified use functions (such as resting, dancing, gathering, drying crops, parking vehicles, etc.). This divergence prompts critical reflection: Whose needs define garden design? The study suggests that professional expertise must adapt through social engagement, guiding the landscape through society will be one of the important paths to achieving a beautiful living environment in the future.

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Keywords:
Keyword 1: Community gardens
Keyword 2: Participatory design
Keyword 3: Community construction
Keyword 4: Transitional Peri-urban community
Keyword 5: Pearl River Delta

1.5-CO-S2-5

Landscape Architecture Education: An Interdisciplinary and Quantitative Assessment

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Assessment of our Landscape Architecture education grows more important each day as our world becomes more interconnected. As our designs need to account for soil health, climate resilience, economic equity, our students need to be creative and deep thinkers before they enter practice. In landscape architecture, each country and each program needs a different way support oneself per their student needs and legal standards.

At our University in the United States, we need to account for student success internally to University standards and to the Landscape Architecture Accreditation Board. The American Association of American Colleges and Universities (AAC&U) offers 16 VALUES rubrics of liberal learning. Using rubrics as guides, our School of Design devised a multi-step assessment for student learning across the School. This study includes students from Landscape Architecture, Architecture, Graphic Design, Interior Design, and Studio Arts. Each student is assessed in their first and final years for their AAC&U standards of creative thinking, critical thinking, and teamwork. Each of these students are participating in a core curriculum to engage in interdisciplinary thinking and creative expression as well as their courses for their major.

The survey uses the foundations of Torrance Test of Creativity to allow students to draw and express their creativity as well as standards set by Perry's Scheme of Cognitive Development and Tuckman's Stages of Small Group Development. A statistic analysis demonstrates students need a broader set of knowledge in their design process to find their design solutions. Students operate, as most do in their early twenties, in the Perry's stages of dualism and multiplicity, rather than relativism and commitment. Students also report spending the majority of their time in the final stages of small group development, while neglecting their process and brainstorming.

This multipronged approach allows us as educators to see the deeper meaning behind attitudes and landscape architecture student development. As opposed to looking for one mind to guide our futures, we can see multiple ways of thinking and improve for greater growth. With the assessment of creative thinking, cognitive development, and teamwork, we can enable the leaders of the future to guide our world.

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Keywords:
Keyword 1: Cognitive Development
Keyword 2: Student Assessment

1.5-CO-S2-6

Well-being design guide for Public Housing in Hong Kong (Landscape and Play space)

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In the context of rapid urbanisation and increasing population density, the design of public housing landscapes and play spaces in Hong Kong is essential for promoting residents' well-being. With over 7.5 million people, approximately 30% of Hong Kong's residents—over 2 million—live in public housing. This significant demographic highlights the need for thoughtful design that enhances quality of life. Hong Kong's public housing landscape is one of the most comprehensive globally, featuring numerous facilities and programmes aimed at achieving a balanced work-life environment for tenants within a limited budget.

The "Well-being Design Guide" is timely, given the numerous upcoming public housing developments in Hong Kong. These projects present a unique opportunity to set design standards that prioritize well-being and sustainability. Public housing offers an excellent environment for tenants to maintain a high living standard while enjoying affordable rent, making it crucial to create spaces that foster community and enhance overall quality of life.
Developed through interdisciplinary collaboration, the guide aims to inform housing policy and improve the living experience within public housing estates. It draws insights from successful models in the Asia-Pacific region, including social housing in Shanghai, public housing developments in Tokyo, initiatives in Seoul, and Housing Development Board projects in Singapore. These diverse frameworks inform our comprehensive approach tailored to Hong Kong's unique socio-cultural fabric.

The guide is structured around eight core concepts of well-being: Health & Vitality, Green Living and Sustainability, Age-friendliness, Intergenerational & Inclusive Living, Family & Community Connection, Urban Integration, Upward Mobility, and Perception & Image. Each concept serves as a lens through which landscapes and play areas can be designed to foster social connections, encourage physical activity, and create a sense of belonging among residents.

Central to this initiative is the recognition that well-designed landscapes and play spaces enhance quality of life in public housing. These areas not only promote physical activity but also provide mental health benefits, such as reducing stress and anxiety, improving mood, and fostering community. The guide seeks to create vibrant communal areas that invite interaction, promote active lifestyles, and provide safe, accessible, and inclusive spaces for all ages.

Moreover, the guide advocates for green living by incorporating nature into residential landscapes. Green roofs, community gardens, and landscaped pathways improve air quality, reduce heat island effects, and promote biodiversity, all positively impacting mental health.
Age-friendliness is also a vital aspect, ensuring that landscapes and play spaces are navigable for elderly residents. Features like seating areas, sensory gardens, and accessible pathways empower older residents to engage with their surroundings, fostering inclusivity and intergenerational interaction.

In conclusion, the "Well-being Design Guide" serves as a vital reference for policymakers, architects, and landscape designers, promoting landscapes and play spaces that nurture well-being, foster community, and elevate the living experience of public housing residents, contributing to sustainable urban development.

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Keywords:
Keyword 1: Public Housing
Keyword 2: Well-being Design
Keyword 3: Urban Development
Keyword 4: Landscape Architecture
Keyword 5: Community Engagement

1.5-CO-S3 - AI and other new approaches to public consultation

1.5-CO-S3-1

Participatory Prompting with Generative AI: Democratizing Urban Landscape Co-creation and Community Governance

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Addressing the increasing urgency to adapt urban landscapes to climate change requires innovative participatory methods that deeply engage communities and stakeholders. Landscape architects play a pivotal role in facilitating such participatory processes, integrating ecological resilience with community-driven aspirations. Advances in Generative Artificial Intelligence (GenAI) - which use machine learning algorithms to produce visualizations and spatial simulations from user-defined textual prompts - offer new opportunities to democratize participatory design, enhancing creativity, inclusivity, and accessibility among diverse stakeholder groups.

This paper investigates how participatory prompting using GenAI influences community engagement, decision-making, and creativity within urban landscape co-creation. Drawing from empirical research involving structured workshops conducted at a university campus, participants engaged in co-design tasks using either traditional participatory tools (manual sketches, physical models) or GenAI tools. Workshops systematically assessed participant experiences through surveys, interviews, and focus groups, focusing on engagement, design exploration, creativity, cognitive load, and overall satisfaction with the participatory process.

Results reveal participatory prompting via GenAI substantially enhances stakeholder agency, engagement, and creativity by providing immediate visual feedback, encouraging iterative exploration, and enabling non-expert users to actively contribute to complex design discussions. Participants demonstrated increased confidence in expressing nuanced ecological and spatial concepts due to the accessibility of visual outputs generated through their descriptive language. This aligns with research highlighting GenAI's potential to significantly enrich early design ideation by offering diverse and novel design options while managing cognitive load effectively (Chandrasekera et al., 2025). GenAI tools also reconfigure decision-making spaces, empowering participants to assert greater independence by leveraging everyday language to articulate sophisticated design preferences (Joshi et al., 2024).

Nevertheless, integrating GenAI into participatory design presented specific challenges. Participants regularly encountered misalignments between prompts and generated outputs, resulting in temporary frustration and disengagement. Technical limitations such as response latency, software instability, and complexities associated with refining outputs highlighted critical areas for improvement. These challenges underscore the importance of developing reliable, user-friendly interfaces, robust prompt literacy training, and effective moderation to sustain meaningful participation (van den Broek et al., 2024).

Building on these insights, subsequent phases of the project have incorporated advancements such as optimized prompting strategies, enhanced cloud-based GenAI systems, and more intuitive user interfaces to mitigate earlier challenges. This iterative refinement supports smoother, autonomous interactions, significantly enriching the design process and aligning closely with participatory governance ideals (Zwangsleitner et al., 2024). Moreover, fostering greater prompt literacy and technical confidence among participants has emerged as essential for fully leveraging the potential of GenAI.

Ultimately, successful integration of participatory prompting with GenAI necessitates balanced facilitation, proactive stakeholder skill development, and careful consideration of ethical implications, including transparency, accountability, and addressing bias in AI-generated outputs. By proactively addressing these considerations, landscape architects can leverage GenAI as a transformative tool to democratize urban landscape co-creation, enhance community governance, and foster inclusive participation - critical components for building resilient urban futures.
This research demonstrates that GenAI, when thoughtfully integrated, can effectively democratize

participatory urban design processes and enhance community governance, reinforcing landscape architecture's critical role in creating inclusive, resilient cities.

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Keywords:
Keyword 1: Participatory Prompting
Keyword 2: Community Governance
Keyword 3: Generative AI
Keyword 4: Urban Resilience
Keyword 5: Inclusive Co-creation

1.5-CO-S3-2

How Does Place Experience in Built Environments Support Children's Subjective Well-being? A Study Based on Participatory Workshops

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Children's development within contemporary urban environments faces unprecedented challenges and opportunities. Technological advancements have enriched virtual experiences; however, academic pressures, spatial constraints, and safety concerns have significantly limited children's free activities in urban built environments. The question of whether and how children can attain well-being through urban place experiences necessitates thorough investigation. Existing research predominantly reflects adult perspectives, lacking comprehensive insights into the spatial characteristics that genuinely impact children's subjective well-being. This study employs an interpretivist paradigm to explore place characteristics influencing children's subjective well-being through participatory workshops conducted in a community in Guangzhou. Thirty-five children aged 6 to 15 participated, providing perspectives on urban place experiences related to subjective well-being through three workshops. Recognizing the variability in children's expressive abilities across different age groups, the research employed the Mosaic approach—a qualitative, multi-method research strategy that emphasizes utilizing communication methods preferred by children, tailored to individual strengths and research focus. Specifically, this study combined traditional methods (interviews, focus groups) with child-friendly, task-based strategies (photography, sticky notes), providing a platform that facilitated communication and fostered collaborative relationships between children and researchers. Thematic analysis identified five key dimensions of spatial characteristics affecting children's subjective well-being: safety, play and recreational opportunities, natural environment, social interaction atmosphere, and environmental comfort. Children perceived safety as encompassing both physical aspects (e.g., facility maintenance, traffic management) and social aspects (e.g., community atmosphere, influence of strangers). Diverse play and recreational opportunities, especially spaces for autonomous exploration and creative play, were found to stimulate positive emotions. A quality natural environment not only enhanced sensory pleasure but also alleviated stress and fostered exploratory interest. A social interaction atmosphere promoted a sense of belonging through peer relationships, intergenerational interactions, and community inclusiveness. Environmental comfort factors (e.g., shading, noise control, basic infrastructure) directly influenced children's willingness to engage in activities and their overall experience. Based on these findings, a theoretical framework was developed to elucidate spatial factors influencing children's subjective well-being, providing theoretical support for child-friendly urban design. The study underscores the value of child-centered methodologies in understanding children's spatial experiences and, through participatory workshops, enhances awareness among children, parents, and community members regarding children's mental health and subjective well-being. These insights deepen the understanding of the relationship between children's subjective well-being and urban spatial characteristics, offering empirical support for future urban planning and policy development.

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Keywords:
Keyword 1: child-centered research
Keyword 2: participatory workshop
Keyword 3: mosaic approach
Keyword 4: subjective well-being
Keyword 5: place

1.5-CO-S3-3

Participatory Landscape Governance in the Akamas Peninsula: A Bottom-Up Approach through the TOPIO Project

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The increasing demand for public participation in landscape governance requires innovative methodologies that integrate local knowledge, scientific expertise, and advanced digital tools.The European Landscape Convention (ELC) defines landscapes as “an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors”, underscoring the necessity of participatory governance approaches that shape landscape management strategies[1]. Against this backdrop,the TOPIO project emerges as a pioneering initiative, leveraging Public Participation GIS (PPGIS), Artificial Intelligence (AI), and Earth Observation (EO) to foster inclusive and democratic landscape governance[2].This abstract explores the role of participatory approaches in governance through the lens of Akamas Peninsula, Cyprus, a Natura 2000 area where TOPIO is actively implementing these strategies.
TOPIO project-an EU founded program- s a collaborative effort between nine partners, including research institutions, universities, SMEs, and NGOs. It aims to democratize landscape governance by integrating citizen science,policy outreach, and digital geoinformatics into decision-making processes[2]. One of the core methodologies is the use of Digital Twins, which simulate landscape dynamics by incorporating crowd-sourced public data, AI-driven visual assessments, and environmental monitoring[3]. In the case of Akamas, this approach ensures that conservation strategies align with both scientific research and local community insights.
The Akamas Peninsula is one of Cyprus' most ecologically rich regions,home to endemic plant species, marine ecosystems, and cultural heritage sites[4]. However, the area has long been at the center of land-use conflicts, with debates over tourism development, conservation restrictions, and local economic interests[5].Recognizing the importance of public participation in resolving these conflicts, the project implements a bottom-up governance model that actively involves local stakeholders in shaping conservation policies.
Public engagement in Akamas case study is facilitated through a combination of digital and face-to-face interactions, ensuring that diverse voices are incorporated into conservation strategies. Workshops, community discussions, and interactive mapping sessions allow local residents, policymakers, and organizations to collaboratively define priorities for the region.The TOPIO Digital Platform serves as an interface for knowledge-sharing, offering real-time access to GIS maps, policy documents, and participatory tools that enhance decision-making. In this context, the role of landscape architects is central. Acting as mediators, they facilitate the exchange of knowledge between scientific experts and local communities, ensuring that policy decisions reflect both environmental sustainability and social justice. Their involvement extends beyond design, encompassing landscape character assessment, geospatial analysis, and participatory planning, which together shape governance strategies that are both data-driven and socially inclusive[2].
The experience of Akamas demonstrates that participatory approaches, do more than just inform policy,they cultivate a sense of ownership and long-term commitment to conservation efforts.The ability of citizens to co-design governance frameworks fosters legitimacy in decision-making, helping to resolve conflicts and align conservation policies with community aspirations. This model aligns with broader European and global sustainability objectives, reinforcing commitments outlined in the EU Green Deal and the UN Sustainable Development Goals (SDGs)[6].The integration of digital innovation, multidisciplinary collaboration, and public engagement in Akamas exemplifies the transformative potential of participatory governance, offering valuable lessons for landscape management in other protected areas.

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Keywords:
Keyword 1: Public Participation
Keyword 2: Sustainable Conservation
Keyword 3: Citizen Science
Keyword 4: Environmental Education
Keyword 5: Akamas Peninsula

1.5-CO-S3-4

From Neighborhood Self-Governance to Diversified Co-Construction: Collaborative Governance Innovation for Community Resilience in Deshengmen Inner Street

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As urban governance shifts from traditional administrative control to diverse participation, building community resilience in historic districts requires innovative governance mechanisms. Taking the comprehensive spatial quality improvement project of Beijing Deshengmen Inner Street as an example, this study explores the application and effectiveness of participatory methods and collaborative governance strategies in historic district renewal. Through a three-tier collaborative governance framework of street-community-district, the project achieved a transition from traditional neighborhood self-governance to modern multi-stakeholder co-construction. The study employed in-depth participatory methods, conducting targeted research on 5 key population groups, and collected public opinions through symposiums and questionnaires. The research revealed differentiated needs among different groups while identifying 3 core issues of common concern: traffic problems, pedestrian environment issues, and architectural style concerns. Based on the research findings, the study proposed a governance model featuring government leadership, market operation, and community participation, innovatively adopting a full-process participation mechanism of co-design, co-construction, and co-management. Residents' suggestions were incorporated into the planning and design phase; volunteers were organized to participate in supervision during the implementation phase; and an old city renewal volunteer team was established in the subsequent management phase to form a long-term management mechanism. The research results show that community resilience building based on multi-stakeholder co-governance not only improved the physical environment quality but also enhanced the community's adaptability to changes. This practice provides an innovative model for collaborative governance in historic districts and demonstrates landscape architects' professional value and social responsibility in promoting community resilience building.

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Keywords:
Keyword 1: Collaborative Governance
Keyword 2: Community Resilience
Keyword 3: Historic District
Keyword 4: Multi-stakeholder Participation
Keyword 5: Spatial Quality

1.5-CO-S3-5

Co-Creation and Public Space: Strengthening Municipal Capacity Through Participatory Landscape Design

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Background: The T!Raum Initiative, launched by Germany's Federal Ministry of Education and Research, aims to revitalize economically challenged regions through innovation and knowledge transfer. Within this framework, the "Handlungsmacht der Kommunen stärken" (Strengthening Municipal Capacity) project focuses on enhancing local governance through participatory procedures. The "Transfer durch Kokreation" (Transfer through Co-creation) component explores citizen engagement in Weißenfels and Zeitz, two medium-sized East German cities facing significant demographic challenges of outmigration and aging populations. The initiative systematically studies how different engagement formats can improve participation across diverse demographic groups, ensuring inclusive community development. By thoughtfully combining academic expertise with community involvement, the project implements innovative transfer approaches such as living labs that serve as real-world testing environments and service-learning programs that integrate educational objectives with community service. One part of the project is concerned with collaborative approaches that specifically target the development of open spaces and landscape design, and create meaningful links between university teaching, research and community engagement. The presentation will outline the current status of work, the results and lessons learned so far, and provide an outlook on the further iterative process. It shows how T!Raum can create a sustainable framework for innovation and community resilience.

Aims: The HKS-Kokreation-Freiraum project aims to develop, test, and evaluate co-creative approaches to public space development that better integrate diverse populations into planning processes. Key objectives include:

1. Strengthening transdisciplinary knowledge exchange between university disciplines and planning practices.
2. Testing innovative approaches to urban and open space design through living labs, engaging researchers, scientists, and students alongside local stakeholders.
3. Developing prototype interfaces between research, teaching, and society that create meaningful connections between academic expertise and community action.

The project balances educational value with community impact, aiming to improve public spaces while enhancing capacity for participatory planning.

Approach(es): The implementation follows a structured methodological approach based on transdisciplinary co-creation with key local stakeholders (civic society groups, neighborhood representatives, community organizations, municipal planners, business owners, youth groups, senior citizens, and environmental advocates):

1. Analysis of local conditions and spatial potentials in Weißenfels and Zeitz, identifying key public spaces through transect walks, participatory mapping, and stakeholder interviews.
2. Establishment of physical and digital living labs as collaborative spaces.
3. Application of a methodological triad: transect walks, storytelling, and mapping as integrated co-creative methods.
4. Implementation of collaborative design workshops involving researchers, faculty, university students, and local stakeholders.
5. Integration of co-creation methodologies into university curricula.

The project's innovation lies in exploring how landscape architectural approaches can create new interfaces to enhance municipal capacity for inclusive participation and sustainable transformation.

Expected Outcomes: The expected outcomes include:

- Development of at least one co-created vision for the future of a public space in each partner city.

- Implementation of small-scale but strategic physical interventions that can catalyse broader positive changes.
- Establishment of prototype interfaces between research institutions, teaching programs, and society.
- Creation of assessment tools for evaluating the effectiveness of co-creative approaches in addressing climate adaptation, improved water management, or mobility transitions.

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Keywords:
Keyword 1: co-creation
Keyword 2: participatory landscape design
Keyword 3: municipal capacity building
Keyword 4: living labs
Keyword 5: civic engagement

1.5-CO-S3-6
Entanglements – living-scapes – collaborative meaning-making

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This proposal resonates with the call for the need for more bottom-up co-design and co-creative approaches, working together with local people, communities and a diversity of stakeholders around particular landscapes – the landscapes with which they have a relationship with. Landscapes are living-scapes, continuously being shaped by humans, nonhumans, more-than-humans and natural forces. People who are embedded in a certain landscape (e.g. as habitants, local shop owners, voyagers/commuters through certain spaces) develop and nurture a living relationship with that landscape, making them bearers of knowledge in the domains of: required and desired features and uses, (hi)stories and memories the landscape holds, ecological stories of spaces (in terms of resident species as well as how the ecology of the space has been shaping and changing over time (e.g. due to human impacts, climate change)) and co-exploration of potential artistic co-creations in that landscape.
The landscape is indeed the setting where 'the best of our societies' should manifest. With a nexus lens, if we aspire for just, inclusive and equitable approaches, people who have a relationship with a given landscape should have the right to decide (Lefebvre, 1968) and the right to knowledge to make informed decisions. To facilitate these, collaborative and bottom-up approaches are needed (Puskás, 2024). As Puskás et al. (2021) suggested, landscape and urban planners and architects are advised to adopt the role of facilitators who (beyond participating in a project in their landscape expert capacities with the needed and valuable knowledge and skillset) design and create spaces, approaches and environments in which equitable, just, inclusive, accessible and ecological collaborative processes can take place. This is evidently a challenge that requires further training and gaining a new skillset, yet it paves way for genuine systemic transformation, facilitating transdisciplinary work. Ideally, each stakeholder group would participate in landscape projects at the higher rungs of Arnstein's ladder of participation (1969), namely at least on a partnership level. The rich, deep, place-based knowledges that the public hold intertwined with the expert and professional knowledge co-create ideal soil for resilient, regenerative landscapes where humans can live in harmony and respect with nature.

To translate the theoretical proposal into empirical research, a particular case study will be presented to demonstrate the above notions and offer one of the many possible ways to conduct such landscape projects. The "Performing Planet Activism: Our Place in the Game" project was co-facilitated by artist Hector Dyer and the author, and co-created with a group of residents of Kings Crescent Estate in London, UK. The project collected place-based ecological stories and collectively explored responses to environmental-related issues via journeying through the estate's landscapes. It was fully co-designed and co-created with the participating residents and resulted in a half-day long collective public performance (and a short film of it), a co-created zine, an exhibition and an 'expert workshop' on the methodology. The rich findings were also fed back to local governance and policymaking.co-designco-designco-design

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Keywords:
Keyword 1: co-design
Keyword 2: transdisciplinary approaches
Keyword 3: justice
Keyword 4: transformation
Keyword 5: art

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Abstracts

Oral & Brief Communications
TOPIC 2 • Guiding territories

2.1-BO-S1 - Multi-scalar largescape enhancement

2.1-BO-S1-1

Adaptive Design Interventions for Guiding Territorial Development: A Multifunctional Landscape Approach to Pocket Park Governance

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Guiding territorial development through adaptive design interventions is crucial for optimizing spatial functionality at different scales, particularly in multifunctional landscapes. As urbanization accelerates, pocket parks in underdeveloped regions have emerged as vital micro-spaces that balance public accessibility, informal economic activities, and dynamic governance challenges (Wang et al., 2024, Wang; Chang and Fan, 2021). However, existing research primarily emphasizes their ecological and recreational benefits, overlooking their role in fostering economic inclusivity and intelligent governance (Kerishnan and Maruthaveeran, 2021; Peng, Yang and Tan, 2023; Sadeghi and Bin, 2023). This study investigates how design modifications and governance strategies can enhance pocket parks as multifunctional urban landscapes while accommodating diverse socio-economic interactions.

Using Guiyang's pocket parks as a case study, this research integrates machine vision learning, GIS analysis, time-series modeling, and behavior recognition to analyze spatial utilization patterns, temporal dynamics, and socio-economic interactions within these micro-spaces. By implementing design-based interventions and flexible governance strategies, the study introduces a "Time-Sharing + Intelligent Regulation" model that provides context-sensitive governance tools for intervention at different territorial scales. This model supports a more dynamic and inclusive approach to urban micro-space management, ensuring a balance between public accessibility, informal economies, and spatial adaptability.

Findings from this study contribute to multiscale spatial governance and intelligent urban management, offering scalable, data-driven intervention tools to enhance public space utilization and economic inclusivity. The proposed approach bridges territorial planning, smart governance, and multifunctional landscape design, providing a replicable framework for integrating informal economies into sustainable urban planning. This study advances theoretical discourse on regional project design while offering practical solutions for guiding adaptive governance interventions across different spatial scales.

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Keywords:
Keyword 1: Territorial planning
Keyword 2: pocket parks
Keyword 3: Informal economies
Keyword 4: Spatial governance
Keyword 5: Machine vision learning

2.1-BO-S1-2
The East Leeds Orbital - A Guiding Landscape For The City

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The East Leeds Orbital Route (ELOR) is a pioneering project which was conceived as a multi modal transport corridor 'driven' by nature, with people's wellbeing at its heart. Set within an abundance of attractive and useable green space, it is a guiding landscape for the City of Leeds and represents an innovative re-imagining of the transport corridor with green, blue infrastructure principles underpinning the design, reflected in its 75% Landscape to 25% road space ratio.
Spanning 7 kilometers, the route marks the eastern boundary of the city. The overarching vision was a road corridor set within a country park, integrating infrastructure with nature, that also fosters active travel and ecological enhancement. This balance offers a guiding framework for a city's growth, setting a high benchmark for future developments at the urban edge.
The landscape-focused approach positions green spaces, pocket parks and play on the way at the heart of the design, ensuring that the needs of the environment and community are prioritised. Pedestrians, cyclists, and equestrian users are all carefully considered with shared, informal routes interwoven alongside more formal commuter paths, connecting local communities and encouraging sustainable transport choices.
An essential feature of the project was engagement with local communities and the co-design process embedded within it. This collaborative approach ensured that the infrastructure serves not only as a means of movement but also as a vital space for recreation and social interaction. Central to this is the creation of a family of iconic bridges that encourage east west permeability across the scheme.
Environmental considerations were paramount, with particular attention given to stormwater management. The landscape incorporates water-sensitive design techniques, including drainage systems to slow the flow of water and retain it on site. This approach reduces the risk of flooding and enhances nature and human interaction. The project also strengthens and expands ecological networks, promoting biodiversity and community health. The provision of generous and varied green space helps improve air quality, encourages physical activity, and promotes the well-being of local residents. The scheme encompasses 12 hectares of wildflower meadows, 4.5km of native hedgerows, 2 water bodies and over 35,000 trees.
The heritage aspect also further enriches its design, responding thoughtfully to its historical context. The presence of a Scheduled Ancient Monument within the route's path has been celebrated, respected, and creatively incorporated into the design through storytelling and bold planting choices.
The East Leeds Orbital Route is a guiding landscape setting the stage for the future development of East Leeds. It integrates thoughtful design principles that prioritise the needs of the environment and the community, offering a model for sustainable, holistic urban development. Weaving together landscape design, transportation, ecological networks, heritage, and community engagement, ELOR delivers a vision of urban expansion that is functional but also meaningful and transformative. The project has been recognised with a number of awards and was selected by the UK Landscape Institute as a masterclass project for innovative infrastructure.

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Keyword 1: Leeds, United Kingdom
Keyword 2: Infrastructure
Keyword 3: Landscape led approach
Keyword 4: Sustainable
Keyword 5: Active travel

2.1-BO-S1-3

Systematic Multi-scale Analysis of Cultural Landscape Dynamics in Yellow River Mouth Estuary National Park, China

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The Yellow River Estuary National Park constitutes an exceptional cultural landscape within China, distinguished by its distinctive riverine-coastal systems formed through intricate interactions between natural geomorphological processes and longstanding human interventions. Although conversation efforts within Chinese national parks historically emphasize ecological values， the identification, preservation, and management of associated cultural landscapes have gained increasing recognition as crucial elements of integrated heritage management practices. . LandscapeCharacter Assessment （LCA）, an internationally recognized and methodological robust framework, offers t systematic means to identify , evaluate, and sustainably manage cultural landscape resources within complex environmental and socio-cultural contexts.This paper proposes and applies an adapted multi-scale Landscape Character Assessment framework explicitly tailored to the unique conditions of the Yellow River Estuary National Park,effectively addressing methodological limitations observed in current landscape evaluation practices. The research methodology integrates spatial overlay analysis, ENVI remote sensing interpretation complemented by expert-led manual visual assessments, systematic descriptive and coding-based landscape characterizations, and comprehensive multi-scale mapping approachesThrough this methodology,the study systematically delineates significant cultural landscape compotents at regional, municipal, and local scales. At the regional scale, extensive analyses considering topography, soil profiles, land use dynamics, geological farmations, and climate conditions establish foundational landscape character zones. At the municipal scale, the research employs high-resolution remote sensing imagery to meticulously categorize prominent cultural landscape typologies, such as salt production fields, petroleum extraction zones, aquaculture fisheries, and intensively cultivated agricultural lands. At the local scale, precise mappings at both 10km × 10km and 2km × 2km scales provide nuanced understanding of intricate spatial configurations and structuralattributes within distinct landscape units.

The findings reveal five clearly defined cultural landscape regions within the Yellow River Estuary National Park at the local scale: the coastal wetland fisheries and salt production landscape , the dynamic alluvial estuarine wetlands, agricultural landcapes associated with historic Yellow River channel plains, petroleum extraction sites, and agricultural plains proximal to urban settlements. These detailed classifications deliver critical insights that can inform targeted conservation strategies, guide ecological restoration initiatives, and underpin sustainable landscape governance frameworks, ultimately contributing to integrated ecological and cultural heritage management within national park systems.

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Keywords:
Keyword 1: Landscape Character Assessment
Keyword 2: Cultural Landscapes
Keyword 3: National Parks
Keyword 4: Integrated Heritage Management

2.1-BO-S1-4

LiF-T Landscape in Focus – Tools for Small Municipalities for Sustainable Landscape

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Background: Municipal leaders in small and medium-sized communities face significant challenges when addressing environmental and landscape management. These officials typically lack both dedicated environmental specialists and landscape architects on their teams, unlike their counterparts in larger cities. Without access to specialized personnel, municipalities experience knowledge deficiencies in landscape matters that impact their entire territory, including both urban areas and open landscapes. This lack of professional expertise leads to difficulties in making informed environmental decisions, implementing effective sustainability measures, and successfully involving community members in local planning processes.
The project aims to bridge these gaps by providing municipal representatives with essential resources, including targeted information on environmental best practices, practical tools for landscape assessment, planning and design, guidance for implementing climate-friendly initiatives, and strategies for meaningful community engagement. By equipping local officials with these resources, the initiative seeks to enhance their capacity for sustainable decision-making and help them create more resilient, environmentally sound, and inclusive communities.
The presentation will outline the current state of work, results, and lessons learned while providing an outlook on the next phase of implementation. It will demonstrate how this initiative bridges critical knowledge gaps in environmental governance, empowering local officials to implement sustainable landscape management despite structural constraints.

Objectives: The project aims to develop, enhance, and distribute essential knowledge for representatives of small and medium-sized rural municipalities. Key objectives include:
1. Providing practical tools for sustainable landscape planning and decision-making to communities with limited resources
2. Building local capacity to implement practices for biodiversity and climate change mitigation
3. Creating accessible resources tailored to smaller communities' constraints
4. Promoting public awareness of landscape importance
5. Establishing knowledge networks supporting landscape stewardship
The project balances immediate practical support with long-term capacity building, helping municipal leaders make informed environmental decisions despite resource constraints.

Implementation: The methodological approach focuses on creating practical resources for small municipalities with limited environmental expertise through:
1. Detailed case studies documenting challenges, successful implementation strategies and outcomes across European regions
2. Step-by-step implementation guide with practical tools for smaller communities
3. Digital learning environment with educational materials tailored to small municipalities
The project's innovation lies in bridging the expertise gap faced by smaller communities through accessible digital resources that translate landscape-related best practices into implementable actions suited to their specific constraints and capacities.

Expected Outcomes: The LIF-T project has developed 20 case studies highlighting successful landscape architecture and management practices implemented by small municipalities across Finland, Germany, the Czech Republic, and Slovakia. These resources will be available in multiple languages. A step-by-step guide addressing essential landscape protection and development topics is being created specifically for officials with limited expertise. An interactive e-learning platform featuring self-assessment tools is being launched alongside a dedicated project website serving as a central hub for all resources.

Partners
ČAKA Czech Association for Landscape Architecture (Czech Republic)
IEPS Institute of European Professional Studies (Czech Republic)

SPU Slovak University of Agriculture Nitra (Slovakia)
bdla Federation of German Landscape Architects, Regional Chapter Saxony (Germany)
MARK Finnish Association of Landscape Architects (Finland)

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Keywords:
Keyword 1: landscape
Keyword 2: rural areas
Keyword 3: capacity building
Keyword 4: best practice
Keyword 5: climate change

2.1-BO-S1-5

Resilience Restoration and Symbiosis of Post-Industrial Vulnerable Ecosystems in Salt Lakes via the philosophy of minimal intervention

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The salt lake is the end of the lake's life cycle, but the beginning of lithium batteries. The prosperity of new energy vehicles promotes the development of brine lithium ore, which is more environmentally friendly than the ore method, but it still needs a large area of salt pan and a large amount of fresh water consumption,This is causing an unpredictable ecological crisis to the extreme environment, resulting in the cost of clean energy being transferred to the development site[1].

Rich lithium salt lake distributed in arid high altitude inflow basin, such as desert or plateau, rely on limited fresh water resources and seasonal supply, a few species can adapt to the extreme environment, the food chain is usually not more than three nutritional level (such as: salt algae brine birds), excessive exploitation or climate change (such as precipitation) easy to cause water level, salinity, cause ecological collapse and extremely difficult to recover. For example, the Atacama Salt Lake, the world's largest lithium resource lake, has dropped by 30 meters due to mining, and the food chain at the top of the flamingos has collapsed. The ecological impact of Zabye Salt Lake, located in the third pole of the world, is temporarily controllable, but in the early stage The factories and salt pans that produce lithium carbonate occupy the area of meadows and salt lakes, squeezing the grazing area of herdsmen and the lake living space of brine insects. The salinity of the lake and soil rises dramatically, threatening the characteristic plateau plants and the organisms in the lake[2].

In this regard, landscape designers practice the concept of minimum intervention, dividing the area in the north of the North Lake to carry out large-scale cultivation of "brine insects", and use spring water and river supply to support the aquaculture industry chain[3]. At the same time, the industrial relics are reverse utilized to recycle the salt fields around the North Lake as the gradient salinity pool to maintain the optimal survival salinity of brine (80-120g / L)[4]; recycle the illegally excavated soil to build the isolation barrier. In the transformation of the territory, solar thermal power stations for new technology will replace cow dung to provide heat source for herdsmen. "cow dung" may be used as economic fertilizer for soil improvement and train local herdsmen to participate in the collection and construction. According to the landscape design, the herdsmen should participate in the multi-industry economy, reshape the herdsmen's belief in the land and lake water, and form a positive feedback cycle of "economic incentive-resource protection-cultural identity". Participate in brine insect breeding, become part of historical memory; participate in soil improvement and ecological zone construction, consolidate the belief of water god; act as a guide, excavate and connect potential scenic spots and set up restricted areas to protect fragile landscapes. Landscape may be able to transform industrial violence into a resilience carrier of eco-social-cultural symbiosis through multi-scale tools, providing a restoration paradigm for other salt lakes around the world.

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Keywords:
Keyword 1: clean energy
Keyword 2: Ecological regeneration
Keyword 3: biological materials
Keyword 4: Soil modification
Keyword 5: Sustainable developmen

2.1-BO-S1-6

Nightscapes : The Dark Infrastructure to Live as an adaptative tool for Climate Change

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Lighting design is a field to shape the nightcape by reorganize lights and darknesses. Facing the climate emergency and the biodiversity loss, the urban lighting must not be seen anymore as a functional data for territories planning. The urban lighting has to become a stakeholder of the landcape design.
Do you know that 50% of our lifes is spent by night ?
With the forecasted cities temperatures increase, the night will offer more cool resourcing times. To take adavantge of them, new lighting atmospheres might be thought in order to better accompany the new nocturnal pratices.
CONCEPTO is suggesting a new approach with the **Dark Infrastructure to Live** to support **the renaturation of public spaces without neglecting desirable and comfortable nocturnal cities.**
Nevertheles, this way of working is questioning the lighting design project process : Where is the proper location of lighting sources among a dense vegetation ? What is the good solution to lit the "green street" ? How can we adapt the light according the diffrents usages throughout the nights and seasons ? Can we suggest both calming and aliving night atmospheres ? How much light we need to strengthen the feeling of safety while lowering lighting levels ?
Finally, how better help landcape designers to make the nightscape not a forgotten time and place anymore ?

Thanks to two of our projects (The PARIS 2024 Olympic Village in Saint-Denis, France and The Grand Chemin project in Les Lilas/Montreuil, France) we will tackle the following issues :

1/ How can we establish a Dark Infrastructure to Live (DIL) which is taking into account usages in a dense urban district ?
The PARIS 2024 Olympic Village DIL was introduced to foster the best condition for vegetation development. This concept was comprehend while suggesting neighbourhood nocturnal atmospheres to support several usages and mobilities. All these considerations make this new district a tommorow's city demonstrator.
The Grand Chemin route DIL is preserving so then favouring the vegetation development. It was also thought to put forward ambiances ushering users daily. These lighting environments were elaborated throught **gender criteria filter. Thanks to this analysis we reinforced the feeling of safety at night encouraging all kind of people uses on a kilometers long trail.**

2/ How can we enchant nighttime darkness again in the urban landscape ?
A delight work on darkness and lighting/shadows layout are allowing us to appease pedestrians who are walking close to Dark Infrastructure areas.
For The PARIS 2024 Olympic Village we balanced the frugal lighting approach **(relative darkness) with two immersive experiences** :
- **"Lampadéphories"** makes the descent owards the Seine river desirable without any intrusive lights ;
- **"Into the Athletes' Steps"** is presenting new way of illuminating public spaces by imposing an ambient lighting reduction for a better reading of lighting projections. It is playful for young people and older ones which engage bodies move.
On The Grand Chemin, we used **marking lights called "Tom Thumb" to trace directions for walkers while reducing light levels on roads.**

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Keywords:
Keyword 1: Nightscape
Keyword 2: Dark Infrastructure
Keyword 3: Nocturnal Atmospheres
Keyword 4: Night Urbanism
Keyword 5: Urban Lighting

2.1-BO-S1-7

The Third Landscape- exploring the seam between metropolis and motorway

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The following abstract deals with how to approach landscapes in the urban fringe and what role, among other things, green open spaces get when densification takes place in these territories.
Two municipalities have been studied, situated in growing metropolitan regions, in different parts of Sweden with different landscape characteristics. The projects have a common vision- that that future districts should ensure livability and sufficient access to recreation, with areas that can also contribute to biological diversity and climate adaptation in terms of stormwater management. Yet, the current areas in Sundbyberg and Burlöv are characterized by large and dominant infrastructure systems. This consists mainly of motorways, which cause both noise and pollution. The transport infrastructure prompts physical and mental boundaries that reinforce the feeling of an urban fringe and raises questions about what qualities can exist in the area and what kind of opportunities there are for place-making.
The study is based on two overarching problems. The first concerns place-making, and addresses issues linked to the complex nature of urban boundaries in particularly. This is largely about our perception of past landscapes and existing qualities, which in turn can create an ambiguity in terms of identity, cultural anchoring and future predictability. These issues become particularly pressing for areas sandwiched between large-scale infrastructures, where previously undeveloped land has become an urban waiting room.
The second question deals with the possibility of green outdoor environments in a dense urban landscape. This complexity is not unique to developing peri-urban areas but is a universal problem when densification is progressing. At the same time, the metropolitan fringe present special conditions where the open green space can function as a "springboard" between the inner city and the surrounding countryside, where, for example, natural and cultivated land exists. Biodiversity needs to be taken into account and the potential for such a development has been an important starting point in the study.
A conclusion from our study is that this zone of territorial transformation “The Third Landscape” is a resource for creating a seam between the city and the highway. A place where more activities and affordances could take place if there was a fruitful collaboration between the Swedish Transport Administration, the municipalities and the inhabitants.
On a regional level, planned with regional authorities, nature-based solutions and nature-like zones, together with the road network's green corridors, can contribute to a more functioning landscape ecology.
At a municipal level, natural plantings between roads and built up areas can contribute to multifunctional structures that complement parks and larger natural areas. There is an inspirational example where a municipality has identified these zones and included it the comprehensive plan.
At a local level, natural plantings provide a buffer against the road that reduces negative health effects. Examples of this are that a wooded zone can reduce noise annoyance, filter light and mitigate air pollution. By applying a dynamic designing approach (such as Alnarp's Landscape laboratory) with nature-like plantings the areas can become attractive for play, walks and a diverse wildlife.

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Keywords:
Keyword 1: urban development
Keyword 2: transport infrastructure
Keyword 3: multifunctional
Keyword 4: biodiversity
Keyword 5: nature-based thinking

2.1-BO-S2 - Methodologies of landscape remodelling and digital images

2.1-BO-S2-1

General landscape plans, targeted landscape plans : initial lessons in France

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In France, the landscape project approach at the territorial level has been practiced for over 30 years in the form of "landscape plans". It is financially supported by the State and implemented by local authorities, most often at the inter-municipal level. It is largely participatory by involving elected officials, administrations, technicians and populations.
The Folléa-Gautier landscapers and urban planners agency, created in 1991, has produced around thirty of them - it is the most experienced in this field - in very diverse situations: urban, peri-urban and rural, in temperate, Mediterranean and tropical climates, on generalist or specialist approaches (energy, biodiversity, climate, mobility, etc.), linked or not to regulatory urban and territorial planning. In the late 1990s, the Ministry of the Environment asked Bertrand Folléa to write the Guide to Landscape Plans (published in 2000). Bertrand taught the territorial landscape project for many years at the national higher schools of landscape in Versailles and Blois. In the “landscape and energy” Chair, which he has directed for ten years at the ENSP Versailles, he experimented with “landscape plans for the energy transition”, convincing the public authorities to subsidize them.
What does a landscape plan consist of? What lessons can be learned from these experiences? What are the strengths and weaknesses of the approach? How can we overcome the apparent contradiction between specialized landscape plans and the global and transversal dimension of the societal landscape project, which is its strength? How can we strengthen the effectiveness of this approach to place landscape expertise at the heart of the ecological transition? How can it inspire other countries? To answer these questions, we will propose to closely associate the theory and practice of the territorial landscape project. The transition through landscape, theorized by Bertrand Folléa in “L’Archipel des métamorphoses – la transition par le paysage” (Éditions Parenthèses, 2019), will be presented and illustrated by examples taken from several territorial projects. This coupling of theory and practice will promote critical perspective, clarification of the conditions for its strengthening, and debate on the ability of the approach to be practiced more widely across the planet according to socio-political contexts.

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Keywords:
Keyword 1: Landscape
Keyword 2: Transition
Keyword 3: Landscape plans
Keyword 4: Landscape policy
Keyword 5: Energy

2.1-BO-S2-2

Research on Enhancement Methods for Generating Design Datasets for Landscape Architecture Plans

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Background: With the rapid evolution of artificial intelligence (AI) technology, the design field has significantly benefited from image data-driven deep learning techniques. Utilizing AI-assisted design as a bridge aims to further enhance the efficiency of design analysis and drafting processes. Currently, an increasing number of algorithms are being applied to generative design research. In the field of landscape architecture, due to the complexity and inconsistency of landscape elements, research on the intelligentization of its design has progressed slowly. Some researchers have adopted Generative Adversarial Networks (GANs) for research on generating landscape plan views, all discovering that the quantity of data fundamentally impacts model performance. However, despite data being a critical bottleneck, most current research focuses on optimizing algorithm architectures to improve performance, with less emphasis on proposing widely applicable methods from a data perspective to enhance the performance of existing models.
Scientific Problem: The production of site layout color block maps is a crucial step in training algorithms for generating plan views. The site layout maps required for research on generating landscape plan views rely on manual drawing. Essentially, the creation of site layout color block maps is an image semantic segmentation task. However, semantic segmentation models capable of solving such problems heavily rely on large sample data. Given limited training data, overfitting is prone to occur, leading to a vicious cycle of data scarcity. Data augmentation methods based on deep learning offer effective solutions to such problems, and deep learning-based GANs are widely used for data amplification in complex tasks such as image segmentation. However, in the specific field of landscape architecture, the application of data augmentation remains relatively limited, lacking models specifically tailored for image data acquisition and optimization in this field.
Methods and Conclusions: To address the data bottleneck issue at low cost, this paper proposes and validates an algorithm-driven data augmentation framework. Firstly, combining the characteristics of deep learning and generative design tasks, three key steps are proposed: external environment cutting, hierarchical training, and curve optimization, based on which a complete and effective data augmentation framework for landscape plan views is constructed. Secondly, ablation experiments are conducted on each part of the framework using a test set to validate its effectiveness. Finally, the framework is applied to generate a high-quality dataset of 9,286 sets, which is then used in three mainstream tasks of landscape generative design: "image segmentation", "layout generation" and "plan rendering." The framework's effectiveness is validated with compelling results in practice, optimizing the level of intelligence and automation of landscape generative design models to achieve a rapid and efficient design process.

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Keywords:
Keyword 1: Deep learning
Keyword 2: Data enhancement
Keyword 3: Plane generation design
Keyword 4: Semantic segmentation
Keyword 5: New technological means

2.1-BO-S2-3

Mountain Landscape Visual Perception Patterns: A Geotagged Image Analysis of Chongqing's Two Rivers and Four Banks"

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The natural urban landscape is associated with residents' physical and mental well-being as well as the quality of life[1][2]. Public perception research of these landscapes is increasingly important, particularly where urbanization compromises their integrity and aesthetic value. While most studies focus on visual quality assessments and perceptual preferences of urban landscapes or green spaces, different landscape types affect perception at various scales[3]. Therefore, conducting further analysis on a specific landscape typology is essential for understanding the mechanisms that affect public natural perception.

Mountain landscapes, as a distinct category of natural urban landscapes, offer multiple perceptual layers and angles due to their topography. Particularly in mountainous cities, the interplay between mountain landscapes and urbans becomes more intricate, which brings richer perception. In Asia, due to the cultural influences, urban development needs to consider the spatial configuration of adjacent mountainous areas[4]. Therefore, mountain landscapes represent the local characteristics in urban culture and spatial. Moreover, Asia has some of the most densely built urban regions, which can obstruct sightlines, rendering other natural landscapes invisible. Therefore, mountain landscapes serve as one of the few natural landscapes available for public viewing.

However, literature on the visual perception of mountain landscapes remains limited. Challenges include: (1) most research is confined to rural or protected areas with little focus on urban mountain landscapes[5], and (2) while some studies use perceptual imagery to assess the impact of different elements[6], few examine visual perception from a spatial perspective.

This research aims to understand the spatial distribution patterns of public perception in mountain landscapes and explore the underlying causes by collecting geotagged image data. We focus on the core area of the Two Rivers and Four Banks in Chongqing, China. As a typical mountainous city, Chongqing's main urban area contains over 40 mountain bodies. The combination of high-density buildings and mountain landscapes forms the city's overall appearance, making it a representative case for visual perception studies of mountain landscapes. The research plan involves: (1) collecting and filtering image data from social media platforms such as Flickr, Two Steps, Rednot, and Weibo that reflect Chongqing's urban landscape; (2) analyzing the image content using DeepLab V3+, an image semantic segmentation method, to quantify the proportions of various elements and determine correlations with mountain landscape perception; (3) using geotag data in ArcGIS to spatially visualize mountain perception points and discern public perception patterns.

Results indicate that perception points are mainly concentrated around historic urban quarters and landmarks (e.g., bridges, skyscrapers), exhibiting a point-like distribution with low continuity. Visual attention along riverside roads is minimal. The low perception of mountain landscapes can be attributed to factors such as mountain invisibility, poor traffic accessibility, lack of cultural support, and insufficient facilities. These findings suggest that urban landscape planning should promote a continuous, integrated perceptual experience that highlights the cultural significance of local mountain landscapes.

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Keywords:
Keyword 1: visual perception
Keyword 2: mountain landscape
Keyword 3: GEO-tagged photos
Keyword 4: spatial distribution analysis

2.1-BO-S2-4

Landscape planning and design of high voltage power lines. Case studies in France and the Netherlands.

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As part of the Creatives Lines project (Moquay, 2022; Bonin et al., 2024), the research explores the landscape and ecological measures for the planning and design of high voltage lines (HVL), in an energy transition context. In the actual framework of development of renewable energy productions, the electricity grid is undergoing a restructuring and extension to answer the needs of an electricity production that is more sprawled on the territories, changing our energy landscapes (Pasqualetti, Stremke, 2018). The research is based on the premise that the HVL design and planning process constitutes local "windows of opportunity" (Kingdon, 1984) for the implementation of transition policies. And it is structured around three main questions:

- What are the main characteristics of design and planning guidelines for overhead power transmission infrastructure?
- How are infrastructure, landscape, energy and ecology connected to each other?
- What are the success and failure factors of the studied design and planning guidelines and procedural regulations, with regard to the overall ecological and energy transition objectives?

To answer these questions, we compare case studies in France and the Netherlands (Pistoni, 2020), countries with energy transition goals and which have landscape and environmental approaches that are explicitly linked to electricity transmission infrastructure. Semi-structured interviews with main stakeholders (ex. RTE, TenneT) together with an analysis of the technical literature as well as of field observations, allow to assess the differences of approaches and governance measures in the two countries, putting the national results in a broader perspective.
The two case studies are grounded in distinct territorial and landscape contexts:
- In France, the Lonny-Seuil-Vesle HVL constitutes the backbone of electricity supply in the “Grand Est” Region. The new 400 kV line was inaugurated in 2016 to meet the challenges of economic development and renewable energy. A Plan of Accompanying Measures (“Plan d’accompagnement de projet”, PAP) piloted by RTE allowed the co-financing of around one hundred local projects. Between 2011 and 2017, the line has also been a place of experimentation of the European project Life Elia, dealing with the ecological management of the land projection of the line in order to realise green corridors.
- In the Netherlands, the new HVL Randstad 380kV between Beverwijk and Bleiswijk opened in 2019. With a total length of 80 km, it closes the high-voltage circuit north of the Randstad. TenneT implemented a landscape design strategy concerning design and spatial integration issues. No formal guidelines for accompanying measures were developed but measures of compensation have been implemented (mainly for biodiversity) proportionally to the length of the line.
Results show that support mechanisms such as RTE’s PAP help finance various local projects, particularly benefiting rural areas with limited self-funding, while also raising questions about the integration of networks into the landscape. In the Netherlands, such national support mechanisms do not exist, and only ecological compensations are covered by operators, with case-by-case solutions. However, landscape integration is considered earlier in the process and on a broader scale beyond the scope of environmental impact studies.

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Keywords:
Keyword 1: energy transition
Keyword 2: Energy grid
Keyword 3: Energy landscape
Keyword 4: Infrastructure
Keyword 5: Territory

2.1-BO-S2-5
Walking as an Ecological Practice

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This paper explores walking as an ecological practice within a rapidly emerging new climatic regime that has led to a disorientation, with outcomes dependent on our ability to design differently with the earth without endangering ourselves or other lifeforms (Latour 2021). The point of departure is the experience of 'land sickness' and the realisation that the problems we face not only dog our footsteps; they are our footsteps (Schultz 2023).

In *Wanderlust – a History of Walking*, Rebecca Solnit describes walking as a deeply human practice, tracing the shifting cultural significance of walking (Solnit 2001). In *Walkscapes – Walking as an Aesthetic Practice*, Francesco Careri reminds us that walking has a profound cultural history of generating art, architecture and landscape architecture (Careri 2002). For Henrik Schultz walking is a tool that helps make large-scale landscapes comprehendible and acts as the gateway to and exchange of ideas (Schultz 2014). Walking as an ecological practice is an inquiry-in-action. It asks the fundamental question of how the explorative practice of walking can guide landscape architecture towards synergies between art, memory and ecology?

The paper seeks to answer this question by reintroducing the notion of sauntering, a word derived from 'saint terre', meaning 'without land'. This suggests that walking as an ecological practice has connotations with walking as pilgrimage; it is, quite literally, a search on foot for new land. When faced with a period of life-altering transformation, the 21st-century pilgrim takes upon walking as a way to regain direction in life. Werner Herzog's existential journey on foot through a hostile winter landscape could be such a pilgrimage; it records physical suffering, hallucination and ecstatic revelation, portents, and animistic landscapes in the wreckage of human history and myth (Herzog 1978).

Despite a sense of urgency, walking as an ecological practice is the slow reorientation towards feeling at home in otherwise unhomely landscapes. This is the oikos in ecology – gleaned through movements on foot deep into the Earth's thousand folds (Latour 2018). This is presented in a series of experimental river walks in European watersheds and alluvial landscapes. The first walk is along the Aire River from its spring in the foothills of Mont Saleve (France) to Geneva (Switzerland). The second walk is along the Aarhus River from its springs in Astrup Mose to its outlet in the Port of Aarhus (Denmark). The third walk follows the watershed along the furthest extension of ice during the last ice age (Denmark).

The walks are different in length and duration but share a relationship between landscape as infrastructure, walker in motion, landscape memory, deep time, and human footprint – imprinted in both traversed landscapes and as carbon dioxide in the atmosphere, driving climate change and the emergence of a new climatic regime. The research findings presented show that, as an ecological practice, walking can be used to remember, reappropriate and reimagine the landscapes of tomorrow.

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Keywords:
Keyword 1: Landscape Architecture
Keyword 2: Walking
Keyword 3: Ecology
Keyword 4: Landscape Infrastructure
Keyword 5: Memory

2.1-BO-S2-6

How can landscape architects guide the design of new rural landscapes ? The exemple of agroecology applied to vineyards.

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Faced with the reality of the impact of climate change on vineyards, Moët & Chandon has been committed to researching and developing new agricultural practices and deploying innovative, sustainable solutions pour several years now. As part of this mission, Moët & Chandon took the initiative of creating Essentia, a conservatory for the diversity of grape varieties in the region. By studying the behavior of vine stocks, the aim is to identify the most robust and resilient vines.

Essentia is not only a conservatory for grape variety diversity but also a showcase of biodiversity across its 4-hectare site, incorporating agroforestry principles into viticulture. The landscape architects at MÉTAMORPHOSE were tasked with designing the masterplan and details for this pilot project, organizing the site around the vine plots with trees and hedges compatible with the vines, managing rainwater, and creating natural habitats, including wetlands. Constraints were set regarding the required vineyard areas, on-site air currents to mitigate frost risks, and the design of visitor pathways.

Essentia was originally a gently sloping field near the Montagne de Reims vineyard, surrounded by a road, a railway line, and fortunately a stream and a few natural habitats. The site has only a 5-meter difference between its highest and lowest points, with a slope ranging from 1% to 4.2%. However, this subtle topography was enough to design a main ditch following a contour line to direct rainwater to the base of a high hedge. This system collects road water along the way and channels it to the low point of the site, where it feeds into a wetland sealed with clay (bentonite). A second wetland helps manage excess water from a nearby path, which was often flooded. The site's slight relief, while modest, is thus revealed and useful for the natural irrigation of the plants.

The equivalent of 1.5 hectares has been landscaped, with 140 tall trees, 500 meters of indigenous hedges and a conservation orchard. Perennials were introduced, including marsh irises, roses and marsh bulrushes, formerly used in vineyards. Finally, a flower meadow was also planted. In addition to this, crops based on a mixture of alfalfa, vetch and clover were sown by Moët ; nesting boxes, perches, stony terrains and piles of branches were created to encourage birds to nest and offer small mammals and amphibians shelter from predators. Moët & Chandon has also installed educational panels to enhance the authorized self-guided tour of the site.

A 'dry feet' circuit has been created to offer a diverse and representative overview of Essentia, with a loop path of less than 400 meters. The design also considers views of the vine conservatory from the access roads, the site's orientation for optimal grape production, and the establishment of windbreaks.

While Moët & Chandon expertly managed the technical requirements for the Essentia grape conservatory and the ambition to create a biodiversity pilot project, it was the landscape architects — with their multidisciplinary expertise—who played a key role in designing the plan, selecting plant species, and overseeing contractors.

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SMYTHE A.

Keywords:
Keyword 1: Grape conservatory
Keyword 2: Biodiversity
Keyword 3: Vitiforestry
Keyword 4: Landscape design
Keyword 5: Moët & Chandon

2.1-BO-S2-7

Beyond the Surface: Transforming 2D Green Infrastructure Typologies for 3D Residential Green Space Classification in Singapore

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Improving the quality of residential green spaces (RGSs) is regarded as an alternative to simply intensifying their physical quantity to create a better urban environment, especially in compact cities like Singapore with limited space for urban greening. Enhancing the quality of these spaces can vary depending on the context, requiring context-specific strategies for well-informed design. Currently, several 2D typologies can be used to characterize RGSs' contexts. For example, the Green Infrastructure Typology (GIT) developed by Bartesaghi-Koc, Osmond and Peters (2019) is a landscape typological approach aimed at comparing and reporting the climatological effects of green infrastructures. It is based on physical and spatial attributes, such as the surface fractions of impervious surfaces, grasses, shrubs, trees, and water. However, representing the 3D spatial nature of the landscape (e.g. volume) is still challenging, possibly due to the limited capacity of recording devices to record the landscape in 3D (Swetnam and Korenko 2019).

To address this gap, this study modified the 2D GIT for 3D RGS classification. Specifically, we used a laser scanner to generate 3D point clouds for 144 RGSs in Singapore. We then converted each landscape category from 3D to 2D by removing the vertical coordinates from the point clouds and classified them according to the 2D GIT. Simultaneously, the 3D features of the 144 RGSs were represented using previously developed point cloud-based 3D metrics (Qi, Lin et al. 2022). The results from the 3D metrics were used to adjust the classification thresholds of the 2D GIT for 3D classification.

The classification process revealed five predominant GIT types in the scanned RGSs, including three impervious groups (i.e., IM1, IM2, and IM4) and two mixed groups (i.e., MX1, MX4) of hard surface and vegetation. These 2D typologies showed significantly different results in 3D spatial metrics, like green volumetric ratio, 3D shape index, cluster density, colour variation, and gradient variation. Based on the results of the metrics, we modified five typologies for 3D landscape classification in Singapore. The significance of this study lies in the modified typological approach for 3D landscape representation and the identification of the main typologies of residential green spaces in Singapore.

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Keywords:
Keyword 1: 3D landscape typology
Keyword 2: Residential green space
Keyword 3: Point cloud
Keyword 4: 3D spatial metrics
Keyword 5: Visual quality

2.1-BO-S2-8

Artificial intelligence-driven urban rewilding: biodiversity hotspot design and multi-scale ecological network reconstruction based on optimization algorithms

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Facing the urgent needs of urban ecological restoration, this study proposes a lightweight AI-driven rewilding practice framework, focusing on biodiversity hotspot design and small microhabitat network optimization. Based on drone scanning and open-source species distribution data, a neighborhood-scale soil-hydrology-vegetation dynamic database is constructed, and a lightweight machine learning model is used to identify potential habitats for native plant communities and pollinators; combined with genetic algorithms to generate low-intervention ecological node layouts (e.g., rain gardens on abandoned land, resistant plant communities in contaminated soil remediation zones), to achieve habitat connectivity and stormwater network optimization with a 30% reduction in cost. Under the premise of guaranteeing a 30% cost reduction, habitat connectivity is improved and rainwater infiltration efficiency is optimized. Taking a high-density community in East Asia as an example, the framework accomplished a “plug and play” transformation of a 2,000m2 brownfield site in 3 months, resulting in a 30% increase in the number of microspecies and a 20% increase in the degree of naturalness, among other initial results. The program integrates a simple participatory GIS tool that balances ecological goals with community activity needs by allowing residents to mark priority areas for restoration online. The result provides a new way for small and medium-sized design teams to rewild urban green spaces, and provides a low-cost implementation example for IFLA's “Guiding cities x Biodiversity” issue.

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Keywords:
Keyword 1: Urban Rewilding
Keyword 2: Biodiversity Hotspots
Keyword 3: Optimization Algorithms
Keyword 4: Micro-habitat Networks
Keyword 5: Artificial Intelligence

2.1-CO-S1 - Largescape, soils and plant cycles

2.1-CO-S1-1

Conservación Activa del Paisaje Altiplánico desde los Intersticios Mineros: Caso Salar de Maricunga

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La investigación proyectual aborda el impacto de la extracción minera en paisajes altiplánicos frágiles desde la arquitectura del paisaje, en dónde se reconoce un espacio de oportunidad para diseñar soluciones que integren los usos productivos, científicos y turísticos en el salar de Maricunga con el fin de promover la conservación del paisaje. En el marco de las Evaluaciones de Impacto Ambiental, la minería del Litio ha tenido el permiso para la exploración y explotación del recurso mineral en territorios desérticos altiplánicos, específicamente en salares, como fuente principal de Litio; las operaciones mineras han perturbado el ambiente altoandino, como se ha visto en múltiples salares entre Chile, Argentina y Bolivia.
Lo anterior es el punto de partida para situar la investigación considerando el recurso hídrico, como sostenedor de la vida en el desierto más árido del mundo, y contrastarlo con la actividad productiva que está en auge actualmente, entendiéndola como una minería del agua. Esto se respalda en la búsqueda de una transición energética, en donde la sociedad contemporánea se ha enfocado en el producto resultante del proceso de extracción del metal. Así, el modo de operar en los salares provoca una pérdida de los valores naturales, sin realizar medidas de mitigación adecuadas respecto a la fragilidad ecológica que presentan estos hábitats y las especies endémicas y micro endémicas que existen en el territorio.
La investigación propone estrategias y un diseño, bajo lo establecido por las declaraciones ambientales de proyectos de extracción, en el salar de Maricunga para su conservación de manera activa, es decir, una adecuada protección de áreas con fragilidad ecológica y una integración de las actividades tanto productivas como científicas y turísticas. El proyecto considera operaciones de reutilización de los descartes mineros, nuevas circulaciones de agua superficial y activación de espacios en una nueva estructura que articula las actividades mineras que han convertido al salar en un campo de maniobras, en conjunto con las áreas de mayor fragilidad en el sistema, para promover las investigaciones científicas y del Estado, como también el desarrollo del turismo como mecanismo de control en un paisaje alterado.

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Keywords:
Keyword 1: Paisaje Altiplánico
Keyword 2: Conservación del Paisaje
Keyword 3: Corredor Biológico
Keyword 4: Salar de Maricunga
Keyword 5: Minería del Litio

2.1-CO-S1-2

The Renaissance of "Design With Nature" (McHarg 1969): A Call for an Ecological Reground in Landscape Architecture

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Landscape architecture stands at a critical juncture. While visually oriented design remains a vital component, the profession must evolve to effectively address the complex, interconnected challenges facing humanity – the so-called "wicked problems." Over the past half-century, landscape architecture has, arguably, strayed from the profoundly impactful, ecologically focused approach pioneered by Ian McHarg in his seminal work *Design with Nature* (1969). This departure has limited the profession's ability to fully engage with the environmental, social, cultural, and economic dimensions of an expanded environmental design-planning construct.

A crucial challenge for landscape architecture is re-establishing itself as a leading design-planning discipline capable of envisioning and implementing holistic solutions. The current visual-centric focus is limiting; our ethical underpinnings demand a more rigorous and comprehensive approach. Landscape architects must be more proficient in providing everyday solutions that address environmental sustainability, social equity, cultural preservation, and economic viability. This expanded scope is essential for authentically engaging communities and empowering them to thrive amidst increasingly complex local and global conditions, navigating both political and educational (didactical) environments and landscapes.

The profession must be grounded in environmental design planning as a primary skill to achieve this. Only then can our design solutions become truly plausible and impactful. Focusing solely on visual perception, experience, and associative factors overlooks enormous opportunities to produce evocative and environmentally sound outcomes. We risk becoming mere aesthetic consultants rather than transformative agents of change.

The paper focuses on rural and coastal territories.

The paper challenges landscape architects to embrace a renewed commitment to ecological thinking. It explores the interconnectedness of environmental principles and their practical application within design-planning processes. This involves moving beyond superficial aesthetics to address the fundamental ecological processes that shape our environment. The thoughtful design of green infrastructure networks can mitigate most current environmental management inadequacies and impacts while enhancing community well-being.

In addition, the paper explores the relationship between restoring permanently protected indigenous ecologies and their integrated connection to introducing productive exotic ‘novel’ ecologies.

Therefore, the paper presents a range of case studies, supported by detailed graphics, to illustrate the power of this integrated approach. One example is Waiheke Island, Hauraki Gulf, Auckland, New Zealand/Aotearoa, where a particularly engaging community transformation has been implemented. Another compelling example is Mountain Landing, an implemented project in Kerikeri, Northland, New Zealand/Aotearoa, demonstrating the benefits of intentional environmental design-planning outcomes. Thirdly, Paewhenua Island, Mangōnui. Northland, New Zealand/Aotearoa is another implemented example of an integrated, comprehensively designed rural/coastal community within a protective (Indigenous) green infrastructure and productive and open space amenities. These projects showcase landscape architecture's potential to create aesthetically pleasing and ecologically resilient environments. They highlight the synergistic relationship between ecological principles and design-planning excellence.

By re-embracing the core principles of "Design With Nature," landscape architecture can reclaim its position as a transformative force in shaping a sustainable and equitable future. This paper calls for a paradigm shift, urging the profession to move beyond visual aesthetics and embrace a more holistic, ecologically-informed approach to environmental design planning.

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Keywords:
Keyword 1: Design With Nature
Keyword 2: Wicked Problems
Keyword 3: Design-Planning
Keyword 4: Ecological Thinking
Keyword 5: Community Development

2.1-CO-S1-3

Care for the landscape through regenerative viticulture: two examples in the Loire valley of France

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The past half a century of viticultural history has focused on productivity and increasing yields through the extensive use of pesticides, herbicides and a number of fertilizers, degrading and impoverishing soils and terroir (the unique combination of soil, climate and social context).
Today, as viticulture attempts to adapt to a changing climate, land-based methods can be used to ease that transition. Professionals working with plants and living systems such as landscape architects are uniquely positioned to endorse a role of advising, guiding, and implementing these methods to accompany vineyard growers.
Two case studies of previously abandoned or degraded vineyards that have now turned to regenerative practices are described through the lens of care for the land.
Domaine des Quarres, in the Anjou region is a fine example of the rewilding of a vineyard parcel and the integration of agroforestry and regenerative hydrology principles such as “keylines” in the landscape. The parcel was once farmed mechanically and many chemicals were used in the farming process. Advised by French viticultural specialist Alain Malard, this vineyard is an example of landscape adaptation to retain available moisture, foster biodiversity, and promote care for the existing soils. The vintner is looking to protect the parcel in the long term with the creation of a community-supported biodiversity reserve.
Domaine des Trois-Toits in the Muscadet region is a vineyard that recently has expanded on abandoned vineyard land and has called upon the expertise of a landscape architect to design several of their newly acquired parcels. A comprehensive design scheme has been developed focusing on easing seasonal vineyard work such as pruning and harvesting by creating parcels of smaller scale separated by hedgerows, remnant forest patches, dead hedges etc. The vineyard property abuts a growing commercial area and the grower seeks to demonstrate a caring approach to landscape edges.
These two examples offer novel ways that designers can be engaged in vineyard design and how this involvement benefits the landscape and the physical comfort of the vintner’s work, i.e. parcel sizes adapted to a day’s work and offering shade in the vineyards. In both examples, the vineyard is treated as a polyculture garden and the vintners are becoming fluent in new agricultural or forestry practices to care for their landscapes.
Vineyard owners in the face of climate change must learn not only how tend to their vines but also how to tend to their “gardens”, meaning tending to their entire vineyard ecosystem including vines, trees, human and non-human forms of life. A vineyard owner cares for his landscape every day and reciprocally a thoughtfully-designed vineyard will preserve and improve the comfort of the grower’s daily work.
As we zoom out from the individual vineyard scale and start to look at the aggradation of parcels, the fields of viticulture and landscape architecture at large have a unique role in the design of regional projects whether in areas at the edge of sprawling suburbs or in fully rural areas.

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Keywords:
Keyword 1: Viticulture
Keyword 2: Agroforestry
Keyword 3: Landscape of care
Keyword 4: Regenerative hydrology
Keyword 5: land-based methods

2.1-CO-S1-4

Integrating Food Forests and Edible Landscaping for Sustainable Urban Development

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With accelerating global urbanization and growing food security challenges, traditional urban green spaces often prioritize aesthetics over functionality, while community gardens struggle with inefficient management and sustainability issues. Although existing research focuses on agricultural productivity or ecological aesthetics, there remains a critical gap in analyzing the synergies between food production, ecosystem services, and community engagement.

Food Forests and Edible Landscaping: A Sustainable Paradigm

A food forest is a multi-layered planting system mimicking natural ecosystems, integrating trees, shrubs, herbs, and groundcover plants. This approach emphasizes biodiversity, ecological balance, and reduced chemical inputs while enhancing soil health and carbon sequestration. Compared to conventional agriculture, food forests are more sustainable and self-sufficient. Edible landscaping, meanwhile, incorporates food-producing plants into urban spaces like parks, campuses, and community gardens, enabling residents to participate in local food production. These strategies not only strengthen urban food resilience but also foster community cohesion, environmental awareness, and climate adaptation by mitigating heat island effects and providing habitats for biodiversity.

Methodology: A Mixed-Methods Approach

This study employs quantitative and qualitative methods to holistically assess the impact of food forests. Quantitatively, experimental food forest plots are compared with traditional farmland and natural ecosystems to measure crop yields, biodiversity, soil fertility, and carbon sequestration. Surveys evaluate participants' shifts in dietary habits, socioeconomic dynamics, and attitudes toward sustainable agriculture. Qualitatively, interviews with planners, farmers, and residents document agricultural practices and community interactions, complemented by participatory observations. Findings from both approaches are integrated to provide a comprehensive analysis of food forests' long-term viability.

Case Studies: Urban Innovations in Hsinchu, Taiwan

1. Mackay Memorial Hospital Food Forest: Collaborating with senior volunteers and environmental groups, this project transformed urban green space into a productive ecosystem featuring citrus trees (kumquats, lemons) and guavas. Beyond enhancing food resilience, it redefined elderly care by empowering seniors as active contributors, creating a socially inclusive long-term care model.

2. General's Village Food Forest: A municipal-community partnership employs multi-layered planting (fruit trees, herbs, edible groundcover) to establish a sustainable ecological space. Community stewardship has strengthened local identity while advancing environmental education, merging ecological conservation with urban food production.

3. Hsinchu Zoo Edible Landscape: Integrating animal welfare and environmental education, this initiative plants mulberry trees and forage grasses to supplement animal diets, reducing feed costs and offering natural dietary options. Visitors learn about ecological interdependencies, fostering human-animal-environment coexistence.

Conclusion: Toward Resilient Cities

Food forests and edible landscaping bridge urban food production and ecological functionality, creating aesthetically vibrant yet practical green spaces. These strategies not only provide healthy, sustainable food sources but also enhance biodiversity, mitigate climate impacts, and strengthen social ties. As environmental and food security awareness grows, these models will play a pivotal role in shaping future urban and agricultural development.

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Keywords:
Keyword 1: Food Forests
Keyword 2: Edible Landscaping
Keyword 3: Urban Food Resilience
Keyword 4: Biodiversity
Keyword 5: Community Engagement

2.1-CO-S1-5

Cohesive Aesthetics for Multifunctional Landscape Territories: In Time of Ecological Understandings

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Aesthetics in landscape architecture have always reflected our values and our relationship with nature throughout history (Fink, 2003; Ritter, 1995). With the emerging climate and biodiversity crisis (IPCC, 2023; Kolbert, 2015; McDonald *et al.*, 2019), landscape aesthetics has seen a shift towards sustainable and ecological design in theories and practices. With Denmark undergoing a nationwide transformation of its rural area from heavily industrialized agricultural land to a multifunctional landscape with sustainability and ecological intentions, we are facing yet another shift in the aesthetic principles to guide this shift towards a systematic and cohesive ecosystem where all living beings on earth are presented (Morton, 2016).

This article explores the development of a vocabulary for a more ecological and systemic perspective on landscape architecture and planning. Grounded in theories of holistic and ecological design, including Patrick Geddes' holistic urban planning to Ian McHarg's ecological design principles (McHarg, 1969), Richard Forman's concept of land mosaics (Forman, 1995) and Anne Whiston Spirn's interpretation of landscape as a language (Spirn, 1998). The study further integrates contemporary theories on shifting aesthetic perspectives (Coccia, 2019; Latour, 2018) in the relationship between cities, nature and landscapes (Nielsen, 2023). The development of this vocabulary is strengthened through an analysis of relevant contemporary case studies, illustrating how aesthetic considerations intersect with ecological and structural transformations.

This is conducted within the context of Denmark's ongoing rural and peri-urban landscape transformation, which aims to meet the nation's sustainability goals by 2050 and the national demand for 30% protected nature. This initiative has placed the rural and peri-urban areas under the spotlight, as centuries of deforestation, draining and industrialized farming have left behind barren ecological value. These land use practices have resulted in a monotonous and often overlooked reality, reinforcing a function-oriented aesthetic in both public perception and landscape practices.

The vocabulary is tested and further developed through a primary case study: a large-scale landscape planning project near Aarhus, Denmark. Spanning around 1.000 hectares, this project integrates multiple land-use transformations, including the establishment of an energy park, solar farms, nature restoration, afforestation, and urban development. As a pilot initiative in collaboration with the Aarhus School of Architecture, the project aims to develop new methods and frameworks for understanding large-scale landscape transformation and land-use change.

Through the theoretical inquiry and case study analysis, the article examines the evolving values and perceptions shaping our relationship with the environment. It critically assesses the aesthetic dimensions of current landscape practices and their ability to reflect and respond to these shifting values at territorial scales. Based on this analysis, the article proposes a new perspective on cohesive aesthetics for multifunctional landscape territories. It presents design strategies that align with evolving ecological and systemic paradigms, using the Aarhus landscape transformation project as a 1:1 research by design study(Jonas and Grand, 2012; Prominski and Von Seggern, 2019; Wang and Groat, 2013). This case exemplifies a holistic and multifunctional land-use approach, highlighting the evolving role of landscape architects in navigating large-scale ecological transitions.

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Keywords:
Keyword 1: Aesthetics
Keyword 2: Landscape architecture
Keyword 3: Territorial planning
Keyword 4: Technical infrastructure
Keyword 5: Ecological thinking

2.1-CO-S1-6

Designing climate change. Landscape design as proactive stratégie for historical cities' adaptation : the case of Rome

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The paper will show the progress of some ongoing research on the climate adaptation of Rome in the Department of Architecture and Design of Sapienza, in collaboration with the National School of Architecture Paris-La Villette - 'Architecture, Milieu, Paysage' Research Team and with the Climate Office of Rome. Research's aim is to define landscape design strategies to support Rome's climate adaptation, through interventions that root in the contexts, integrating cultural, social, environmental, and climatic differences of a complex and historically stratified city like Rome. The recognition of different urban parts is significant in relation to the climate crisis, according to different climate footprints, vulnerabilities and risks (environmental, social, cultural) and above all different possibilities for action and reduction of local and indirectly global climate impact starting from the availability of green areas as they could be seen analyzing land cover and land use or potentially re-greening areas.The differences in climatic behaviour of the different parts of the city are assumed as possible drivers of local adaptation measures, suited to the contexts, going beyond generic and standardized measures.
Fundamental element of the research is the transdisciplinary approach. It keeps together the environmental, cultural, economic and social dimensions defining effective strategies from a technical point of view (through targets and measurable indicators useful for monitoring the results) without forgetting the spatial and aesthetic quality, to trigger processes of empowerment, education, community training and involvement.
Research's innovation also lies on overcoming neutral measures, adopting a pro-active approach. Landscape project, ist herefore taken as a tool to overcome playing defence, using only restrictions, mitigations and compensations. It's about playing offense, implementing the recent Nature Restoration Law (June 2024) promoting recovery of biodiversity and resilient nature, restoring degraded ecosystems, even urban ones, limiting local (and global) warming, preventing natural disasters. The multidisciplinary research group collaborates with the institutions that are working on the Rome Climate Plan ("Climate" Office of Rome) and research institutes responsible for climate monitoring on a national scale (National Environmental Information System Service_ISPRA Institute for Protection and Environmental Research). Development and monitoring of the social and perceptive impact of new cultural aesthetic values connected to climate adaption measures are developed in collaboration with the AMP-ENSA of Paris la Villette in Paris. The study of the recent landscape projects in the French capital following the prescriptions of the Paris Climate Plan, contributes to the constitution of quantitative and qualitative indicators to be adopted in climate adaptation strategies of complex historical cities as Rome.

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Keywords:
Keyword 1: LANDSCAPE ARCHITECTURE
Keyword 2: CLIMATE CHANGE
Keyword 3: URBAN DESIGN
Keyword 4: BIODIVERSITY
Keyword 5: SOCIAL COMMUNICATION

2.1-CO-S2 - Largescape, analysis and digital tools

2.1-CO-S2-1

Landscape Transformation in the Age of Solar Energy: A Spatial Analysis of Photovoltaic Landscapes in the Loess Gully Region

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Climate change and resource depletion have accelerated the transition from fossil fuels to renewable energy. Historically, energy development has been a driver of landscape transformation (Pasqualetti, 2012). Compared to traditional energy, solar power requires larger land areas due to its lower energy density, leading to significant impacts on regional landscape patterns. The large-scale construction of solar power plants has reshaped existing landscape, forming a new type of landscape known as the "photovoltaic landscape". Understanding its spatial characteristics and evolutionary patterns is essential for guiding sustainable planning and design.

This study analyzes solar power plants in China's Loess gully region, which is the main landform unit in the Loess Plateau, establishing a spatial analytical framework for photovoltaic landscapes at both regional and site scales. At the regional scale, a two-step cluster analysis combined with automatic segmentation in eCognition was employed to classify landscape types (Yang et al., 2020). The spatial distribution characteristics of solar power plants were identified using kernel density analysis, Getis-Ord Gi* hot spot analysis and natural breaks classification in GIS. Additionally, the spatial relationships between solar power plants and landscape elements such as terrain, landforms, vegetation, land use, human activities, ecological and cultural values, and environmental risks were examined through spatial overlay analysis, spatial autocorrelation analysis and multi-ring buffer analysis (Liu et al., 2023). Furthermore, landscapes and solar power plants were considered as integrated photovoltaic landscapes and subjected to typological classification and characteristic synthesis. At the site scale, two typical samples were selected from each regional photovoltaic landscape category for in-depth analysis through case study and morphological analysis. Using high-resolution satellite imagery and field survey, the study examined changes in landscape element before and after the solar power plants construction, analyzing system layouts, patch configurations and array orientations (Oudes and Stremke, 2021).

The findings reveal distinct spatial characteristics at both scales. At the regional scale, solar power plants are predominantly centralized but spatially dispersed, showing strong correlation with terrain, landforms and settlements. Some plants are located in ecological and cultural sensitive areas or regions prone to soil erosion. At the site scale, the spatial configurations of photovoltaic landscapes vary significantly based on terrain conditions. In flat areas, photovoltaic arrays are arranged in grid patterns with regular patches and centralized layouts, showing lower adaptability to the original landscape. In rugged areas, arrays align with contour lines, forming irregular patches with dispersed system layouts, demonstrating higher responsiveness to landscape features.

This study highlights that the existing photovoltaic landscapes result from historical siting decisions rather than optimized planning. In some cases, photovoltaic development exacerbates ecological vulnerability or disrupts cultural landscapes. Future photovoltaic landscape planning should focus on optimizing the siting decisions, balancing energy production with environmental conservation, and integrating solar power plants installations with local landscapes to enhance long-term value. The proposed analytical framework provides a scientific basis for assessing photovoltaic landscapes impacts and supports sustainable energy planning, facilitating synergy between renewable energy development and landscape conservation.

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Keywords:
Keyword 1: Solar Power Plant
Keyword 2: Photovoltaic Landscape
Keyword 3: Spatial Characteristics
Keyword 4: Photovoltaic Landscape Typology
Keyword 5: Photovoltaic Landscape Morphology

2.1-CO-S2-2

Landscape Architecture or Revolution?: New experiments in AI Technology Application in Landscape Design

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This presentation aims to map contemporary experiments and the potential applications of artificial intelligence (AI) in landscape architecture, with a particular focus on landscape planning and design. While the discussion primarily draws upon my own research and projects, it also situates these investigations within broader trends in AI-driven design and research. The presentation is structured into two key sections, each addressing distinct yet interconnected dimensions of AI's impact on landscape architecture.

The first section explores the role of AI-generated image technology in landscape design. Since the advent of DeepDream and the proliferation of Generative Adversarial Networks (GANs), AI-driven image generation has fundamentally reshaped the paradigms of art and design. Landscape architecture is inevitably influenced by these advancements. The creation of the polemical artwork Edmond de Belamy (2018) using a Creative Adversarial Network (CAN) demonstrated AI's capability to engage in artistic production, challenging the notion of human originality in art. Contemporary AI artists such as Pindar Van Arman and Refik Anadol continue to push the boundaries of AI-generated visual art, highlighting the evolving relationship between computational creativity and design. This section critically examines the mechanisms underlying major AI algorithms utilized in the art and design fields and assesses their implications for landscape architecture. Beyond serving as a tool for representation and visualization, generative AI enables landscape architects to transcend traditional design methodologies. The integration of GAN algorithms with parametric design applications facilitates the adaptation of classical garden designs to varied site conditions. Additionally, the incorporation of augmented reality (AR) into design workflows suggests a future where shop drawings may become obsolete in construction practices.

The second section reviews recent research methodologies leveraging AI to analyze the efficacy of landscape projects in mitigating climate change. AI-integrated remote sensing technologies enhance our comprehension of ecological systems by enabling the processing of vast environmental datasets. These advancements provide landscape architects with critical insights for developing strategic responses to climate change. The integration of AI with Light Detection and Ranging (LiDAR) and Hyperspectral Imaging Systems (HIS) not only improves analytical accuracy but also automates landscape surveying and assessment processes. Furthermore, genetic algorithms introduce innovative methodologies in AI-assisted landscape planning, presenting opportunities for broader applications in future landscape practice. It is imperative to incorporate quantitative models such as I-Tree, SWAT, SWMM, InVEST, and ENVI-met into the landscape design process to evaluate the effectiveness of environmental interventions. The studies presented in this section illustrate that AI as a generative tool and as an analytical instrument are not discrete aspects but rather interdependent dimensions of AI technology.

As the field of landscape architecture confronts the challenges of the climate crisis, it is essential to bridge research and practice by integrating AI-driven methodologies into planning and design strategies. This presentation underscores the necessity of leveraging AI technologies to foster more resilient and adaptive landscapes in the face of global environmental change.

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Keywords:
Keyword 1: Artificial Intelligence
Keyword 2: Generative Adversarial Networks
Keyword 3: Generative AI
Keyword 4: Analytic AI
Keyword 5: Climate Change Mitigation

2.1-CO-S2-3
From Canvas to Code: Evolutions in Landscape Representation

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Recent innovations in data-driven technology join a centuries-long lineage of technological advancements that, with every iteration, have enhanced the fidelity of landscape proxies, that is the representation of real-world, physical environments. Together, these advancements underscore an enduring relationship between technological progress and the modes by which we represent, understand, and operationalise landscapes.

This paper will explore the historical evolution of landscape representation and the tools and technologies that have driven its transformation, from analogue methods rooted in the fine arts and cartography to digital methods and ultimately gamification that enable precise, dynamic, and interactive models of our environs. Central to this exploration is the concept of digital twins, which are virtual replicas of physical environments that integrate real-time data, predictive analytics, and advanced visualisation. As both a scientific tool and a creative medium, digital twins exemplify the convergence of precision and imagination, offering new ways to simulate, preserve, and reimagine landscapes. Beyond their technical applications, they invite us to consider how digital technologies can bridge the gap between objective analysis and subjective experience, enabling us to understand landscapes as they are while also envisioning what they might be.

Drawing from two case studies led by the authors—one in southeast Ireland and another in Knoxville, Tennessee—this paper explores the application of digital twin technology in the context of these two innovative projects, showcasing how this medium for representation can be used for different types of landscape with their respective characteristics and challenges. The first case study, Cúpla Trá, a three-year project funded by the Irish Environmental Protection Agency, focuses on the protection of a coastal landscape including an extensive sand dune system which is increasingly threatened by climate change and human activity. By adopting and adapting the established methodology for creating a digital twin and incorporating gaming software the project aims to capture and disseminate an accurate as possible model of the region, which includes the dynamic topography of its sand dune system, as well as the ecological assets of the local flora and fauna. When completed, the interactive model will show the past, present and future of this constantly shifting landscape to benefit the local community as well as inform policy decision-makers.(1)

In comparison, the second case study, a pedagogical project in Knoxville focuses on loss and liminality in an urban landscape, employing these same technologies in a classroom setting. The class challenges students to use digital twins to reimagine derelict urban areas, emphasising the speculative and imaginative potentials of the technology. Together, these case studies aim to demonstrate the versatility of digital twinning, from its capacity to represent urgent ecological challenges to its ability to inspire and speculate on new visions for liminal spaces, allowing for new interpretations as well allowing for stakeholder interactivity and participation.

Through this postphenomenological(2) lens, we consider how digital twins can transcend their technical applications to become tools for storytelling, education, and community empowerment and informing policy, ultimately redefining what it means to represent and experience landscapes in the digital age.

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Keywords:
Keyword 1: Representation
Keyword 2: Technology
Keyword 3: Digital Twins
Keyword 4: Erosion
Keyword 5: More-than-human

2.1-CO-S2-4

Enhancing the Positional Accuracy and Reproducibility of Landscape 3D Models Using UAV Photogrammetry with RTK-GNSS

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The digitalization of Landscapes management in Japan is accelerating with advancements in 3D modeling and remote sensing technologies[1)2)]. Many urban parks, developed during the period of rapid economic growth from the mid-1950s to the early 1970s, now face severe maintenance challenges due to aging infrastructure, financial constraints, and labor shortages. In address these issues, the Ministry of Land, Infrastructure, Transport, and Tourism (MLIT) has launched initiatives such as Project PLATEAU, which aims to construct nationwide 3D city models. However, current 3D models rely primarily on aerial photogrammetry conducted by manned aircraft, which has a fundamental limitation: the difficulty of accurately reconstructing vegetation on the ground surface. This paper explores a method to improve the positional accuracy and reproducibility of Landscapes using UAV-based photogrammetry with RTK-GNSS.

This investigation was conducted at the Atsugi Campus of Tokyo University of Agriculture. Referring to the previous study by Losè et al[3)]. and Forlani et al[4)], a UAV equipped with RTK-GNSS was used to capture high-resolution aerial images, comparing two imaging methods: nadir (orthophoto) and oblique photography. While orthophotos provide a top-down view commonly used for mapping, oblique images, taken at an angle, enhance the visibility of vertical surfaces and shaded areas. In optimize measurement accuracy, flight parameters were determined based on the UAV surveying guidelines of the Geospatial Information Authority of Japan, setting a ground sampling distance (GSD) of 1.5 cm and a flight altitude of 119.4 m.

Aerial triangulation analysis revealed that oblique imagery significantly outperformed orthophoto-based models in positional accuracy. The root mean squared errors (RMSE) for oblique images were ±0.034 m (horizontal), ±0.041 m (vertical), and ±0.053 m (3D), demonstrating superior precision compared to traditional orthophoto methods. Notably, oblique imaging captured detailed tree structures and shaded ground areas that were challenging to reconstruct using orthophotos. These results clearly indicate that 3D reconstruction using oblique imagery substantially enhances both positional accuracy and spatial reproducibility compared to conventional methods.

The findings of this study extend beyond park management, suggesting potential applications in ecological monitoring, Landscapes design, and urban forestry through enhanced digital twin technologies. The ability to create high-precision 3D models using UAV photogrammetry reduces reliance on labor-intensive ground surveys and makes geospatial data more accessible to various stakeholders. Furthermore, integrating this method into Project PLATEAU could strengthen Japanese digital mapping infrastructure, enabling more accurate representations of natural environments.

As UAV technology and photogrammetric techniques continue to evolve, the fusion of high-precision 3D modeling and digital twin technologies are expected to transform how Landscapes are visualized and managed. This paper represents a step toward a future where digital Landscapes mirror real-world complexity with exceptional accuracy. Further advancements in UAV photogrammetry will expand its applications in smart city initiatives, ecosystem conservation, and sustainable urban planning.

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Keywords:
Keyword 1: UAV Survey
Keyword 2: Photogrammetry
Keyword 3: RTK-GNSS
Keyword 4: 3D Modeling
Keyword 5: Landscape Reconstruction

2.1-CO-S2-5

Research on Multi-objective Optimization of Urban-Rural Blue-Green Space Network Based on NSGAIII Algorithm: A Case Study of Chengdu New Area

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With the rapid advancement of global urbanization [1], urban expansion has brought significant ecological issues and resource conservation challenges [2]. This is particularly evident in newly developed urban areas, where imbalances between urban and rural blue-green spaces exacerbate human-land conflicts and intensify resource disputes [3]. Addressing these issues has emerged as an urgent international challenge. Meanwhile, with the rapid iteration and advancement of artificial intelligence technology [4], the question of whether new technologies can be harnessed to leverage the role of landscapes will remain a key focus for the landscape architecture discipline in the future.

This study employs the Non-dominated Sorting Genetic Algorithm III (NSGA-III) [5] and uses Chengdu Eastern New Area—characterized by rapid economic growth and dramatic shifts in urban and rural blue-green spaces [6]—as a case study to conduct multi-objective optimization research on urban and rural blue-green space networks. By applying the artificial intelligence optimization algorithm NSGA-III to regional blue-green space networks [7][8], the research seeks optimal spatial layout solutions that balance the objectives of carbon storage resources, water resources, and biodiversity benefits.

A significant innovation of this study lies in its application of the multi-objective optimization algorithm NSGA-III to the field of landscape architecture, specifically in optimizing the layout of urban and rural blue-green spaces. By innovatively integrating intelligent algorithms with landscape architecture planning, this research explores the potential of NSGA-III to resolve high-dimensional ecological design conflicts [9]. It offers a replicable model for the sustainable planning of blue-green spaces in rapidly urbanizing regions, aligning with the demands of sustainable development. Another key innovation is the development of urban and rural blue-green space networks through multi-objective optimization. This approach proposes a systematic method that incorporates water resources, biological resources, and carbon resource benefits as optimization objectives, while integrating spatial layout and ecological protection requirements.

This research not only provides theoretical and practical guidance for sustainable urban planning in Chengdu Eastern New Area but also establishes a reference framework for promoting high-quality development in other urbanizing regions.

Keywords: Multi-objective optimization; NSGA; Blue-green space network; Chengdu Eastern New Area;

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Keywords:
Keyword 1: multi-objective optimization
Keyword 2: NSGA
Keyword 3: blue-green space networks
Keyword 4: Chengdu

2.2-BO-S1 - Tools for reinventing territories in situations of risk and environmental change

2.2-BO-S1-1

Estuarism: A critical framework for designing adaptive coastal landscapes in northern Spain

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Hydrating, feeding, producing, and oxygenating - estuaries are vital landscapes capable of engendering life. Positioned at the thresholds of diverse lands and waters, they represent non-binary ecosystems, creating environments that sustain biodiversity and support human activity. Yet, under growing climatic friction, they demand a new approach—one that moves beyond anthropocentric development towards an entangled coexistence with nature. Under this premise, the presentation explores the concept of *Estuarism*, a critical framework for designing adaptive and tactical interventions in coastal landscapes, taking the Nalón river estuary in northern Spain, as a case study. It belongs to the polynuclear bioregion of Asturias, which is home to a variety of species, including the migratory eel from the Sargasso Sea. It is a site of converging flows, both human and non-human, which has undergone significant degradation due to the aggressive extractive activity of coal mining and its subsequent post-industrial reconversion. *Estuarism* embraces a climate form over a carbon form. This specific site could serve as a model for other coastal estuaries, prompting the following question: How might coastal landscapes be designed enhancing trans-species communities and becoming resilient to environmental change?

To answer this question, the methodology employs a comparative mapping approach to deploy design strategies for estuarine regeneration. It examines the twenty-six estuaries along the Cantabrian coast from Galicia to the Basque Country. Each estuary is analyzed and organized in a circular way according to its proportion of ecosystem services related to water, oxygen, food, industry and culture. A set of tactical interventions, drawn as an atlas of regenerative elements, is then proposed as a tool for engaging in co-design processes. The combination of elements depends on the needs of each estuary. It embraces complexity rather than imposing control by moving from actions against nature to actions with nature. The methodology is both diagnostic and prescriptive: it first establishes a baseline knowledge of estuarine conditions along the Cantabrian coast and then extrapolates key strategies.

The transformation project of the Nalón estuary demonstrates how E*stuarism* can serve as a critical framework for designing adaptive coastal landscapes that move beyond extractive practices. Its hypothetical transformation involves a three-fold approach: 1) Relocating activities and regenerating ecosystems – expanding ecotones and reversing extractive practices; 2) Improving connections and softening boundaries—reviving commercial ground floors, regenerating abandoned buildings, and linking them to estuarine activity; 3) Implementing experimental interventions—introducing climate-responsive infrastructures and fostering ecological economies by repurposing materials such as the eucalyptus timber. From regenerative tourism to adaptive aquaculture, new sectors of the blue economy emerge, such as maintenance rituals, and traditions rooted in care practices. Through this approach the estuary evolves into a prototype for entangled coexistence.
Ultimately, *Estuarism* envisions estuaries as dynamic and evolving ecosystems—where landscape, architecture, and biodiversity are interwoven into a living fabric of adaptation.

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Keywords:
Keyword 1: estuary
Keyword 2: coastal resilience
Keyword 3: adaptive design
Keyword 4: Cantabrian coast
Keyword 5: ecosystem services

2.2-BO-S1-2

Landscape-based actions to mitigate hazards in the Norwegian extreme landscapes.

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Five Norwegian research institutes (NGI, AHO, NIKU, NTNU, and NORCE) from various academic disciplines and expertise – including risk management, landscape architecture, design, heritage, ecology, and earth systems science – joined efforts to develop new working methods for multidisciplinary teams involving locals to mitigate hazard events. The research project, NATURACT, seeks to develop landscape-based transition plans utilising Nature-Based Solutions (NBS) for adapting and mitigating the hazards provoked by climate change effects with the help of Systems Oriented Design (SOD). A skill-based methodology to understand, interact with, and design complex systems (Dudandi, 2020) to approach the complexity of climate change impacts and solutions with and for the communities.
The five-year project (2012-2026), funded by the Norwegian Research Institute, is advanced. At this stage, we have some intermediate conclusions and visions on how to act with the communities on long-term proposals to avoid putting locals at risk, but also preserve the cultural landscape and the more-than-human specificities of the different fragile landscapes we researched on. The chosen sites are common in Norway- the transferability of the working methods can be operated for other valleys. The sites we worked on are an inner fjord mountain valley, a marshland plateau, and a rare rich farming land. All under threat from floods provoked by extreme precipitation patterns during unusual periods of the year due to climate change effects. The increased rainfall provokes different types of landslides, such as quick clay collapse, debris flow, rock avalanches, and rock falls.
In Norwegian laws, NBS is the only answer to hazard management – no grey solution is authorised any longer (traditional concrete and engineering solutions). Nevertheless, there exist challenges to apply NBS due to the fact that grey solutions are still allowed for emergency situations. This requires multidisciplinary work to propose anticipatory actions.
In the project, the role of the landscape architect is to enable iterative processes between different fields and the communities to map and draw actions that can mitigate the natural and rapid dynamics of the landscape through actions that we can name *Guiding Landscapes.* We aim to bridge the gap by interlinking the use of key topical methods from two main fields: geoscience – which encompasses hydrology, applied geology, and geomorphology – and cultural history – which includes heritage, urban morphology, traditional practices, and oral histories and interviews – to enable NBS, or better 'Landscape-based Actions' – a term preferred by the research project – done for and with the communities. The physical and cultural context are therefore the starting answers to the landscape-based actions to mitigate the hazards and the communities are involved as active agents in decision and management. The overall goal is to understand the impact, feedback, synergies, and trade-offs of NBS and recommend their upscaling to optimise climate adaptation and mitigation strategies for these territories through community engagement actions and iterative processes.

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Keywords:
Keyword 1: Co-adaptive actions
Keyword 2: Large-scale Landscape
Keyword 3: Hazards
Keyword 4: Landscape-based Actions
Keyword 5: Nature-based Solutions

2.2-BO-S1-3
Guiding Tree Migration for Climate Crisis Adaptation

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Adaptive management of woodlands and forests requires human assistance to insert native trees as new plantings to test enhanced resilience. As specific species decline, with pests, diseases and severe weather exacerbated by climate stress, human agency in tree planting offers an opportunity to augment the species palette much more quickly than the trees can migrate on their own. While historical data demonstrates tree migration as ice receded, some 12,000 years ago, that tree range expansion required hundreds of years. The rapid timeline of contemporary climate change mandates that humans assist trees to expand their range.

Progress is possible when we define a conceptual approach for adaptation through active planting projects. From 2020 to 2025 Heritage Landscapes and Broad Reach Farm carried out planting projects in Vermont, northeastern United States, initiating tree migration testing through human assistance. Each project began with careful observations of existing tree species, rising average temperatures and weather events. Over the past 20 years the plant hardiness zones maps have changed twice to shift our area from zone 4b to zone 5a and b, for a gain of up to 15 F degrees (9.4 Celsius).

Learning from forest ecology and arboriculture, projects considered future-adapted tree species based on their current range. Two tree groups were employed, 1) trees already present but at the northern margin of their range and 2) common native trees further south rarely observed in our region. Both types were planted to augment woodlands and test adaptation. The trees species centered further south, generally inhabiting warmer areas, can be assisted in migrating north. Southern trees, commonly found in the mid-Atlantic, are planted to test the potential of Vermont as suitable habitat. Native trees already present but somewhat rare are augmented.

At Broad Reach Farm testing of multiple species includes native persimmon, sassafras, redbud, and several oaks. In 2025 a new woodland area of 100+ trees began with invasive suppression harvest of declining ash trees due to pest infestation. For the planting, reinforced native spaces included red maple, sugar maple, hope hornbeam, Canadian serviceberry, Allegheny serviceberry hackberry and catalpa, while migrating species focused on sawtooth oak, pignut, redbud and tulip tree.

At Shelburne Farms Heritage Landscapes prepared plans for entry allee replacement, Elm Swamp succession, silvo-pasture demonstration, and a new woodland area. Native sycamore grown from local seed now line the entry drive to this 1,400 acre (567 Ha) property. To improve the livestock environment planting of pasture adapted shade trees advanced. At Elm Swamp testing of wetland adapted trees were tested. In a new 3-acre woodland the species list to plant drew on the surrounding forest and added infrequent native and southern species. Human assisted tree migration demand is increasing. Tree testing includes honeylocust, shagbark hickory, swamp white oak, tulip tree, red maple, yellow birch, tupelo, tulip tree, redbud, swamp white oak, and northern pin oak. The concepts, processes and preliminary outcomes of these will be presented in this paper.

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Keywords:
Keyword 1: tree migration
Keyword 2: climate adaptation
Keyword 3: human assistance
Keyword 4: woodland
Keyword 5: forest

2.2-BO-S1-4

How to live with fire? Towards strategic planning of pyro-landscapes

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Understanding fire risk is key to developing resilient landscapes. Wildfires are not merely natural disasters but complex socio-ecological phenomena shaped by land use, vegetation structure, and climatic conditions. The Mediterranean biome, long adapted to recurrent fire cycles, hosts ecosystems that have evolved with fire as an ecological driver. The Rayol Garden, designed by Gilles Clément for the French Coastal Conservatory, exemplifies a fragment of *pyro-landscapes*—territories where fire is not an external threat but an endogenous energy within the fabrick of the territory. This approach shifts responses to fire from reactive emergency measures to proactive and even prospective strategies. Despite this, contemporary fire management remains focused on short-term emergency responses rather than addressing fuel accumulation through long-term landscape planning. The expansion of forest cover due to rural abandonment, coupled with unchecked urban sprawl, has heightened fire risk by advancing the wildland-urban interface (WUI). Climate change exacerbates these vulnerabilities, intensifying heatwaves, droughts, and wind-driven fires in historically fire-prone regions while also promoting the spread of fires to new, previously unaffected areas. Peri-urban forests have become neglected spaces of dense vegetation, with cities now embedded beneath heavy canopies. This reduced visibility of fire risks fosters a false sense of security, leaving communities increasingly vulnerable to inevitable fires caused by profound land-structure transformations.

One of the major contributions of landscape architects is their ability to visualize and analyze ecological data and risk dynamics while also constructing a strategic narrative, accessible to all, that fosters a better understanding of post-fire restoration dynamics, which Clément refers to as “natural genius.” Today, research and emergency services converge on the necessity of developing resilient territories, shifting from defensive fire suppression strategies to proactive land management approaches that collectively reduce vulnerabilities. A landscape strategy based on proactive management of peri-urban edges can redefine the relationship between human settlements and fire-prone landscapes. I advocate for four key principles: (1**) restoring the landscape mosaic** by reintroducing open spaces; (2) **use prescribed burning as a tool** to maintain resilient ecosystems and rediscover a fire education; (3) **promoting long-term ecological** processes that enhance landscape fertility; and (4) **reintegrate domestic animals as active gardener** in edge maintenance. This agricultural reclamation of the edges reconfigures firebreaks into multifunctional 200 meters wide rings around districts and villages. Rather than relying solely on mechanical clearing, this strategy reopens environments on a case-by-case basis to design new domesticated pyro-landscapes, incorporating agronomic community spaces while ensuring a gentle, structured densification. In Corsica, the Giussani Landscape Plan serves as a pilot project illustrating this agro-landscaping approach.

Through this interplay of scales and temporalities, pyro-landscapes establish a framework for participatory risk management, embedding fire within a renewed territorial vision. By producing goods and services for local communities, these natural and domestic mosaic, integrating fire into a new paradigm of land-use planning. This shift towards *flammability urbanism* transforms fire from a threat into a driver of resilience. By fostering collaboration among stakeholders, fire risk reduction moves beyond security-driven objectives, embracing a systemic landscape approach—what I call “territorial gardening”.

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Keywords:
Keyword 1: pyro-landscapes
Keyword 2: proactive
Keyword 3: territorial gardening
Keyword 4: flammability urbanism
Keyword 5: vulnerabilities

2.2-BO-S1-5

Sustainable water management and irrigation practices in the face of climate change: an anthropological perspective

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The social history of the mountain communities of the Arrière-Pays Niçois and the High Atlas of Morocco is marked by an ancient hydraulic heritage. For centuries, irrigators, once organized in traditional institutions (Castas, Universitas, watering societies, Jmâas) and now in syndical associations or AUEAs (agricultural water users' associations), have never ceased to maintain complex relationships with their environment, constantly restructuring their local modes of water governance as part of a social, hydraulic and territorial organization. These Mediterranean mountain countries, which have been able to preserve to this day the major features of ancestral irrigation water management, are distinguished by the omnipresent concomitance of two state and community logics that are difficult to reconcile in reality. As a result, the limitations of universalizing and rationalizing models have led us to imagine other management methods, favoring the local scale as a vector for sustainable development. In the process of integrated water resource management, aspects relating to the use of water, and above all to the individual and collective use of the resource, seem to us to be essential if we are to appreciate the current challenges of more equitable and sustainable management. In the new context of climate change and overexploitation of natural resources, and in order to meet the agri-food needs of a growing population, the management and appropriation of water remains a strategic challenge for state and community players. In the case of the Amizmiz and Ourika valleys, how can the development of gravity-fed irrigation canals and the presence of agricultural practices help to combat flooding and fires? For decades, agricultural abandonment in the hinterland of Nice, due to a lack of real political will to promote water-efficient organic farming, has led to ecological vulnerability and increased exposure to natural disasters. Indeed, the Roquebillière floods and landslides of 1926 and the recent storms of storm Alex are evidence of a new, complex ecological context.

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Keywords:
Keyword 1: Water
Keyword 2: Governance
Keyword 3: Climate Change
Keyword 4: Development Policies
Keyword 5: Societies/Environment

2.2-BO-S1-6

Rethink the quality and potential of urban open space through drawing and redrawing method in the context of disaster

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My research is at the crossroads of architecture and urban planning, and is applied to three areas of Turkey (Antakya, Ercis and Lice) that have suffered earthquakes at different times. The Anatolian territory lies at the crossroads of 4 continental tectonic plates. These three cities present different cases of post-earthquake urban use. Their morphological configuration, climate and topographical features seem to be the cause of this diversity, and will be taken into account in our reflection on the cultures of inhabitation.
As discussed by Jayakody et al (2018), the literature on natural disasters, particularly earthquakes, reveals that public open spaces in cities can be used extensively for emergency evacuation and recovery. Several studies (Allan and Bryant; 2010) also insist that after a major earthquake, city open spaces function as a “second city”, using the spaces for services ranging from the simple to the complex, such as gathering, shelter construction, distribution of goods and services, temporary housing and commemoration.
Open spaces are recognized for their ability to adapt to the varied needs of disaster-affected populations. Stanley et al (2012) highlight their role as multifunctional places, and with my fieldwork I was also able to observe that these spaces can serve as temporary refuges, distribution centers and spaces for community activities in post-disaster situations. From this perspective, Woolley (2003) also drew on Gehl's (1987) approach, to emphasize that the human experience of open spaces is crucial to their appropriation and effective use. In a post-disaster context, we can highlight the potential of open spaces to be reappropriated for unexpected uses, following the example of roads transformed into temporary refuges in Antakya. Thus, our research alongside our fieldwork shows that open spaces are not just urban residues or a simple component of the urban landscape defined in Local Urban Plans, but central actors of resilience, adapted to a multitude of functions in contexts of crisis and disaster. This research seeks to deepen this understanding by studying their specific application in Antakya and their role in post-earthquake urban reorganization.
What I want to achieve with my research is to highlight the importance of the diversity of urban open spaces, their different qualities and capacities, by applying several methods and approaches. This is not a quantitative work; the drawing re-drawing method (Cankat, 2018) aims to show the potential of urban spaces in order to serve the planning of future cities and reflect on how urban space can be designed differently, i.e. under the prism of risk.

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Keywords:
Keyword 1: drawing, re-drawing method
Keyword 2: urban open spaces
Keyword 3: earthquakes
Keyword 4: Antakya
Keyword 5: natural disasters

2.2-BO-S1-7

Fully considering soils in the urban planning and development processes – replicable examples from Nantes Metropolis (France)

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Soils are often considered from a risk perspective (pollution, geotechnics) in the urban environment. This is particularly the case in redevelopment projects. Being part of the ecosystem, soils represent also a vital resource. They are indeed a major source of biodiversity (in and above). They also sink carbon, store and infiltrate water, transform organic matter and nutriments. In this frame, in addition to supporting human activities, soils contribute to eg. regulate the climate and the water cycle, support the production of biomass. Planning and (re)development processes must consider soils as resource and as risk, whatever the scale of approach. Several R&D projects on soils used Nantes Metropolis territory as a case study. The objective is to present some results corresponding to knowledge, methods and tools that can serve landscape architects.

Excavated soils are a resource. They can be reused, from one site to another or through a valorisation platform. The TERRASS[1] numerical tool helps to put producers and receivers (users) in contacts and to fulfil the traceability obligations. In case of low to moderate contamination, which is frequent in the urban environment, the local geochemical background[2,3,4,5] serves to establish threshold values to facilitate the reuse of excavated materials at district to territorial scale[6]. Soil refunctionalisation or construction[7] can also be operated, using eg. excavated soils and organic waste. This can compensate for the scarcity of topsoil. Soil multifunctionality helps taking the soil resource into account in planning and development. The MUSE method[8] considers four estimated indicators of soil ecological functions (carbon storage, biodiversity storage, infiltration capacity, agronomic value) at territorial scale, and their combination. The maps can be used to preserve some good or patrimonial soils or anticipate soil restoration needs. Methodological adaptations at project (eg Ris-Orangis[9]) to territorial scale (eg. Rennes Metropolis[10]) aim to gain precision. Larger sets of indicators[11] and more detailed soil maps[12] allow adapting their use according to their quality, including multifunctionality as well as contamination.

Soil pollution risks are linked to different sources. Urban historical inventories map the former industrial and service activities potentially source of soil pollution[2,3], and can guide on associated potential pollutants. Anthropogenic deposits may also be a source of pollutants, according to the nature of materials they contain[13]. Further research efforts are in progress within the GSEU[14] and PERMEPOLIS[15] projects. Agriculture, like market gardening, and green spaces maintenance may also have generated diffuse soil contamination with pesticides[16]. That is why, soil contamination risk needs to be checked before any project. In this frame, the high demand for urban gardening appears as a real challenge needing a careful check of soil quality(16). Soils (including resource and risk) are fully considered in the DésiVille17 method to map their potential for desealing, additional development being in progress within the PERMEPOLIS15 project. Other inspiring examples exist at national to EU scale. The webtool in progress (SPADES18) aims to help the users (including landscape architects) to find the right soil concept/methods/tool to answer their needs in the planning, developments and/or design process.

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Keywords:
Keyword 1: soil
Keyword 2: resource
Keyword 3: risk
Keyword 4: methods
Keyword 5: tools

2.2-CO-S1 - Impact of socio-environmental disruptions on landscapes

2.2-CO-S1-1

The Calanques underwaterscape plan : Guiding and being guided

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An original approach: The Calanques Underwater Landscape Plan (2018-2020) is a study that examines underwater environments on the scale of a 43,500-hectare territory. It's a shared vision of the underwater landscape, with landscape architects and oceanologists on the same team. The work involved dives at key sites, thematic workshops on land and at sea, and coordination meetings to integrate different points of view: 100 people were consulted.

Understanding to respect: representing to protect: The aim was to recognize the existence of unknown landscapes. The diagnosis compiled data that had never been put together before.
The study mobilized an important facet of the profession: bringing together different players around the same table, on the same map, “in the same boat”. The unifying force of the notion of landscape and its representations enabled us to move from personal experience to a shared culture and vision.
Studying and debating the underwater landscapes of the Calanques reveals the vital need to think collectively about tomorrow's territories.

The urgency of doing nothing: In the current ecological emergency, preserving marine environments is a priority. The challenge is to ensure that proper ecological functioning is recognized as an ambition of the landscape project, without excluding humans.
But the underwater landscapes of the Calanques are a space of evolution and dynamics... not of planning and operations. Faced with this fact, it's not necessary to fix points to be (dis)developed, nor to find key sites to stage virtuous principles in order to illustrate a “good” strategy: no master-plan or guide-plan!
How can we take action in this vast, unplanned, undeveloped area?
The action plan for protection and enhancement acts by influencing, protecting and isolating practices. It's a question of deciding together where not to intervene to create a happy landscape, as opposed to adding up decisions that produce - by default - a reality. Stopping to act is here a valuable project action that can be the most structuring.
To steer transformations and reduce negative impacts, we need to reduce disturbances: exclusion buoys for anchorages, speed reductions to reduce noise, no-fishing zones, etc. What is proposed is a territorial project based on strategic subtractions and guidance of practices.
“Taking care“ (i.e. ‘noticing, paying attention, putting oneself in a position of wonder’) then merges with ‘taking care’ (”protecting, defending, safeguarding").

In conclusion: teaching to guide: An essential aspect of the plan is the educational dimension. For schools and children, on whom we must rely for the future. An ambitious program is underway, aimed at recognizing the quality of the Calanques' landscapes... where the surface of the water is no longer a frontier.

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Keywords:
Keyword 1: underwaterscape
Keyword 2: strategy
Keyword 3: ecology
Keyword 4: consultation
Keyword 5: Calanques

2.2-CO-S1-2

Gradient Shift in Urbanization Impacts on Water-Heat-Carbon Risks: Implications for guiding sustainable urban development

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Rapid urbanization destabilizes water-heat-carbon systems, amplifying interconnected risks such as urban flooding, urban heat islands, and carbon imbalances that threaten urban sustainability. Focusing on Beijing, this study investigates the nonlinear mechanisms by which urbanization gradients shape these risks through integrated spatial analysis, structural equation modeling, and threshold-based zoning. The results show demonstrate an inverted "S"-shaped response of water-heat-carbon dynamics to urbanization intensity, with two critical night-time lighting thresholds (34 and 296 nW/cm²/sr) defining three zones: Urban Core Zone, Urban Expansion Zone, and Urban Periphery Zone. These thresholds mark irreversible shifts in risk dynamics: Urbanization transitions from direct negative impacts in peri-urban areas to complex interactions in highly urbanized areas, where direct and mediated effects coexist with trade-offs and synergies. Crucially, natural topography, vegetation cover, and landscape patterns act as mediators across gradients, revealing strong spatial heterogeneity in ecological vulnerability.

This study identifies priority management areas in Beijing by analyzing spatial transitions in water-heat-carbon risks using cumulative distribution functions. Two critical thresholds classify regions into priority restoration zones (19 units likely to transition to low-risk conditions) and protection zones (31 units requiring intervention to prevent high-risk degradation), which are integrated into Beijing's "Two Rings and Six Wedges" ecological framework. In the Urban Core Area, dominated by impervious surfaces, strategies emphasize retrofitting gray-green infrastructure to counter urban heat islands and urban flooding, while leveraging micro-climate regulation. The Urban Expansion Area, facing encroaching urbanization, adopts ecological corridors and riparian buffers to reconnect fragmented habitats. The Urban Periphery Area, critical for regional ecological security, enforces strict red-lines to prohibit land conversion. These policies preserve forests and wetlands, which play an essential role in carbon sequestration and water retention. These threshold-based strategies align urban development with ecological gradients, balancing growth intensity with environmental carrying capacity. By embedding nonlinear water-heat-carbon responses into land use policies, Beijing's framework exemplifies adaptive urban governance. It offers a scalable model for cities to harmonize sustainability with urbanization. This approach emphasizes the need for targeted spatial interventions to mitigate compound risks. It also promotes long-term resilience in urban and regional governance.

By bridging landscape science and policy, this study advances a paradigm for guiding cities and regions toward climate-resilient futures. The gradient-aware framework demonstrates how nonlinear responses and mediating environmental factors can inform targeted interventions to reduce compounding risks while supporting SDGs 6, 11, and 13. The findings provide scalable insights for global cities facing similar water-heat-carbon challenges, emphasizing proactive governance over reactive solutions. This approach not only addresses immediate ecological threats, but also redefines urban landscapes as dynamic, adaptive systems where human and natural processes coexist sustainably.

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Keywords:
Keyword 1: Urbanization
Keyword 2: Water-Heat-Carbon Risks
Keyword 3: Threshold Effects
Keyword 4: Mechanism
Keyword 5: Sustainable Landscape Planning

2.2-CO-S1-3

Unravelling Textile Terrains: Landscape Architecture and the Hidden Geographies of Fast Fashion Waste

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Fast fashion waste is a landscape issue. The global used clothing trade, driven by the overproduction of fast fashion in the Global North, is generating novel anthropogenic landscapes throughout the Global South. These landscapes, comprised of surplus discarded used clothing, are growing in scale along urban peripheries, on riverbanks, and in coastal zones, forming complex and chemically rich ecosystems among importing communities. Yet despite their ecological and infrastructural impact, these waste formations remain largely undocumented in spatial terms. This paper argues that such formations, referred to here as *textile terrains*, constitute an emergent landscape typology, and that their invisibility is both a technical and geopolitical condition that supports continually increasing export quantities of used clothing from the Global North with little regard for the impact the surplus of overconsumption do to importing communities.

This study explores how tools from the discipline of landscape architecture - specifically mapping, visualisation, and multi-scalar analysis - can be applied to document, interpret, and spatially qualify emerging textile terrains. Focusing on a case study in Old Fadama, Accra (Ghana), one of the largest used clothing markets globally, the research draws on collaborative work undertaken by researchers and postgraduate students at RMIT University. Working in a data-scarce environment, the study employs an integrated methodology combining Geographic Information Systems (GIS), photogrammetry, and triangulation of news and social media information to construct visual spatial narratives of accumulation and transformation of these urban sites over time.

Findings indicate that textile waste in Old Fadama has led to the development of sedimentary waste formations that alter local topographies and hydrological systems. These formations are dynamic, shaped by accumulation, erosion, burning, and seasonal movement. Their presence, however, remains largely absent from environmental assessments, planning documents, or public spatial datasets. This absence limits both public awareness and governance responses.

The study demonstrates how landscape architectural methods can operate as critical tools in data-poor contexts, synthesising fragmented information into coherent spatial representations. Beyond documentation, these methods support the recognition of textile terrains as legitimate spatial and ecological entities that warrant design, intervention, and regulatory attention. In addressing the spatial invisibility of fast fashion waste, this research contributes to ongoing discourse in landscape architecture, urban studies, and environmental justice. It proposes an expanded disciplinary role for landscape architects, not only as designers of planned environments, but as advocates for emergent, damaged, and politically marginalised landscapes in the context of the climate crisis.

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Keyword 1: Landscape Architecture
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Keyword 3: Fast Fashion
Keyword 4: Textile Waste
Keyword 5: Environmental Impact

2.2-CO-S1-4

Margin's territories : an (eco)systemic *reading* through uncertainties

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The margins are a 'territory for investigating the wealth of different environments' (Clément, 2004, p. 59), spaces that have gone from light to shade, exploited, abandoned, located on the 'edge of woods, along roads and rivers' (Clément, 2004, pp. 17-18). As 'territories of retreat', 'pieces of territory' (Prost, 2004, Rode, Sierra, 2008) about which we seem to know nothing, but which are nonetheless linked to interlocking climatic and social hazards, to uncertainties whose resolution appears difficult if not impossible. The profoundly terrestrial dimensions of continental margins (Boillot, 1979) and environments (Paskoff, 1985) combine geomorphological and historical processes that are catalysed in the very process of creating a habitat that can also be described as marginal. By going beyond the paradigms of risks and limits (Charbonnier, 2020), margins and uncertainties call for a reconsideration of conceptual tools and methods to open up proposals for transformation (Christensen, 1985; Vigano, 2012). Such postures invite us to adjust and experiment with the tools of the project in order to intervene in a more targeted and graduated way, with margins requiring to be approached not as limits and closed lines, but as layers that assemble physical, environmental, but also spatial and historical diversity.

Floods, storms, rising sea levels and erosion act as a catalyst for some of the most vulnerable processes and ways of living in large coastal cities in the South (McGranahan, 2007). Informal settlement on the margins of rivers and coasts is a major issue in Montevideo (Uruguay), where the settlement of populations and the creation of marginalised settlements are increasingly taking place alongside the hazard dynamics associated with the Rio de la Plata. The interplay between the margins, informal settlements and increasing and combined climatic hazards means that there are no ready-made solutions and that targeted strategies are needed on sites where disasters are linked to 'survival logics' (Piperno, 2009, p. 132).

This complexity of spatial and temporal scales has led to the need to adjust the tools used by architects and landscape architects. Physiographic' mapping (McHarg, 1969; Corner, 1999; Desimini, Waldheim, 2016) composes and breaks down the geomorphological and historical dimensions of sites. The '(eco)systemic sections' (McHarg, 1969; Geddes, 1915; Cavalieri, 2021) expand and deepen the knowledge produced by cartography by involving fieldwork and surveys. It clearly associates measurements of the small dimensions of the habitat with the geography of the site and the hazards simultaneously, revealing the roles played by certain spaces in resisting, regulating or accepting climatic hazards. This allows us to better interpret how habitats change, combine and shrink under the influence of physical, climatic and economic factors, and to propose levels of transformation that are truly adapted to the complexity of inhabited sites.

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Keywords:
Keyword 1: margins
Keyword 2: territories
Keyword 3: ecosistemic reading
Keyword 4: uncertainties
Keyword 5: Montevideo

2.2-CO-S1-5

Emerging Landscape Architecture Pedagogies from the Global South: Addressing Climate Change in times of resilience

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How can the integration of active learning methodologies in Landscape Architecture training address the challenges of climate change in vulnerable amphibian ecosystems in the Global South from an experiential perspective? This research explores the application of pedagogical strategies that merge ecological design, green infrastructure, and nature-based solutions within higher education. The study focuses on the Ciénaga de Mallorquín, an aquatic ecosystem modified by anthropogenic intervention in the Colombian Caribbean region. The degradation, pollution, and loss of biodiversity in mangrove forests require educational approaches that combine direct experience and critical reflection in the training of architects committed to sustainability and ecological resilience. Theoretical and empirical evidence shows that traditional teaching methods do not adequately respond to the complexity of climate change, which has led to the adoption of experiential learning practices, facilitating a comprehensive understanding of natural processes and fostering critical and creative thinking in urban and landscape architecture. During one academic semester, a qualitative study was conducted with undergraduate students in urban and landscape design, integrating experiential learning, service-learning, and project-based learning, creating spaces for direct interaction with communities and the environment. Participants conducted field observations, created visual narratives, and speculative urban scenarios, allowing them to identify territorial variables and define ecological restoration strategies by analyzing water dynamics and their influence on the configuration of the biocultural landscape. These activities fostered an understanding of local cultural identity linked to mangrove diversity, an essential element in the formation of guiding landscapes capable of responding to current and future environmental demands. The results indicate that immersive educational experiences in real-life contexts and the application of active learning methodologies strengthen competencies in environmental awareness, sustainable development, and skills to address the challenges of climate adaptation in amphibian ecosystems. It was found that contextual learning and direct contact with ecological reality enable the development of well-founded and coherent proposals, integrating the restoration of natural processes and the revaluation of local cultural identity. Furthermore, the training experience increased students' commitment to mangrove conservation, suggesting that the inclusion of environmental education in landscape architecture is crucial for building resilient and sustainable communities in the Colombian Caribbean. In conclusion, the findings highlight the importance of rethinking pedagogical models in the training of landscape architects, promoting an education that combines theory and practice in real-life settings. The integration of active learning methodologies and collaborative approaches is an effective tool for articulated responses to climate change, promoting the restoration of biocultural landscapes and the creation of sustainable cities. These methodological contributions have implications for the evolution of architectural teaching, guiding proposals in the fields of urban and landscape design, and offering perspectives that strengthen the commitment to biodiversity protection.

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Keywords:
Keyword 1: Experiential learning
Keyword 2: Climate change
Keyword 3: Nature-based solutions
Keyword 4: Environmental education
Keyword 5: amphibian landscapes

2.2-CO-S1-6
Facilitating Ukraine's Agricultural Landscape

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Ukraine is known for its productive soil, Chernozem, which covers about 60 % of the country and is about 25 % of the world's storage. Until 2022, Ukraine's share of global export of sunflower seed oil was 50 %. The country was the world's #1 sunflower oil exporter while exporting other products like barley, maize, and wheat [1]. Due to the Russian invasion, the number of exports dropped dramatically, which affected the food supply not only to European countries but also to Asian and African countries.

Although many soils in Ukraine were contaminated by heavy metals related to the intensive use of pesticides and mineral fertilizers in agriculture, industrial emissions, and other sources of pollution before the war [2], it still was within the safety standard. The Russian invasion, however, released extensive amounts of contaminants through military operations and the destruction of infrastructure that changed the situation dramatically. As of August 2023, more than 188,000 km2 of soil have been damaged and contaminated by military operations, and more than 105,000 km2 of soil located up to 5 km from the front lines were at high risk of damage and contamination [3]. Shebanina et al. (2024) noted that the level of soil contamination varies across the country, but the pollution has increased by 30–60 % compared to the pre-war period. Such contamination reduces soil fertility, affects global food distribution, has a danger of spreading hazardous substances through agricultural products, and has serious consequences for people inhabiting the landscape and ecosystem health [4].
Soil recovery of previously occupied areas requires demining and disposal of unexploded ordnance. Meanwhile, battlefields have bombs, mines, and other activities that destroy and disperse the topsoil, meaning that returning land to production mode might take many years [5].

This paper focuses on strategies for regenerating the soil to enable a productive agrarian future. It is seen from the perspective of the potential danger of food shortage, taking into account the climate crisis, as well as the cultural landscape of Ukraine.

While looking for phytoremediation and design strategies that are flexible enough to allow the start of restoration shortly without waiting for the end of the ongoing war, the work also aims to answer the question of how soil remediation can be integrated into the cultural landscape and what the role of a landscape architect here can be.

Such methods as interviews, system-oriented design, and research by design are elaborated on concerning the specific contaminated agricultural area. The paper is accomplished with a visual narrative in the form of maps and diagrams presenting the past and present history of the case study, which is explored and expanded on to possible future scenarios. While understanding the dynamics of living systems, scenarios are elaborated on to identify desirable and undesirable futures. It is done in order to understand and embrace the potential consequences of heavy soil contamination and facilitate synergy between environmental and social dimensions.

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Keywords:
Keyword 1: Land degradation
Keyword 2: Regeneration
Keyword 3: Agriculture
Keyword 4: Cultural landscape

2.2-CO-S2 - Impact on the landscape of climate change and in particular droughts

2.2-CO-S2-1

Fish Scale Polders as Flexible Infrastructure: A Symbiotic Approach to Flood Management and Pollution Control

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The polder landscape is a water conservancy system built in shallow swampy areas or along riverbanks, with dikes enclosing fields to block water and internal ditches facilitating drainage and irrigation. It represents a local adaptation to environmental conditions, utilizing natural processes to regulate water levels and enhance agricultural productivity. In China's Lake Taihu basin, the intricate water network of Wujiang, Suzhou, has given rise to the unique "fish scale polder" landscapes. These polders serve not only as valuable ecological and cultural heritage but also as flexible infrastructure that mitigates flooding and supports agriculture.

Wujiang District preserves some of the most intact historical fish scale polders, maintaining their traditional role in water management and food production. However, the surrounding landscape has changed with the development of farming and industrial sites, which discharge biochemical effluents into the polder system. Combined with nitrogen and phosphorus runoff from agricultural activities, these pollutants have led to a significant decline in water quality, threatening both the ecological integrity and the long-term functionality of the polder system.

As an ancient yet adaptable water management system, polders exemplify flexible infrastructure that interacts with natural processes, offering an integrated approach to flood mitigation and pollution control within sustainable landscape management. The landscape is characterized by an interwoven water network and low-lying topography, making it prone to flooding. Polders create a buffer at the land-water interface, where soil, vegetation, and microorganisms absorb and store surface runoff.

Traditional polders feature three terrain levels: elevated drylands for settlements and mulberry trees, mid-level ponds for aquaculture, and lower paddy fields. During floods, water overflows into polder fields, forming temporary reservoirs. As floodwaters recede, retained water supports agriculture and aquaculture. This dynamic system helps regulate seasonal water levels in rivers and lakes, mitigating flood impacts. Polder embankments in China are typically made of soil and porous sandstone, fostering biodiversity and microbial activity. Layered materials like stones and decomposed wood enhance stability, while aquatic plants such as reeds and watercress reinforce embankments. Their root systems prevent erosion and filter nitrogen and phosphorus from agricultural runoff, making polders effective in water purification.

Research examines polder evolution, stormwater management, and pollutant control in Wujiang District by methods including historical document analysis, remote sensing, geological analysis and geological prediction based on SCS-CN model. Field investigations document three key spatial interfaces: (1) dikes and water bodies, (2) dikes and inner fields, and (3) dike topography. Recorded Vegetation and ecological processes, 3D site models classifying dike typologies, and visualized in pollutant distribution mappings through local interviews and spatial analysis provide both theoretical and practical support to future conservation and water management strategies. Analyzing the spatial characteristics and ecological role of these polders provokes attention to polder topography and interfaces function as nature-based solutions for pollution control, contributing to sustainable conservation strategies as a beneficial landscape.

How to manage water resources and pollutants in a symbiotic perspective in contemporary China, where large-scale infrastructural projects are saturated and tend to stagnate, is the deeper reason of the research choice.

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Keywords:
Keyword 1: fish scale polder
Keyword 2: ecological heritage
Keyword 3: beneficial landscape
Keyword 4: sustainable water management
Keyword 5: pollution control

2.2-CO-S2-2

Guidance from local wisdom —— green transformation from barren dunes to coastal forest in Changjiang, Hainan island, China

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At this age of climate change, after survived retreating coastal line, it is undoubtedly becoming a major task about how to transform the current barren inland areas into green and productive land. What can the people from lower income region do without mechanical assistance or financial support?

There is a guiding case in Changjiang, Hainan island, China. A remarkable green transformation has been made only by the bare hands of local female villagers. The 12.6 square kilometer coastal sand turned into beautiful green coastal forest (more than 4 million trees) within 20 years. It is a groundbreaking community-based afforestation model developed by local woman volunteers focusing on extreme coastal desertification (annual precipitation <1,000 mm, frequent typhoons).

Central to the methodology is a two-stage sand stabilization process. Initially, Pandanus tectorius (screw pine), a native pioneer species with deep, sand-binding roots (>2 m penetration), was planted to create windbreak grids. These grids reduced wind velocity by 60%, forming stable microhabitats for subsequent species. In the second phase, drought-resistant Casuarina equisetifolia (ironwood) saplings (>50 cm tall) were deep-planted into 40–50 cm pits filled with nutrient-enriched red soil, ensuring root access to subsurface moisture. Pre-treatment with water-retaining agents and clay-based “nutrient bags” further enhanced drought resilience. Complementary techniques included plastic tube stem protection to mitigate wind abrasion and strategic planting timed with pre-monsoon rains (May–June) to maximize water availability.

The project’s sustainability stems from its community-driven maintenance. Local women formed patrol teams to enforce grazing bans and conduct real-time replanting. A unique 1,000-meter-wide “screw pine–ironwood” mosaic windbreak system was established, exceeding standard widths by 500%, which reduced sandstorm frequency by 70% and enabled safe harbor conditions for over 300 fishing vessels. Ecologically, the restored area now supports 600 million trees, increasing coastal vegetation cover from less than 10% to 85%. Biodiversity monitoring reveals stabilized habitats for endangered species, including migratory shorebirds. Socioeconomically, the initiative created 200+ local jobs and attracted $1.1 billion in ecotourism investments, demonstrating how community-led restoration can harmonize ecological and human needs.

This case study offers a replicable blueprint for arid coastal regions globally, prioritizing resilience and equity over technological complexity.

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Keywords:
Keyword 1: Community-based afforestation
Keyword 2: Coastal restoration
Keyword 3: Socioecological resilience
Keyword 4: Sand stabilization
Keyword 5: combating desertification

2.2-CO-S2-3

Beyond abandonment, hinterlands as places to reconsider the posture of the landscape architect in Mediterranean rural regions.

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The Mediterranean hinterlands have undergone profound changes, which are reflected in the landscapes as clues that allow us to trace the thread of these transitions, departures, arrivals, and cuts. This research focuses on these trajectories in Catalonia and Liguria, where the landscapes are closely linked to a deep-rooted peasant heritage marked by the departure of these inhabitants. These successive departures allowed the arrival of new non-human inhabitants, resulting in the forested landscapes that dominate these territories today. These forests skim, border and cover the traces of past practices. They are also close to plots still cultivated, producing unexpected new boundaries. However, the vulnerability induced by ongoing upheavals gives these landscapes a dimension tied to risk and uncertainty. This complex situation calls for a prospective vision, in which the landscape architect, relying on grounded approaches, can focus on the ongoing processes without attempting to predict the results. In this sense, the research sets out an initial hypothesis: hinterlands are at the forefront of upheavals that go beyond the local scale and stand as guardians of a broader territory. This assumption draws on approaches developed by Italian territorialists, questioning the classic oppositions centrality-marginality, hinterland-foreland. To explore this approach in the territories studied, a second hypothesis is suggested: the areas where agricultural practices meet forest landscapes are strategic places to engage territorial project dynamics from the hinterlands. In this hypothesis, the processes are embodied by the farmers, who, through their practices, gestures, and presence, compose the front lines, both as witnesses to changes and as the ultimate actors in contact with vulnerable forest landscapes. The encounters so far reveal, in a first place, a discreet dynamic of abandonment of agricultural practices, occurring gradually and possibly unnoticed over time, raising the question of a potential major abandonment. The land surveys, for their part, reveal the great diversity of these agro-forestry interfaces. This diversity arises from the "island" configuration of plots, confronted with varied contexts. In Catalonia, the vineyard plots meet Aleppo pines, agricultural wastelands, wooded slopes, and burned hills. In Liguria, olive trees and hazelnuts form more blurred boundaries with chestnut coppices. This unique configuration indicates potential at the territorial scale, where networking these isolated practices could lead to a shared vision of a direction to follow. These first results also question the posture of the landscape architect-researcher in rural territories, at various scales. First, with the people encountered, where the project approach lies in the act of “making visible” and offering the opportunity to initiate movement based on directions derived from time spent on the territories. Next, at a regional scale, where the challenge is to offer a more articulated vision of the dynamics, enabling the guidance of discussions regarding the objectives to set and the policies to implement to achieve those objectives. Lastly, in the academic community and in public debate, to highlight the complexity of rural situations as key drivers for a shift in the approach to landscape project, based on those hinterland that constitutes the ramparts of the Mediterranean.

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Keywords:
Keyword 1: hinterlands
Keyword 2: forest landscapes
Keyword 3: agricultural interfaces
Keyword 4: qualitative approach
Keyword 5: risk

2.2-CO-S2-4

Exploring the link between blue-green spatial patterns and diurnal temperature based on machine learning

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The spatial and temporal heterogeneity of the urban heat island (UHI) effect poses a major challenge to the sustainable development of high-density cities. As a nature-based solution (NbS), blue-green space (BGS) has been proven to have thermal mitigation potential, but a large number of studies have only explored the impact of green space or blue space on land surface temperature from a single perspective, and there is still a significant gap in the research of its multidimensional synergistic mechanism: For one thing, existing studies have mostly explored the single role of green or blue space in isolation, lacking a systematic analysis of the synergistic effect of the two landscape-morphology dimensions; for another, the traditional static analysis paradigm is difficult to capture the dynamic divergence of BGS features in diurnal thermal regulation, which restricts the accurate prediction of the cooling benefits.

Given the above limitations, different from the analysis mode of a single perspective, this study constructs a framework of 'multi-dimensional feature integration - machine learning decoupling' based on the joint effect of blue-green spatial cooling to reveal the dynamic response law of the blue-green spatial cooling effect in different times of the day and night. Firstly, we break through the single perspective, integrate the BGS landscape pattern and morphological spatial pattern analysis (MSPA), and establish a multi-perspective feature evaluation system; then we develop a hybrid machine learning validation pathway - screening key variables, selecting non-linear prediction architectures, comparing the applicability of multiple machine learning models and combining with SHAP interpretable algorithms to decouple the complex interaction effects. The method effectively overcomes the strong assumption limitation of the traditional linear model on the data distribution and is particularly suitable for revealing the interaction between the features of BGS and LST in a deeper and more comprehensive way.

Taking Nanjing, a typical high-density city in China, as an empirical object, the study reveals that there is a differentiated dynamic response mechanism of BGS multidimensional features to diurnal LST, and this spatial and temporal heterogeneity provides a key entry point for optimizing the allocation of blue-green infrastructure. By quantifying the dominant influencing factors and their interaction thresholds at different times of the day, the research results form a spatial pattern optimization decision matrix, which provides a scientific basis for climate adaptation planning under the constraints of limited resources in large cities, and significantly enhances the precision and effectiveness of urban heat island mitigation strategies.

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Keywords:
Keyword 1: blue-green space
Keyword 2: synergy
Keyword 3: land surface temperature
Keyword 4: machine learning
Keyword 5: cooling effect

2.2-CO-S2-5

Landscape of Persistence. Climate Change and technologies of longue durée in the water landscape of Sardinia

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The article is part of the research activities of the Department of Engineering and Architecture of Cagliari in support of landscape planning in the region of Sardinia [1]. The research is based on a study of climate change phenomena that are constantly affecting the regional territory. Sardinia can be considered an interesting case for the monitoring of the Mediterranean climate, since it is located in the centre of the western Mediterranean and is highly exposed to extreme phenomena such as droughts and floods. In addition to the hydrogeological risk, depopulation and abandonment also constitute a further element of interest and urgency for project-oriented research in these areas [2].
The study of the morphology of ancient rural landscapes can be an extraordinary tool for understanding the principles that have created and maintained them. The structure of the landscape is made up of a fine-grained network of construction techniques that have allowed the landscape to maintain itself over time, following the rhythms of the land and creating models of self-sufficiency and circularity specific to each sub-region [3].
The research is based on two tools: an atlas of traditional technologies and strategies for the recovery and enhancement of landscapes at risk. The first tool is based on the point by point analysis through the reconstruction of historical water management techniques such as dry stone walls, canals, terracing, wells, intakes and mills. Through these devices it is possible to explore the principles of water management that are still valid today, namely those of water collection, conservation and distribution. The study of techniques focuses on the use of materials, on questions of permeability, capillarity and soil moisture. These issues are extremely relevant to today's problems.
The strategies therefore focus on the validity of water management principles in a series of sites exposed to extreme cases of hydrogeological risk, which represent the experimental areas to be studied by the project [4]. The guidelines address the issues of water collection, conservation and distribution in terms of time and the project's ability to act with different scenarios at different times. Topography, vegetation, architectural devices, new hydraulic infrastructures, rural routes, represent the tools of persistence that integrate the knowledge of engineering and architecture to take care of this fragile landscape [5].

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Keywords:
Keyword 1: climate change
Keyword 2: rural landscape
Keyword 3: traditional technologies
Keyword 4: architectural design
Keyword 5: landscape preservation

2.2-CO-S2-7

A fire smart landscape: to define new collaborations with agriculture

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The management of landscapes is an important topic in western Europe because of the growing density and continuity of the metropolis. The banalization of the landscapes linked to urban sprawl has been denounced since the 1970s. Little by little rural landscapes have become a heritage to protect. They illustrate the shared values and the identities of many territories for inhabitants even if these values do not reflect productive agricultural realities. The incomprehension between urban or neo rural societies and farmers has been explained in sociology research (Hervieu & Purseigle).
The European Landscape Convention (2000) has developed some tools to define and to support the evolution of landscapes while the existing range of systems of protection has been growing (Natural Parc, Biosfera reserve, Sipam, Geopark, Pays d'Art et d'Histoire, UNESCO cultural heritage list…). But global climate change and the growing frequency of extreme events, such as wildfires, oblige us to reconsider and diversify strategies. How can our landscape values be protected? How could their resiliency be managed? How could their physical transformations (mechanization, diffusion of agroecological and agroforestry models, mortality of plants and forests…) be dealt with?
These challenges are shared by the sector of agriculture as they face important losses and reduction of profits while the number of its active population is constantly decreasing. On the other hand, the idea of a farmer as a "gardener of our landscape" which is shared in politics and the media, expresses the reality of the ecosystemic services that agriculture provides (beauty, security, biodiversity, water quality…). Because of the fragility of the whole system, we need to build new ways to collaborate. *Fire Wine* and *Fire Product* brands have been created by CTFC (Technological Forestry Center of Catalonia) to enhance the role of agriculture in wildfire risk management. Its ambition is to create a network to improve processes and to share experiences that could be defined in some cases as good practices. The suddenness of a fire event and the violence or even the fear that can be associated with it permit to consider new dynamics of participative and collective management of territories. We visited farmers and territory managers these 4 past years in 4 countries (Spain, Portugal, France, Italy) that have to deal with wildfire risk. We will present their strategies and reactions, that are tools to imagine future landscape strategies to face the risk.

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Keywords:
Keyword 1: landscape management
Keyword 2: rural landscape
Keyword 3: europe
Keyword 4: wildfire
Keyword 5: agriculture

2.3-BO-S1 - Organisation of large territories (Part 1)

2.3-BO-S1-1

Adaptation of urban and rural areas to climate change – Federal funding program in Germany - Implementation of subsidized constructions

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Climate change is a reality in Germany. Local authorities in particular are key players in establishing resilience and are largely responsible for adapting public spaces to the upcoming changes at early stages.
Public spaces, streetscapes and parks are more frequented by the population, especially since the pandemic, and must meet high expectations.
In addition to aesthetic issues of design and quality of stay, these spaces provide important benefits such as increased protection from heat or heavy rainfall. They are sources of cold air and oases of shade. They thus fulfil important functions for the microclimate and are part of the blue-green infrastructure. These structures must be strengthened, especially to increase the climate preparedness in light of future weather extremes.
This new approach is nothing less than a paradigm shift. Whereas in the past, water was channelled out of cities as quickly as possible, today rainwater is to be kept in the area according to a water-sensitive settlement development. While sufficient space was provided in the streets for technical infrastructure and traffic, trees were not given enough room to develop. Many of the plans of recent decades will be put to the test in the coming years and must be brought up to contemporary new technical and design standards so that future generations will also find attractive and liveable open spaces.
Local authorities can hardly cope with the scope, complexity of the planning and, in particular, the financial obligations without support. This is where in Germany the federal program “Adaptation of urban and rural areas to climate change” comes in.
The funding program gives municipalities the opportunity to implement climate adaptation concepts and to test inter-agency cooperation and “new” approaches in practice. At the same time, the possibility of funding offers incentives to integrate aspects of sustainability more strongly into planning and thus creates greater awareness of the issue.
The first projects were selected in 2020. The Federal Institute for Research on Building, Urban Affairs and Spatial Development (BBSR) was entrusted with the technical and administrative implementation of the program from the outset. The BBSR supports municipalities throughout the entire project period, from the application to the completion of the construction project, and supports municipalities with its experience and expertise to achieve sound planning, individual solutions and effective results. Citizen participation and bottom-up approaches are mandatory in the projects’ design.
To date, 285 projects have been funded. Up to 50 new projects are right now on the way.
There are examples like the Grüne Clara in Erfurt, where a four-lane road is being reconstructed, or the Gaulbad in Aalen, where a parking lot is transformed into a lake.
Funding tangible investments in combination with capacity-building is an important step towards pioneering new approaches in practice and mainstreaming them in the future.

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Keywords:
Keyword 1: Governance strategies
Keyword 2: Funding program
Keyword 3: Supporting cities
Keyword 4: Targeted development
Keyword 5: Participatory approaches

2.3-BO-S1-2

Mapping China's High Nature-Cultural Value Rice Terraces: An Integrated Framework for Identification and Spatial Prioritization

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With globalization and agricultural intensification accelerating, the world is witnessing unprecedented biodiversity loss, landscape homogenization, and degradation of ecosystem services. In contrast, traditional agricultural ecosystems have garnered significant attention for dual ecological and cultural conservation capacities. Rice terraces landscapes, as iconic mountainous agricultural landscapes across Pacific Rim countries, exemplify this through their low-intervention farming practices that sustain coupled biocultural diversity systems. Nevertheless, the current rice terrace systems face dual challenges. On one hand, severe natural constraints driving marginalization trends, compounded by socioeconomic pressures including rural depopulation and diminishing agricultural returns, collectively heightening systemic collapse risks. On the other hand, existing conservation frameworks suffer from critical bottlenecks including the absence of standardized value assessment criteria, limited coverage, and outdated quantification methods. Most protected areas rely on individual case submissions, making it difficult to extend protection to remote regions. In light of these challenges, it is crucial to safeguard high nature-cultural value rice terraces (HNCVrt) and develop appropriate tools for assessing and mapping their distribution, as the effectiveness of policies and conservation measures is highly dependent on their spatial implementation.

This study focuses on China's rice terraces and presents an innovative identification framework for HNCVrt to achieve high-precision spatial mapping at a 30-meter resolution on a national scale. The technical approach comprises three main components: (1) Integration of multi-source geospatial data: Multi-source geospatial data—especially rice and terrace information—are integrated using Boolean logic operations and landscape continuity optimization algorithms to establish a national rice terrace database. (2) Development of a hybrid evaluation system: A dual-dimensional hybrid evaluation model is established that encompasses both natural and cultural aspects. The natural dimension includes a land cover approach (assessing patch area, shape index, etc.) and a species approach (evaluating the spatial distribution of rare species), while the cultural dimension covers a heritage approach (analyzing the spatial distribution of traditional Chinese villages, intangible cultural heritage, etc.) and a social media approach (quantifying the cultural significance of the landscape based on public perception). (3) Spatial mapping and thresholding: By integrating weighted linear combination (WLC) with machine learning algorithms, the study captures locations spanning from high to low value, determines thresholds and classes for high-value areas, and thereby produces a detailed distribution map of China's HNCVrt.

It was found that: (1) China hosts a substantial number of HNCVrt, covering approximately 5% of the country's arable land and 0.6% of the national land area. Most of HNCVrt are located in highly undulating and remote regions, particularly in the Yunnan-Guizhou Plateau and the Southeast Hills; (2) While HNCVrt types vary, a strong synergy between high natural and cultural value is observed, reinforcing the coupled human-land interactions within agricultural systems.

The HNCVrt spatial database surpasses traditional case-by-case conservation methods, enabling precise identification of areas for National Important Agricultural Heritage Systems designation. This study advances biocultural assessment and multisource data integration, offering innovative tools for agricultural landscape planning and sustainable development. The findings may also support other regions in establishing agricultural landscape conservation areas and policies.

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Keywords:
Keyword 1: rice terraces
Keyword 2: agricultural landscape
Keyword 3: heritage landscapes
Keyword 4: spatial mapping
Keyword 5: landscape management

2.3-BO-S1-3

Landscape plans: the strengths and weaknesses of a landscape approach

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In France, the main operational landscape policy tool is the landscape plan. This approach seeks to anticipate changes in the landscape of an area by formulating landscape quality objectives and implementing regulatory (urban planning and development documents), operational (actions located in the area) and educational (mediation) measures (Folléa, 2001, p. 104).
Although landscape plans first appeared in France in the 1950s with Jacques Sgard, who imported the concept from the Netherlands (Pernet, 2011, p.404), 70 years later they remain a non-mandatory, non-binding approach, albeit one that is gradually becoming institutionalised. Landscape plan policy in France closely follows regulatory developments, and while they were the subject of experimentation until the early 1990s, the 1993 Landscape Act led to the introduction of a circular in 1995 making this tool official. Secondly, France's adoption of the European Landscape Convention in 2006 led, seven years later, to the introduction of an incentive policy through a call for projects by the Ministry to fund areas wishing to implement the landscape plan approach. The call for projects, which is renewed every year, reflects a continuing need to raise awareness of landscape plans and, at the same time, a desire on the part of the public authorities to support this tool, which is seen as an opportunity to meet the challenges of ecological transition. In fact, over the last five years, new funding bodies have provided support for landscape plans focusing on two issues: the energy transition, with the French Environment and Energy Management Agency (ADEME), and biodiversity, with the French Biodiversity Office (OFB).
There are many different ways in which landscape plans can be taken on board, involving different structures (municipalities, inter-municipalities, associations) and on different scales (from neighbourhood to metropolis). This makes it difficult for the Ministry to define a precise framework for application, and sometimes for local authorities to support the process over the long term. Rather than being genuine planning tools, the strengths of landscape plans lie in their ability to mobilise both external expertise, through the eyes of the landscape architect, and endogenous expertise, by gathering the perceptions of local residents. This democratic dimension reflects the spirit of the European Landscape Convention, which seeks to use people's perceptions to formulate landscape quality objectives for landscape development. By incorporating a landscape dimension into local political action, the landscape plan is intended to break down the barriers between sectoral policies in order to build a genuine territorial project, the link between which and landscape is often tenuous for local players, as demonstrated by a report published in February 2022 by the Commissariat Général de l'Environnement et du Développement Durable, entitled Sensibilisation et formation des élus locaux à l'approche paysagère (Raising awareness and training local elected representatives in the landscape approach).
Through examples of implementation, this paper, the result of doctoral research in progress, proposes to explore the forms of landscape approaches mobilised by local players and the effects of landscape plans on territories.

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Keywords:
Keyword 1: landscape plan
Keyword 2: transition
Keyword 3: mediation
Keyword 4: landscape approach
Keyword 5: regional project

2.3-BO-S1-4

The (in)existence of Nature-based Solutions for climate resilience: from theory to practice in the landscape of Curitiba, Brazil

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The world is currently facing a climate crisis, making it imperative to explore alternatives for the adaptation and resilience of urban landscapes. Climate change not only alters the climate but also triggers a broader transformation in thinking and consumption patterns, affecting social, political, economic, and legislative aspects (Beck, 2018). Amid this emergency, recent decades have seen efforts to develop infrastructure that promotes the recovery of nature in urban spaces. One such initiative is Nature-Based Solutions (NbS), which involve techniques that mimic natural processes and have been highlighted as a key approach in addressing climate change. However, the adoption of NbS remains limited, particularly in the Global South, and especially within the Brazilian context.
The primary objective of this study is to explore the relevance and application of NbS in the city of Curitiba, located in southern Brazil. To achieve this, a survey will be conducted to determine whether practices that align with the NbS framework are present, comparing the findings with normative documents produced by the city's public administration, particularly guides, booklets, and manuals. Curitiba was chosen for this analysis due to its reputation as a "smart city" and "ecological city," as well as its membership in the "C40 Cities" group—a global network of 97 cities committed to addressing the climate crisis through adaptation and resilience actions.
This paper aims to highlight the gap between the production of regulations and the promotion of NbS in municipal urban planning, identifying barriers to their adoption in the Brazilian context. By making this comparison, the study seeks to identify potential reasons for the limited use of nature-inspired solutions in Brazilian urban landscapes, particularly in a city that has prioritized climate issues on its public agenda, especially since 2020, when it launched its first Climate Action Plan. Consequently, 2020 serves as the reference year for the research's time frame.
The research was conducted in two phases, employing a qualitative-quantitative, exploratory approach. The first phase, supported by a field survey, examined public space projects completed in the last five years to assess whether NbS were implemented. The second phase focused on analyzing interpretative content from manuals, guides, and booklets produced by Curitiba's public administration since 2020, offering insights into the conceptualization of NbS. This paper thus seeks to contrast the actual use of Nature-Based Solutions as a means of adaptation and resilience with how they are envisioned in official and normative documents.

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Keywords:
Keyword 1: climate emergency
Keyword 2: Nature-based Solutions
Keyword 3: urban landscape
Keyword 4: public spaces
Keyword 5: Landscape Architecture

2.3-BO-S1-5

Negotiating the future: scenarios for climate resilient Slovenian coast

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Processes resulting from the humans' interactions with nature have global, but territorially diverse impacts when they interact with locally specific natural and socio-economic features. To cope with associated challenges, the societies need to design and implement sustainable responses, which are territorial specific and socially feasible. This contribution presents an approach and tools to provide such response. The approach is based on a IGC (international Geodesign cooperation) framework and tools and has been tested several times in academic situation as well as in practice of regional planning. The approach consists of interchange of scenario development and evaluation and using GIS support and negotiation process. The presentation will focus on the latest implementation that addresses the coastal region of Slovenia, challenged by climate change consequences such as floods due to sea level rise, droughts and forest fires. First, the "trend" scenario was prepared for 2035 and 2005 and for eight different spatial systems (land uses). This scenario includes further increasing density of development in the shoreline, such as tourism infrastructure, settlement and economic activities – in particular the port of Koper, followed by costly and ineffective flood protection against the sea level rise. In hinterlands, the scenario includes further abandonment of cultural landscape followed by forest overgrowth and increased risks of wildfires. This scenario was evaluated in reference to SDG's, internal level of conflict and national Spatial development strategy objectives. The evaluation results were used as inputs for developing normative scenario along with the negotiations to resolve the conflicts among different land uses. This scenario proposes a set of different flood protection measures, including relocating some of the activities from the coastline and introducing natural flooding areas and wetlands. It also proposes new housing and industrial areas and cultural landscape measures in the hinterland. The back casting approach was used to designate the plan for 2035 along with the action plan for implementation. The resilience assessment showed that there will be less areas affected by floods and wildfires in this scenario as compared to trend.

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Keywords:
Keyword 1: Scenarios
Keyword 2: Climate resilience
Keyword 3: Negotiations
Keyword 4: Coastal regions
Keyword 5: Landscape planning

2.3-BO-S1-6

International Comparative Study on Spatial Regulation and Governance Systems in National Parks

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To address the challenges of coordinating ecosystem conservation and natural resource utilization in China's national parks, this study conducts a comparative analysis of spatial regulation models in national parks across the United States, Germany, France, Italy, and the United Kingdom. Key findings include: **1) Legal and Policy Dimension**: National parks spatial regulation systems are closely tied to national political structures, with legal and policy instruments exhibiting marked differences in regulatory dominance. Centralized governance systems (e.g., France, Italy) adopt *legislation-dominated* regulatory frameworks with rigid constraints, while decentralized systems (e.g., Germany, UK, U.S.) employ *policy-dominated approaches under legal authorization*, offering greater flexibility. **2) Planning Dimension:** All countries employ a graded regulatory system with hierarchical planning transmission, structured as "territorial-zoning-implementation" tiers. At the territorial level, emphasis is placed on preserving ecosystem integrity and functional continuity. Zoning planning serves as an intermediate stage to translate macro conservation goals into specific rules, dynamically adjusted based on ecological sensitivity. For example, "core zones "enforce strict development bans, "restoration zones" guide activities via positive lists, "utilization zones" restrict actions through negative lists, and "recreation zones" apply flexible controls. Implementation shifts from zoning to project-based governance. Common features include hierarchical regulation and permit systems, though approaches vary: Germany and France implement resource management through land-use classification; the United States emphasizes objective-oriented "implementation plans"; the United Kingdom and Italy adopt constraint-oriented project licensing. **3) Project Dimension:** Project governance integrates permit review with ecological performance monitoring, combining development approval systems and accountability mechanisms to achieve full-cycle, comprehensive regulation.

The comparison of the five countries offers critical insights for China's national park spatial regulation mechanisms. A context-sensitive governance system is proposed, featuring: **1) Institutional Design**: A hybrid "rigid legislative authorization + flexible policy implementation" framework, including dynamic zoning clauses in China's National Park Law. **2) Planning Optimization**: A refined four-tier "territorial strategy-zoning regulation-specialized plans-project implementation" transmission system, incorporating gradient access rules for ecologically sensitive areas. **3) Implementation Tools**: Create full-cycle regulatory tools covering planning approval, construction oversight, and ecological assessment. Through systemic coupling of legal frameworks, planning mechanisms, and regulatory tools, the relationships between ecosystem integrity conservation, community development, and sustainable spatial utilization will be coordinated.

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Keywords:
Keyword 1: National parks
Keyword 2: Spatial regulation
Keyword 3: Governance systems
Keyword 4: Legal and policy
Keyword 5: Planning transmission

2.3-BO-S1-7

Comparative Analysis of Urban Forest Planning for Climate Adaptation in American Cities

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The climate crisis presents urgent challenges to cities. The rise in temperatures, the intensification of extreme weather events, and environmental degradation reinforce the need for strategies that promote urban planning focused on resilience and climate adaptation. In this context, urban trees are a strategy that enables better regulation of the microclimate of cities within the urban forest, the totality of plant elements present in cities. This set of elements helps protect cities against climate impacts and weather conditions, promotes water drainage in the soil, enhances spaces, improves air quality, fosters biodiversity, and provides numerous other environmental, economic, psychosocial, and aesthetic benefits. However, for the potential of the urban forest to be fully realized, cities need to plan urban arborization in a strategic and integrated manner. In light of this, the present text analyzes urban arborization plans from various American municipalities that incorporate mitigation strategies. The selected urban areas are part of the C40 group, an initiative focused on addressing the climate crisis. The aim is to draw lessons from this comparative analysis, observing strategies for climate crisis mitigation and adaptation. The methodology used employs multiple case studies and is organized into five stages: exploratory bibliographic and documentary research, case selection based on analysis criteria, description of selected plans, individual analysis, and cross-comparison. The preliminary evaluation followed 20 analysis criteria organized into four main axes: the structure of the plan; methods of implementation and management; approaches to environmental protection and climate change issues; and modes of social participation. The analysis revealed that more recent plans show a clearer integration of climate issues and climate adaptation. Initially, twenty-two plans were examined, three of which were selected as case studies: Austin, Bogotá, and São Paulo, chosen for their commitment to the climate agenda and for their diversity in urban greening management approaches. Using a comparative method, the study highlighted both convergences and divergences among the strategies analyzed, emphasizing the importance of social participation in the formulation and execution of guidelines, the connection between the plans and other urban planning instruments, and the use of graphic resources as tools to facilitate communication of the proposals. Another relevant point identified was that the effectiveness of the plans depends on participatory governance, collaboration between various sectors, and continuity of policies, avoiding administrative discontinuity that could undermine the progress made. Thus, more effective implementation of urban arborization plans requires political commitment, continuous monitoring, and engagement from civil society. Finally, by adopting a structured and coordinated approach to managing the urban forest, municipalities can transform this strategy into an essential tool for creating environmentally balanced cities that are prepared for the climate challenges of both the present and the future.

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Keywords:
Keyword 1: Urban forest
Keyword 2: Climate crisis
Keyword 3: Resilience
Keyword 4: Urban arborization plan
Keyword 5: The Americas

2.3-BO-S1-8

Territorial planning through the prism of agriculture and landscapes : Examples from Lyon metropolitan area and Greater Reims in France

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Territorial Coherence Schemes (SCoTs) are a cornerstone of France's spatial planning system. However, they remain subject to many doubts and uncertainties (Loubière and Vanier, 2018). Introduced by the Solidarity and Urban Renewal (SRU) Law, their role has been strenghtened by the Evolution of Housing, Urbain Planning, and Digital Affairs (ELAN) Law in 2018 and the Climate and Resilience Law in 2021. Additionally, local authorities have become increasingly concerned with agricultural and food-related issues. SCoTs are also crucial tools for preserving agricultural and natural areas from urban sprawl. The "Zero Net Artificialisation" (ZAN) trajectory encourages local authorities to rethink urban planning by integrating non-built areas into their considerations.
This paper is part of the "Âge2SCoT" research-action project. It examines how agriculture and landscapes are taken into planning documents in a context of global change (Dugua, 2023). The research explores the production process of these documents, the integration of the landscape concept and the involvement of agricultural stakeholders. Furthermore, it investigates how natural, agricultural et forestry lands are considered in the construction of territorial project. The study is based on two case study in France where SCoT revisions are currently underway : the SCoT of Greater Reims (Grand Est region) and the SCoT of the Lyon metropolitan area (Auvergne-Rhône Alpes region).

- Greater Reims (143 municipalities, 300.000 inhabitants) is characterised by its extensive agricultural and wine-producing areas transformed after the World War II by a national and European policies promoting intensive agriculture relying on chemical inputs and mechanisation. As part of the Age2SCoT project, the Omnibus landscape agency has been commissioned to develop a landscape-based approach called "Landscape Trajectories" as a mediation tool to reflect on the future of the region's agricultural spaces through a retrospective approach. However, this exploratory approach has received only limited support from Greater Reims, despite their participation in the research-action project.
- The Lyon metropolitan area (74 municipalities, 1.45 million inhabitants) is predominantly urban and shaped metropolisation dynamics, driven by post-war State policies aiming for balanced metropolitan development. Agricultural land is under significant pressure, despite efforts by the green-led municipal government since 2020 to implement a proactive agricultural policy. As part of the SCoT revision, a study entitled "Landscape, Soil and Resilience"(2022-2023) has been commissioned from the Base landscape agency. Among its proposals is the development of an "agro-bocage woodland network" design to mitigate heat islands and reintroduce biodiversity into the urban fabric. However, this project has sparked controversy, particularly among representatives of the farming profession.

The results from the two case study areas reveal a weak link between planning, agriculture and landscape management. In both cases, the SCOTs struggle to incorporate a large-scale landscape approach (Pernet, 2014) into their territorial planning. In line with previous research (Dugua and Chakroun, 2019), the results challenge the capacity of SCoTs to define a strategic vision on large-scale landscape and over the long term. This is particularly critical given the pressing climate and environmental challenges that require a sustainable and integrated approach to land management.

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Keyword 1: Territorial Planning
Keyword 2: Territorial Coherence Schemes
Keyword 3: Agriculture
Keyword 4: Landscape

2.3-CO-S1 - Organisation of large territories (Part 2)

2.3-CO-S1-1

The possibility for a Desakota-city: structuring Asian urban-rural territories at the large scale - The case of Fieldoffice and Yilan.

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Globalization and urbanization are the life's framework of most of the world's population. Anyhow, societies worldwide are far from homogenized. Even though Western planning systems are often considered a developmental benchmark for world peripheries, the non-Western achievement of sustainable landscape development targets -such as extensive structures of public space and natural corridors- may entail unprecedented dynamics and processes, very often "flying under the radar" of conventional planning and landscape studies. If adequately assessed, these cases can help rethink and improve established knowledge and disciplinary approaches for greater effectiveness and sustainability.
Among such occurrences, one can find recent developments of Yilan, i.e., a third-tier city in Taiwan, that -like many other urbanized areas in Asia- is characterized by *desakota*, i.e., an intense urban-rural land-use mix based upon wet agriculture and disruptive mobilities. Over the last decades, this city has developed a 1.5-km-long public space system, and now, this is further developing into a landscape public space system spanning an urban-rural area that is bigger than 25 sqkm. Such happening is already rare in the West, but it is rarer in the Asia Pacific area, where public space usually has no ambition of structuring a whole city's spatial continuity or identity, not to mention regional territories. Besides the contribution of the local society and government, a pivotal role has been played by a design firm -named *Fieldoffice*- and the singular way of practicing this has developed over 30 years of activity within the place and in relation to the peculiarities of the local landscape, urbanization, administration, and society. Somehow, this has internalized the mixitè characteristic of desakota, and through this, it has been able to engender a leap-frogging development of extensive public space structures, a process that was also able to resist the many social, economic, and political pressures that inform the life of any liberal democracy with a strong participative culture, as Taiwan is since the late 1980s.
In light of this, the proposed presentation aims to showcase Yilan's evolving landscape public space system alongside the findings from an "ethnography of design" study on *Fieldoffice* and its engagement with the local context. Conducted over five years, this study exploits relatively novel research methodologies of the design practice that reveal alternative approaches to guiding the spatial development of socio-natural systems.

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Keywords:
Keyword 1: landscape/public space systems
Keyword 2: urban-rural areas
Keyword 3: Asian landscapes
Keyword 4: non-western planning
Keyword 5: Fieldoffice

2.3-CO-S1-2

AI-Enhanced Landscape Regulation Querying with GPT Fine-Tuning

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Background

The proper application of regulations and standards is crucial for ensuring compliance, safety, and sustainability in global landscape planning and construction. Current regulation retrieval primarily relies on manual document review or keyword-based database tools, which are inefficient, lack precision, and struggle to analyze cross-regulation correlations. To enhance the accessibility, accuracy, and applicability of regulatory information, this study explores artificial intelligence applications in landscape regulation queries using China's current standards as a case study. We propose an intelligent query system based on GPT fine-tuning to optimize regulation retrieval processes and improve the intelligence level of regulation applicability analysis.

Research Content

This study develops a GPT fine-tuned intelligent query system for landscape regulations, integrating 942 current Chinese standards across architecture, planning, construction, and landscape sectors. The system employs the FastGPT framework for domain-adaptive optimization, enabling precise interpretation of regulation clauses, identification of cross-regulation relationships, and delivery of efficient smart regulation retrieval services.

Core Technologies

Regulatory Knowledge Graph Construction

Clause-level parsing of 942 standards establishes a semantic network of entity relationships. The system identifies implicit regulatory connections, such as correlating Section 6.1.12 of GB 51192-2016 (Park Design Code) with Section 6.1.4 of GB 50763-2012 (Accessibility Design Code) regarding accessible routes in park green spaces, achieving automated cross-standard reasoning.

Domain-Adaptive Fine-Tuning

The FastGPT framework is enhanced with landscape-specific terminology to improve comprehension of professional expressions. It deciphers the unique logic of regulatory texts, increasing the accuracy of applicability judgments.

Context-Aware Query

The system supports fuzzy searches. For example, inputting "height restrictions for waterfront facilities" triggers automatic matching with flood control, navigation, and ecological regulations, accompanied by contextual interpretations. Results include clause sources, effective dates, and cross-referenced standards to ensure authoritative compliance verification.

Conclusions and Future Work

Experimental results demonstrate that the GPT fine-tuned system accurately matches regulation clauses while enabling cross-standard intelligent reasoning through knowledge graph-enhanced semantic understanding. Compared to traditional methods, the system significantly improves retrieval efficiency and accuracy, reducing response time to an average of 3 minutes per query, lowering compliance risks, and saving practitioners' time in regulation review. These advancements lay the foundation for the development of a global knowledge base for landscape regulations. The GPT fine-tuned model also shows superior performance in regulation applicability analysis.
Future work will expand the system's coverage to international regulatory databases and enhance GPT's cross-lingual capabilities to support multi-country regulation queries.

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Keywords:
Keyword 1: Landscape regulations
Keyword 2: AI-enhanced querying
Keyword 3: GPT fine-tuning
Keyword 4: Regulation retrieval

2.3-CO-S1-3

A powerful professional network - a lever for legislative and social advances? The "discrete" profession – a historic constant?

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This presentation will delve into the decades preceding the foundation of the International Federation of Landscape Architects as well as its founding years, unravelling the efforts made by a series of international practitioners as early as the 1930s, especially in Belgium and in France, to create a network of professionals in the field of garden architecture - later landscape architecture. Exploring the pre-World War II events (amongst others the international Garden Congresses organised in Belgium in 1935 and in France in 1937) that eventually led in 1948 to the organisation in London, by the British Landscape Institute, of the international exhibition and conference that would pave the way to the the foundation of the International Federation of Landscape Architects, the presentation will focus on the impact that IFLA had on the extension of the scope of the profession, as well as its positioning as an important player in the reconstruction of Europe in the aftermath of the war.
Drawing a parallel with the urgent change of paradigm needed in the face of large-scale environmental destruction in the era of the Anthropocene, the presentation will explore the visions, policies and strategies adopted by the founding members of IFLA to *redefine* the profession and its territorial scope, *assert* its importance on a policymaking level and *position* landscape architecture as an important player within the design professions.
The presentation will analyse in particular the role of the International Garden Congress organised in Brussels on the occasion of the 1935 World's fair by the Belgian Association of Garden Architects (Association Belge des Architectes de Jardin, ABAJ). Its president, Jules Buyssens, who was a major figure of landscape architecture in the first half of the 20th century, had an extensive professional network spanning more than 10 European countries. He had, amongst others, worked for 6 years in Edouard André's practice in Paris, which enabled the development of strong links between Belgium and France in the realm of the profession, but also of horticulture.
The presentation will also bring to light the close collaboration engaged in 1948 by Belgian delegates René Pechère and René Latinne with French delegates Maurice Thionnaire and Ferdinand Duprat to coin the French name of the profession: 'Architecte-paysagiste' ('landscape architect'), which appeared on the IFLA constitution document of 1949, and was ratified by 15 countries. It must be recalled that French was the main language of the International Federation of Landscape Architects in its founding years.

We propose the notion of "history-based solutions" as a trigger for reflexion and invention for present-day advocacy and policymaking, and as a formidable source of inspiration for reinventing the profession in the 21st century, as it encounters challenges of yet another scale than after World War II.

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Keywords:
Keyword 1: IFLA
Keyword 2: history
Keyword 3: professional networks
Keyword 4: advocacy
Keyword 5: policymaking

2.3-CO-S1-4

Landscape Planning in Lithuania: the Unique Geo-ecological System of "Natural Framework" and National Landscape Management Plan

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This presentation aims to address the **landscape planning system in Lithuania**. First of all, the historical and scientific context of the landscape field is briefly reviewed and the main stages of landscape planning are identified (Kavaliauskas, 2011; Kavaliauskas, 2014). This talk presents the history and traditions of landscape science and practice in Lithuania, and outlines the main scientific and practical work carried out on landscape. Key legislation and regulations on landscape management and planning are also outlined. The impact of the European Landscape Convention (2000) on the development of this field (Godienė, 2012; Kavaliauskas, 2014).
One of the main focuses of this presentation is the unique Lithuanian geo-ecological network system called **Natural Framework/Carcass** (lt. *Gamtinis karkasas*) (2022), also linked to the system of protected areas, which is largely based on the scientific methodology of landscape science (Valstybinė saugomų teritorijų tarnyba 2023). The presentation covers the planning principles, structural components and implications for territorial development of the natural framework.
Furthermore, considerable attention is paid to perhaps the most important state-level landscape spatial planning document in Lithuania - the **National Landscape Management Plan** (lt. *Nacionalinis kraštoivaizdžio tvarkymo planas*) (2015). This plan reflects an integrated approach to the landscape, with spatial regulations identifying landscape management zones, regulatory directions for landscape management, a scheme for visual-aesthetic potential, and cultural heritage protection areas aimed at preserving the cultural identity of the landscape. In addition to the theoretical aspects, the practical implications of these important documents and concepts and their implementation at municipal and local level are presented. The presentation is illustrated with various landscape planning strategic documents, maps and schemes.

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Keywords:
Keyword 1: landscape planning
Keyword 2: landscape policies
Keyword 3: Natural Framework
Keyword 4: Landscape Management Plan
Keyword 5: Lithuania

2.3-CO-S1-5

Landscape and Economy: the vicious cycle. An infernal couple putting humanity's future at stake

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Economy and landscape have been closely intertwined since the dawn of humanity, but this has not been well researched. The discipline of landscape economics is relatively new. In fact, landscape transformation is driven by economic development, and economic investment adds value (negative or positive) to the landscape. In this sense, the investment in the "artificialisation" of the landscape area depends a lot on how the return on investment and the business model are developed. As our current business model is carbon intensive, based on burning fossil fuels and coal derivatives, it automatically and inevitably leads to intense and irreversible pressure on land, climate and environment through the creation of grey infrastructure, buildings, roads and more. Within this business model, the originally high landscape values become irrelevant as soon as they are artificialised, and landscape interventions are often relegated to the role of "beauty maker". The current degrowth debate is only one aspect of this new awareness.
For example, EU28 land consumption reached 539 km2/year between 2012 and 2018. The main drivers over the period 2000-2018 were industrial and commercial land use, as well as the expansion of residential areas and construction sites (EEA 2019). Europe's urbanisation rate is expected to increase from 74% today to around 84% in 2050 (EU 2020). The EU population is ageing dramatically and is projected to fall to just 4.1% of the world total by the end of the century. On the other hand, migration has become increasingly important to sustain the economy (EPRS 2019). At the same time, urbanisation goes hand in hand with the growing socio-economic benefits that many Europeans have only recently been able to enjoy: better housing, more job opportunities and a better quality of life.

Urban and peri-urban land is scarce, so battles over land use and ownership are in full swing. In and around cities, we need space for climate adaptation, water retention, biodiversity, affordable housing, sustainable transport, social integration, food production - with a forward-looking approach that takes into account the ideas and needs of future generations that we cannot foresee or predict today. These wicked sustainability challenges have already proven intractable to business-as-usual solutions, especially in the short-term context of political elections and sectoral policies.

It is time to think landscape first and change the business model of urban and peri-urban land use. This paper explores the current debate on the landscape economy, identifies possible new ways of changing the paradigm, and shows how the landscape first approach could be implemented in relation to other business models, in particular the degrowth landscape model.

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Keywords:
Keyword 1: Climate Impacts
Keyword 2: Ecological Degradation
Keyword 3: Natural Disasters
Keyword 4: Human Factors
Keyword 5: Urbanization and Sprawl

2.3-CO-S1-6

From Landscape Policy to Practice: Promoting High-Quality Landscape Architecture Within Europe's Evolving Political Framework

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In the 21st century, the profession of landscape architecture faces critical challenges in conserving, developing, and managing landscapes to ensure climate resilience. Landscape architects play a key role in addressing pressing issues, including biodiversity loss, health crises, conflicts over land use, the abandonment of traditional cultivation, and the intensification of agriculture, all of which impact the design, planning, and management of landscapes. These challenges align with major European initiatives such as the European Green Deal and the New European Bauhaus Declaration (Council of Europe, 2020).
The European Landscape Convention, one of the most relevant policy frameworks, defines landscape architecture as a profession that integrates aesthetic and scientific principles in the analysis, design, planning, and management of both natural and built environments. It also underscores the importance of landscape policy as a reflection of public authorities' commitment to framing and implementing strategic approaches to landscape governance.
Policies play a vital role in governing landscapes and the environment; therefore, this paper employs a policy analysis approach to examine the relationship between EU policies and landscape architecture. It explores how policies shape the competencies and responsibilities of landscape architects. A review of key European policies and guidelines is provided, followed by an analysis of contemporary landscape architecture projects that align with the objectives of the European Commission in planning, design, and management. The findings highlight the critical role of landscape architects at both governmental and local levels in creating more sustainable, inclusive, and aesthetically enriched environments. Finally, this paper assesses how European policies can either support or hinder the effective practice of landscape architecture. It aims to identify policy gaps that directly impact the quality and implementation of landscape architecture across EU countries, ultimately advocating for stronger policy integration to enhance the profession’s contribution to climate resilience.

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Keywords:
Keyword 1: policy analysis
Keyword 2: landscape architecture
Keyword 3: EU policies
Keyword 4: landscape governance
Keyword 5: landscape projects

2.4-CO-S1 - Towards a right for nature

2.4-CO-S1-1

Landfill restoration: The use of native Mediterranean plants in landfill restoration as a tool to create sustainable urban landscapes

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Landfill restoration is an issue that has greatly concerned Greece in recent years, as there has been a delay in implementing European legislation on waste management. The Solid Waste Management Agency has been a pioneer in the holistic approach to the problem and continues to lead in this field. As an organization, it was the first to comprehensively address the issue of landfill restoration and aftercare. For the organization's management, restoration is viewed as the reclamation of new landscapes and beneficial landmarks for citizens. Because of this approach, two environmental parks have been created in the city of Thessaloniki: in Thermi (80.000m2) and Derveni (132.000m2), located in the outskirts of the city of Thessaloniki (northern Greece).

The implemented rehabilitation scheme in each site, was designed to comply with the relevant provisions of the EU Waste Framework Directive 75/442/EEC and the Greek regulation defined in the Joint Ministerial Decision 114218/1997 "Establishment of a framework of specifications and general waste management programs".

At this stage, we are approximately 20 years into the restoration process, during which the selected experimental plantings are systematically recorded, aiming to identify which plants have the best response to the adverse environments of former landfills. It should not be overlooked that the restored sites continue to have emissions of biogas and leachate.

The selection of native Mediterranean plants, although not initially found in landfill restoration literature, posed a challenge for the administration, anticipating all the environmental issues we now face. Therefore, the advantages of these plants regarding water conservation factors, avoidance of fertilizer use, and minimization of cultivation work were considered worthy of the effort. This study presents statistical data on the plant species used in two different locations and ultimately suggests the most suitable species for landfill restoration, targeting the maintenance of sustainability.

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Keywords:
Keyword 1: Landfill rehabilitation
Keyword 2: wasteland reclamation
Keyword 3: native Mediterranean plants
Keyword 4: sustainability

2.4-CO-S1-2

The Ages of Loire: a development project, a thing to conserve, or a legal subject yet to be established?

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This text is a contribution put forth by the so-called council of « witnesses » of the "International Network of Rivers and Other Elements of Nature" which, inspired by civil conventions and other dialogical democracy dynamics, seeks to pave the way for a renewal of the ties between research and society and to deepen what a conflation of perspectives can mean.

I. The Loire: from a developed to a protected river

The landscapes of the Loire have long been objects of study. The river has undergone a myriad of development efforts to exploit its hydraulic power, to provide cooling for nuclear power plants, and it has been subject to numerous extractive processes (sand, irrigation and drinking water).
Such a development logic has given rise to militant movements that have, since the 1980s, actively been defending another form of relationship with the river, like the "SOS Loire vivante" collective.
In 1994, the "Plan Loire Grandeur Nature" was set up, which heralded a shift in the relationship. A portion of 280 kilometers of the river was recognized as a cultural object and registered as a UNESCO World Heritage site in 2000. Efforts to protect are the daily prerogatives of the State, collectivities, organisations, etc.

II. Institutional governance or self-governance?

Is the Loire just an object that can be cut into segments whose every aspect would fall under the governance of public policies ? Or is the Loire a subject in its own right, and thus should no longer be regarded as a legal object but as a legal subject? Who is legitimate to govern the Loire, who-should defend its interests? The fictive tale that was proposed in 2019 by the POLAU alongside the "Loire Parliament". The Loire becomes Loire. These considerations have continued to flourish since 2023 with the birth of the project entitled "Towards an International Network of Rivers and Other Elements of Nature," indeed spearheaded by the Nantes Institute for advanced studies and Camille de Toledo. The effort is carried alongside scientists from multiple horizons and a council of witnesses. It seeks to produce bills for Loire inspired by endeavors undertaken in the world. They are initiated by Indigenous nations (the Whanganui River in Aotearoa/NZ) or Western world like the Menor Laguna recognized as a legal person, « L'Appel du Rhône », Seine...

III. From the landscapes of Loire to the Loire system

Loire's legal empowerment opens up a new order of things. Loire could be endowed with its own perspective as a natural entity, regardless of the gaze of humans and their proclivities to act according to the way they are usually organized.
How then does this proposition impact or on the contrary reinforce the notion of landscape as it is defined in the European Landscape Convention? How it interfere with French landscape policies and tools ? Does the concept of landscape disappear with the empowerment of the subject or could the notion of landscape become an even more powerful system of interrelations wherein legal subjects are hybridized ?

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Keywords:
Keyword 1: Loire
Keyword 2: legal person
Keyword 3: nonhuman
Keyword 4: landscape

2.4-CO-S1-3
Creating a new regional parkland

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This presentation explores the preparation of the Jacksons Creek biik wurrdha Regional Parklands Plan by Fitzgerald Frisby Landscape Architecture, which sets out principles and directions for the progressive establishment and management of the new regional parklands. The plan responds to the critical need to protect and enhance biodiversity and cultural heritage, mitigate climate change, and contribute to improved community health and wellbeing. In addition, the project sets a new benchmark for the role of First Peoples in the development of regional parklands which not only includes their participation as a client and landowner but also proposes a return of Wurundjeri Woi-wurrung as future land managers.

Sunbury is a town located approximately 40km north-west of Melbourne experiencing significant population growth as the urban fringe impacts the town. In the 1990's the population of Sunbury was around 10,000, today it is closer to 40,000 and is expected to more than double to 85,000 people by 2041. The need for the parkland was identified more than 20 years ago as part of regional planning processes.

An ecological survey was completed at the start of the project to map the biodiversity and habitat values of the proposed parklands. A specific focus of the conservation areas in the Parklands is the protection and enhancement of habitat for Nature Conservation and Growling Grass Frog in accordance with the Australian Government Environment Protection and Biodiversity Conservation Act 1999.

The Parklands are an example of the Victorian Government's commitment to self-determination for Aboriginal Victorians. The plan embeds the rights and values of the Wurundjeri Woi-wurrung people and supports them in caring for significant places and objects, practising Cultural land management, recording knowledge, walking Country, and ceremonial practices.

Prior to the commencement of the Parklands Plan, the Wurundjeri Woi-wurrung Cultural Heritage Aboriginal Corporation prepared a Cultural Values Study. The study captured the Connection to Country and included the following key findings:

- The Parklands are rich with Cultural artefacts, important view lines, and significant meeting places of different Aboriginal groups.
- The area is significant for its history as a site of colonial accommodation, resistance, and efforts for self-determination at the interface of colonisation 1835-1863.
- It is likely that John Batman explored the area known as Redstone Hill, where he set out to negotiate a transfer of deed of title (known as the Batman Treaty) between the Wurundjeri Woi-wurrung and the first European settlers of Melbourne.

The Cultural Values Study played an important role in empowering First Peoples by being able to articulate their relationships with the Parklands and beyond

Options to improve sustainability, visitor experience, and adaptive land management were explored with the client group during the initial visioning process. The result is the inclusion of climate resilience measures such as canopy cover, fire risk minimisation, stormwater management and reducing operational and greenhouse gases.

This project is an example of the benefits of landscape architects leading projects of this scale as well as the benefits of collaborative design including those working on behalf of clients and approval authorities.

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2.4-CO-S1-4

Coastal right with the climate justice-deep ecology nexus: A holistic coastal management framework for the Bodrum Peninsula

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The impacts of climate change, which are severely experienced as a result of anthropogenic activities, are not equally distributed across societies at a global scale. The climate justice approach, which seeks solutions to this emerging inequality, prioritizes human benefits and interests. However, anthropogenic activities not only affect humans but also the natural and cultural landscape values. Activities such as tourism, industry, energy production, and settlement contribute to fragmentation in habitats, an increase in carbon levels, the transformation of fertile soils into artificial surfaces, eutrophication of flowing waters and wetlands, and the destruction and loss of coastlines and coastal life. When this situation is examined in the context of equality and the pursuit of rights, merely evaluating it from an egocentric justice perspective proves insufficient. Therefore, to address this gap, it is necessary to develop a 'biocentric' approach that encompasses all components of the landscape and considers the 'value of existence.' In this regard, the main aim of this research is to identify criteria by examining the deep ecology perspective, which offers a more holistic viewpoint than the climate justice approach, and to develop a biocentric justice model. This new model is intended to be integrated into the landscape management framework, with the Bodrum Peninsula, which is under the pressures of tourism and intense urbanization, chosen as the study area. This research aims to develop strategies for managing the natural and cultural landscape components of the study area within the scope of 'value of existence' and 'biospheric equality.' In this context, the shortcomings of the criteria presented by the climate justice approach are identified, the criteria of deep ecology are determined, and a survey based on pairwise comparison with experts has been conducted. A participatory and objective perspective has been provided by quantifying the criteria according to their importance priorities using one of the most current Multi-Criteria Decision-Making (MCDM) methods, the ARAS method. The ARAS method, which aims for proportional ranking, supports objectivity and an impartial analysis process by presenting a hybrid model that includes both absolute criteria metrics and relative comparisons in the evaluation of criteria. Thus, this method offers both a participatory and quantitative perspective. The methodology and results of this study address the gap in the climate justice approach by integrating deep ecology into climate justice, with the Bodrum Peninsula serving as a case study for rural landscapes. In this way, the study ensures the sustainability of both vulnerable and degraded landscapes under management or protection, while emphasizing the value of existence of the landscape and prioritizing its biotic, abiotic, and cultural equality. This holistic approach, presenting a participatory and quantitative landscape management model integrated with climate justice and deep ecology, provides an innovative framework not only for the coastal areas of Turkey but also for countries lacking sustainable coastal management.

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Keywords:
Keyword 1: landscape management
Keyword 2: Deep ecology
Keyword 3: climate justice
Keyword 4: landscape democracy
Keyword 5: MCDM Method

2.4-CO-S1-5

The Magpie-Mutehekau Shipu River in person: “with” the landscape?

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In the late 2010s, between 2017 and 2020, many natural entities such as rivers and mountains gained recognition as legal entities, in New Zealand, India, Colombia and Canada. This phenomenon, which may seem extraordinary in Western culture, is an ordinary reality for indigenous cultures.
It marks a profound paradigm shift for Western societies, whose cursor is gradually shifting from anthropocentrism to biocentrism, leading to a redefinition of the relationship between humans and non-humans. Indeed, while Western cultures often see the relationship between society and nature as separate, other cultures, particularly indigenous ones, have always experienced this cohabitation in a more integrated way.
Initiatives such as the Loire Parliament and the Call of the Rhône in France illustrate this change of perspective in an era of global upheaval. The recent example of the Magpie River or Mutehekau Shipu (in Innu-Aimun, the language of the Innu), an affluent of the St. Lawrence River on the North Shore of Quebec (Canada), is particularly telling: Western activists from a variety of backgrounds (environmentalists, jurists, white-water sportsmen) have joined forces with indigenous communities (Innu) and municipalities to defend the cause of this internationally renowned river against new hydroelectric dams. In 2019, the Innu and the Ekuanitshit Band Council, SNAP (NAture and Park Society of Canada), the Association Eaux Vives and the Minganie municipalities joined forces and founded the Alliance Muteshekau Shipu. This successful alliance bears witness to the possibility of merging two seemingly opposing worldviews to achieve a shared victory. In 2021, the Alliance announced the granting of legal personality to the Magpie River through two legally fleshed-out mirror resolutions, the first recognition of its kind in Canada.
This three-part paper brings together two of Quebec's leading players in the field (an Innu member of the Ekuanitshit Band Council, an environmentalist and activist member of Canadian Nature and Park Society) and a Landscape University lecturer in France.

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Keywords:
Keyword 1: MUTEHEKAU SHIPU-MAGPIE RIVER
Keyword 2: LEGAL PERSONHOOD
Keyword 3: INNU PEOPLE
Keyword 4: CANADA
Keyword 5: LANDSCAPE

2.5-BO-S1 - Heritage landscapes: authenticity and change (Part 1)

2.5-BO-S1-1

Heritage Value Interpretation and Adaptive Utilization of the Zhuozhang River Basin Cultural Landscape Based on Digital Humanities Methods

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The Zhuozhang River is home to long-established villages along its banks, which, combined with the surrounding natural environment and local culture, form a linear cultural landscape of significant heritage value. However, current conservation efforts focus largely on isolated cultural relics and structures, lacking a comprehensive approach that considers the interconnectedness of the region's natural and cultural elements. In response, the research team uses digital humanities methods to provide a foundation and strategic framework for the recognition and interpretation of the Zhuozhang River's linear cultural landscape, focusing on its natural and cultural linkages at the regional scale.

Drawing on the cultural display and utilization experience of the Loire River Basin, this research integrates Shanxi's local cultural characteristics. Using cultural landscape as the methodology, the study establishes an analytical framework for the cultural and natural interconnections within landscapes. The framework is based on "one culture, four voices, five themes, and six aspects." First, the study uses the cultural landscape of the Zhuozhang River Basin as the spatial framework, with water culture as the entry point. Employing digital humanities methods, the research combines text data mining, field surveys, and GIS technology to systematically explore the region's historical context and cultural value elements. This is achieved by extracting six tangible carriers of landscape depiction from the concept of "*landscape culture*" — place names, literature, painting, garden landscapes, architectural planning, and cultural writings.The study further integrates text and network data analysis, expert interviews, and field surveys to evaluate heritage value indicators related to five themes of Zhuozhang River water culture: agriculture, folklore, economy, military, and nature. By mapping cultural values to space using geographic information of heritage sites, the abstract cultural values are quantified to generate a spatial layout of heritage values.The research visually maps the spatial correlation of heritage values, creating a network of cultural connections between different heritage sites and regions. These connections form linear or regional cultural linkages, connecting various heritage types and levels within the basin. The study also demonstrates that digital humanities technologies can effectively quantify the cultural heritage elements of the Zhuozhang River Basin and spatially correlate them using GIS technology.

This research elaborates on the multiple values of the Zhuozhang River's linear cultural landscape within the context of five cultural themes, considering aspects such as the natural environment, cultural heritage, and historical context. The study proposes strategic recommendations for the interpretation of cultural landscape values from three scales—large (municipal), medium (cultural tourism routes), and small (historical scenes). These strategies aim to enhance the systemic and continuous nature of regional cultural heritage, while promoting adaptive protection and revitalization of cultural landscapes in response to climate change. By integrating digital humanities methods, the study bridges cultural heritage protection theory and practice, offering a systematic framework for heritage preservation and display. Ultimately, the utilization of these heritage landscapes helps preserve the continuity and diversity of Central Plains civilization, addressing global challenges in cultural heritage preservation.

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Keywords:
Keyword 1: cultural landscape
Keyword 2: digital humanities
Keyword 3: heritage preservation
Keyword 4: value assessment
Keyword 5: text mining

2.5-BO-S1-2

Research on the Living Cultural Inheritance of the Grand Canal Heritage Landscape

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The Grand Canal, a luminous gem interwoven into Earth's azure hydrological network, stands as an unparalleled engineering feat among global artificial waterways, renowned for its monumental scale and profound historical significance. Spanning 1,794 kilometers, this UNESCO World Heritage Site traces its origins to the Spring and Autumn Period (770–476 BCE), with subsequent expansions under the Sui (581–618 CE) and Yuan (1271–1368 CE) dynasties. The Grand Canal is distinctive for its Caoyun transportation system (transportation of grain and strategic logistics. It remains one of humanity's earliest, largest, and most complex hydraulic engineering systems—a timeless tribute to premodern innovation. Linking China's Yellow, Yangtze, Huai, and Qiantang Rivers, it forged the historic"south-north grain corridor and north-south governance axis,"driving cultural and economic exchange. Buddhism and Islam spread via its currents, exemplifying early globalization.Today, navigable segments such as the Shandong-Zhejiang stretch persist, while its critical role in the Eastern Route of the South-to-North Water Diversion Project underscores its status as living cultural heritage. The canal's harmonious fusion of historical legacy and contemporary utility exemplifies adaptive resilience. Inscribed on the UNESCO World Heritage List (2014), it endures as a testament to humanity's enduring ingenuity.

The Grand Canal, far more than a "National Business Card" of China, stands as a shared treasure of humanity. It is not merely a witness to history but a living testament to civilizational continuity, technological adaptability, and cultural inclusivity. Amidst the tides of globalization and urbanization, the canal's preservation and adaptive reuse offer the world a Chinese paradigm for the modern revitalization of historic heritage. Today, heritage conservation has evolved from static preservation to a value-driven dynamic journey, forging cognitive bonds between the past, present, and future. The canal's living culture thrives through a three-dimensional value framework—cultural inheritance, ecological resilience, and innovative reuse—achieving synergistic enhancement and optimization.In the cultural dimension, the application of historical stratification theory enables deep analysis of the site's spatiotemporal evolution, establishing a regeneration framework of systematic protection, innovative reinterpretation, and living heritage transmission. This approach revitalizes heritage landscapes through contemporary design languages. For ecological resilience, nature-based solutions (NbS) restore harmony between the canal and its natural surroundings, reviving riparian ecosystems. In reuse practices, historic structures are artfully transformed into vibrant public cultural hubs, reimagining traditional canal spaces as engines of social engagement.

In the context of globalized urbanization, the conservation and revitalization of the Grand Canal unfold as an epic of modern transformation for ancient heritage, showcasing China's paradigm of "modern metamorphosis for historic legacies." This study employs the landscape design of the Suzhou Sericulture College Former Site Cultural Park (Xiling Hall Park) at the XuShuguan Section of the Grand Canal as a practical exemplar. By exploring the breadth of cultural integration, scope of ecological-urban governance, and precision of engineering techniques, it proposes multidimensional strategies for living heritage transmission and landscape regeneration, offering innovative pathways for the sustainable development of linear heritage corridors.

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Keywords:
Keyword 1: The Grand Canal
Keyword 2: Heritage Landscape
Keyword 3: Living Cultural Transmission
Keyword 4: Landscape Regeneration
Keyword 5: Spatial Reconfiguration

2.5-BO-S1-3

Adapting Heritage Landscapes in the Face of Transformation: The Case of Ziro Valley and the Apatani Tribe

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Located deep within the Eastern Himalayas, the Ziro Valley, India is a quintessential example of a living cultural landscape. Shaped by harmonising nature with culture, it has been designated as a tentative UNESCO World Heritage Site. The Apatani Tribe's indigenous knowledge systems and agrarian culture, which is infused with animistic philosophy and ecological stewardship, is a classic example of enduring the balance between cultural practice & environmental sustainability.

The Apatani people have traditionally maintained an agricultural system where paddy cultivation is combined with active pisciculture. Agro-forestry practices in the valley with clear land use patterns like grazing grounds, sacred groves, plantation areas, etc. have facilitated optimum utilisation of land while enhancing yields. Their traditional ecologically balanced livelihood, rituals, festivals, and unique cultural identity, such as facial tattoos and distinct social customs, have shaped this "organically evolved landscape", co-existing with their ecological systems in harmony. Nonetheless, increasing global temperatures, change in climatic patterns, and depletion of natural resources are threatening these practices. Parallelly, the movement of younger generations to cities is endangering the traditional knowledge systems, thus posing a two-fold challenge to the conservation of tangible as well as intangible heritage.

The evolution of Ziro Valley raises critical questions about the future of heritage landscapes in an age of rapid change. In what ways can such landscapes adapt to new socio-economic and environmental contexts while retaining their cultural significance? This study explores these questions, advocating for innovative conservation approaches that align with the valley's distinct cultural and ecological features.

This study also highlights the pivotal role of landscape architects in mediating between tradition and innovation. Through the development of adaptive interventions that honour the valley's cultural heritage, landscape architects can assist in sustainable water management, climate resilience, and eco-tourism activities that serve the interests of both the Apatani community and the wider ecology. Landscape Architects can subsequently absorb these indigenous knowledge systems to their own sustainable practices.

The study employs both primary and secondary data collection methods to analyse the evolution of Ziro Valley's heritage landscape and its conservation challenges. Primary data includes field observations, interviews, and surveys conducted with Apatani community members - to document traditional practices, perceptions of change, and adaptive strategies. Secondary data includes scholarly articles, reports, UNESCO documents, and case studies on heritage landscapes, climate change, and conservation policies adapted in similar landscapes.

Ultimately, the case of Ziro Valley illustrates the broader challenges of conserving heritage landscapes in the Anthropocene. It highlights the need for a holistic approach - harmonising preservation with adaptation, allowing heritage sites to develop alongside the communities that sustain them. Through the means of adaptive conservation strategies and interdisciplinary collaborations between stakeholders, it is possible to safeguard the tangible and intangible heritage of Ziro Valley in a manner that will ensure its resilience and relevance in the future. This study serves as a call to action for policymakers, conservationists, and communities to rethink heritage protection in an era of rapid environmental and cultural transformation.

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Keywords:
Keyword 1: Ziro Valley
Keyword 2: Apatani Tribe
Keyword 3: Cultural Landscape
Keyword 4: Cultural Ecology
Keyword 5: UNESCO

2.5-BO-S1-4

From Dongshen Water Supply Channel to Ecological Corridor: Organic Evolution and Heritage Value Reconstruction of the Shima River Basin Landscape

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During China's socialist construction period, a series of large-scale inter-basin water diversion projects were built, often distributed in linear and nodal patterns. These projects integrate unique cultural resources, forming significant heritage corridors. Unlike static historical buildings or cultural relics, water conservancy heritage is the result of human beings using and transforming nature in different periods, and has dynamic evolution and complexity. Current research focuses more on engineering techniques or historical values, with limited attention to the long-term evolution process of water heritage and its interactions with ecological and social environments. Therefore, it is of great significance to introduce the "organically evolved landscape" theory to study the dynamic characteristics of water conservancy heritage. In 1963, to address the drinking water crisis of residents caused by severe drought in Hong Kong, the government constructed the Dongjiang–Shenzhen Water Supply Project, with the Shima River serving as its primary water conveyance channel. As urbanization and climate change pose new challenges, the landscape of the Shima River Basin requires continuous integrated management to sustain its heritage value. This paper takes the Shima River as a research case, employing historical document analysis, spatial data interpretation, and field investigation to sort out its evolution from the Dongshen water supply channel to a natural ecological corridor. It identifies four key evolutionary stages and analyzes the corresponding ecological and social background, engineering interventions, spatial morphology, water quality changes, and community participation cases. The aim is to refine the evolution path of the Shima River from a single-function waterway to a multi-value symbiotic heritage landscape, providing a paradigm for adaptive management of heritage landscapes in rapidly urbanizing areas and comprehensive water environment governance in high-density urban built-up regions. The study shows that integrated governance and social collaboration can facilitate the reconstruction of water heritage value, allowing it to serve ecological, cultural, and social functions simultaneously.

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2.5-BO-S1-5

San Lucas Island National Park and Las Cruces Biological Station: Evolving Heritage Landscapes of Puntarenas, Costa Rica

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Puntarenas is one of the seven provinces of Costa Rica (CR) that extends along the Pacific coast of the country. Despite being a vulnerable area, it has enormous scenic potential and important protected areas such as San Lucas Island National Park and Las Cruces Research Station (CRS), both of which are heritage sites due to their cultural and natural value. The Island was declared a national heritage site in 2002 and the Station is part of the "Talamanca Range-La Amistad Reserves / La Amistad National Park", a World Heritage Site since 1983.

The objective of this paper is to analyze two CR sites with heritage value, as well as their evolution both spatially and in terms of valuation, seeking alternatives for their conservation. Some of the methods used are field work, surveys, botanical inventories and interviews.

The collective imagination associated with these landscapes has changed drastically, going from spaces considered of little aesthetic value to highly valued spaces. San Lucas Island (472 ha) was populated between 1000 and 1500 by native peoples. From 1873 to 1990 it was transformed into a penitentiary center where a series of buildings were constructed to preserve its history. Climate change has caused droughts, floods and loss of coastal areas. The island underwent an important change of valuation being declared a National Wildlife Refuge in 1991 and a National Park in 2020. As a conservation proposal, an Infrastructure and Landscaping Master Plan was developed based on sustainable development. It promotes planning based on green and blue infrastructure, generating a non-anthropocentric response. Additionally, a proposal for Landscape Units was made and imaginaries were developed to represent the design strategies.

In San Vito, where La CRS is located, there was an abrupt transformation from tropical rainforest to coffee plantations in 1950 (Quesada & Díaz, 2019), and deforestation continued unchecked until 1965. In 1990, national policies began to control this forest loss by creating the Amistosa Biological Corridor. The CRS, formed by the Wilson Botanical Garden and a 365 hectares of forest, has undergone major changes that have been little studied. In 1962, Robert and Catherine Wilson decided to settle on this site to develop a tropical garden of relevant importance. Shimizu (2015), confirms the important influence that Burle Marx had on the design. In the 1970s, the OTS acquired this property and began to describe this garden as a paradise.

In conclusion, these sites represent unique examples of valorization of the tropical landscape with a patrimonial importance that has varied over time, being this evolution part of its relevance. Las Cruces protects a portion of tropical wet premontane forest and the legacy of the Wilsons; while the island protects a remnant of tropical dry forest, in danger of extinction, as well as archaeological and architectural landmarks. The regulatory protection documents have supported the improvement of the conditions for biodiversity conservation, however, it is necessary to continue with the transdisciplinary work of landscape architects to understand the different layers that make up the essence of these sites.

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2.5-BO-S1-6

Project CRUSADE: Community-driven Revitalization of the Bessang Pass Natural Monument/Landmark as a Multifunctional Landscape using Sustainable Agro-Eco Tourism Development

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The study explores an integrated ecological planning approach to preserving the cultural, historical, and environmental assets of the Bessang Pass Natural Monument/Landmark (BPNML). Recognized for its historical significance as the site of the 1945 Battle of Bessang Pass, as well as its rich biodiversity, the protected area faces challenges such as soil erosion, deforestation, and inadequate sustainable development strategies. This research aims to address these concerns by applying ecological planning, biotope mapping, and multifunctional landscape strategies to create a sustainable framework that balances conservation, economic development, and cultural preservation.

The study employs a methodological framework adapted from Navarra (2013), integrating GIS-based spatial analysis, biotope classification, and ecological evaluation techniques. Through landscape layer analysis, the research identifies key ecological structures such as core conservation areas and biological corridors. The assessment of biodiversity, hydrological structures, and socio-economic functions informs the categorization of the study site into preservation, conservation, and improvement zones. The findings highlight that while the majority of the BPNML consists of primary forests with high ecological value, areas designated for multiple uses, particularly those affected by upland farming, require interventions to mitigate soil loss, enhance biodiversity, and promote sustainable land management practices.

To guide the site's transformation into a multifunctional landscape, the study proposes a series of community-driven design interventions. These include the development of an agricultural park, designed to showcase and promote sustainable upland farming techniques; a nature and sculpture trail, which integrates historical storytelling with ecological education; an ethnobotanical park, highlighting medicinal and culturally significant plant species; and an improved BPNML park grounds, which feature eco-friendly facilities and heritage conservation elements. These interventions are structured around principles of landscape resilience, community participation, and sustainable tourism, ensuring that conservation efforts align with local livelihoods and long-term environmental stewardship.

Findings from the ecological evaluation underscore the need for integrated planning strategies to address environmental degradation while leveraging the site's historical and cultural value for eco-tourism. The study recommends policies that strengthen local governance in managing protected areas, enhance community engagement in conservation efforts, and implement green infrastructure solutions to support sustainable tourism. By aligning with the Recreation Opportunity Spectrum and the Tourist Area Life Cycle Framework, the proposed interventions aim to balance environmental preservation with responsible economic growth, ensuring that the BPNML remains a thriving cultural and ecological landmark.

Ultimately, this research demonstrates the potential of ecological planning in revitalizing protected landscapes through a participatory, multi-sectoral approach. By integrating cultural heritage conservation with sustainable land use and eco-tourism, the study contributes to broader discussions on landscape resilience and climate-adaptive planning for heritage sites in the Philippines. The results serve as a model for other protected areas facing similar challenges, advocating for a holistic strategy that safeguards both natural ecosystems and local communities.

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2.5-BO-S1-7

The Living Landscape of Gochang: Ecosystem and Cultural Services in a UNESCO Biosphere Reserve

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South Korea is facing a critical social challenge which is population decline due to low birth rates and an aging society. This issue is particularly severe in rural areas, where a high concentration of the population resides in urban areas, exacerbating rural depopulation and demographic imbalance. Addressing these challenges and restoring the balance between urban and rural areas has become a pressing national priority, particularly in the context of rural regeneration.
One of the characteristics in South Korea's rural areas is the high accessibility between urban and rural areas in terms of both distance and cost. With nearly half of the country's population living in the Seoul metropolitan area, there is a growing demand for staying closer to nature, away from overcrowded cities. Many rural areas maintain functional relationships with urban areas, offering opportunities for sustainable development. To support this transition, it is essential to create attractive rural spaces where urban residents can live, work, and visit.
This study aims to identify and assess the value of rural landscapes, particularly their role as ecosystem cultural services. The research focuses on Gochang County in Jeollabuk-do, South Korea, selected for its distinctive rolling low hills—an uncommon feature in other parts of the country. Some of these hilly areas have been converted into pastureland-based agricultural landscapes and are popular tourist destinations. Gochang is also recognized for its exceptional landscape, ecological, and cultural significance, which led to its designation as a UNESCO Biosphere Reserve.
To analyze and classify the hilly landscapes of Gochang County, this study employs the Self-Organizing Map (SOM) machine learning method, widely used in spatial analysis. This approach integrates various spatial datasets, including terrain, geography, soil texture, land use, and other rural resources. Following this classification, the study conducts visual landscape analysis, a literature review, and on-site interviews to assess the ecosystem service values of the identified hilly areas. Recognizing the scenic and ecological value of Gochang's hilly landscapes as local heritage is essential for guiding rural regeneration efforts, conserving natural resources, and promoting both economic and social sustainability. Furthermore, landscape architects can play a crucial role in the effective utilization and management of these landscapes.

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Keywords:
Keyword 1: Rural regeneration
Keyword 2: Biosphere Reserve
Keyword 3: Self-Organizing Map
Keyword 4: Hilly landscapes
Keyword 5: Vernacular heritage

2.5-BO-S1-8

Evolution of the UNESCO site of Royal Saltworks into an island of biodiversity inspired by Gilles Clément's planetary garden

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Biodiversity provides irreplaceable services to humanity: oxygen, food, medicines. Today, the global use of resources poses major problems: climate change, collapse of biodiversity, but we do not have a second planet. Gilles CLÉMENT's thinking, notably expressed through his concept of "planetary garden" according to which the Earth is - like a garden - a closed and finite space that it is up to man to maintain and preserve, can play a role of compass. It was by drawing inspiration from both his work and that of the visionary architect Claude-Nicolas Ledoux, who sought in the 18th century to reconcile apparent opposites - minerals with plants, people with nature, beauty with utility, the city with the countryside - that an initiative was born at the Saline royale d'Arc-et-Senans to open a laboratory for landscape professions on 13 hectares under the leadership of the Mayot & Toussaint agency, associated to ALEP architects, Soberco Environment and Sébastien Appert.

In 2022, for the first time in 250 years, the development of the "Great Circle" thus made it possible to transform the Unesco site of the Saline royale, renowned for its semi-circular architecture, into an island of biodiversity in the form of a complete circle inspired by the "Cité idéale" that the architect Ledoux had dreamed of in the 18th century around his factory in Arc-et-Senans.

The originality of this project is to be supported and carried out by and with learners from national landscape schools and agricultural professional establishments, by combining high quality landscapes, architectural heritage, circular economy, creativity and ecology. Each year, the 30 gardens, some 12,000m², which now make up the "Great Circle", are an opportunity to bring together, from their design to their completion, interdisciplinary teams bringing together gardeners, architects, artists, ecologists, teachers and more than 400 students from around twenty schools in France, Switzerland and Belgium, awarding diplomas in the field of landscaping.

Here, the gardeners observe and accompany nature, rather than seeking to domesticate it, to promote biodiversity. The challenge is to awaken individual and collective potential, to share knowledge and techniques to produce with the living, and not against it, in order to give everyone the tools to live better, to cooperate and build together a more sustainable and more united future.

Everything in this project proposes, enriches, and fertilizes possible futures: a melting pot for experimenting, a tool for transmitting, an agora for sharing, a theater for reinventing.

Realizing the design of the "Great Circle" imagined by Ledoux made it possible to pursue 4 objectives: Double the surface area of the Saline royale by developing 30 gardens on 13 hectares; Create an ecological corridor consisting of a double alignment of 200 trees along the royal avenue, connecting two “Natura 2000” protected areas; Develop a platform for experimentation and sharing of knowledge between students, professionals and the general public; Highlight the remarkable built heritage of the factory, in particular by creating two belvedere footbridges allowing, from a height of 5m, a view of the entire circle.

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Keywords:
Keyword 1: Planetary garden
Keyword 2: Heritage
Keyword 3: Ecology
Keyword 4: Creativity
Keyword 5: Transmission

2.5-BO-S2 - Heritage landscapes: authenticity and change (Part 2)

2.5-BO-S2-1

Reimagining the Stiemerbeek: a blurred line

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The course of a river is never merely a matter of hydrological flow; it reflects time, history, and culture, shaped by both nature and human agency. The case of the Stiemerbeek in Genk is no exception.

The Stiemerbeek flows through a valley long shaped by urban expansion and industrialization, notably the mining history that defined Genk's identity for much of the 20th century, where nature has often been relegated beneath the concrete, coal, and metal of human development. The river has been canalized, channeled, and altered, its natural course obscured by infrastructure. As these interventions have unfolded, the true memory of water—the risks, the relationships, and the vital presence of its force—has been lost. This project aims to restore that memory by reintroducing the creek as a living entity, while articulating places that foster a dialogue between the landscape and its inhabitants—both human and non-human alike.

At the heart of this transformation is the **parallel creek**, a new water system designed alongside the existing canalized Stiemer. This is not merely a technical addition but a reclamation of ecological processes long suppressed. The new creek and wet forest draw water from the surrounding valley through surface, seepage, and groundwater. This natural flow revitalizes the landscape, promoting biodiversity, water infiltration, and flood resilience. The creek is not just a passive infrastructure; it becomes a living organism, an ecological space where life flourishes, and water reasserts its presence. Here, we engage with water not as something to control but as something to live with.

Parallel to this new feature are the **linear gardens**, spaces where human activity and nature converge. Strategically placed along the Stiemerbeek, these gardens act as bridges between the city and the valley, inviting people into the landscape in unexpected ways. Each garden is conceived as a place for encounter—a pergola, a bench, a fireplace —simple elements that encourage a process of appropriation, where people redefine their relationship with the landscape. In this way, the gardens are not fixed entities but evolving places that allow nature and water to be part of everyday life, in much the same way that a river's meandering path reshapes its course over time.

The gardens also echo the dynamic history of the valley, a site shaped by both industrial intervention and natural forces. The landscape itself becomes an archive, where the layers of the past—floods, drainage systems, protective infrastructures, and human settlements—are in constant dialogue with the future. These gardens act as living testimonies.

The Stiemerbeek project responds to the dual needs of hydro-ecological restoration and a cultural reawakening of a forgotten landscape. The creek, gardens, and landscape become a canvas upon which the rhythms of water, textures of soil, movements of people, and wildlife converge. Through this approach, the project offers a new model for cities dealing with climate change—one that acknowledges the resilience of natural systems, fosters social connection, and reawakens the memory of water in the urban landscape.

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Keywords:
Keyword 1: water
Keyword 2: garden
Keyword 3: human and non-human
Keyword 4: ecological restoration
Keyword 5: climate resiliance

2.5-BO-S2-2

Reconstruction of Narrative Situation of Western Han Dynasty Imperial Mausoleum Site Landscape

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The interpretation of ancient urban sites with earthen architectural heritage in East Asia has long been constrained by the authenticity dilemma between "intentional reconstruction" and "authentic preservation of archaeological remains". This contradiction becomes particularly acute in superimposed capital city ruins like those in Xi'an, where defining the cultural role of large-scale "void areas" surrounded by modern urbanization poses significant challenges. Taking the Western Han imperial mausoleums north of ancient Chang'an as a case study, their pyramidal rammed-earth structures have served as enduring cultural landmarks for two millennia. However, the vanished timber architectures and evolving states of archaeological preservation necessitate mechanisms for memory continuity beyond physical forms.

The study proposes a " situational chain" mechanism connecting urban narratives with landscape interventions through a tripartite spatial reference system: At the macro scale, it establishes spatiotemporal correlations between mausoleum clusters and geographical networks, enhancing the perception of historical urban-territorial evolution through a system of spatial reference identifiers. The meso scale addresses fragmented archaeological data within individual mausoleum precincts by integrating newly discovered spatial patterns to construct transitional interfaces between ancient and modern urban fabrics. At the micro scale, fragmentary exhibitions in underground museums activate spatial imagination between surface landscape voids and subterranean artifact clusters through minimal physical interventions. This multi-scalar approach successfully transforms passively conserved ruins into active cultural media, weaving subterranean remains, surface markers, and collective memory into a semantic network of "interpretive fields" while preserving archaeological authenticity.

The study demonstrates that situational reconstruction weaves subterranean archaeological layers, surface markers, and collective memory through semantically precise spatial languages, forming a sustainable "interpretive field". Within the situation of counter-urbanization landscapes, this approach not only enhances public engagement but also coordinates long-term archaeological pressures with urban development needs via a "situation-production" mechanism. It provides a replicable collaborative model for large-scale site conservation in East Asian historic cities, addressing three critical dimensions: 1) Spatiotemporal continuity of geo-cultural landscapes through reference systems; 2) Dynamic supplementation of archaeological knowledge layers; 3) Transformation of passive preservation into active spatial storytelling. The findings emphasize emotional resonance and imagination stimulation as vital bridges between past material forms and present urban realities, offering new operational logic for heritage interpretation in rapidly transforming metropolitan regions.

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Keywords:
Keyword 1: Situational Reconstruction
Keyword 2: Cultural Memory
Keyword 3: Spatiotemporal Continuity
Keyword 4: Heritage landscapes

2.5-BO-S2-3

Digitalization Research on Garden Heritage: A Case Study of the Yipu Garden in Suzhou

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The digitalization of classical gardens involves the application of modern digital technologies to document, analyze, simulate, and present both tangible and intangible elements of these heritage sites. This research holds significant value in multiple dimensions:

1.Comprehensive Documentation: Digital technologies enable precise and systematic ecording of garden layouts, architectural structures, plant species, and spatial distributions.

2.Analytical Innovation: They provide novel methodologies for exploring the spatial organization and cultural significance of classical gardens.

3.Historical Reconstruction: By simulating environmental changes, socioeconomic influences, and human interventions across historical periods, digital tools allow for the dynamic reconstruction of a garden's evolutionary trajectory.

4.Global Accessibility: Digital platforms transcend geographical and temporal barriers, facilitating worldwide access to and appreciation of classical gardens.

Yipu Garden located at No. 5 Wenya Lane, Tiankuqian, Suzhou, Jiangsu Province, Yipu Garden is a classical garden of exceptional historical and artistic significance. As an exemplary Jiangnan-style garden, this study employs 3D point cloud technology to digitize Yipu Garden, driven by its outstanding artistic merits. The garden epitomizes masterful craftsmanship in rockery design, water feature arrangement, architectural composition, and botanical configuration, making it a multidisciplinary research subject. Scholars across disciplines can investigate its historical, cultural, artistic, and scientific dimensions, thereby uncovering its diverse academic value.

Contributions:

1.Academic Advancement: The digital study of Yipu Garden deepens insights into classical Chinese gardens and offers critical references for interdisciplinary research, fostering scholarly progress.

2.Public Engagement: Digitization creates participatory platforms for the public to contribute to the preservation, inheritance, and sustainable development of cultural heritage.

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Keywords:
Keyword 1: 风景园林
Keyword 2: 数字化
Keyword 3: 园林遗产
Keyword 4: 三维点云技术
Keyword 5: 世界遗产

2.5-BO-S2-4

Echoes of heritage: How landscape and soundscape shape visitor perception in Chinese Classical Gardens

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While the architectural and historical-cultural values of World Cultural Heritage sites have been extensively studied, the evaluation of their soundscapes remains largely overlooked. Additionally, with the rapid growth of urban tourism, the potential impact of audiovisual environments on visitor experience and well-being may be underestimated. This study focuses on Suzhou Classical Gardens, a representative example of Chinese classical gardens designated as a UNESCO World Cultural Heritage site, to systematically assess the characteristics of its audiovisual environment. A combined approach of on-site measurements and field surveys was employed to collect empirical data. By establishing a nested structural model integrating soundscape, landscape, and tourism experience, this study explores how audiovisual interactions shape visitor perception and satisfaction. The findings indicate that natural sound sources enhance visitor satisfaction by increasing soundscape pleasantness, while audiovisual interactions significantly improve the overall visitor experience. More importantly, this study advances the discourse on cultural heritage conservation from a soundscape perspective, providing valuable insights for evidence-based sustainable sound environment management and planning in World Cultural Heritage sites, particularly in Chinese classical gardens.

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Keywords:
Keyword 1: World Cultural Heritage
Keyword 2: Chinese classical gardens
Keyword 3: Audio-visual environment
Keyword 4: Soundscape perception
Keyword 5: psychological restoration

2.5-BO-S2-5

Ceques in Inca time in Cuzco. Contemporary Reading of the Landscape as a System

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Pre-Hispanic civilizations have left numerous archaeological remains throughout America, which show interventions that shaped the landscape and territory for administrative, residential, sacred, or productive purposes. South America has many sites related to the last notable pre-Columbian civilization, the Inca State (15th and 16th centuries).

Within this framework, other vestiges coexist that range from their beginnings in pre-Inca times (before 1200 AD), passing through the Inca period (1200-1533 AD), the Inca-colonial transition (1533-1572 AD), and the subsequent evolutionary phases that lead to the current urban landscape.

This study focuses on Cuzco, the capital of the Inca State (Peru), based on colonial records from the 16th and 17th centuries. The sites examined show diverse settlement patterns within the territory and landscape, influenced by the varied geography crossed by the Andes. This study delves into the Ceque system of the Inca State, which served as a structure for the territory of Cuzco, the capital of Tahuantinsuyo.

The Ceque system is a radial network of 42 invisible lines. Although the abstract conformation of the system could resemble the spokes of a wheel, its adaptation to geography means that the axes are not perfectly straight but related to existing elements (rivers or water courses, geographical features, roads).

The network extended approximately 10 or 15 kilometers around, starting from the center of the city, possibly from the vicinity of the Coricancha [temple of the sun], according to the chroniclers Bernabé Cobo and Cristóbal de Molina.

This way of organizing space was related to the various areas of the life of the *ayllus* and *panacas**[1]***, mainly in terms of their distribution in the territory, and tenancy, and its production, the care and maintenance of irrigation canals, land the presence and care of sacred elements or enclosures called *huacas*.

Therefore, various aspects such as the social, symbolic, infrastructure, productive, and territorial structure were interconnected.

It is relevant to keep in mind that the central starting point of this system coincided with the point of origin of the division of the Inca State into four regions or *Suyos**[2]***, in addition to the point of origin of the four main royal roads - towards the four region - that made up the Qhapac Ñan network.

The reasons for the existence of the ceque system seem to be primarily of a religious and sacred nature, understanding that the Inca State was governed by the Sapa Inca (the son of the Sun god), having the divine mandate to bring order and civilization to the rest of men.

The relevance of this endeavor is to understand the current Andean territory through a contemporary lens. Despite the extensive research on ceques within archeology and history, there is still the opportunity to analyze them from a spatial and landscape perspective, considering them as a model of territorial organization. Its purpose is to interpret them within their spatial and landscape framework and to inspire possible applications in contemporary rural environments or as strategies for territorial planning, such as irrigation management and agricultural organizations.

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2.5-BO-S2-6

How does the public develop an aesthetic experience towards industrial heritage landscapes? ——A discourse analysis based on social media data

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Industrial heritage bears unique memories of industrial civilization's evolution, possessing profound historical, cultural, aesthetic, and multi-dimensional values. In recent years, with the advent of the stock conservation era, China has increasingly prioritized the preservation and adaptive reuse of industrial heritage. The shaping of industrial heritage landscapes has assumed greater significance in urban regeneration, while scholarly research in this domain has witnessed substantial growth. Although exceptional industrial heritage landscapes are recognized for delivering unforgettable aesthetic experiences to the public, quantitative investigations into public perception and aesthetic experience generation mechanisms remain conspicuously scarce. This study examines Beijing's 789 Art District - a regenerated industrial heritage site in China - as a case study, analyzing 21,524 online reviews from Dianping, China's prominent consumer review platform. Through natural language processing (NLP) and coding techniques, we systematically extract aesthetic elements of industrial heritage landscapes. Employing Fairclough's three-dimensional discourse analysis framework, we interpret social media commentary to investigate how industrial heritage landscapes facilitate public aesthetic experiences and manifest through digital discourse. By integrating big data analytics with discourse analysis methodologies, this research establishes a novel paradigm for industrial heritage studies while providing theoretical underpinnings and practical scientific guidance for landscape revitalization within urban regeneration contexts.

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Keyword 3: Discourse analysis
Keyword 4: Urban regeneration
Keyword 5: Natural language processing

2.5-BO-S2-7

Resilience Mechanisms and Regeneration of Rural Mining Pit Heritage Landscapes under Socio-Economic Changes: An Example in Nanjing, China

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In rapid urbanization and industrial restructuring, many industrial remnants have appeared in rural areas. As one of the types, the remnants of mining pits are the results of the interaction between industrial civilization and nature. Also, these remnants can be considered typical cultural landscapes to record the traces of artificial activities in nature. However, in the contemporary changing socio-economic relations, for these rural industrial remnants, the transformation of their identities, the challenges of reconstruction of heritage values and identification of local communities are arising. On the other hand, the mission of cultural landscapes has to be emphasized to continue to interact with people in the present and even in the future. In this study, we take three rural mining pit landscapes of different scales and types in the suburbs of Nanjing as research objects, and focus on the historical process of their transformation from “productive industrial spaces” to “heritage landscape landmarks” and the evolution of their forms, functions, and meanings. Through the multi-dimensional mapping method, the data from remote sensing images, mining archives and field surveys are integrated and analyzed. It aims at revealing the resilience mechanism of the evolution of the mining pit heritage landscape in the socio-economic changes and exploring the adaptive practice strategies. Based on the comparison of the three cases, it’s found that the three-layered nested value system, including ontological layer (material remnants of mining facilities, geological profiles, and habitat systems), relational layer (socio-cultural network of historical memories and local identities), and systemic layer (regional synergies of pit-countryside-ecological base), is an important element of the resilience mechanism of the rural pit heritage landscapes, and a key part of guiding the regeneration of heritage landscapes. Then the regeneration framework of “Historical Layers - Value Linkage - Guiding Territory - Adaptive Design - Community Conservation” was constructed. Finally, the study concludes by advocating “heritage + landscape-ing” as a dynamic approach that not only creates the possibility of reconstructing the value of heritage landscapes in response to ongoing urban and rural socio-economic changes, but also guides the practice of regeneration of rural heritage landscapes.

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Keyword 2: mining pit heritage
Keyword 3: cultural landscape
Keyword 4: values
Keyword 5: resilient regeneration

2.5-BO-S2-8

Beyond Preservation: Rethinking the Marrakesh Palm Grove as a Living Cultural Landscape

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The Marrakesh Palm Grove (MPG), a historically and ecologically significant landscape, is currently facing severe environmental and socio-economic challenges due to rapid urban expansion, unchecked tourism development, and climate change-induced degradation. Recognized as an integral part of Marrakesh's identity and cultural landscape, the palm grove is now at a critical juncture between preservation and transformation. While conservation efforts are being implemented, their effectiveness remains debatable, and traditional preservation strategies often struggle to address the dynamic socio-economic and environmental forces shaping the landscape. Drawing on UNESCO's concept of "organically evolved landscapes" (Rössler, 2006), this paper argues for a paradigm shift that reconceptualizes MPG as a living cultural landscape rather than a static heritage relic.

This research is based on a mixed-method approach, including (1) a Synthetic Controls Method (SCM) comparing MPG's land cover change with the other palm groves in the Mediterranean context (n=20) from 2000 to 2020, (2) semi-structured interviews (n=24) with administrative staff, planning experts, and local residents, and (3) survey-based participatory mapping exercises (n=120). The objective is to analyze MPG's landscape changes and public perceptions of its boundaries, value, and evolving conditions. Results show a recent slowdown in deforestation in MPG in comparison to the other Mediterranean palm groves, driven by the conservation efforts from the Observatoire de la Palmeraie de Marrakech (OPM). Findings also reveal a sharp contrast in perspectives: while experts perceive MPG as a fragile and deteriorating ecosystem, driven by pollution, desertification, and the pressures of real estate and tourism expansion, residents exhibit a more ambivalent stance, acknowledging both the economic benefits of tourism and the loss of ecological integrity. Moreover, survey data highlight discrepancies between institutional restoration efforts and community engagement, with many residents unaware of or uninvolved in conservation initiatives. These insights align with prior scholarship on the tensions between heritage tourism, conservation, and community participation (Graham, Ashworth, & Tunbridge, 2000; Taylor, 2009).

By integrating perspectives from cultural landscape theory (Mitchell, Rössler, & Tricaud, 2009) and ecological restoration (Higgs, 2003), this paper proposes a reimagined conservation framework that moves beyond conventional heritage preservation. It advocates for an adaptive and participatory approach incorporating digital tools, such as Participatory GIS (PPGIS) and social media data mining, to enhance community involvement in decision-making and improve transparency in landscape governance. Additionally, the study suggests that virtual and augmented reality technologies can serve as tools for reinterpreting the landscape's heritage value, bridging the gap between its historical significance and contemporary transformations (Fouseki & Cassar, 2015).

Ultimately, this research contributes to the evolving discourse on the management of heritage landscapes, proposing that the survival of cultural landscapes like MPG hinges on their ability to dynamically adapt to socio-economic and climatic shifts. By fostering collaborative governance, leveraging digital heritage tools, and embedding conservation efforts within a sustainable tourism model, MPG can be repositioned as a resilient and evolving heritage landscape, ensuring its ecological and cultural vitality for future generations.

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Keyword 3: Marrakesh
Keyword 4: PPGIS
Keyword 5: protected area tourism

2.5-CO-S1 - History and curation

2.5-CO-S1-1

Text mining-based spatial mapping of cultural landscape values and features for Cultural Route of Tang Poetry conservation: Ancient ShuDao, China

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Cultural routes, as heritage networks, interconnect sites through shared cultural, historical, or natural themes, fostering sustainable development and cultural dialogue. A distinctive subtype of cultural route is the poetry-linked corridor—exemplified by the Road of Tang Poetry in the ancient ShuDao region, which integrates historic relics and landscapes that inspired Tang Dynasty poets. Recently, the Chinese government has aimed to preserve this heritage by connecting key poet-related sites and promoting sustainable tourism and education. However, rapid socioeconomic changes are causing the cultural landscape values along the route to be overlooked and remain unidentified, and the spiritual essence embedded in the cultural landscapes is being eroded. Moreover, fragmented conservation approaches fail to adapt to the shifting socioeconomic environment that weakens the local identity of these landscapes. Such superficial engagement diminishes their cultural appeal and perpetuates fragmented practices. Existing research emphasizes Tang poetry's literary dimensions but neglects spatial analyses of cultural landscapes. Although scholars have mapped road systems and preserved relics, geographical methods to interpret the values of poetic landscapes remain underutilized. This gap impedes a comprehensive understanding of the region's multilayered cultural significance. Addressing this urgency requires systematic interdisciplinary strategies that bridge literary, geographical, and conservation perspectives to safeguard the Road of Tang Poetry in the Ancient ShuDao region's unique identity as both a historical corridor and a living cultural route.
This study aims to fill this gap by spatially identifying the multiple values and features of the cultural landscape along the Tang Poetry Cultural Route in the Ancient ShuDao region, using the text mining of 2,153 poems by 195 Tang Dynasty poets. We performed kernel density analysis to identify four main routes of the Cultural Route of Tang Poetry in the Ancient ShuDao region and spatial patterns of the landscape values perceived by poets along these routes. We used correspondence analysis to elucidate key associations between land features and poets' landscape perceptions.
Furthermore, quantitative text mining revealed 205 poetically significant locations: 66 sites of natural appreciation and aesthetic value, 81 locations with religious significance, 34 historical heritages, and 24 tied to folk and sense of place perceived by poets along these routes. Correspondence analysis shows that farmlands are closely tied to folk and sense of place, while natural appreciation and aesthetic value connect with extremely high rolling mountains, high rolling mountains, grasslands, shrubs, rivers, artificial forests, and impermeable surfaces. Historical heritage shows strong connections to lakes, plains and terraces, whereas religious significance associates predominantly with hills, low rolling mountains, and mid rolling mountains. This study enhances our understanding of integrating poetic texts with spatial pattern analysis that decodes cultural landscape values along the Tang Poetry Route, and offers a framework to balance heritage preservation with adaptive reuse amid socioeconomic shifts. This will also provide valuable insights for planners involved in the holistic protection and management of the Tang Poetry Cultural Route and contribute to future cultural tourism corridor planning. Ultimately, this transdisciplinary effort establishes a replicable protocol for balancing cultural preservation with sustainable development goals across World Heritage Cultural Landscapes.

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Keywords:
Keyword 1: Tang Poetry Route
Keyword 2: Cultural Landscape
Keyword 3: Spatial Patterns
Keyword 4: Perceptions of Poets
Keyword 5: Text mining

2.5-CO-S1-2
Integrating Industrial Cultural Landscapes: Toronto's Port Lands District

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The evolution of our culture relies on understanding and building on the layers that came before us. The palimpsest of the evolving built environment builds our sense of place and collective memory, helping us move forward with awareness of the past. How we reshape urban landscapes reflects the spirit of the age – what we value as part of our history and our future - informing what we choose to preserve or transform. Attitudes toward industry have changed significantly from the turn of the 20th century to the current one: from industry as the main driver of progress, values have shifted toward real estate development and re-naturalization**.**

Toronto's Port Lands District was once one of the largest freshwater marshes in the Great Lakes, used by Indigenous communities as a gathering place for fishing, and recreation for early colonists. At the turn of the 20th century an ambitious 1912 plan by the Harbour Commissioners to create a new Port Industrial District in anticipation of the opening of the St. Lawrence Seaway, incrementally filled in the marsh and built shipping channels, lift bridges, and grand boulevards with allees of trees framing axial views of chimney stacks. However, the scale of shipping industry expected did not materialize, and the area became an underused industrial district for the storage of oil, coal, road salt, and other light industrial uses.

The renowned Port Lands Flood Protection project by MVVA is currently reshaping the area yet again, creating a new meandering naturalized outlet of the Don River into the harbor, framed by large destination parks and wetland habitat, while unlocking 240 ha of land for mixed-use redevelopment. This major landscape infrastructure project, the largest in North America, included large-scale land-forming and engineered landscape infrastructure to create a naturalized flood-proof river valley, and new bridges and roads connecting it to the city and enabling future development. The massive landscape transformation has also included the demolition and removal of several old steel bridges, industrial buildings, and rail spurs from the district, while preserving and celebrating a few iconic heritage structures like the Atlas Crane and Fire Hall within the park. Only a few small buildings of various quality have been designated as Heritage structures, and some heritage views to tall chimney stacks are protected, while the major infrastructural Keating and Shipping channels, their bridges, and the composition of streets with mature trees and rail spurs have no heritage status.

In the current period of 21st c. city-building and post-industrial waterfront revitalization, we prioritize re-naturalization, new development, new infrastructure, and limited conservation of primarily Victorian heritage buildings. The infrastructural remnants of the 20th century industrial age that reshaped the landscape may not be as highly iconic as individual objects, but are meaningful as part of a cultural landscape and increasingly vulnerable to erasure. More sophisticated planning and conservation tools are needed in brownfield redevelopment areas to revalue, adaptively reuse, and integrate remnants of the recent industrial past as part of the cultural layers of landscape transformation for future city-building.

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Keywords:
Keyword 1: cultural landscape
Keyword 2: industrial heritage
Keyword 3: conservation tools
Keyword 4: renaturalization
Keyword 5: brownfield redevelopment

2.5-CO-S1-3
The “chameleon challenge” of the Roche de Solutré

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The Roche de Solutré is a memorable site, marked with the print of History. This limestone escarpment embodies a certain blink over French culture. Of course it dominates the well-known Burgundy wineyard, but it also carries the weight of the past, as it’s been an frequented by humans for centuries. Even during Prehistory times, people would hunt horses to the top of its cliff. Until the year he died, former French president Mitterrand would climb the Roche every year, making it a little political ritual of his.

Nowadays, the site, welcomes about 150 000 visitors each year. Neighboring infrastructures needed a refreshment, so as to be integrated to the landscape. This is why **arpentère** studio has been charged of developing several areas surrounding the Roche, from the relocation of its parking lots to the upgrading of the walking promenades that leads to its top. The idea was to help visitors take a step back from the site in order to gain perspective.

Discretion has been our main tool: that is to say enhancing the existing qualities of this site goes through melting into them, as a chameleon would do. In other words, and as the beauty of the Roche speaks for itself, **arpentère**’s work has privileged sobriety, a study of local patterns, as well as an in-depth reflection on panoramas.

A thrifty conception of the project has been implemented. This doesn’t mean we chose to lower our standards, but rather to adapt our strategy to environmental and esthetic requirements. The aim was to embrace existing features, and to work with local materials. Mineral and vegetal resources of the region served as a basic palette: a cover of indigenous plants punctuates the area, limestone blocks from a local quarry are used as large paving stones, sand from the Saône River cover the parking lots and some trails, acacia vineyard stakes are used both as tables and as benches, always oriented towards the majestic panorama that offers the Roche. On another hand, soil sealing has been kept to a minimum.

Widespread weed control in wine-growing plots usually leads to severe soil erosion that prevents rainwater from being captured. Here, collection and canalization of these floods has been a major issue we answered to by settling waterways and ditches all along the paths. As for light rainfalls, they will naturally infiltrate thanks to the dense planting on site. The mass of the latter, reinforced with new hedges and trees, hide cars on the parking, no matter the season.

After the rain always comes the sun, and with it, bright views over the Roche and the surrounding countryside. The Voie Romaine, or Roman path, has been thought to prioritize pedestrian accessibility, and it swiftly connects parking lots to the bottom of the Roche, with multiple scenic stops along the way. All this encourages to enjoy this unique geological monument through different angles, and to take time. After all, this big rock is older than mankind!

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Références, Arpentère, Paris, 2024, Solutré, Arpentère, 112

Keywords:
Keyword 1: limestone
Keyword 2: waterways
Keyword 3: rainmanagement
Keyword 4: thrifty
Keyword 5: panorama

2.5-CO-S1-4

Ming-Qing Yellow River Abandoned Course: Evolution and Protection from Cultural Heritage to Heritage Landscape

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Objective: The Ming and Qing Yellow River abandoned course is the most complete historical river channel remnant in China, containing rich hydraulic heritage, settlement heritage, intangible cultural heritage, and landscape heritage. However, the existing heritage protection system in China primarily focuses on isolated, static preservation, failing to reflect the integrity and dynamic nature of the heritage landscape. This study examines the evolution of domestic and international heritage protection systems, explores the composition, values, and hierarchical structure of heritage landscapes, and aims to develop a tailored conservation framework for the Yellow River abandoned course.

Methods: This study integrates **literature review, GIS spatial analysis, and case study comparison**. First, the literature review traces the historical development of heritage conservation policies in China and abroad, with a focus on UNESCO, ICOMOS, the French cultural heritage legal system, and the American heritage corridor model, to extract key international conservation strategies. Second, GIS spatial analysis, combined with historical records, local gazetteers, and archaeological data, is used to map the distribution of heritage landscapes along the Yellow River corridor and analyze the spatial patterns of different heritage types. Finally, selected case studies are used to compare international heritage conservation models, and region-specific strategies such as **spatial zoning protection, cultural landscape restoration, and policy optimization** are proposed to establish an adaptive conservation framework.

Results: The study identifies the Ming and Qing Yellow River abandoned course as a **typical abandoned river cultural landscape**. Distinct from conventional static heritage models, its spatial characteristics exhibit **linear aggregation, point-like retention, and environmental embedding**. Based on a cultural heritage value assessment framework, this study defines **five core heritage values**—historical, scientific, artistic, social, and spiritual—and constructs **five major heritage components**, including hydraulic heritage, associated heritage, settlement heritage, intangible cultural heritage, and landscape heritage.

Conclusion: This research challenges the traditional **site-specific conservation** approach by introducing a **systematic methodology based on cultural routes, heritage corridors, and regional landscapes**, leading to the development of a tailored conservation system for the Yellow River abandoned course. Furthermore, the study advocates integrating the conservation of the abandoned course into national spatial planning frameworks to enhance its long-term sustainability. Future research should further explore **the application of digital technologies** in heritage conservation and the role of **community-based management** in building more adaptive conservation strategies. This study not only fills a research gap in **large river heritage landscape conservation** but also provides theoretical and practical guidance for the holistic protection and sustainable utilization of the Yellow River's cultural heritage.

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Keywords:
Keyword 1: Yellow River heritage
Keyword 2: Abandoned course landscape
Keyword 3: Cultural landscape
Keyword 4: Adaptive conservation
Keyword 5: Heritage planning

2.5-CO-S1-5

Climate change challenges for historic gardens and management plans

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Historic gardens and cultural landscapes face unprecedented challenges from climate change, including threats from sea-level rise, extreme weather events, flooding, and changing temperature patterns. These challenges pose significant risks to the preservation of cultural heritage sites, threatening both their physical integrity and cultural significance. Landscape architects and conservation managers must prepare Management Plans where to develop effective strategies to identify and address these climate-related risks while maintaining the historical authenticity of these valuable sites.

The methodology involved a systematic review that analyzed 30 research papers to understand how experts identify and mitigate climate change-related risks in historic gardens and cultural landscapes. It was completed with a comprehensive analysis of case studies, empirical research, policy analyses, and theoretical papers, examining their approaches to risk assessment, mitigation strategies, and management solutions. The reviewed studies represented diverse geographic locations, with a predominant focus on European sites (18 studies), followed by North America (6 studies), and limited representation from Australia, Africa, and the Asia-Pacific region.

Results revealed several key findings. First, vulnerability assessments as described in the "Climascape project" (Cartalis et al., 2021) and methodologies (Polydoros, A. et al, 2024), as well as risk analysis methodologies, emerged as the primary tools for identifying climate risks, with particular attention to sea-level rise, flooding, and extreme weather events. Second, mitigation strategies encompassed both preventive measures and adaptation techniques, including climate-resilient plant selection, landscape modifications, and improved water management systems. For example, the Melbourne Botanic Gardens implemented a strategic approach to transition 75% of their species to climate-suitable varieties by 2036 (Entwisle et al., 2017).

The analysis identified several management challenges, including institutional barriers, resource constraints, and complex decision-making processes. Solutions emphasized collaborative approaches, innovative assessment tools such as the Storm Risk Assessment and Management Tool (Ravankhah et al., 2020), and the integration of traditional preservation methods with modern adaptation strategies.

The review concludes that successful climate change adaptation in historic gardens requires a balanced approach that combines structured risk assessments, adaptive management strategies, and stakeholder engagement. The findings emphasize the need for flexible, context-specific solutions that can evolve with improving understanding of climate impacts while preserving heritage values. Future management approaches must integrate traditional preservation principles with innovative adaptation strategies, supported by sustainable funding mechanisms and policy frameworks that facilitate long-term resilience. This research provides valuable insights for the ellaboration of Management Plans by landscape architects and conservation managers seeking to protect historic gardens and cultural landscapes in an era of climate change.

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Keywords:
Keyword 1: historic gardens
Keyword 2: climate resilience
Keyword 3: Management plans
Keyword 4: vulnerability assessments
Keyword 5: risk analysis methodologies

2.5-CO-S1-6

The evolutionary conservation of the cultural landscape through fire ecology: A landscape strategy for wildfire risk management in Ischia

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In Ischia, the largest island in the Gulf of Naples, the conservation of the cultural landscape of the *parracine* and wildfire risk management are interconnected issues.
On the island, viticulture is an ancient practice that has shaped the traditional terraced agricultural landscape known as *parracine*. Historically, only the steepest slopes and the few chestnut forests were excluded from vine cultivation; the development of settlements, roads, and port infrastructure was entirely tied to the wine economy. The territorial structure, literally shaped by the *parracine* landscape system—an outcome of strict compositional rules based on functional and ecological principles and considered an example of the "art of dry-stone walling" (UNESCO, 2018)—remained largely unchanged until the 1960s.
However, the surge in construction linked to mass tourism triggered major alterations to the *parracine*, including the decline and replacement of agriculture in favor of urban expansion towards the coast, the uphill expansion of development, and the subsequent abandonment of terraced fields. In 1929, vineyards covered 2,395 hectares, approximately 50% of Ischia's surface, but by 2010, this area had shrunk to just 450 hectares. Both of these dynamics (replacement and abandonment) have increased the exposure and vulnerability of the territory, not only in terms of slope stability (hydrogeological risk) but also in terms of wildfire risk. Across the Mediterranean, the abandonment of resilient mosaic cultural landscapes is the primary human factor exacerbating the effects of climate change (e.g., droughts and prolonged heat waves), contributing to an increased fire risk due to landscape homogenization and the consequent accumulation of vegetative biomass.
In this context, FIRE, a recently concluded multidisciplinary research project (applied geology, engineering, environmental and materials chemistry, landscape architecture), experimented with the development of a replicable working methodology for defining multi-criteria risk scenarios. Focusing on the wildfire–shallow landslide risk chain, FIRE integrates and systematizes climate variables, ecosystem changes, landscape evolution, and wildfire propagation dynamics within a multi-hazard approach.
Among its research outcomes, FIRE conducted a critical evaluation of the existing emergency plans of Ischia's municipalities and developed an adaptive and ecologically responsive landscape strategy for wildfire risk mitigation. This strategy is based on the experimental implementation of innovative forms of coevolutionary conservation of the *parracine*. It proposes subdividing the single interface zone identified in the emergency plan—largely coinciding with the abandoned cultural landscape—into five homogeneous wildfire risk zones. The delineation of these zones, along with their corresponding performance objectives and intervention actions, is based on key landscape relationships, including slope gradients, recent and ongoing landscape and ecological-environmental dynamics, Dominant plant species and their respective habitats, anthropogenic structures, and proximity to settlements. Applying fire ecology principles, the strategy explores various ways to engage local communities in redefining the functions and collective imaginaries of the *parracine*, proposing a reinterpretation of Ischia's traditional landscape elements and economies.

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Keywords:
Keyword 1: Coevolutionary conservation
Keyword 2: Landscape strategy
Keyword 3: Fire ecology
Keyword 4: Wildfire risk management
Keyword 5: Ischia Island

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TOPIC 1 • Guiding cities

Guiding cities through what is alive: cities as ecosystems

P001

Bringing Nature into Urban Areas in Palestine, Challenges and Prospects: The case of Alistiqlal Park of Ramallah and Al-Bireh Governorate.

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Historically, people used surrounding natural open spaces in neighborhoods, schools' playgrounds and streets for passive and active recreation in urban and rural areas in Palestine. These spaces were of particular significance for children and families as they provided the opportunity for recreation and learning about abiotic and biotic components of surrounding nature and agriculture in the vicinity. People commonly utilized these natural areas for picnics, family gatherings and children play. However, there has been a scarcity of designated public spaces within urban areas, with only a few municipality parks located in Palestine's major cities, such as Jerusalem, Gaza, Nablus, and Ramallah. In the late 1980s there was an emerging interest in constructing children's parks funded by CSOs and NGOs working in Palestine. After the establishment of the Palestinian Authority following the Oslo Accords in 1993, there was a significant urban growth and an increase in built up areas within cities and villages, which in turn decreased areas for open spaces, and affected the connectivity of species and weakened biodiversity. Accordingly, municipalities became more focused on establishing open spaces and parks within urban areas. Today, there are 19 small parks in Ramallah, and 10 parks in Al-Bireh, some of which serve as community gardens for planting and harvesting produce. Among these, Al-Istiqlal Park, a 9 hectare park, serves Ramallah and Al-Bireh cities, the neighboring city of Betonia and surrounding villages. Its initial design concept focused on an environmentally friendly approach. This paper investigates Al-Istiqlal Park and highlights the challenges faced through its design process, management, and use. It also investigates people's perception towards the quality of the landscape in terms of comfort, safety, biodiversity, cleanliness, and services offered.

The paper relies on authors' observation and interviews with professionals (the park manager, design and engineering team, and the co-authors' own experience as part of the design team), and park users. Results reveal insights into how the design, construction and processes interfere with biodiversity, native plant population and public experience of park users. The paper further explores the precarity of natural spaces and parks due to funding, governance structures, and authorities that favor profitable investments in lieu of an interest to protect biodiversity.
The paper concludes with providing recommendations of green solutions for the use, maintenance and management of public parks, as a way to sustain such invaluable spaces. The paper further contributes to debates around the importance of biodiversity protection through the investment of native plants, community gardens and general natural spaces within urban spaces.

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Keywords:
Keyword 1: nature
Keyword 2: Istiqlal Park
Keyword 3: urban park
Keyword 4: biodiversity
Keyword 5: palestine

P002

The “Parc Urbain des Papillons” – or Urban Butterfly Park: landscaping to preserve and raise awareness of urban biodiversity

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Created in 2012, the Parc Urbain des Papillons (PUP) is an experimental research facility set up on a site in the city of Marseille (France). It represents an innovative multi-partner initiative: research team (Laboratoire Population-Environnement-Développement AMU), City of Marseille, naturalists non governmental organisation, artists and students to promote biodiversitý in an urban environment. Thanks to appropriate landscaping and ecological management incorporating the planting of host and nectar-producing plants this project has doubled the specific richness of butterflies in ten years, demonstrating the effectiveness of this development which combines spontaneous and introduced plants (Deschamps-Cottin *et al.*, 2023).
The PUP mobilizes the concept of nature-based solutions and is at once a scientific project, a tool for the development and management of green spaces and a means of training and raising awareness for different audiences (students, professionals, the general public) with the aim of better understanding the interactions between local biodiversity and the urban landscape.
The PUP aspires to be deployed in France through the creation of the PUP+ network, which aims to reproduce and extend the experience in different cities (Marseille, Bordeaux, Angers, Lille). The aim is to support the setting up of new facilities, in order to multiply best practices in urban Lepidoptera management through a reproducible and adaptable model, and to make these places spaces for exchange and training for managers and the general public.
A striking example of the expansion of this initiative is to be found in Angers, where teachers from Institut Agro Rennes Angers have mobilized their students to design a PUP on the Angers campus, integrating spaces favorable to butterflies at all stages of their development, educational spaces for observation and raising awareness of urban biodiversity. Following a survey in summer 2024 (of existing plants and butterflies), a plant list favorable to butterflies and their caterpillars is proposed, to provide future horticulture and landscape students with a thoughtful educational space featuring a diversity of habitats, in keeping with the existing uses and constraints of the educational estate. The eventual aim is to open the site up to a wider public, with a view to raising awareness of urban biodiversity and the development and management actions that promote it.

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Keywords:
Keyword 1: Lepidoptera
Keyword 2: landscape students
Keyword 3: ecological engineering
Keyword 4: ecological management
Keyword 5: plant choice

P003

Guiding Sub-Saharan African City Landscapes: Optimising Outdoor Living Walls for Urban Ecosystem Enhancement

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Urban areas are complex socio-ecological systems requiring a multi-layered approach to integrating ecological processes at diverse scales and planes to mitigate climate change impacts, including urban heat islands. Building façades offer interstitial space for greenery in dense cities with limited horizontal space, where living walls provide space-efficient solutions that enhance sustainability through ecosystem services (Larcher et al., 2018).
Living walls offer multiple benefits, including biophilic value, thermal regulation, air purification, sound absorption, biodiversity support and food production (Goel et al., 2022; Radić et al., 2019; Perez and Perini, 2018). However, their high cost, maintenance demands, low resilience, and carbon footprint concerns hamper the efficiency of living walls (Botes and Breed, 2022; Perini and Rosasco, 2013; Ottelé et al., 2011). Integrating high-efficiency living walls into urban green infrastructure could enhance the sustainability of cities (Zeiler, 2022; Russo and Cirella, 2019; Ling and Chiang, 2018).
This study aims to establish criteria for selecting and optimising living wall systems as green infrastructure suited to Sub-Saharan African cities with a monsoon-influenced humid subtropical climate area (Cwa) according to the Köppen-Geiger climate classification. The research investigates how outdoor modular living wall systems could perform more effectively as green infrastructure in Tshwane, South Africa.
The study employed a literature review followed by a mixed-method methodology involving the qualitative selection of high– and low-technology living wall system typologies and a six-month quantitative performance analysis (Botes, 2024). Variables included daily minimum and maximum temperatures, relative humidity, precipitation, soil temperature, soil water content, electrical conductivity, plant biomass yield, and plant stress. The first performance indicator entailed fresh and dry biomass yields, measured with a calibrated laboratory balance. Plant stress, the second performance indicator, was measured by chlorophyll fluorescence analysis. Results were analysed statistically using non-parametric ANOVA and pairwise Tukey's multiple comparison post-hoc tests. Significance was set at $p < 0.05$ between genotypes.
The findings establish foundational principles for optimising living wall systems as green infrastructure, contributing to climate change, food security and sustainable cities. This is achieved by defining technical characteristics for systems to enhance the performance of living walls as green infrastructure. The results highlight the viability of locally produced, low-technology, outdoor modular LWSs with limited, robust, lightweight, recycled components entailing uncomplicated assembly (Botes, 2024). The study also found that ornamental plant species that are compact in size and shape, tolerate local climate requirements, and provide various ecosystem services should be selected (Botes and Breed, 2022). Additionally, systems should integrate low-technology irrigation. The positioning of systems should consider the light requirements of the selected plant crops and local air or water pollution (Beacham et al., 2019). Pots should minimise soil surface exposure to sunlight to maximise moisture retention and optimise growing conditions. Moreover, the study suggests a minimum soil volume of 3 litres and a minimum depth of 200mm (Botes, 2024).
This research highlights the need to integrate ecological processes into cities through optimised living wall systems. Defining technical performance criteria enables cities to maximise benefits while addressing constraints and advancing sustainable urban development and resilient, biophilic infrastructure.

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Keywords:
Keyword 1: living walls
Keyword 2: green infrastructure
Keyword 3: performance
Keyword 4: climate change
Keyword 5: modular systems

P004

Identifying nature-relations in marginalized urban areas: from functional benefits to healing experiences

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The context and impact of urban biodiversity experiences – the relationship with people – is receiving merited research attention. The interest in people's perception is mainly due to the notion that positive and visual experiences of biodiversity could affect attitudes and behaviors towards care and empathy for the environment and other life forms. People have preserved distinctive understandings rooted in cultural experiences that guide relations among human, nonhuman, and other-than-human beings in specific ecosystems. Yet, colonial Western traditions have strongly influenced urban and green space design. There is a lack of research on local connections between people and nature in marginalized communities. Unearthing local relationships can be meaningful as design informants for urban environments that are more meaningful and beneficial to residents.
The research investigates the relationships between people and urban nature in a peri-urban area of the City of Tshwane, South Africa and inquires into the aspects that influence these connections. To this extent, 51 qualitative, in-depth, and photo-eliciting interviews were conducted in May 2024.
The findings show many people have strong positive ties to nature, either through wilder nature spaces or through urban and food gardens that they tend to. Childhood experiences in nature strongly feature as part of adults' conversations on nature connections, emotions, and memories. Several respondents feel that time alone in nature heals them, while socio-economic challenges make food gardens a sound backup system. Most nature and garden conversations feature mentors who played an educational role in establishing participants' knowledge about nature and food production.
These findings are explored to inspire nature-based design solutions that could foster a connection between people and place. The aim is to encourage care and stewardship but, more so, for local landscapes and plants to have relational values for therapeutic, spiritual, and healing experiences.

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Keywords:
Keyword 1: Nature connections
Keyword 2: nature relations
Keyword 3: urban biodiversity
Keyword 4: landscape design
Keyword 5: sub-Saharan Africa

P005

Exploring the biodiversity, perceived biodiversity, and usage preference of urban green space with different characteristics at the landscape scale

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Currently, there is increasing interest in researching how to restore biodiversity in urban green spaces. Enhancing biodiversity has become a core goal in many landscape designs. Many studies mention that the vegetation density, naturalness, and water characteristics of parks support biodiversity, but the mechanisms of influence are not fully revealed. Furthermore, there is a trade-off between biodiversity conservation and the socio-cultural benefits of urban green spaces. Prioritizing the enhancement of urban biodiversity may conflict with other attributes of park design, such as studies indicating that restoring relatively "wild" plant ecosystems and reducing the intensive management of green spaces can lead to diminished orderliness and recreational functionality. Public opinion is often ignored in the process of urban planning and park transformation. This study aims to explore how the design characteristics of green spaces in the urban environment of Beijing, China, impact urban biodiversity, particularly the biodiversity perceived by the public within urban green spaces. Beijing city parks were chosen as the research object, thoroughly examining three key questions: 1) Can the public recognize biodiversity in green spaces within the Chinese urban environment? 2) Is there a correlation between public perception of biodiversity in urban green spaces and their usage preferences? Is this influenced by different green space characteristics? 3) Which park landscape attributes and intervention design measures would enhance people's perception of biodiversity in urban parks?
This study employs a fine-scale habitat biodiversity scoring method to assess the actual biodiversity of habitats and builds a comprehensive biodiversity index of urban parks with different characteristics. Principal Component Analysis (PCA) identifies multiple landscape attribute indicators of urban parks (habitat types, environmental attributes, facilities, maintenance management). A mixed-method approach using questionnaires and behavioral observation serves as various data sources, collecting respondents' perceptions of biodiversity and usage preferences for different park types from the dimensions of landscape perception and visiting experience, assessing the public's understanding of the characteristics of urban park green spaces. Non-parametric tests are employed to compare differences in biodiversity perception and usage preferences among parks, and regression models are constructed to analyze the reasons for stimulating respondents' perceptions of biodiversity. Finally, this study analyzes the impact of different types of urban green space characteristics on biodiversity perception and usage preferences. The results indicate that respondents can recognize the biodiversity of urban green spaces with different characteristics and that there are differences, showing a preference for aquatic wetland habitats and forest habitats. In the densely populated urban core of Beijing, all types of parks serve as important leisure green spaces, and people generally consider them to be safe. In contrast, urban forests, with their rich flora and fauna, are more likely to stimulate perceptions of biodiversity. High maintenance and management levels significantly influence visitors' experience preferences, with respondents showing a tendency towards engaging in sports and social activities. These findings highlight the importance of considering users' landscape spatial perception when assessing urban biodiversity, identifying public appreciation of biodiversity, and suggesting strategies for balancing biodiversity conservation and urban green space use.

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Keywords:
Keyword 1: Urban biodiversity
Keyword 2: Perceived biodiversity
Keyword 3: usage preference
Keyword 4: landscape scale
Keyword 5: Beijing

P006

From Trees to Woodlands: A New Framework for Understanding Green Space Preferences

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[Short Version]

The preference for green spaces has long been a focal point in landscape research. This study examines the factors influencing such preferences through a comprehensive review of empirical studies on key determinants across individual trees, grasslands, and woodlands.
Tree preferences are shaped by tree form and canopy spread, while grassland preferences are influenced by green quantity, spatial openness, and ground smoothness. Woodland preferences depend on stand density, visibility, tidiness, and tree age.
Building on these findings, we propose a conceptual framework for green space preferences, consisting of three key dimensions: **Resource, Exploration, and Safety**. This framework posits that green space preferences arise from a balance among these factors. It offers a predictive model for understanding green space preference and provides insights for landscape design and planning.

[Full Version]

The preference for green spaces has long been a key topic in landscape research. This study investigates the factors shaping these preferences by systematically reviewing empirical research on individual trees, grasslands, and woodlands.
Tree preferences are influenced by tree form and canopy spread, while key determinants for grassland preferences include green quantity, spatial openness, and ground smoothness. Woodland preferences, in turn, are shaped by stand density, visibility, tidiness, and tree age.
Several commonalities emerge among these factors, revealing underlying principles in landscape preferences. First, stand density and tree age in woodland preferences correspond to the preference for green quantity, reflecting an innate human inclination toward environments that suggest abundant resources. Second, both grassland and woodland emphasize the importance of sightlines that facilitate exploration, as evidenced by the preference for openness in grassland and visibility in woodland. Finally, visual coherence at ground level—whether through uniform ground surfaces in grassland or a tidy understory in woodlands—aligns with fundamental human needs for safety. Additionally, preferences for tree shapes (which suggest greater food availability), and broader canopies (which provide shelter) further support the role of Resource, Exploration, and Safety in shaping green space preferences.
Based on these insights, we propose a conceptual framework for green space preferences, termed the **RES Triangle**, encapsulating the three fundamental dimensions: **Resource, Exploration, and Safety**. Green spaces that evoke a sense of comfort and appeal typically maintain a balance among these three elements. Excessive greenery may compromise safety by obstructing visibility, while overly open environments may lack the shelter necessary for a sense of security. Conversely, spaces that prioritize safety at the expense of variation and depth may fail to inspire curiosity and exploration.
This review has synthesized the structural characteristics of green spaces that are consistently supported by the majority of studies, providing a more reliable foundation for practical applications in landscape design. By integrating findings from multiple studies, it addresses the challenge of limited generalizability often associated with isolated case studies. In doing so, this review offers a more comprehensive and robust framework to inform both theoretical discourse and practical advancements in landscape planning and design.

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Keywords:
Keyword 1: Green spaces
Keyword 2: Environmental preferences
Keyword 3: Visual perception
Keyword 4: Scenic beauty

P007

Evaluation of innovative management practices for urban lawn and their impact on CO_2 and N_2O emissions

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In 2019, the European Commission adopted a series of proposals aimed at adapting the EU's climate, energy, transport and taxation policies with a view to reducing net greenhouse gases (GHG) emissions by at least 55% by 2030 compared with 1990 levels (Green Deal). Therefore, local and regional authorities have a major role to play in the fight against climate change through their mitigation and adaptation actions.
Among the possible levers, the greening of cities represents a major challenge in offsetting GHG emissions. Urban green spaces (UGS) are diverse (urban forests, flowered areas, parks, lawns, allotments, etc.). In particular, lawns, which designate a grassed surface composed mainly of graminaceous, are the most representative type of UGS and account for 50 to 70% of the surface area of UGS worldwide (Ignatieva et al. 2020). Fertilisation and irrigation stimulate particularly N_2O emissions through nitrification and/or denitrification (Livesley et al., 2010). However, other forms of management could reduce GHG emissions by encouraging soil C storage. Reducing the frequency of mowing, recycling grass clippings or tree litter on soil surface are all innovative practices that may be considered 'aesthetically dirty' by residents, but which could decrease GHG emissions
The main objective of this study was to assess the impact of management methods for grassed areas on soil CO_2 and N_2O fluxes. These measurements were taken over three seasons: spring, summer and autumn, in order to assess the relevance of practices according to the seasons. To this end, a 9-month experiment was carried out in 2024 using several management methods for grassed areas, where CO_2 and N_2O fluxes were measured and correlated with climatic variables (temperature, soil moisture) and the soil mineral nitrogen content (NO_3^-, NH_4^+) but intensities were affected by grass management.
The main findings of this study suggest that fertilisation should be minimized to limit N_2O emissions, with a preference for organic over mineral fertilizers, and that the first spring fertilization should be delayed to reduce nitrogen leaching risks. Leaving tree litter in place and reducing mowing frequency help lower GHG emissions by creating a mulch layer that moderates soil temperature, thereby reducing CO_2 emission. Leaving / recycling of litter on soil surface should therefore be encouraged as a practice to enhance the soil's carbon storage potential.
These findings now need to be effectively communicated to developers and managers of urban green spaces. A practical guide is currently in preparation. While organic fertilisation should be preferred, it remains essential for aesthetic reasons. Leaving litter and grass clippings on the lawn can be problematic, both aesthetically and in terms of plant biodiversity loss. Therefore, finding balanced solutions is crucial to enhance carbon storage in soils and vegetation while minimizing greenhouse gas emissions.

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Keywords:
Keyword 1: greenhouse gases
Keyword 2: soil mineral nitrogen
Keyword 3: temperature
Keyword 4: mowing
Keyword 5: fertilisation

P007

Living Infrastructure: Diversity Patterns and Strategies of Spontaneous Plants in Road Greenbelts of 10 Shaanxi Cities

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Urban road greenbelts in China has multiple ecological functions on the city by virtue of its systematic planning, multifunctional composite and high-density implementation characteristics.It is also a major habitat for urban spontaneous plants. Elucidating the spatial heterogeneity patterns and dynamic response mechanisms of spontaneous plants' diversity can optimize road ecological services, informs urban biodiversity conservation strategies, and supports evidence-based ecological infrastructure planning. This study examined herb-layer spontaneous plants in road greenbelts across 10 Shaanxi Province cities through systematic sampling (including 546 roads, 3,543 quadrats), analyzing species composition, diversity patterns and driving factors, and habitat management strategies and landscape application approaches for road greenbelts. Key findings include:
(1) Species Composition
424 spontaneous species (87 families, 268 genera) were recorded, dominated by Asteraceae (15.1%). Native species constituted 48.3% (205 species), while invasive species represented 10.8% (46 species). Perennial herbs (33.3%) and woody spontaneous seedlings (33.0%) dominated the life-form spectrum.
(2)Spatial Diversity Patterns
Kruskal-Wallis H tests confirmed significant spontaneous plants diversity disparities in heterogeneous spaces in road greenbelts. Medium urbanization zones (Level III) exhibited maximum Shinnon-Wiener diversity for overall ($H(o)=1.01\pm0.25$), native ($H(n)=0.45\pm0.42$), and invasive spontaneous species ($H(i)=1.16\pm0.23$)($p<0.001$). For overall and native species, Planting Strip habitat showed maximum Patrick richness ($R(o)=3.90\pm1.77$, $R(n)=2.14\pm1.25$) but lowest Pielou evenness ($J(o)=0.98\pm0.16$, $J(n)=0.61\pm0.31$). Invasive species demonstrated microhabitat specificity: maximum diversity in Grassland ($H(i)=0.12\pm0.25$), minimum in Pavement Gap（$H(i)=0.06\pm0.22$）, with highest evenness in Flat-grade Tree Pit ($J(i)=0.84\pm0.18$).
(3) Driving Factors
Multivariate statistical analyses revealed Impervious Surface Percentage ($p<0.001$), Sidewalk Width ($p<0.01$), Street Tree Canopy Coverage Rate ($p<0.001$) and Management Intensity ($p<0.001$) as negative predictors of overall and native spontaneous species' diversity, while Greenbelt Width ($p<0.001$) and Quadrat-to-Curb Distance ($p<0.001$) positively influenced it. Invasive species responded to Carriageway Width ($p<0.05$), Quadrat-to-Curb Distance ($p<0.05$) and Greenbelt Width（$p<0.05$）. Road Aspect ($p<0.001$), Cross-sectional Type ($p<0.05$) and Greenbelt Type ($p<0.01$) significantly affected diversity patterns, while Road Hierarchy showed non-significant effects. Roadside Quadrat Position only influenced the evenness of overall species ($p<0.001$).
(4) Applied Landscape Strategies
With the goal of building a sustainable green landscape with high biodiversity and low maintenance requirements, the study proposes strategies for optimizing the green landscape of roads from the perspectives of habitat construction, screening of native spontaneous plants, and community configuration patterns. The research results provide theoretical and practical basis for urban biodiversity conservation, spontaneous plants resource utilization and sustainable green space construction.

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Keywords:
Keyword 1: urban
Keyword 2: spontaneous plants
Keyword 3: road greenbelt
Keyword 4: biodiversity
Keyword 5: heterogeneous biotope

P008

Carbon-neutral optimization of carbon sinks in urban green spaces: paradigm evolution and spatial regulation strategies

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In the face of global climate change and rapid urbanization, achieving carbon neutrality has become a central objective of sustainable development (Lal, 2004).As a key component of urban ecosystems, the optimization of the carbon sequestration efficiency of urban green spaces not only holds theoretical innovation value but also has a profound impact on urban planning practices (Grimm et al., 2008). While existing studies have explored factors influencing the carbon sink capacity of urban green spaces, a comprehensive framework linking theoretical mechanisms with planning and design remains lacking. To address this gap, this study systematically synthesizes research progress on urban green space carbon sinks based on 146 publications from the Web of Science core database over the past 15 years, employing bibliometric analysis and social network analysis (Zhao et al., 2023). The study focuses on four key areas: knowledge mapping of sustainable carbon sink design in public green spaces, the regulatory relationships between spatial elements and carbon sink efficacy, the development of differentiated carbon sequestration quantification methods, and the identification of theoretical gaps and interdisciplinary pathways. The results reveal three main findings: (1) Research on urban green space carbon sinks exhibits regional concentration and thematic clustering, with an exponential increase in publications. China, the European Union, and the United States serve as the primary research hubs, forming two major clusters: “carbon measurement innovation” and “ecosystem service assessment.” (2) The research paradigm has evolved through three distinct phases: from 2010 to 2015, studies focused on the biogeochemical processes of carbon exchange (Piao et al., 2009); from 2015 to 2020, research shifted toward the integration of green infrastructure and urban energy consumption; and after 2020, a new paradigm of “carbon-neutral spatial co-design” emerged. (3) The focus has transitioned from single-function ecological studies to multi-functional synergies, with “carbon sequestration,” “ecosystem services,” “land use change,” and “biomass estimation” emerging as core themes. This shift reflects a transition from static carbon sequestration to dynamic carbon cycle management. Building on these findings, this study proposes a functional trait–canopy structure–soil carbon pool cascade model for optimizing plant communities (Moon et al., 2024), emphasizing the regulation of the evergreen-to-deciduous ratio and leaf area index. In terms of system integration, it advocates for coupling green spaces with urban forests, wetlands, and agricultural landscapes to establish a multi-scale carbon sink network (Ye et al., 2015). Additionally, given the functional heterogeneity of urban public green spaces, it introduces a classified regulation approach for optimizing carbon sequestration. This study highlights the necessary shift in urban green space carbon sink design from single-function approaches to a multi-factor coupling and full-cycle management paradigm, offering a theoretical foundation for developing practical carbon-neutral spatial intervention strategies.

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Keywords:
Keyword 1: Carbon neutrality design
Keyword 2: Urban green space

Keyword 3: Carbon sink capacity
Keyword 4: Bibliometric analysis
Keyword 5: Social network analysis

P009

The linear forest, an ecological corridor at the gateway to Paris

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The forêt linéaire is a bold offer. It utterly rethinks the importance of nature within the city, and upgrades the urban sprawl. The one we conceptualized flourishes just outside the northern gates from Paris. This three-kilometer-long planted promenade runs between the Porte de la Chapelle and the Porte de la Villette, literally by the beltway. It takes over every neglected or devalued space, converting them into quality public spaces. Originally a garden, the linear forest is now filled with mature trees. A forestry management has helped humus to develop on the soils with the decomposition of leaves, forming a nutritious litter for plants and understory beings that thrive there. Eventually, this litter will be invaded by vegetation.

In the glades, where the tallest trees have taken root, another method allows the forest to move into the city. Salvaged from the Bois de Boulogne and Bois de Vincennes, large logs have been installed to form the skeleton of the Forest. An ecological paradigma has been reestablished, as the forêt linéaire already serves as a corridor for several species, formerly excluded from the area. This is even intended to evolve as time goes by. A successive tangle of twigs and stones, brought in by local residents, schools and associations, provides shelter and nesting sites for the animals.

We could even call this forest a living wall, as trees, bushes and meadows interact to form a consistent screen. A dense canopy covers the tumult of the cars and delivers a horizon of leaves. There, under the slings of trees, a new pedestrian space designed for Parisians and Suburbians offers calm and greenery. Jogging, cycling, or just strolling around… The forêt linéaire turns into an oasis that only ends at the Canal Saint Denis, by the water.

Crossed by several trails, it links a bunch of different neighborhoods together. As a pioneer signal, it confirms the possibility of ecosystems in an urban environment. As it follows the beltway, it creates a contrast with the flow of cars and enhances the value of this hitherto neglected interstice. This forêt linéaire represents the first stage of an ambitious project that comprehends several big challenges. It aims at recreate a natural zone with a real ecological function, and this goes, among others, through an alternative management of rainwater that comes from the neighboring areas. Ground leveling creates depressions capable of collecting these floods and reusing them throughout the forest.

Hornbeam, ash, wild cherry and maple are complemented by a number of tree species from the south of France. These adapt well to the dry, warm atmosphere that surrounds the ring road, and anticipate global warming. The human management of the forest is measured, and the work of the gardeners is considerably modified. Dead leaves are kept on site, and only the driveway is raked. The principles of silviculture, which are unusual in an urban environment, are applied: we let the plants grow, select the interesting ones and thin them out!

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Keywords:
Keyword 1: forest
Keyword 2: biodiversity
Keyword 3: beltway
Keyword 4: silviculture
Keyword 5: humus

P010
The redevelopment of the Promenades de Reims

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The project is part of the wider urban project *Reims Grand Centre* which aims to redesigning this part of the city center and enhancing the city's appeal. The Promenades, a protected site covering 10 hectares and of almost 2 kilometres in length, located in the heart of the city and at its entrance, had lost its original character as a tree-lined promenade, been just a place for pedestrians to pass through and somewhere to park cars. In a co-construction approach, residents were involved through the "Let's Invent the Reims of Tomorrow" program to express their wishes and expectations.

Several purposes : rediscover the historical significance by developing it for contemporary uses, recreate living spaces, re-establish continuity between the different parts, make water a unifying element, rework the links within the urban fabric for a harmonious heterogeneity of users, redefine the spaces and their uses, improve accessibility and active modes of transport, remove car parks, enhance and preserve existing arboreal and historic heritage features, integrate facilities for play, sports and relaxation, integrate memorial features, provide spaces for events, integrate features of biodiversity, rainwater management and soil permeability.

The project questions the meaning of this landscape heritage figure and its singularity: 18th-century promenades. The project transforms this heritage space without distorting it. It returns to the nature and primary purpose of promenades: a place for socializing, strolling, and celebration, in line with contemporary practices and expectations.

The project clears the promenades of invasive parking and restructures them by clearing on one side, and on the other, adding to the plant heritage to accommodate new, fun and convivial activities under its foliage: bowling greens transformed into water mirrors, monuments highlighted and integrated into the design of the spaces; regenerated and diversified alignments, according to the principle of an urban wood that reflects the atmosphere of forested woodlands. It is therefore a project that seeks to enhance what already exists, to restore coherence and quality to a whole that is currently disparate and without any real amenities.

This historic site was characterized by its regular rows of trees, but lacking in quality soil and space beyond this tree-lined framework. Today, it has become a place of nature in the city, with strong work on de-impermeability and the reintroduction of a lower vegetation layer, strengthening and developing the promenades as a place of nature and freshness in the city. The work on the tree mass, through a deliberate sculpting of shadow and light, allows for the redefinition of spaces with diverse uses and atmospheres.

The redevelopment allows for a profound transformation of the perception and use of this site while preserving the main components. It also allows a heritage site to become a player in the fight against global warming. It's now a place of great social diversity and a true destination for the residents of Reims.

This nomination forward following on from the success of winning a double French "Victoire du Paysage" 2024 (+possibility of an additional translating existing poster later).

References:
No references

Keywords:
Keyword 1: Preserve and transform
Keyword 2: heritage site&contemporary uses
Keyword 3: social diversity
Keyword 4: wellness in city
Keyword 5: permeable&sustainable city

P011

A landscape architect needs arborist competencies: interaction and collaboration aspects

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In the face of accelerating environmental changes, we must carefully shape and reshape urban ecosystems that are experiencing increasing climate change and anomalies: heat islands, prolonged droughts in temperate climate zones, previously uncharacteristic, sudden downpours, and stormy winds. Climate change encourages the combination of skills from various fields in the landscape planning and design process: architecture, ecology, engineering, landscape, arboriculture, urbanism, etc. Green spaces and trees remain the most important objects and elements of landscape architecture.

However, urban trees have an even harder time surviving these challenges and threats. When a landscape architect comes to prepare urban landscape renovation projects, he must carefully protect and nurture the natural environment: old greenery, mature trees, to shape their architectural expression, ensuring the physical and physiological vitality of the plantings. Arborists have extensive experience in this area. They can and should be excellent assistants and consultants for landscape architects, especially at the stage of pre-project research and project proposals submission.

European and Lithuanian experiences, practices, and legal also methodological regulations are discussed in our poster presentation. Operational guidance designed specifically for individuals engaged in arboriculture works and consulting, and those involved in landscape planning, designing, and overseeing or carrying out development activities and other events that are in the vicinity of trees and have the potential to substantially change their conditions, are of great importance. The European Arboricultural Council (EAC) has published six methodological documents, *European Arboricultural Standards* (EAS), three for arboriculture practitioners, and three for consultants. The Standards were prepared and published by working groups “Technical Standards in Treework” (TeST) and “European Consulting Standard in Treework” (ECoST) in cooperation with the EAC. All Standards present common fundamental practices used among European countries and provide methodological guidance for persons engaged in arboriculture. The two Standards published in 2025 – *European Tree Assessment Standard*, *EAS 04:2025* and *European Tree Protection Standard, EAS 06:2025* – are also very significant for landscape architecture practice.

Tree is immensely important in our environment. It is crucial to adopt strategies that prioritize the protection and preservation of mature trees, veteran trees, recognizing their vital role in urban and rural landscapes. The tree assessor must apply appropriate assessment methods and propose appropriate recommendations in landscape projects for tree management, pruning, roots protection, tree cabling or bracing.

Several stages are provided in tree assessment process: tree inventory (identification, taxonomic data, dendrometry), basic or advanced tree assessment (evaluating the physiological condition and mechanical integrity), tree risk assessment, worksite inspection and monitoring. In the process of urban development, the harmonious integration of pre-existing natural elements, especially trees, into the built environment is becoming increasingly important for the human well-being. The protection of mature trees in landscape architecture projects determines the main stages of this approach, each of which has different goals and methodologies for the planning and construction process. A case study of Vilnius city landscape architecture projects requirements as the example of interaction and cooperation between landscape architects and arborists will be presented and analysed in our poster.

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Keywords:
Keyword 1: arboriculture
Keyword 2: landscape architecture
Keyword 3: project
Keyword 4: tree assessment
Keyword 5: Vilnius city

P012
A thousand trees for Burgundy's high schools

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Playgrounds are unique places. They are a forum where youngsters live together, an essential space for them to interact and develop social, emotional and physical skills. As heat waves intensity and frequency tend to increase, schools also have a mission. Like other facilities, they need to adapt, so that their users don't undergo climate change. To that respect, restoring a common sense to the vitality of schoolyards is a major issue. Tree, indeed, plays a key role in this specific landscape dedicated to the well-being of our kids. Not only has it contributed to maintain biodiversity in town and create a comfortable environment, but it is also a direct tool against heat islands.

We realised that there was an incompatibility between planted trees and the overuse of soils through the trampling of students just around their trunks. Our first decision was to create buffer zones, to set back the play area from the tree area. This does not mean we isolate trees but rather that we develop a living distance between the trees and the courtyard areas. This is where the creation of capsules into which the trees will be integrated comes in.

Schools directors are already enthusiastic about this thousand trees plan. They tell us this succession of diverse spaces, that their fragmentation has increased the variety of their uses. It even helps children's creativity. Also, replacing the traditional football field with other items such as trees makes the playground less "gendered".

As its name suggests it, the thousand trees plan is an ambitious project that aims to make urban spaces greener. Sponsored for forty-seven high schools in the Côte d'Or county, Burgundy, it upgrades their playground as it includes the inherent ecological demands of climate change. The broad diversity of these high schools buildings has been taken into count and emphasized by appropriate features. Before each project, we designed a monitor plan for each high school, which helped developing a long-term vision of all outdoor areas. Then, we zoomed on spaces specifically dedicated to students.

Each tree is the best friend of urbanists who think about adapting our urban societies to climate change. Each tree on a playground is a strong commitment that demands a certain amount of care so it can fully embrace its natural lifespan. It also gives an opportunity to work with external elements that interact with the plant, such as light, water, and soils. As far as high schools are concerned, this requires an anticipation of buildings development, in order not to cut these trees down. It also means you have to think about the floor coverage, its potential unsealing so as to collect rainwater, and how to intensify biodiversity nests on the playground.

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Keywords:
Keyword 1: playground
Keyword 2: tree
Keyword 3: capsule
Keyword 4: bufferzone
Keyword 5: climate

P013

Urbanization vs. Greening Governance: Three-Decade Spatiotemporal Dynamics of Atmospheric Urban Heat Islands Across 424 Chinese Cities (1994–2023)

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Over the past three decades, China's urbanization has transitioned from rapid expansion to stock renewal, with the dynamic interplay between urban sprawl and greening policies profoundly reshaping urban thermal environments. Investigating the spatiotemporal evolution of urban heat island effects (UHIE) and their relationships with greening policies and urban greening levels is critical for advancing urban green well-being.
Utilizing temperature and impervious surface data (1994–2023), this study first calculates atmospheric heat island effects across 424 Chinese cities via ArcGIS and classifies heat island levels using the mean-standard deviation method. Subsequently, policy bibliometrics quantify greening policy effectiveness, with built-up area green coverage and per capita park green space serving as proxies for greening levels. Grey relational analysis is applied to assess their impacts on UHIE.
Key findings include:
(1) Urban heat island levels in China are normalizing, with a declining national annual average intensity. The number of "normal zone" cities increased by 8, while "sub-heat islands" and "green islands" decreased by 7 and 4, respectively. Post-2007, annual heat island intensity stabilized, with five-year averages showing an initial rise, followed by a decline and gradual rebound, albeit with marked regional disparities.
(2) China's urban greening policy efficacy values exhibited phased volatility, while urban heat island effect values showed corresponding fluctuations with a lagged response. Three stages emerged: pre-1999 saw low policy efficacy values alongside pronounced UHIE fluctuations; 2000–2010 featured two peaks in policy efficacy values concurrent with moderated UHIE fluctuations; post-2011 demonstrated heightened policy efficacy values with frequent peaks, yet UHIE fluctuation magnitudes remained lower than earlier periods.
(3) Grey relational analysis reveals positive correlations between UHIE and green coverage in built-up areas (0.854), per capita park green space (0.701), and greening policy effectiveness (0.632). The first two factors initially strengthened and then weakened in their associations with UHIE, while policy effectiveness displayed high instability.
This study highlights the characteristics of China's UHIE as "fluctuating mitigation, regional differentiation, and policy linkage", demonstrating that initiatives like the "Ecological Garden City" policy positively contribute to thermal environment governance. Future strategies should prioritize targeted policy interventions and optimized urban green space planning to enhance thermal regulation.

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Keywords:
Keyword 1: Urban heat island
Keyword 2: Greening policy
Keyword 3: Spatiotemporal evolution
Keyword 4: Greening level
Keyword 5: Grey relational analysis

P014

From Decline to Adaptation: Machine Learning Reveals Green Space Strategies for Shrinking Cities

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Background
The global proliferation of urban shrinkage has underscored the urgency of mitigating ecological issues such as land vacancy (Sakamoto et al., 2017) and environmental degradation (Yu et al., 2023) through organic renewal of Urban Green Space (UGS). UGS not only mitigates microclimate (Lin et al., 2023) and enhances biodiversity (Luo et al., 2024), but also restores urban ecological foundations through spontaneous natural vegetation succession (Fekete et al., 2024). However, existing research primarily focuses on expanding cities, lacking systematic insights into heterogeneous UGS structural evolution under shrinking contexts. Current research presents limitations: 1) Most studies adopt city-scale analytical frameworks, overlooking heterogeneous neighborhood-scale processes that shape UGS dynamics in shrinking areas. 2) Predominant urban expansion narratives neglect shrinkage-specific mechanisms, including spontaneous vegetation colonization and the degradation of artificial green infrastructure (Chen et al., 2023).
Objectives
This study investigates Hengyang City, a prototypical shrinking city in Central China, to establish an integrated analytical framework addressing two scientific questions: 1) how natural and artificial vegetation succession shape ecological service patterns in the neighborhoods with different shrinkage scenarios, and 2) which factors drive the evolution of ecological service pattern[A1] under different shrinkage scenarios.
Methods
Integrating multi-source spatiotemporal data with machine learning, this research developed a novel technical system to overcome limitations of traditional remote sensing accuracy and black-box driver analysis. The specific steps are as follows:
1) **Shrinkage Scenario Classification**: Classify neighborhood-scale shrinkage scenarios based on changes in dominant land use functions and population density dynamics.
2) **Vegetation type discrimination**: Employ YOLOv11 deep learning for accurate discrimination between natural and artificial vegetation types, followed by quantification of the neighborhood-scale scale, type, and spatial distribution.
3) **Ecological service pattern analysis:** Hybrid K-means and DBSCAN clustering algorithms are used to classify ecological service patterns by integrating vegetation succession metrics (scale/type/spatial distribution) with shrinkage scenarios.
4) **Driver Identification:** Apply interpretable machine learning (Random Forest with SHAP analysis) to identify the dominant drivers of ecological service pattern evolution across different shrinkage scenarios.
Findings
The findings reveal that ecological service pattern exhibits distinct spatial differentiation characteristics shaped by the combined effects of population shrinkage rates and dominant land use functions. While building density and population shrinkage rate emerge as key influencing factors, their effect intensities demonstrate significant variability across different shrinkage scenarios.
Conclusions
Methodologically, this study pioneers the integration of deep learning, hybrid clustering, and interpretable machine learning algorithms, offering new technical pathways for neighborhood-scale ecological service pattern research. Practically, it proposes shrinkage-adapted optimization strategies including low-maintenance green space designs leveraging natural succession processes (as identified in spontaneous vegetation dynamics) and resilient green networks accommodating population loss (targeting areas with high shrinkage rates). These findings provide actionable insights for implementing nature-based urban renewal in developing countries.

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Keywords:
Keyword 1: Urban shrinkage
Keyword 2: Urban Green Space
Keyword 3: Natural vegetation succession
Keyword 4: Interpretable machine learning
Keyword 5: Ecological service patterns

P015
We give urban trees a voice

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Urban forests are critical to creating greener, more sustainable cities—spaces where people thrive in harmony with nature. As landscape architects, you play a pivotal role in shaping these environments, from green corridors to natural urban spaces. However, the long-term success of these projects depends on effective urban forest management.

Empowering Landscape Architects to Shape Resilient Cities

When your clients—municipalities, developers, or large land managers—invest in urban greenery, their goals go beyond aesthetics. They want healthier, safer, and more resilient tree ecosystems offering tangible benefits like shade, clean air, and stormwater management. Greehill's cutting-edge 4D digital twinning and artificial intelligence (AI) technologies make this vision achievable and measurable. With precise, up-to-date tree data, you can advocate proactive strategies that ensure the longevity of your designs and align with your clients' sustainability goals.

Why Urban Forest Insights Matter

Managing thousands of trees means tackling challenges like outdated inventories, safety risks, and inefficient maintenance. Greehill provides solutions to transform urban forestry from reactive to proactive management. By equipping your clients with accurate, real-time insights, you enable them to:

- **Protect community safety**: Identify high-risk trees (e.g., those with diebacks or lean angles) before incidents occur.
- **Enhance tree health**: Detect stress, decay, or vitality issues early to prevent escalation.
- **Optimize resources**: Prioritize maintenance activities and reduce unnecessary costs.

As trusted advisors, you can connect your clients to these innovative tools, positioning yourself as advocates for their sustainability and resilience.

A Partnership Between Design and Technology

Imagine designing a green boulevard or urban park with assurance that your vision is supported by precise, ongoing data on tree health, safety, and growth. Greehill complements your expertise by addressing post-installation challenges, such as:

- **Canopy cover optimization**: Helping trees reach full ecological potential while minimizing lifetime costs.
- **Reducing liability risks**: Identifying hazardous trees for swift action.
- **Efficient communication**: Simplifying reporting and decision-making for your clients.

By integrating these capabilities into your projects, you demonstrate a commitment to their long-term success beyond design.

Transforming Urban Tree Management Together

Here's how Greehill works:

1. **Data Collection**: Advanced LiDAR and ultra-high-resolution imagery capture every detail of your spaces.
2. **Digital Twin Creation**: AI generates centimeter-accurate replicas and high-resolution images for each tree.
3. **Automated Analysis**: Trees are assessed for safety, health, and ecosystem contributions.
4. **Expert Review**: Arborists remotely inspect flagged trees, followed by on-site visits if necessary.
5. **Accessible Insights**: Clients access actionable data via a user-friendly cloud platform.

Why This Matters to Landscape Architects

Introducing clients to Greehill's tree insights helps them protect their green investments and meet sustainability objectives. It strengthens your role as visionary partners bridging design and implementation.

This IFLA 2025 presentation will show how landscape architects can drive innovation in urban forestry

management. Real-world case studies will demonstrate how data-driven solutions enhance project outcomes, reduce risks, and deliver lasting ecological and social benefits.
Together, let’s redefine urban forest management to build greener, safer, and more resilient cities.

References:
No references

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P016

Unraveling the Thermal Effects of Multi-Dimensional Urban-Green Morphological Transformations: Insights from Machine Learning and Spatial Analysis

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Rapid urban expansion and the degradation of urban green spaces (UGS) have significantly intensified urban thermal environments, posing critical challenges to urban sustainability. Existing research largely focuses on static or single-dimensional perspectives, neglecting the dynamic interactions between multi-dimensional urban and green space transformations and their impacts on urban thermal conditions.

In this study, we integrated multi-source remote sensing data and machine learning techniques to investigate the two-dimensional (2D) and three-dimensional (3D) dynamic changes in urban and green spatial structures within Beijing's central urban area from 2000 to 2020. Using high-resolution (500 m) grid-based clustering analysis, we explored quantitative relationships and interactive effects between urban-green structural changes and the expansion of high-temperature zones.

Our findings reveal six distinct types of urban-green structural change. Specifically, morphological changes dominated by high-density building expansions in both planar and vertical dimensions (Clusters 2 and 3) significantly promoted the expansion of high-temperature areas ($P<0.001$). In contrast, structural changes emphasizing solely 2D or 3D green space expansion (Clusters 4 and 5) provided limited mitigation effects on urban heat. Notably, mixed development characterized by moderate building density and optimized green space layout (Clusters 0 and 1) substantially reduced the trend of heat environment deterioration, highlighting the importance of integrated spatial planning. Furthermore, the combination of multiple linear regression and XGBoost with SHAP interaction analysis further confirmed that, after controlling for the influence of covariates such as population, topography, and climate change (wind speed, precipitation), the contribution of UGS morphological variables to the changes in the urban thermal environment remained significant, with obvious nonlinear interaction effects.

This study proposes a novel analytical framework from a long-term, multi-dimensional dynamic perspective, emphasizing the complex mechanisms through which urban-green structural changes influence urban heat environments. The findings highlight the importance of spatially integrated urban planning in enhancing climate resilience and advancing urban sustainability. By offering critical theoretical insights and practical strategies, this study supports the refinement of UGS planning, design, and management to optimize ecological functions, mitigate urban heat, and foster livable, high-density urban environments.

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Keyword 1: Urban-Green Morphological Change
Keyword 2: Urban Heat Dynamics
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Keyword 4: Sustainable Urban Planning
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P017

Cycling-Driven Community Activation: jiangou Village's Ecological Cycling Network

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Following a devastating rainstorm, Jiangou Village faced significant ecological damage and a decline in economic vitality. As a typical suburban traditional village on the outskirts of Beijing, Jiangou suffers from severe aging population issues and lacks industrial support. This study investigates the role of an ecological cycling network in driving resilience-focused community activation, aiming to rejuvenate both the ecological and economic landscape of the village. The primary objective is to integrate the cycling network into the village's ecological and social frameworks, thereby stimulating sustainable community development and enhancing resilience against socio-economic and environmental stresses.

Methodologically, the research employs a blend of multi-source data integration, GIS spatial analysis, and ecological network modeling to precisely evaluate the benefits of the cycling network on the village's ecology and community. System dynamics modeling is innovatively applied to analyze the interaction between the cycling network and village economics, along with community vitality. Additionally, a path optimization technique based on ecological sensitivity analysis is developed to maximize ecological connectivity and community participation.

Results indicate that the cycling network has significantly promoted local ecological restoration by connecting fragmented habitats and enhancing biodiversity. It has also boosted community engagement and economic opportunities, with improved safety and accessibility features that attract tourists and support local businesses. Introducing cycling as a health industry not only enables repeated participation but also attracts young people from Beijing's urban areas, driving rural development.

In conclusion, the study demonstrates that a resilience-driven approach to developing ecological cycling networks not only strengthens community cohesion but also effectively leverages local natural and cultural resources. The Jiangou Village model provides a scalable and replicable framework for other rural areas experiencing similar challenges, advocating for policy support and sustained investment in similar initiatives to maximize their socio-economic and environmental benefits.

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Keywords:
Keyword 1: Cycling-Driven
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Keyword 4: Ecological Restoration
Keyword 5: Rural Revitalization

P018

Drivers of urban spontaneous plants diversity and their application pathways in urban ecological space rewilding in five cities in Heilongjiang,China

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The change of urban environment has caused significant changes in species diversity, community structure and distribution pattern. The urbanization gradient is a composite of multiple habitat factors and different interference factors. In order to understand the causes and maintenance mechanism of plant diversity, indicator species that are sensitive to environmental changes are usually selected. As a vegetation type distributed in the urban area in the process of urbanization, urban spontaneous herbaceous plants have survival countermeasures to adapt to the special habitats of the city and resist strong human interference. Unlike the remaining natural vegetation and artificial vegetation in the city, they are a special type of urban vegetation that is not artificially planted but subject to strong human interference. At the species level, due to its short life history, high sensitivity and strong plasticity, it can be widely distributed in urban areas without being dominated by human consciousness, and make rapid responses to urban heterogeneous habitats by changing its own morphology, physiology and behavior. At the community level, the characteristics of species composition, community structure and distribution pattern have also changed along the urbanization gradient. Therefore, spontaneous plant groups, especially native wild spontaneous plants, not only have important ecological functions for maintaining urban biodiversity, improving urban microclimate, and creating regional wild plant landscapes, but also are excellent objects for studying the mutual feed mechanism between urbanization and urban ecosystem.
In this study, the urban built-up areas of five different climatic subregions in Heilongjiang Province of China were selected as the study area, and the field survey of spontaneous herbaceous plants was carried out by using uniform sampling method and typical sampling method. A total of 45 plots and 472 quadrats were set up. The results of the study clarified the species composition characteristics of spontaneous herbaceous plant diversity from different sources (i.e., native plants and non-native plants) in the above five cities and their distribution characteristics in heterogeneous habitats; From the multi-scale (urban scale, plot scale, patch scale) and multi-dimensional (alpha diversity, beta diversity and gamma diversity), the key driving factors of natural environmental factors, Urbanization Characteristics and habitat characteristics on the composition and distribution of spontaneous plant diversity at different scales were analyzed; Finally, according to the species composition characteristics of urban spontaneous herbaceous plants, especially the competitive relationship between alien species and native species, from the perspective of design and management of urban spontaneous herbaceous plants, this study puts forward the optimization of plant community structure by multiple vegetation management methods, such as clearance type, regulation type and induction type, in order to realize the rewilding of urban ecological space and maximize the ecological service function of spontaneous herbaceous plants landscape. The research results not only fully understand the species diversity distribution pattern and ornamental characteristics of urban spontaneous herbaceous plants, reveal the formation and maintenance mechanism of spontaneous herbaceous plant diversity in specific urban habitats, but also provide a reference for exploring the application potential and implementation ways of urban ecological space rewilding in the future.

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Keyword 3: Diversity distribution pattern
Keyword 4: Urban rewilding
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P019

Mapping and Equity Assessment of 3D Green Quantity: A Case Study of Beijing Central Area

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Ensuring equitable access to urban green space (UGS) is fundamental to fostering sustainable, livable cities, as emphasized in the United Nations Sustainable Development Goal 11. However, conventional assessments often overlook the vertical dimension of green infrastructure, which plays a crucial role in ecological functions and human well-being.
In this study, we developed an advanced leaf area index (LAI) inversion model by integrating high-resolution multi-source satellite data with machine learning techniques, improving estimation accuracy and adaptability across heterogeneous urban landscapes. Based on this model, we mapped the 3D Green Quantity across Beijing Central Area. We conducted a comparative analysis of 2D and 3D green quantity distributions using spatial statistical methods, including local spatial autocorrelation and coupled coordination degree analysis. Additionally, we employed the Gini coefficient to quantify and compare equity disparities between the two metrics.
The results reveal significant spatial heterogeneity between 2D and 3D green quantity distributions. The 2D green quantity follows a “low-center, high-periphery” pattern, whereas 3D green quantity exhibits a distinct “low-south, high-north” trend. Quantitative analysis shows that the Gini coefficient of 3D green quantity is 28% higher than that of 2D green quantity, indicating the equity of 3D green quantity distribution is significantly lower than that of 2D green quantity.
Our findings underscore the untapped potential for urban greening in the vertical dimension. Given the potential ecological risks of relying solely on single-dimensional green metrics, we recommend incorporating 3D green indicators into urban green exposure and equity assessment frameworks.

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Keyword 1: 3D Green Quantity
Keyword 2: Spatial Justice
Keyword 3: Green Space Exposure
Keyword 4: Urban Green Space
Keyword 5: Landscape Architecture

P020

Effectively Connecting Ecological Corridors in Urban Areas: Optimizing Ecological Barriers Based on Ecological Function Assessment and Connectivity Analysis

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Under the current situation of urban ecological landscape fragmentation and decline in ecological quality, ecological corridors within cities play a significant role in the urban ecological security pattern. However, during the urban construction process, the original functions of planned ecological corridors have been encroached upon and weakened. Previous studies have predominantly focused on larger scales such as provinces, and rural areas such as nature reserves, whereas urban ecological corridors demand a more focused, complex approach that integrates human and animal considerations at a district level.

This study focused on the Ling Mountain-Gui Mountain-Longwang Mountain ecological corridor as a case study, which is a typical urban ecological corridor located in the eastern part of Nanjing, China, connecting Zijin Mountain in the city center with suburban areas. The main purpose of this study is to analyze the current state of construction from the perspectives of ecological function and ecological connectivity, identifies barriers that hinder ecological connectivity, and proposes optimization measures.

Morphological Spatial Pattern Analysis (MSPA) and landscape connectivity assessment, combined with wildlife information obtained through infrared camera monitoring, were utilized to evaluate the ecological functions of ecological corridors. By constructing terrestrial and wetland ecological resistance surfaces using ArcGIS, the Minimum Cumulative Resistance (MCR) model was applied to identify terrestrial and wetland ecological corridor connectivity paths and pinpoint ecological barriers. Ultimately, ecological barrier optimization measures were assessed across multiple dimensions.

The result demonstrated that despite the presence of 30 intact cluster and strip-shaped habitats within the corridor, ecological functionality has been significantly compromised by traffic-induced fragmentation of expressways and major roads, as well as internal and surrounding construction land use, resulting in sub-optimal ecological network connectivity. Among the identified ecological barriers, 35 were assessed as suitable for optimization based on barrier characteristics, environment, human activities, and other factors. The main optimization methods were low-cost terrestrial or wetland underground passages and habitat modification, followed by ecological bridges and tunnels.

This study reveals the challenges that urban ecological corridors face in actual construction and provides insights for the development and optimization of ecological barriers within urban ecological corridors. It calls on urban planners and designers to engage in refined design practices for ecological corridors.

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Keywords:
Keyword 1: Urban Ecological Corridors
Keyword 2: Ecological Barriers
Keyword 3: Ecological Function Assessment
Keyword 4: Ecological Connectivity

P021

Accessible Anacostia Riverfront Master Plan: Guiding Washington D.C. as waterfront revitalization model

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As a historically undertreated neighborhood, the Anacostia is rich in agricultural heritage but lack of adequete provision of living amenities such healthy food, high public transit mobility and fragmentation of ecology. This project, based on stakeholder mapping and planning framework analysis, seek to revitalize Poplar Point Riverfront in the city of Washington D.C. and provide social, economic and ecological opportunities for stakeholders. The project aims to provide stable food system based on food chain procedure, experiential dining opportunities as well as accessible space with DC side neighborhood and resources, ultimately to utilize the guiding landscape at waterfront to bring vitality into historical neighborhood. Poplar Point design area lies between Anacostia River and Historical Anacostia Neighborhood. With a high elevation difference rising up till south side, the Poplar Point shoulders great flooding pressure in specific circumstances. In this proposal, 57.3% of design area are proposed as water adaptable fields flexible for particular emergencies from both north and south sides. Street lanes are taken advantages as rain gardens to catch, hold and store water for daily landscape metabolism as well as neighborhood daily use. The main street network structures the path of rain gardens, bioswales, slow traffic sidewalks as well as core developments along the continued axis from Washington D.C. For traffic flexibility, street networks are opportunities to serve as food delivery network as well, the proposal also encourages multiple transportation modes of delivery, as well as guiding visitors from northside Navy Pier. For the sake of continuation and access to waterfront, the proposal buries 1-295 highway underground to keep highway traffic operation as an infrastructure, the portion goes between Suitland Parkway and 11th St Bridge. In order to make use of current onground space, a boule- vard with three lanes in both direction will be designed allowing for less on ground traffic and more pedestrian space. Thus, building distances on both sides will be closer together with density increase. A continuous street with diverse housing choices and commercial destinations will appear.
Therefore, the project will serve as a model for redesigning the historical neighborhood at southside Anacostia River by providing close loop food production chain industry within the design scope.

Poster File

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https://ddot.dc.gov/page/anacostia-waterfront-transportation-master-plan.

Keywords:
Keyword 1: Waterfront
Keyword 2: Sustainable
Keyword 3: Productive Landscape
Keyword 4: Urban food production
Keyword 5: neighborhood

P022

Dynamic Evolution of Landscape Patterns and Ecosystem Service Values in the North Slope Area of Tianshan Mountain, Xinjiang, China

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[Background] The rapid economic development has altered regional landscape patterns, subsequently leading to changes in ecosystem services. Quantitative assessment of landscape patterns and exploration of the spatiotemporal evolution patterns of ecosystem service values (ESV) represent crucial pathways for achieving ecological civilization and high-quality regional development.
[Study Area] This study focuses on the northern slope area of the Tianshan Mountains in Xinjiang, China, covering a total area of approximately 255,000 square kilometers and encompassing 24 county-level administrative units. The geographical scope includes strategic regions such as the development zone on the northern slope of the Tianshan Mountains, the Urumqi metropolitan area, and the oasis ecological belt of the Junggar Basin. As a composite region serving as a core hub of "the Belt and Road" and an ecological security barrier in northwest China, this region plays a pivotal role in maintaining ecological balance in the arid areas of Central Asia.
[Objectives] This study aims to reveal the dynamic evolution patterns of landscape patterns and ESV and their correlations in the north slope area of the Tianshan Mountains, Xinjiang, from 1980 to 2023, so as to provide a basis and guidance for ecological conservation and sustainable development in this region.
[Findings] This study utilized three phases of land use data from 1980 to 2023, and employed landscape pattern indices, equivalent value factor method, and grey relational analysis to quantitatively evaluate the temporal and spatial variation characteristics of landscape patterns and ESV in the northern slope area of the Tianshan Mountain, Xinjiang. Furthermore, we also analyzed the impact of landscape pattern indices on ESV. The results indicate:

1. From 1980 to 2023, the landscape pattern of the northern slope area of Tianshan Mountain showed a trend of decreasing landscape fragmentation, with an increase in the contagion, an elevation in the connectivity of dominant patches, and higher diversity and evenness of landscapes.
2. From 1980 to 2023, the region's ESV exhibited an overall trend of slight decrease, with a 2.97% decline in 2023 (235.121 billion yuan) compared to 1980 (242.328 billion yuan). Ecological lands such as grasslands, water bodies, and forests contributed the most to ESV.
3. Over four decades, significant changes in ESV occurred across most of the study area, particularly increases in the southern Tianshan, Karamay Mountain Reserve, and Qitai Desert Grassland Reserve peripheries, while notable decreases in central farmland and northern grasslands. Regarding land types, the most significant changes were in cropland, construction land, and deserts.
4. Interspersion and Juxtaposition Index (IJI) has the highest correlation with ESV, followed by Shannon's Diversity Index (SHDI), Shannon's Evenness Index (SHEI), and Contagion (CONTAG).

[Significance] The findings reveal the variation characteristics of landscape patterns and ESV in the northern slope of the Tianshan Mountains, Xinjiang, as well as the relationship between them, which deepens the understanding of the ecological environment changes in this area. Furthermore, it provides robust scientific support and decision-making references for formulating scientific land use policies and environmental conservation measures, promoting sustainable regional development.

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Keywords:
Keyword 1: Landscape pattern
Keyword 2: Ecosystem service value
Keyword 3: Spatio-temporal variation
Keyword 4: Land use
Keyword 5: Grey relational analysis

P023

Optimization of Blue-Green Infrastructure (BGI) Networks Based on the Blue-Green Horizontal Ecological Connectivity Index (BGHCI)

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As the capital of China, Beijing has undergone rapid urbanization, leading to significant changes in the city's landscape patterns. The degradation of functional connectivity within water corridors and green space systems has become particularly prominent. To address the challenge of landscape fragmentation, it is imperative to establish a Blue-Green Infrastructure (BGI) network to link isolated habitat patches and restore ecological services. However, traditional structural indices (e.g. PC/IIC) have long been relied upon for landscape connectivity analysis, failing to account for the limitations of quantifying water corridor connectivity.
This study focuses on Yuyuantan Park and the Yongding River Diversion Channel, extending outward to form a river corridor study area ten times the width of the river (approximately 2 ha). Utilizing ENVI for land use classification and QGIS modelers, we developed a Transversal Connectivity Index (TCI) and a landscape connectivity assessment framework based on the PC/IIC indices. Furthermore, we propose the Blue-Green Horizontal Ecological Connectivity Index (BGHCI), which integrates the functional and structural attributes of water-green space systems to support the resilient design of BGI networks.
Key findings include:
(1) Compared to PC/IIC indices, BGHCI demonstrates a 23% improvement in sensitivity to water corridors, accurately identifying highly connected patches (PA > 1 ha, PCI > 0.8) such as those on the eastern side of Yuyuantan Park, providing scientific targets for ecological revetment transformation.
(2) BGHCI overcomes the limitations of fixed buffer thresholds, with patch area (PA) and compactness (PCI) contributing 38% and 31%, respectively, significantly outperforming the single-structure evaluation of PC/IIC.
(3) Application validation indicates that BGI layout based on BGHCI enhances ecological network connectivity efficiency by 17%.
This study addresses the gap in quantitative assessments of urban river corridor connectivity in China and provides an internationally informed yet locally adaptive technical toolkit for the "Preserve White Spaces and Expand Green Areas" urban renewal strategy.

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Keywords:
Keyword 1: blue-green infrastructure
Keyword 2: landscape connectivity
Keyword 3: ecological sources
Keyword 4: landscape security patterns
Keyword 5: ecological network construction

P024

A framework for balancing the expansion of land supply and the maintenance of ecological networks in urban dynamic development

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Rapid urbanization has greatly changed land use patterns, and is considered to be an important driving force leading to the massive loss of biological habitats. Habitat fragmentation leads to the extension of species migration distance, hinders energy flow, and has a serious negative impact on biodiversity and landscape connectivity.
With the development of research, scholars have increasingly realized that urban ecosystem is not only a static spatial problem, but also a dynamic evolution process. The traditional static optimization scheme is difficult to effectively deal with the challenges brought by urban expansion and land use change to enhance landscape connectivity. At the same time, the researchers also used land use simulation technology to evaluate the trend of landscape connectivity and ecological benefits under different development planning scenarios, providing more in-depth decision-making insights for urban management. This shows that strengthening landscape connectivity should not only focus on increasing ecological patches and corridors, but also consider the interaction between ecological connectivity and land use change, so as to achieve the dual goals of ecological protection and urban development. Establishing a balance between the demand for land for urban development and its potential environmental impact has become a key factor in achieving the goal of sustainable development.
Although these methods have improved our understanding of landscape connectivity optimization, most studies still rely on adding ecological patches or corridors to improve the structure of ecological networks. However, this strategy often requires additional land resources, which are extremely scarce in high-density urban areas. Therefore, the contradiction between ecological protection land and urban development has become increasingly prominent. The traditional ecological network optimization scheme is difficult to adapt to the dynamic changes of ecological space driven by rapid urbanization. Therefore, optimizing the ecological network connectivity under the constraint of land resources and exploring the landscape connectivity protection strategy that does not rely on additional ecological land has become an urgent challenge.
In this study, we propose an optimization strategy based on the target patch to identify and optimize the green patches suitable for urban expansion without requiring additional ecological land. The strategy aims to reduce the loss of landscape connectivity while maintaining land supply. By improving the efficiency of land use and supplementing the traditional urban optimization methods, it provides a scientific basis for the land management of rapid urbanization or high-density cities. As the capital of China and a typical urbanized area, Beijing was selected as a case study. Firstly, the impact of future urbanization on ecological network is evaluated, and the evolution of habitat patches is analyzed. Secondly, determine the green space that can provide land for urban development while retaining ecological potential. Finally, the framework was validated by network optimization, revealing the potential of target patches in balancing land supply and maintaining landscape connectivity.

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Keywords:
Keyword 1: Urban ecological networks
Keyword 2: Urbanization
Keyword 3: Landscape connectivity
Keyword 4: Land-use simulation
Keyword 5: Urban dynamic development

P025

Gradient-Based Restoration of Avian Ecological Networks and Collaborative Planning in High-Density Urban Areas: a Case Study of Central Hangzhou City

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Rapid urbanization has led to the fragmentation of urban ecological patches, disrupting habitat connectivity and threatening biodiversity (Watson et al., 2018). In high-density built environments, urban expansion significantly restricts the migration and energy flow of species, contributing to biodiversity loss (Łopucki et al., 2020; Li et al., 2022). Although ecological networks have been widely recognized as a crucial strategy to mitigate these issues (Li et al., 2024; Miao et al., 2024), existing studies present critical limitations. Specifically, there remains a lack of systematic research on bird ecological networks in high-density urban areas. Furthermore, the interaction between ecological substrates and human activities, as well as the dynamic relationships between species migration demands and spatial patterns, have not been sufficiently explored, limiting the effectiveness of planning practices.

To address these gaps, this study selects central urban area of Hangzhou City, a key migratory node along the East Asian-Australasian Flyway as a case study. An integrated research framework is applied, combining Ecological Source (ES) Identification, Corridor Simulation, and Network Assessment. ES identification is conducted using MaxEnt modeling and 2024 bird observation data to determine key habitat areas. Corridor simulation employs Least Cost Path (LCP) analysis to model potential ecological corridors based on habitat suitability, land use, and urban barriers. Network assessment utilizes spatial syntax analysis to evaluate connectivity, integration, and spatial hierarchy, identifying critical nodes and weak links within the ecological network.

The analysis identifies 9 ES areas (totaling 264.23 km²) and 139 potential ecological corridors (spanning 137.61 km), forming a multilevel ecological network. Results indicate two key findings: (1) The ecological network exhibited a relatively low global integration (mean value: 0.23), reflecting spatial dispersion among ecological corridors. Notably, the areas around ES4 and ES5 showed high integration and connectivity, confirming their essential role in supporting ecosystem service flows and habitat integrity. (2) Network hierarchy analysis revealed clear spatial differentiation. The central level (ES4-ES5-ES6) formed a core ecological hub (integration value: 0.46), while edge-level areas (ES1-ES2-ES3 and ES6-ES9) were distinctly segregated. Additionally, the supporting-level corridors (ES2-ES4 and ES4-ES7-ES8), despite their lower integration, demonstrated high selectivity values, highlighting their importance as biological transition and ecological buffers.

Based on these findings, a gradient-based spatial optimization strategy is proposed. Priority should be given to strengthening core corridors in the ecological hub comprising the West Lake, the Qiantang River, and the Xixi Wetland. Connectivity should also be improved in peripheral regions, such as the shallow mountainous areas in central Yuhang District and the wetlands in western Qiantang District. Additionally, buffer areas such as the Xianghu Lake, the Nanhu Lake, and the southern shallow mountainous areas of Xiaoshan District require targeted ecological restoration. By integrating spatial analysis with ecological principles, this study provides a systematic framework for synergizing biodiversity conservation with spatial planning in high-density cities and supports the protection of key migratory bird routes through evidence-based planning strategies.

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Keywords:
Keyword 1: urban ecosystem

Keyword 2: bird ecological network
Keyword 3: spatial syntax
Keyword 4: ecological diversity conservation
Keyword 5: central Hangzhou City

P026

Future Immigration of Trees: Predicting Suitable Spatial Distribution Areas for Urban Trees Under Climate Change Scenarios

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Climate change (CC) is one of the most urgent and complex global challenges of the 21st century, impacting natural and urban ecosystems [1]. To mitigate the consequence of the CC, urban vegetation plays a key role by providing ecosystem services including biodiversity support, microclimate regulation, flooding control, etc. However, the effectiveness of these services mostly depends on the health and growth of urban trees, which are increasingly vulnerable to the impacts of climate change [2,3]. Shifting temperatures and precipitation patterns are expected to significantly alter the growth, phenology, and distribution of many tree species [4,5], making it crucial to anticipate these changes.
While numerous studies have examined the potential distribution of natural or forest tree species, systematic and quantitative research on urban tree species is inadequate. Additionally, most previous studies have relied on single-algorithm species distribution models (SDMs), limiting predictive accuracy and robustness. To address these gaps, this study aims to enhance traditional SDMs by integrating multiple machine learning algorithms, thereby developing a comprehensive framework for predicting the spatial evolution of urban tree distributions under different climate change scenarios. We selected 24 commonly used ornamental tree species with high ecosystem services in China and categorized them into four groups: evergreen conifers, evergreen broadleaf trees, deciduous conifers, and deciduous broadleaf trees. Their suitable distribution ranges were modeled under two future climate scenarios (SSP126 and SSP585) across four time periods (2030s, 2050s, 2070s, and 2090s). By comparing future projections with current distributions, we identified stable areas, expansion zones (regions where habitat suitability increases), and contraction zones (regions where suitability declines). Preliminary results indicate that the ensemble SDM demonstrated strong predictive accuracy, achieving an AUC value of 0.95, significantly improving prediction performance compared to traditional models. Further analysis is ongoing. These findings are expected to provide a scientific basis for urban tree species selection and management decisions, guiding proactive adaptation strategies for climate-resilient urban planning. Additionally, the proposed methodological framework serves as a valuable predictive tool, offering insights into the future distribution of urban trees in response to climate change and contributing to sustainable urban landscape planning and management.

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Keywords:
Keyword 1: Urban forestry
Keyword 2: Ensemble model
Keyword 3: Guiding landscape management

P027

EU Grassland Habitat types in urban landscapes: A case study of Latvia

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Grassland habitats within urban areas in Latvia, as part of the European Union's (EU) Natura 2000 network, are crucial for biodiversity conservation purposes and ecosystem service provision. These habitats, often characterised by a mix of semi-natural grasslands, meadows, and pastures, provide essential ecological functions such as carbon storage, water regulation processes, and the supporting of diversity of flora and fauna. However, urbanisation poses significant threats to the integrity of these habitats, leading to habitat fragmentation, pollution, and dispersal for invasive species. Importantly, urban areas has been considered to be one of the major drivers for biodiversity loss and the homogenization of environments (McKinney, 2002). This study examines the current status of EU grassland habitat types in urban settings in Latvia, assessing their ecological value, conservation status and ecosystem service supply. Through a combination of field survey and GIS analysis, we highlight areas where grasslands are under threat and propose management strategies for their preservation. This study was showed the importance of integrating conservation efforts within urban planning to safeguard these vital ecosystems, ensuring that urban grasslands contribute to both biodiversity and the well-being of urban inhabitants.
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Keywords:
Keyword 1: urban grasslands
Keyword 2: nature conservation
Keyword 3: ecosystem services
Keyword 4: vegetation

P028

The Functional Transformation of Green Belts: Research on Spatial Spillover of Recreational Services in Shanghai's Ecological Park Belt

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The establishment of a new urban outer-ring green space system based on traditional green belts has emerged as a global trend. Shanghai's Ring Ecological Park Belt, built upon a three-decade-developed "outer-ring greenbelt," addresses the demands of urban-rural integration and public recreation under the "Park City" initiative, facilitating the transformation of greenbelt functions from ecological barriers to recreational service providers for high-density urban areas. **During this transition, the park belt faces challenges such as spatial imbalances in recreational service distribution and supply-demand mismatches.** Evaluating and optimizing these systems based on **spatial spillover effects** presents a critical approach to mitigating these issues.
By integrating the Recreation Potential Supply (RPS) and Recreation Opportunity Supply (ROS) models, we developed an assessment framework and derived spatial distribution maps of recreational service supply for 2013, 2018, and 2023. Using spatial pattern analysis, we identified core supply zones of recreational services, while the Spatial Lag Model (SLM) and Spatial Error Model (SEM) were employed to **analyze spillover effects from core areas to adjacent regions over the decade.** Additionally, we calculated the spillover coefficients of representative parks along the belt, conducting localized spatial spillover analyses for specific segments.
The results show the following:
(1) Recreational services within the park belt have increased, with high-value areas clustering into more continuous and coherent structures. Multi-temporal data indicate that core zones are primarily distributed along the belt, with additional concentrations at intersections between the greenbelt and other urban green spaces, such as waterfront areas.
(2) Areas with the strongest growth rates are clustered in core zones, **demonstrating the success of the greenbelt's functional transformation over the past decade.**
(3) When setting a 2 km threshold from core zones, initial recreational service levels positively influence subsequent growth rates. **High-value areas drive the development of neighboring low-value zones through spatial spillover, with this effect radiating outward from core regions**.
(4) **Distance-based threshold analysis reveals that spillover effects diminish with increasing distance, exhibiting three distinct intervals**: the highest spillover coefficients occur within 400 m, followed by a sharp decline; a significant rebound emerges at 1,000 m; between 1,000–2,000 m, effects steadily weaken; beyond 2,000 m, spillover becomes unstable with reduced statistical significance.
(5) **The enhancement in both quantity and diversity of park recreational services has been identified as the primary driver for value growth and spatial spillover effects.**
From a macro-planning perspective, it is crucial to strategically utilize the three key spillover boundaries while integrating external green resources to stimulate inter-regional synergy and maximize development potential. At the micro level, urban planners should mitigate potential siphon effects during the renovation of older parks by strategically grouping them with newly developed, functionally specialized parks. This integrated approach can significantly amplify and extend the spatial spillover effects. This study systematically reveals the spatial spillover mechanisms of recreational services following the functional transformation of metropolitan greenbelts, providing both theoretical frameworks and practical implementation strategies for ecological park belt planning and development.

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Keywords:
Keyword 1: Urban green land
Keyword 2: Greenbelt
Keyword 3: Ecological park belt
Keyword 4: Recreational services
Keyword 5: Spatial spillover effects

P029

Breathing Green Sponge: Lifecycle Carbon Accounting of Low Impact Development Systems in Urban Green Spaces

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Green spaces serve as primary carriers for implementing Low Impact Development (LID) to address urban stormwater issues（Suresh et al., 2023；Fan et al., 2022）. In LID processes, green spaces are often simplified as part of engineering measures due to their clear goal orientation, concentrating on exploring the optimization of short-term hydrological performance and ignoring their long-term carbon sink value as important near-natural ecological spaces in the city（Ayoubi et al., 2024；Qi et al., 2025）. Enhancing the synergy between stormwater regulation and carbon neutrality can amplify green spaces' ecological value as natural organisms, offering nature-based pathways for sustainable urban development amid intensifying extreme weather and rising carbon emissions（Su et al., 2022）.

This study establishes a life cycle assessment (LCA) framework to quantify carbon benefit differentials between LID-equipped and conventional green spaces across four phases: material production, construction, operation-maintenance, and demolition. A comparative case study in Longquan Lake Wetland Park, Shijiazhuang, employed the Storm Water Management Model (SWMM) to simulate parallel designs—one integrating LID infrastructure (permeable pavements, rain gardens, green roofs, sunken green spaces, and rainwater harvesting systems) and another using traditional drainage—evaluating their 50-year carbon performance（Zamani et al., 2023；Chen et al., 2019）.

The results show that the LID system generates higher carbon emissions during the production and construction phases compared to the traditional system, yet exhibits significantly lower emissions during operation and maintenance. Both systems reach carbon parity 0.68 years after implementation, with the LID system demonstrating increasing carbon benefit advantages over time. Over a 50-year evaluation period, operational-phase carbon differentials (130 times greater than the combined emissions from the other three phases) dominate the lifecycle outcomes. Specifically, stormwater reuse contributes 65.6% of the operational carbon benefits, followed by reduced maintenance demands (29%), runoff control (3.2%), and trade-offs in vegetation carbon sequestration (2.2%, due to simpler plant composition in LID systems). Based on these findings, the study proposes a low-carbon sponge space design integrating stormwater reuse, runoff management, vegetation optimization, and sustainable material applications.

This study combines SWMM-based hydrological modeling with life cycle assessment methodology to improve the carbon emission accounting system, reveal the carbon benefit advantages of LID facilities in the operation phase of the green space, and provide low-carbon optimization solutions to expand the multidimensional benefits of urban green space as a natural system, which will provide a reference for resilience building of the city to cope with climate issues.

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Keywords:
Keyword 1: Low Impact Development
Keyword 2: Carbon benefit
Keyword 3: Life cycle assessment
Keyword 4: SWMM hydrological modeling
Keyword 5: Stormwater reuse

P030

Monitoring Landscape Characteristic Change of Nature Reserves In Highly Urbanized Areas ：A Case Study of State-level Neilingding-Futian Nature Reserve

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The landscape is constantly changing, combining the natural environment and human interaction. The vast number of variables of landscape change make it impossible and unnecessary to observe and evaluate actual and direct landscape changes in detail. It is difficult to provide an understanding of the cumulative impact of landscape changes on discrete and fragmented geographic patches. Defining landscape change from the perspective of human management and promoting its transformation into sustainable goals are the keys and premises of landscape planning and management. Map patch management of traditional nature reserves based on elements is dominated by land cover type, and there are modes such as static control and feature fragmentation. The concept of character provides an operational concept for defining landscape change; that is, whether landscape character changes or not is a prerequisite for defining a landscape's magnitude and degree of impact. Originating from the Landscape Character Assessment Tool in England, it provides a technical method for scientifically identifying landscape characters and dividing their types/areas of landscape character. This study used the Neilingding-Futian State-level Nature Reserve (921.6 hectares) in Guangdong Province as an example. We used Landscape Character Assessment tools to identify, evaluate, and analyze landscape characteristic change. Based on the ArcGIS platform, a landscape information database will be constructed, and the landscape character maps of the nature reserve in 2010 and 2020 will be established from the dimensions of nature, humanity, and policy, and the landscape characteristics of the nature reserve will be compared and analyzed. Fragstats was used to analyze changes in landscape patterns. Then, the correlation between landscape elements and landscape characteristic change was analyzed, and the driving force, trend, and direction of landscape feature change were analyzed based on the DPSIR (Drivers-Pressure-State-Impact-Response) framework. To put forward monitoring and management suggestions based on changes in landscape characteristics. The Neilingding-Futian State-level Nature Reserve in Guangdong Province is the only nature reserve in the city's hinterland worldwide, and the protection of its ecological value is closely related to external urban and rural backgrounds. This study demonstrates that the boundaries of isolated protected areas often fail to preserve their original ecological values, necessitating a broader spatial perspective to examine the interactions between human activities within and beyond their boundaries. It emphasizes implementing integrated conservation and monitoring mechanisms encompassing surrounding urban-rural environments. Furthermore, the research aims to enhance dynamic monitoring and management of landscape changes in protected areas within highly urbanized regions. Moving beyond current static, element-based monitoring approaches, it proposes exploring dynamic monitoring frameworks focusing on structure-function relationships in the evolution of landscape characteristics.

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Keywords:
Keyword 1: Landscape Character Assessment
Keyword 2: Landscape Characteristic Change
Keyword 3: Characteristic Identification
Keyword 4: Characteristic Monitoring
Keyword 5: Nature Reserve

P031

Ecologically Constrained Generative Design: A Controllable AI System for Urban Landscape Planning

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Background: Under the dual pressures of accelerating global urbanization and ecosystem fragmentation, urban ecological restoration urgently requires design tools that balance multiple objectives including biodiversity conservation and stormwater resilience enhancement. Current landscape architecture practice faces core challenges in static utilization of ecological data and inefficient transmission of professional expertise when addressing complex ecological issues.

Problem Statement: Existing generative design tools exhibit two major limitations: 1) The black-box nature of algorithms leads to loss of control over spatial relationships among ecological elements, making it difficult to ensure design schemes conform to site-specific ecological contexts; 2) The lack of dynamic constraint mechanisms hinders the translation of domain knowledge from professional groups (ecologists, landscape architects) into intervenable design rules.

Solution: This study develops an ecology-oriented controllable generation system through three components:
Data Foundation: A dataset containing 9,286 annotated ecological element plans (green spaces, water bodies, vegetation, etc.) was constructed, establishing element-semantic mapping through color coding (e.g., dark green = native vegetation reserves).
Two-phase Generation:
Layout Generation: A deep learning-based image translation framework generates complete layouts that adapt to ecological constraints, using input masks of key ecological elements (e.g., vegetation reserve boundaries).
Dynamic Optimization: Vector editing interfaces allow real-time adjustment of element relationships (e.g., relocating water bodies), with the system automatically verifying ecological constraints and iterating schemes.
Interaction Mechanism: An interactive design interface supports landscape element adjustments, where user interventions are encoded as JSON instructions to drive scheme regeneration, forming a decision-making loop that synergizes expert knowledge with algorithms.

Conclusion: Experimental validation demonstrates that this system optimizes the spatial layout of ecological elements, enhancing the alignment of key features such as water bodies and green spaces. Meanwhile, the system maintains stable interactive responses and supports multiple rounds of real-time optimization, allowing design solutions to dynamically adapt to ecological constraints.
Compared to traditional static design tools, this research introduces controllable generation and expert intervention mechanisms, markedly enhancing ecological design adaptability and operability. The explainable generation process not only strengthens ecological rationality but also ensures precise control over critical ecological objectives.
Future applications could extensively serve urban ecological restoration and resilient landscape planning, functioning as intelligent decision-support tools to elevate the scientific rigor and implementation viability of ecological designs.

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Keywords:
Keyword 1: Ecological
Keyword 2: Landscape Architecture

Keyword 3: Interactive Design
Keyword 4: Explainable AI

P032

Reimagining Land Bank Properties: Integrating Nature for Community Resilience and Biodiversity

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Land bank properties are often vacant or deteriorated, primarily located in blighted, underserved communities. Although land bank systems can provide affordable housing and increase urban green spaces, funding from community loan programs often only covers building costs, leaving the surrounding landscapes underdeveloped. These spaces typically consist of minimal turf grass and offer little opportunity for creating healthy, resilient, and aesthetically pleasing environments. This presentation explores several case studies across the U.S. to examine alternative approaches and opportunities for transforming land bank landscapes. We focus on strategies for creating habitats that benefit both human and non-human communities. By intentionally integrating natural spaces into land bank properties, we believe it is possible to enhance local biodiversity, climate resilience, and neighborhood revitalization, while simultaneously providing broader socio-ecological benefits. One key case study is from Hartford, Connecticut, where vacant and blighted land has been successfully rezoned and repurposed. Along with Waterbury and New Haven, Hartford represents one of the few Connecticut municipalities with land banks. These cities, particularly in historically underrepresented neighborhoods, face ongoing challenges such as flooding, food deserts, low tree canopy, and health disparities. We reviewed local zoning restrictions—such as regulations on grass height, brush piles, and land cover—that impact the development of urban agriculture and green spaces. Through focus groups involving municipal land banks, city officials, zoning commissions, local nonprofit organizations, and other community stakeholders, we identified vacant land for demonstration sites and explored the challenges of rezoning land for urban agriculture use. We also examined the potential for landscape rehabilitation using natural interventions, including community food gardens, pollinator habitats, street orchards, and natural playgrounds. Our findings also reveal varying levels of awareness regarding land banks and their potential socio-ecological benefits, as well as the difficulties posed by outdated zoning codes and blight ordinances. We propose a reimagined approach to land use and zoning, emphasizing health, equity, and biodiversity. Our aim is to develop interventions that provide long-term stewardship protocols for maintaining ecologically productive, yet aesthetically pleasing, spaces that meet community needs. Through challenging outdated planning paradigms, we advocate for the creation of a "greenlining" framework that can break the cycle of poverty and environmental degradation. These changes are not just about reshaping urban land ownership and zoning—they act as catalysts for healthier, more resilient communities, particularly for underserved populations. This project promotes broader public co-benefits, such as increased access to nature and improved community resilience, with the potential to inspire similar efforts in other neighborhoods across the country. Lastly, we explore the concept of transitioning to "Nature-Inclusive Zoning" systems. This framework aims to ensure the coexistence of natural, human, and built environments, integrating natural components into urban, suburban, and peri-urban spaces. By rethinking zoning codes and urban planning, we can address urgent challenges like climate change and biodiversity loss—global issues that demand action on all levels.

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Keywords:
Keyword 1: Vacant lots
Keyword 2: Land bank
Keyword 3: Greening
Keyword 4: Zoning
Keyword 5: Biodiversity

P033

A method for land use simulation and ecological network construction in Shanghai based on PLUS and MSPA model

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Objectives:
China has completed the urbanization process that took many developed countries hundreds of years in about 3 decades. As one of China's fastest-growing cities in urbanization, Shanghai has experienced significant ecological fragmentation dvelopment. Land-use change is the main reason for changing the regional landscape structure and ecological characteristics (Huang et al., 2022). While ecological networks have been proposed to mitigate the conflict between urban expansion and habitat destruction, existing research tends to provide static protection strategies based on current ecological substrate, neglecting the dynamic impacts of land-use changes.
China uses the “Three zones delineated by three lines for land use” to guide urban development. In this study, based on “three lines” and land-use balance formulated in Shanghai Master Plan, using the PLUS model coupled with MSPA and circuit theory, we constructed ecological networks based on the existing 2020 and predicted 2035 land-use. Through comparison of spatio-temporal consistency through network structure, the study establish a dynamic and coordinated protection mechanism for the regional ecological network.

Methods:
(1)Land-use Prediction with PLUS Model: This study extracted the spatial changes in land-use expansion from 2000 to 2020, selecting 17 factors and used the Random Forest Classification (RFC) algorithm in the LEAS module to obtain the development probabilities of each land-use and the contribution of driving factors. Adopting the development areas and restriction zones based on the urban expansion boundary and the redlines of ecological protection delineated in the “Three Lines” and the land-use balance formulated in the Shanghai Urban Master Plan (2017-2035), the CARS module combined Cellular Automata (CA) with patch-generating strategies to dynamically simulate 2035 land-use patterns, with the development weight of 0.8 for urban development areas. The model was validated by using 2000-2015 land-use to simulate 2020 land-use, achieving a Kappa coefficient of 0.802364 (>0.75), indicating satisfactory accuracy.
(2)Ecological Source Identification with MSPA: Waters, forests, and grasslands were selected as foreground data to identify potential ecological sources in 2020 and 2035. ArcGIS extracted sources larger than 3 km², and Conefor calculated their delta Probability of Connectivity (dPC). Sources with dPC > 0.5 were selected as key ecological sources.
(3)Ecological Corridors and Nodes Identification with Circuit Theory: Twelve factors related to land-use, topography, human activity, and construction were selected as ecological resistance factors, with resistance values ranging from 0 to 1. Weights were assigned using the Analytic Hierarchy Process (AHP), ensuring consistency ratios were below 0.1. Composite resistance surfaces were created for 2020 and 2035. Centrality Mapper was used to calculate current density in ecological corridors, with natural breaks classification for importance ranking. Ecological pinch points and barriers were extracted using Pinchpoint Mapper and Barrier Mapper.
(4)Dynamic Coordination Mechanisms for Ecological Network: The ecological network was constructed by overlaying identified sources, corridors, and nodes. Comparative analysis identified spatially consistent ecological networks for prioritized protection, emerging ones for planned development, and disappearing ones for analysis on protection, transfer, or removal.

RESULTS:
This coordinated planning mechanism provides methodological guidance for city to effectively prevent the destruction of the existing ecological pattern from urban development.

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Keywords:

Keyword 1: Land use simulation
Keyword 2: Ecological network
Keyword 3: PLUS model
Keyword 4: MSPA
Keyword 5: Circuit theory

P034

LANDSCAPE DESIGN OF THE MINISTRY OF PUBLIC WORKS OFFICE IN NEW CAPITAL CITY OF INDONESIA THROUGH NATURE-BASED SOLUTIONS APPROACH

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Indonesia is a country with a population of 281 million people in 2023, with 57% concentrated on Java Island. The plan to relocate Indonesia's capital city has been envisioned since 1957 by Indonesia's first president, Soekarno, who proposed moving the capital to Central Borneo. The decision to relocate Indonesia's capital to East Borneo was officially made by the 7th President of the Republic of Indonesia in 2019. This relocation aims to achieve economic equity and justice while reducing the burden on Jakarta, which is facing high urbanization rates and land subsidence caused by groundwater depletion.
The Central Government Core Area is one of the planned zones of the capital city (Nusantara), designated for governmental functions. According to Presidential Regulation No. 63-2022 Chapter V, the design of the capital city embodies a future city model based on forests and archipelagos as symbols of Indonesia's transformation themed as a Forest City, Sponge City, and Smart City. One of the government buildings in the Core Area is the Ministry of Public Works and Housing Office Wing 1, occupying a land area of 3.17 hectares, which once was a monoculture forest. The land is not only designated for the office building, but also for public green open space. The Office is strategically situated adjacent to the Presidential Palace Complex, making it a potential role model for other ministry buildings in the Nusantara Capital City. Issues related the development of a new city, may impact environmental quality and biodiversity in the area. Particular soil conditions at the existing site requires ecological landscape design-based approach to improve the environmental quality. On the other hand, the selected area for public green open space offers immense opportunity to support the inhabitant's well-being and biodiversity to create a sustainable global city.
The Nature-Based Solutions (NBS) approach is considered one of the viable strategies in landscape design to provide benefits for humans and the environment. These benefits can be assessed using the Millennium Ecosystem Assessment framework. This assessment defines ecosystem services as the benefits provided by ecosystems to humans, including provisioning, regulating and cultural services. Through the assessment, the role of landscape design in supporting the provision of ecosystem services beneficial to humans can be evaluated.
This study aims to develop a landscape design for an office area in Indonesia's new capital (Nusantara) that supports ecosystem services, focusing on the provision of clean water, the regulation of climate and erosion control, and the cultural service. The study adopts the design methodology framework from James A. Lagro, which consist of four stages: pre-design, analysis, synthesis, and design. The site analysis has been conducted to assess the climatic factors, wind patterns, and topography, followed by the development of a phased design implementation timeline that consider the ecological processes. The expected outcome of this study is the development of a landscape design that responds to site conditions through a nature-based solutions approach, serving as a reference for the development of other office areas in Indonesia's new capital (Nusantara).

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Keywords:
Keyword 1: Climate Adaptation
Keyword 2: Ecosystem Services
Keyword 3: Green Infrastructure
Keyword 4: Nature-Based Solutions
Keyword 5: Sustainable Urban Development

P035

Mitigating Urban Heat Island Effect: effective climate change adaptation strategies for hot climates

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Due to climate change, Texas cities are warming faster than the global average of .36 degrees per year. Within 25 years, the number of 40° C days is expected to double, making Austin's climate more comparable to Phoenix, Arizona.

The Urban Heat Island (UHI) effect magnifies the warming. Cities have higher daytime and nighttime temperatures compared to surrounding rural areas, making cities especially vulnerable. At the same time, the state of Texas, much like the rest of the world, is rapidly urbanizing. Texas cities have grown by 18% over the last decade, while its rural population has grown by only 1%. 84% of the state's population lives in metro areas that can be more than 3° C warmer than the surrounding countryside. Clearly, adapting cities to be more resilient and sustainable in an era of heat emergencies is an urgent task. Luckily, built environment professionals (landscape architects, planners, and architects) are well positioned to design cities that tangibly mitigate UHI and ensure the vitality of public spaces and the health of urban dwellers.

Austin is located on the 30th parallel and it's climate is classified as humid subtropical (Koppen climate classification system). There is a lot that can be learned from looking at our climactic sister cities that are at the same latitude (Beni Isguen, Algeria & Fez, Morocco). How could we fuse western city building with ancient examples of climate-conscious town planning? This presentation applies these pre-industrialization design principals to a selected site in Austin and uses thermal analysis to evaluate their effect on apparent temperature, surface temperature, absolute humidity, and wind speed.

This program is innovative in that the strategies for reducing UHI (longer streets that are aligned with wind prevailing winds, concrete pavement finishes, streetscape "urban canyon" profiles) are within the scope of design professionals. However, knowing where to start and which techniques are actually effective is quite challenging. The three mechanisms presented (urban form, materials, vegetation) are not commonplace in the design field. However, there is a wealth of academic literature that can be used to inform our everyday design choices. This innovative program will showcase proven methods that make cities cooler, more resilient, and more livable, and that we, as designers,are fully capable of implementing in our practices.

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Keywords:
Keyword 1: climate change
Keyword 2: urban heat island
Keyword 3: town planning
Keyword 4: micro-climate

P036

BioNocta: Rethinking Urban Lighting for Sustainable Landscape Design

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As cities evolve into dynamic ecosystems, integrating lighting solutions that respect biodiversity while ensuring urban functionality has become a critical challenge for landscape architects. Light pollution is now recognized as a major environmental and public health issue, as highlighted in the French Senate's 2023 scientific report on the topic. Addressing this challenge, **BioNocta** presents an innovative lighting technology designed to minimize ecological disruption while preserving nighttime visibility.

BioNocta's patented nanometric composition emits a spectrum that is imperceptible to plants, allowing them to maintain their natural cycles. Its optimized wavelengths significantly reduce the impact of artificial lighting on insects, birds, fish, and nocturnal mammals—key concerns for landscape professionals seeking to design resilient and balanced urban ecosystems. Furthermore, by eliminating harmful blue light emissions, BioNocta mitigates human health risks and enhances the perception of nocturnal landscapes.

Already recognized for our expertise on sustainable lighting, **we were invited speakers at the 2024 FOCALES Forum des Lumières Durables in Paris and engaged in discussions with the Éco-Maires de France on urban lighting policies.** Additionally, **BioNocta was recognized as a finalist for innovation at the most recent Salon des Maires, reinforcing its relevance for public decision-makers and urban planners.**

Our innovation and expertise will also be included in **the first guide on sustainable lighting for municipalities, published by the Cluster Lumière France in late 2025.** Furthermore, **BioNocta has been selected as a reference standard for the second version of the "BiodiverCity" label, issued by the International Council for Biodiversity & Real Estate, shaping future certifications in ecological urban development.**

This innovation aligns with the **IFLA 2025** theme of guiding cities through what is alive, offering landscape architects a groundbreaking tool to implement lighting strategies that support biodiversity, reduce disruptions to ecological networks, and foster a harmonious coexistence between human activity and the natural environment.

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Keywords:
Keyword 1: Bionocta
Keyword 2: Biocenosisable
Keyword 3: Spectrum
Keyword 4: DarkEcologicalNetwork
Keyword 5: Light Pollution

P037

Reshaping Emerging Wild Spaces in Metropolises: A Case Study of Wetlands in Shanghai, China

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As one of the world's megacities, Shanghai has experienced urbanization and population dynamics that entered the global metropolis development stage earlier than other Chinese cities, leading to significant transformations in its urban environment and ecosystems. As the core area of the Jiangnan Watertown region, Shanghai features a dense network of rivers, crisscrossing waterways, and exceptionally rich wetland resources. The total area of urban wetlands in Shanghai is 27,047.29 hectares, accounting for approximately 4.5% of the city's total wetland area. Urban wetland ecosystems provide ecological and service functions, including regulating the urban climate, improving water quality, and enhancing biodiversity. However, excessive urban construction and disordered human exploitation of rivers, lakes, and ponds have led to prominent issues such as habitat fragmentation, water pollution, and biodiversity degradation in urban wetlands. In recent years, urban rewilding has been recognized as an effective approach to reduce anthropogenic disturbances, enhance urban wilderness and biodiversity, and restore the natural states and self-regulating capacities of urban ecosystems. These emerging wild wetland spaces may evolve into novel wilderness areas, providing habitats and refuges for species while delivering valuable ecosystem services, including climate adaptation, to enhance human well-being.

To address the practical needs of Shanghai's urban wetland spatial development planning, this study developed an evaluation framework and mapping methodology to accurately assess and identify rewilding-possible spaces within urban wetlands. Based on a comprehensive understanding of the core principles of "rewilding" and the characteristics of urban wetlands, the study integrates ecological dimensions (required for biodiversity enhancement), diversity dimensions, and participatory activities that wetlands can offer humans, including nature education. Additionally, it considers how excessive construction and human disturbances hinder ecological processes and negatively impact urban rewilding. Consequently, a four-dimensional rewilding potential evaluation system—ecology, diversity, disturbance intensity, and participatory—was constructed to assess the possibility of wetland rewilding in Shanghai. By combining the Invest model and GIS technology, the spatial distribution of habitat quality in Shanghai's urban wetlands was identified and overlaid with disturbance intensity data to generate a graded map of rewilding potential. Based on this approach, a tiered restoration plan for reviving the urban wetland wilderness in Shanghai was proposed.

Identifying rewilding potential spaces in Shanghai's urban wetlands and restoring their wildness will facilitate the self-organization of these wetlands into more complex ecosystems, ultimately achieving self-sustaining and self-regulating states. This study also provides a research paradigm to support global rewilding initiatives.

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Keywords:

Keyword 1: Ecosystems
Keyword 2: Urban rewilding
Keyword 3: Wetlands
Keyword 4: Biodiversity
Keyword 5: Potential evaluation

P038

Spatiotemporal Dynamic Assessment of Urban Forest Resilience Based on Critical Slowing Down Theory

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As core components of urban green infrastructure, urban forests conserve biodiversity and provide essential ecosystem services, such as air purification, heat mitigation, and carbon sequestration[1, 2], enhancing human well-being and promoting sustainable urban development. However, the persistence of these benefits depends on the ability of forest ecosystems to withstand and recover from natural and anthropogenic disturbances—i.e., their resilience[3]—especially under climate change. Experimental evidence suggests that rising temperatures, vapor pressure deficits, and droughts exacerbate thermal and water stress in forests, increasing tree mortality rates[4-7]. This consequence raises concerns about forest resilience, particularly in the Amazon rainforest[8, 9], tropical forests[10], and even on a global scale[11-13]. Yet, few studies have investigated the spatiotemporal dynamics of forest resilience in individual urban areas.

This study aims to assess the spatiotemporal dynamics of forest resilience in Huanggang City, with nearly 44% forest coverage, from 2004 to 2023, using lag-1 temporal autocorrelation (TAC) of satellite-based vegetation indices as a critical slowing down (CSD) indicator[14]. According to dynamical systems theory, as a multi-stable system approaches a critical transition threshold, its recovery rate from disturbances slows[15]. This slowdown indicates a loss of resilience and can be quantified by an increase in TAC[14]. As this slowdown diminishes the rate of internal change within the system, its state at any given moment becomes increasingly similar to its previous state[11].

We first produced the monthly kernel Normalized Difference Vegetation Index (kNDVI)[16] (2004-2023) derived from Landsat surface reflectance products to represent the forest state. Next, we generated 1 km × 1 km equal-area grids and computed the area-weighted mean kNDVI for unchanged forest pixels (classified as forest in all time steps of annual China land cover dataset[17]), excluding grids with <50% forest coverage. Subsequently, we applied the Seasonal and Trend decomposition using Loess (STL) method to remove seasonal and trend components from the original kNDVI time series. We then calculated TAC using a sliding window approach. Finally, we quantified the long-term trends of TAC (δTAC) using the Theil-Sen slope estimator, assessing significance with the Mann-Kendall test. A positive δTAC (TS slope > 0, $p < 0.05$) indicates a long-term decline in resilience, whereas a negative δTAC suggests increased resilience.

The results indicate significant spatial heterogeneity in the temporal trends of forest resilience in Huanggang City. Compared to the first decade, the loss of forest resilience was more widespread in the second decade, increasing from 40.5% of focal forests between 2004 and 2013 to 48.9% between 2014 and 2023, while the rate of the loss slowed. This trend may be attributed to ecological conservation policies that have reduced human disturbances, while climate change, although less intense than human activities, exerts a more widespread impact.

The findings underscore the urgent need for climate-adaptive management strategies, such as diversifying forest structure, planting drought-resistant tree species, strengthening urban rainwater harvesting, and regulating urban heat environments to enhance urban forest resilience. Our study highlights the importance and feasibility of resilience assessment and trend detection as crucial tools for urban forest management practices in changing environments.

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Keywords:
Keyword 1: Urban forests
Keyword 2: Resilience
Keyword 3: Climate change
Keyword 4: Critical slowing down
Keyword 5: Climate adaptive management

P039

Resilience Measurement and Response of Ecological Network of Wetland Urban Complex under Multi-scenario Disturbance: Case Studies of Haizhu District, Guangzhou

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Urbanization has fragmented ecological habitats, threatening urban ecosystem sustainability. Ecological networks are crucial for maintaining resilience, with dynamic interactions between network systems and urban development. Amid the green transformation of cities, refining the framework for optimizing urban ecological networks is essential. However, current research mainly focuses on static optimization, neglecting the dynamic evolution between nature and urbanization, and overlooks land use/cover changes in mid- to small-scale areas, weakening the social functions of ecological networks. This study establishes a theoretical framework for the **dynamic coupling of urban development and ecological networks**, using Haizhu District in Guangzhou（90.42 km^2）—a typical wetland urban area in the Pearl River Delta as a case study. By integrating multi-source data, including LUCC, remote sensing, and socio-economic data, the **PLUS model** is employed to simulate three development scenarios: natural evolution（baseline state without policy intervention）, ecological priority（Maximising ecological benefits）, and economic priority（Maximising economic efficiency）. Based on multi-temporal land-use classification maps, an ecological network system under multi-scenario disturbances is constructed. A dual-dimensional resilience assessment model (structural-functional) is proposed to quantify resilience. The structural resilience is evaluated using **Graph Theory** methods (connectivity probability, network closure), while the functional resilience is assessed through betweenness centrality analysis and node deletion experiments (key node identification rate, network robustness). The study explores the development prospects and resilience levels of the wetland-urban complex, offering insights for enhancing urban ecological resilience and responsive design at the mesoscale.

The findings indicate substantial differences in the development of ecological networks across the three scenarios. Structural resilience is closely linked to **source fragmentation, ecological corridor length, and network transmissibility,** while functional resilience depends on **the number of critical nodes and the node deletion methodology**. Comparing ecological network resilience before and after removing critical nodes helps in **identifying key ecological nodes** accurately.

The study anticipates the measurement and design response of urban ecological network resilience in the context of dynamic urban development and regional synergy. The ‘wetland-urban complex’ concept is introduced, focusing on human-scale driving factors to inform planning refinement. Based on the analysis results, optimization recommendations for Haizhu District's ecological network are put forward: restoring ecological breaks in the densely urbanized northern region and constructing a modular green space unit system; developing a multi-level **"Core-Corridor-Node" (CCN) network for the region**, protecting core source areas, strengthening connections between edge source areas, and forming a vertically and horizontally woven ecological network to enhance Haizhu’s ecological network resilience.

This study extends prior research on identifying key patches and corridors into a spatiotemporal dimension. It assesses landscape connectivity changes under diverse development scenarios from a dynamic urban-development perspective. Moreover, it explores urban ecological network evaluation methods, establishing a three-dimensional framework of **"network - resilience - potential"**. This framework offers scientific support for **defining regional ecological development directions and land-space planning**. It also provides a theoretical reference for studying the dynamic coupling of "nature - city" in high-density urban areas.

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Keywords:
Keyword 1: Ecological Network Resilience
Keyword 2: Multi-scenario Simulation
Keyword 3: Urban-Wetland Complex
Keyword 4: PLUS
Keyword 5: Graph Theory

P040

The New Neighborhood "Les Sècheries" in Bègles: How to Inhabit the Clearings of the Park?

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Located opposite the Town Hall, on a former industrial wasteland (the old cod drying facilities), this project aims to intimately intertwine architecture with nature by first establishing a strong landscape structure into which 350 housing units (social rental, social ownership, and freehold) will be integrated across 9 hectares.
Here, there are no cars or fences. Residents park their vehicles in the public parking area (PRE) located at the heart of the park. The public space becomes a true area for residents to share, meet, garden, play, stroll, and picnic.
The pathways have been designed as an urban promenade, echoing the principle of tree-lined park avenues. A network of alleys and open pathways between the blocks, as well as through private lanes, extend the promenade right up to the foot of the housing units. Vehicles are permitted on the avenues for short stops, unloading, etc. Breaking away from the conventional model, the profile of the avenues deviates from the Metropolitan specifications (road + sidewalk). The dimensions of the roadways, with a minimum width of 3.50m (one-way), do not allow for parking without obstructing traffic.
The layout of the avenues is not straight. The idea is to develop a park vocabulary rather than a roadway one, functioning within both the public and private spaces (developer lots). The pathways narrow and widen according to the flow of pedestrians, animating the route among the residences, weaving through the vegetation, and opening a dialogue with its environment.

Four "green stations" have been established to punctuate the promenade. These were identified from the beginning of the study as remarkable landscape elements (notable trees or quality landscape ambiance). These green stations are also part of the continuity of the green framework of Bègles' "Delta Vert," a pedestrian and cycling route that combines nature, biodiversity, sports, and leisurely walks. Designed as spaces for rest or activities depending on the time of day or events, these areas are equipped with a cohesive and multifunctional range of furniture. Canopies have been specially designed to shelter long wooden tables suitable for games and picnics. Armchairs and coffee tables invite reading or conversation, while another type of furniture (seated/standing) offers a place for a quick sandwich or a chat.

The lighting of the project also contributes to enhancing the atmosphere and identity of the site. Pathway lighting (lampposts, recessed in the ground) emphasizes the illumination of the vegetation, revealing silhouettes and textures that remind us that the park is also inhabited... by nature! Occasionally, the silhouette of a projected pattern on the ground evokes the memory of the drying facilities and its emblematic fish: the cod. The nocturnal lighting also enhances the chosen pavement surface by playing with the texture of the brushed concrete.

The quality of this project owes much to the involvement of the project owner, the project management, the contractors, the managing services, and the suppliers who adapted to this innovative concept of the "inhabited park."

References:
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Keywords:
Keyword 1: Eco-neighborhood
Keyword 2: green framework
Keyword 3: urban promenade
Keyword 4: Delta Vert
Keyword 5: inhabited park

P041

From "resistance" to "symbiosis" : Multi-dimensional practice and inspiration for the construction of four major Bay Area resilient cities

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Abstract:
[Objective] In the context of global climate change and accelerating urbanization, traditional "resilient" resilience strategies (such as flood embankments and underground drainage systems) are unable to meet the needs of sustainable urban development due to high costs, ecological damage and insufficient social participation. This paper aims to propose a paradigm shift from "resilient" to "symbiotic" resilience to achieve dynamic balance and sustainable development of urban systems through ecological restoration, social collaboration and technological empowerment.
[Methods] Taking the Pearl River Delta, New York, Tokyo and San Francisco as examples, this paper analyzes their resilience construction practices in ecological, social and technical dimensions from the perspective of landscape architecture. Through the comparative analysis of multiple cases, this paper summarizes the common laws and causes of differences in paradigm transition, and puts forward targeted inspiration and suggestions based on the actual situation of China's Greater Bay Area.
[Results] The study found that the four major bay areas have shifted from a single engineering measure to a comprehensive ecological, social and technical strategy, from government leadership to multi-subject participation, and from short-term response to long-term planning and sustainable development. However, due to differences in geographical environment, level of economic development, social and cultural background and policy orientation, there are significant differences in the focus and implementation path of resilience construction among bay areas.
[Conclusion] The paradigm shift from "resilience" to "symbiosis" is an inevitable choice to cope with the challenges of global climate change and urbanization. By building a "mountain - sea - city" continuous habitat network, promoting a "resilient community" co-construction model, developing a "resilient digital twin platform" and establishing a "Bay Area Resilience Fund", the Greater Bay Area can comprehensively enhance its ecological, social, technological and policy resilience, realize the resilience transformation from a "resilient" to a "symbiotic" resilience, and promote sustainable development of the region.

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Keywords:
Keyword 1: Resilient cities
Keyword 2: Guide the landscape
Keyword 3: Paradigm transformation

Keyword 4: Four bay areas
Keyword 5: Landscape architecture

P042

Natural Restoration of Green Corridors: AI Agent Simulation of Spontaneous Urban Wilderness Dynamics

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[Objective] The artificially constructed green corridors in the city have some breakpoints, which hinder the flow of biodiversity and the continuity of citizens' recreational activities. While artificial green spaces face problems such as high costs and limited ecological functions. **How to prioritise the use of pre-existing organisms in the city, especially the spontaneous urban wilderness, to repair the green corridor breakpoints** and enhance the connectivity of the urban green space system has become an important issue to guide the sustainable development of the city.
[Methods] This research investigates spontaneous urban wilderness as a nature-based solution for ecological restoration. After identifying spontaneous urban wilderness areas in three megacities (Paris, New York, and Beijing), **we employed AI agents to simulate the growth, expansion, and environmental interactions of wilderness biocenosis, analyzing their effectiveness in restoring green corridors connectivity.**
[Results] Simulation results reveal **two distinct restoration modes** of spontaneous urban wilderness for urban green corridor breaks: **(1) Solid-line restoration mode:** Linear wilderness spaces (along rivers and bridges) function as corridors connecting habitat patches. Three years after the formation of these linear wilderness corridors, biodiversity in connected areas increased at a rate of 17.6% annually, with species migration success rates improving by an average of 8.4% for every additional 100 meters of corridor length. **(2) Dashed-line restoration mode:** Urban wilderness serves as ecological stepping stones, providing migration corridors and small-scale habitat sources. Research indicates that patches of approximately 1 hectare effectively function as stepping stones, while areas of about 10 hectares serve as habitat sources, significantly enhancing landscape connectivity. Each additional wilderness stepping stone increased the biological circulation index by 12.7%.
[Conclusion] These results demonstrate the restorative effect of spontaneous urban wilderness on green corridors. Building on these results, **we developed a "multi-functional synergistic stitching strategy" for spontaneous urban wilderness in green corridors.** This strategy preserves "succession spaces" and implements gradient management. It ranges from completely natural succession to moderate intervention while respecting natural growth processes. Consequently, wilderness areas can simultaneously support both biological flows and recreational activities within green corridors, offering innovative approaches for guiding urban sustainable development through spontaneously growing ecosystems.

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Keywords:
Keyword 1: Urban wilderness
Keyword 2: AI agent
Keyword 3: Green corridor
Keyword 4: Nature-based solutions
Keyword 5: Green space system

P043

The Study of Understory Light Intensity and Plant Diversity in Urban Forests

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Understory vegetation, as a key component of urban forest ecosystems, supports over 80% of the biodiversity within forest communities (Deng et al., 2023). However, increasingly dense canopy cover often leads to insufficient light in the understory, severely limiting plant diversity and resulting in homogeneous vegetation structures (Majasalmi & Rautiainen, 2020; Xu et al., 2021), as well as instances of plant death and bare soil (Liu at al., 2022). Currently, there is a lack of systematic assessments of understory light intensity, and the species diversity of understory plants in urban city has not received sufficient attention. This study takes Huazhong Agricultural University (HZAU) in Wuhan city, China, as a case study, focusing on areas with canopy coverage. A grid sampling method was employed to investigate light intensity, canopy density, and plant diversity across different stand types during both the growing season (i.e., summer) and the non-growing season (i.e., winter). The results revealed that 90% of the understory vegetation in the growing season was located in areas with high canopy density, where the average light intensity was 9592 lx, indicative of typical shade conditions. And the average light intensity in the non-growing season was 10126 lx, suggesting that light levels in urban forests were generally low. Light intensity decreased parabolically with increasing distance from the forest edge, with no significant difference observed between the light levels at the middle and the center of the canopy. Deciduous forests exhibited significantly higher light intensity than evergreen and mixed evergreen-deciduous forests. Additionally, plant richness peaked when canopy density was approximately 0.6 during the growing season. In the non-growing season, a canopy density of low to moderate levels was beneficial for increasing understory plant diversity. The understory light conditions in winter were relatively sufficient, and the abundance of spontaneous plants was significantly higher than in the summer. When the canopy density reached 0.9, cultivated understory plants were limited in diversity, while spontaneous species such as *Aster indicus* and *Cyclosorus acuminatus* performed better, and rich in diversity. Next, 21 native wild plants were selected from the understory vegetation survey for a tolerance adaptability test in the experiment field of HAZU. Eighteen indicators, including survival rate, shade tolerance, and resistance to summer and winter conditions, were observed and evaluated. A comprehensive evaluation system of “ecological adaptability-ornamental value-application potential” for understory plants was constructed using the Analytic Hierarchy Process (AHP). Typical horticultural species (e.g., *Ophiopogon japonicus*, *Hosta plantaginea*) were used as controls. Following three years of field observations, eight native shade-tolerant species, including *A. indicus*, *Persicaria filiformis*, and *Androsace henryi*, were identified as exhibiting exceptional ecological adaptability, ornamental value, and application potential, making them suitable for broader adoption in urban landscapes. This study provides valuable scientific insights for the design and management of urban green spaces, contributing to the sustainable development of urban forests.

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Keywords:
Keyword 1: Urban forest
Keyword 2: Understory vegetaion
Keyword 3: Plant diversity
Keyword 4: Light intensity
Keyword 5: Native plants

P044

Ecological Network Planning in Zhangshanying Town Based on Morphological Spatial Pattern and Minimum Cumulative Resistance Analysis

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Ecological patches are important structural units for integrating urban ecological patterns, and high-quality patches with high biodiversity play a key role in maintaining ecological network functions, providing ecosystem services such as water protection, climate regulation, and soil conservation for cities. In the process of urban expansion, Beijing suburban areas are experiencing ecological problems such as fragmentation of ecological landscapes and green landscape units. Ecological network is a kind of network system that uses corridors in open space to connect resource patches organically to maintain and protect a variety of functions, and the construction of ecological network is of great significance to the optimization of ecological problems and the construction of sustainable development of ecological space.

To address the fragmentation of urban ecological environment, the ecological network of the town was constructed by integrating regional natural resources to increase the connectivity of ecological patches and promote the sustainable development of regional ecology. Zhangshanying town in Beijing is selected as the research object, and the morphological spatial pattern analysis method and the minimum cumulative resistance analysis method are applied to identify ecological nodes to increase landscape connectivity, and the ecological network of "point-line-area" structure is constructed by combining ecological sensitivity analysis and assessment. Based on this, the ecological network of Zhangshangying town was optimized and improved.

The results show that: 1) the number of ecological patches in the southern part of Zhangshangying Town is relatively small, and the ecological connectivity with the northern mountainous area is relatively fragmented, and the ecological network is broken. 2) The ecological sensitivity of the mountainous area in the northwest of Zhangshangying Town is extremely high, and there are important ecological protection nodes such as Songshan National Nature Reserve and Haitou Mountain, which should comply with the relevant protection regulations, carry out protection and conservation, and carry out appropriate recreation. In the south, along the Guishui River, the ecological sensitivity is high, but the ecological patches are fragmented, and the construction of ecological connectivity should be emphasized. 3) 20,000m is the optimal performance distance for the landscape connectivity of the ecological network in Zhangshangying Town. At the point, line and surface domain levels, respectively, the regional natural background is systematically optimized and enhanced, ecological restoration implementation points are proposed, and the zoning matches different degrees of ecological restoration means to obtain a more complete ecological network system of Zhangshangying town, which is applied to the subsequent ecological corridor selection, ecological tourism guidance and other town ecological development planning.

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Keywords:
Keyword 1: ecological network
Keyword 2: ecological corridor
Keyword 3: ecological sensitivity
Keyword 4: morphological spatial pattern
Keyword 5: minimum cumulative resistance

P045

Estimation of Carbon Sequestration Based on the Normalized Difference Vegetation Index of Individual Trees Obtained by UAV

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Forests cover approximately 70% of Japan's land area and play a role in supporting human life by producing timber, recharging water sources, and reducing global warming. However, due to the increased use of fossil fuels and energy associated with economic development, greenhouse gas emissions are increasing year by year.
Therefore, there is a need for a shift to a decarbonized society in which greenhouse gas emissions are to be reduced to virtually zero by 2050. In particular, carbon fixation through photosynthesis by trees not only reduces emissions by absorbing CO_2 and fixing it inside wood, but also leads to carbon accumulation. Therefore, afforestation and reforestation through conservation and expansion of forests, agricultural land, and greening of urban areas are effective means indispensable for realizing a decarbonized society.
However, the amount of carbon absorption from forests and other sources in Japan in 2022 was approximately 502,000,000 tons, a decrease of 340,000,000 tons from 2021. The main reasons for the decrease in carbon sequestration are thought to be the slowdown of growth due to the aging of planted forests and oak die-off. Therefore, it is necessary to calculate the amount of carbon fixation on a single tree scale and use this information for tree renewal and planting plans.
Generally, carbon fixation is calculated by tree-by-tree surveys, but this is labor- and time-intensive. In recent years, satellite imagery has been used to estimate carbon fixation at the regional scale for forests and rice paddies, but there have been few studies at the single-tree scale. In addition, differences in tree species are not taken into account, and all are calculated as the same species, resulting in values that differ from actual values.
Therefore, this study aims to propose a method for estimating carbon fixation by the Normalized Difference Vegetation Index of individual trees acquired by UAV in urban areas.
The target site for this study is the Setagaya Campus of Tokyo University of Agriculture. The methodology will use i-Tree Eco, an urban tree assessment tool developed and provided by the USDA Forest Service, to calculate carbon fixation for individual trees. i-Tree Eco is designed to quantify urban forest structure, environmental impacts, and community value, a software application designed to use field data from a complete inventory of trees or randomly placed plots, along with local hourly air pollution and meteorological data.
To calculate the Normalized Difference Vegetation Index, a DJI Matrice 350 RTK with a multispectral camera, ALTUM-PT, is used to acquire near-infrared images. The acquired near-infrared images were imported into ArcGIS, and the Normalized Difference Vegetation Index was calculated for each tree. The numerical data obtained from the above will be analyzed and correlations will be determined to estimate the amount of carbon fixation. Further research will contribute to the promotion of urban greening by quantifying the carbon fixation of urban trees.

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Keywords:
Keyword 1: decarbonized society
Keyword 2: Carbon Sequestration

Keyword 3: urban revegetation
Keyword 4: UAV
Keyword 5: NDVI

P046

Dynamic UTCI Prediction via Hybrid GANs: Integrating Climate,Human Physiology, and Built Environment for Climate-Responsive Urban Green Spaces Design

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Outdoor thermal comfort evaluation in landscape architecture traditionally relies on complex physical modeling, requiring substantial effort and lengthy workflows, which pose significant challenges to design practice. To address this issue, this study proposes an innovative deep learning framework based on an improved Pix2Pix model. Unlike conventional Pix2Pix approaches that rely solely on single-image inputs (e.g., planar maps of buildings and roads), our framework introduces additional numerical condition inputs—including climate parameters and human factors—to enhance the prediction of the Universal Thermal Climate Index (UTCI) specifically in urban green spaces.

The core innovation of this study lies in integrating a Conditional Generative Adversarial Network (cGAN) with an enhanced Pix2Pix framework to improve UTCI prediction. The cGAN regulates the generation process through dynamic environmental and physiological constraints, including time, metabolic activity levels, and clothing insulation, while the Pix2Pix architecture learns the spatiotemporal correlations between composite inputs—such as planar representations of the built environment and climatic variables—and the corresponding UTCI heatmaps. **This synergistic integration effectively captures the complex interactions among urban morphology, microclimate dynamics, and human thermoregulation, enabling the model to account for thermal comfort variations across different times and physiological states.** Consequently, it provides a more dynamic and precise prediction of outdoor thermal comfort in urban green spaces.

During training, we employ a combined strategy of adversarial loss and reconstruction loss to ensure that the generated UTCI heatmaps maintain high structural and numerical consistency with real-world simulations while accurately reflecting the impact of dynamic environmental conditions on thermal comfort. This method significantly reduces dependence on traditional, labor-intensive physical modeling and offers landscape architects and urban planners an efficient, generalizable, and responsive tool for thermal comfort assessment.

In summary, this study presents a forward-looking deep learning model that integrates planar maps of buildings and roads with environmental and human condition parameters to achieve dynamic UTCI prediction. By leveraging Conditional GANs, this approach not only simplifies the modeling process but also enhances prediction accuracy, providing robust decision support for climate-adaptive urban and landscape design.

References:
There is no reference in this abstract.

Keywords:
Keyword 1: Thermal Comfort Prediction
Keyword 2: Deep Learning
Keyword 3: pix2pix
Keyword 4: UTCI
Keyword 5: Conditional GANs

P047

Research on the Impact of Green Space Patterns on Audiovisual Tranquility in the Central Area of Beijing

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The rapid urbanization of Beijing's central districts has resulted in dense populations, intensive traffic, and clustered buildings, exacerbating noise pollution and visual disturbances. The World Health Organization (WHO) warns that prolonged exposure to environments exceeding 55 decibels significantly increases cardiovascular disease risks, while visual clutter heightens psychological stress. Existing green spaces in central urban areas predominantly consist of fragmented patches, which prove inadequate in effectively mitigating sound propagation or screening visual pollution. Beyond traditional ecosystem services such as carbon sequestration, climate regulation, and biodiversity conservation, green spaces play critical roles in physical noise attenuation, visual interference filtering, and attention restoration. However, the mechanisms by which their spatial configurations influence audiovisual tranquility remain understudied, necessitating urgent investigation into the relationship between green space patterns and sensory tranquility. This study systematically examines how green space patterns shape tranquility distribution in the central area of Beijing. First, landscape pattern indices were calculated using FRAGSTATS to quantify green space characteristics, including patch size, shape complexity, connectivity, and spatial arrangement. Second, the Analytic Hierarchy Process (AHP) was employed to integrate expert evaluations, establishing a weighted framework for mapping audiovisual tranquility. Key indicators such as noise attenuation efficiency, visual aesthetics, and spatial enclosure were prioritized to generate tranquility maps. Third, the Geo-detector model was applied to quantify the explanatory power of green space pattern indices on tranquility distribution, identifying dominant factors and their interactions. Results demonstrate that green spaces with stronger connectivity and larger patch sizes exhibit superior capacity to enhance audiovisual tranquility. Specifically, interconnected large-scale green patches significantly reduce noise levels and mitigate visual disturbances from urban infrastructure. This research establishes a methodological framework linking landscape metrics to tranquility assessment, offering actionable insights for urban planners to design green infrastructure that balances ecological functions with human sensory comfort. By prioritizing connectivity and scale in green space layouts, policymakers can effectively alleviate urban sensory pollution while fostering restorative environments in high-density urban cores. The study underscores the importance of integrating sensory performance metrics into green space planning, shifting from purely quantitative targets to quality-driven, human-centered urban design.

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Keywords:
Keyword 1: green space pattern
Keyword 2: audiovisual tranquility
Keyword 3: Beijing‘s central area
Keyword 4: Geo-detector model
Keyword 5: Fragstats

P048

Anticipatory Ecogenesis: Micro-Network Optimization through Block-Green Space Interface Typology in Xiong'an New Area

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Traditional urban planning has long adhered to the "build first, green later" approach, compressing ancillary green spaces into residual fillers within built-up areas. This "end-patched greening" model (McHarg, 1969) has resulted in dual systemic flaws: first, green spaces exhibit a "honeycomb-like fragmented distribution" (Forman, 1995), which not only disrupts ecological continuity but also renders over 75% of neighborhood edges ecological dead zones due to connectivity gaps. Second, "green blind spots" emerge within communities, where residents require more than a 5-minute walk to access functional green spaces. As a rare "blank-slate" new city of the 21st century, Xiong'an New Area, with its zero-construction base, offers a historic opportunity to break this impasse. This study subverts traditional spatial production sequences by proposing a **structural ancillary green network** as an urban genetic carrier, advocating a reverse planning paradigm of "weaving green networks first, constructing spaces later" to redefine the hierarchy between ecology and the built environment.
Focusing on a pilot neighborhood in Xiong'an, this research constructs a hierarchical "block-green space connectivity system" to enhance regional ecological performance. Through MCR model evaluation, existing green spaces are classified into three categories: ordinary green spaces (66%), ecological patches (23%), and corridors (11%). A **5-category, 12-type connectivity typology** is established: Type A (isolated blocks with no connectivity), Type B (single/double-sided ordinary green space connectivity), Type C (single/adjacent/opposite/multi-sided ecological patch connectivity), Type D (single/adjacent ecological corridor connectivity), and Type E (hybrid connectivity of patches+green spaces/corridors+green spaces/patches+corridors). A multi-objective genetic algorithm optimizes the system: the U-model, based on the connectivity probability index (PC), precisely controls ancillary green space boundaries, while the V-model, grounded in the network coverage index (N), quantifies ecological service radiation. Through hundreds of iterations using a "0.7PC + 0.3N" weighted optimization framework, an optimal **ancillary green space layout decision matrix** is generated.
The pilot neighborhood demonstrates multidimensional transformative outcomes: ecologically, stormwater peak runoff delay increases from 17 to 42 minutes, carbon sequestration density reaches 3.7 kg/m²/year (320% improvement in isolated zones); socially, children's daily nature interaction frequency rises from 0.7 to 2.3 times, elderly green space utilization increases by 157%, with 12 planned community-led greening groups enhancing social cohesion. Crucially, the study reveals that embedding micro-ecological networks during urban embryogenesis can leverage each 1% of ecological investment into 7.3× long-term climate adaptation returns, resolving the "ecology vs. development" paradox.
This research not only provides direct technical support for Xiong'an's development but also validates the universal applicability of the "community micro-ecological network" concept, establishing an "ecology-first" paradigm for global new town development.

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Keywords:
Keyword 1: Micro ecological network
Keyword 2: Urban resilience
Keyword 3: Ecological benefits
Keyword 4: Social benefits
Keyword 5: Xiong'an New Area

Guiding cities through what is alive: Soil management

P049

Génération automatique de modèles de paysage à l'aide de données ouvertes ; Exemple du paysage invisible : le sol

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The current profusion of geographical data, particularly open data, is an interesting opportunity for all those involved in spatial planning. However, the abundance of data, the variety of download sites and the diversity of formats can make it difficult to use. What's more, 3D representation is particularly time-consuming and requires relatively specialised skills.
These repetitive tasks are particularly suited to being automated by programming. This is precisely what the Computer Modelling of Landscape (MIP) applied research group at the Geneva School of Landscape and Engineering (HEPIA) has developed. The group has acquired specialist skills and created open source tools (plugins) to facilitate the automatic generation of 3D digital models of the landscape.
As part of her dissertation work for a Master's degree in territorial development with a focus on landscape architecture, Maëlle Proust experimented with the application of these digital tools to the field of research applied to soil and subsoil.
Starting with the observation that soil and subsoil are not represented in urban planning, part of the work focused on how to make invisible living landscapes visible. In other words, to consider how soil can be given a prominent place in spatial planning, by creating a planning tool. Ultimately, how can we rely on living soil (open land) to maintain landscapes (open, unbuilt and structuring) in Geneva's urban planning?
The hypothesis of this work is that revealing and representing the soil/subsoil helps to (re)consider it as a surface with thickness. It functions in interaction between the atmosphere and the 'parent material', and is more than just a volume on which to rest. The importance of shedding light on this invisible landscape inhabited by non-human life suggests a landscape shaped by decades of urbanisation, hiding what we no longer wanted to see. But this land that has not yet been sealed off in cities should become an opportunity for more virtuous planning in the future.
The 3D mapping tool used to represent the subsoil, developed for this project, has revealed the soil so that it can be better integrated into planning. It is a genuine tool for analysis, diagnosis, monitoring and project planning that planners can use to think about and design the landscape of the soil for the living world.

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Proust, M., Donzé, O., Picenni K., Barrioz, A., 2024, Generation automatique de maquettes de paysage grâce à l'open data; Exemple du paysage invisible : le sol, Projets de paysage (online), 30/2024, Online since 15 July 2024

Keywords:
Keyword 1: ground representations
Keyword 2: planning
Keyword 3: 3D models
Keyword 4: landscapes
Keyword 5: living soil

P050

Back to (full) soil - Restoring the Fertility of Anthropogenic Urban Soils: Methodological Approaches and Lessons Learned from Landscape Projects

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The Anthropocene has resulted in extensively degraded, infertile, and low-quality soils unsuitable for vegetation growth or subterranean life. Landscape architects inherit these soils for implementing their projects. Through specific tools and methodologies, they aim to enhance existing soils both quantitatively and qualitatively, seeking a balance between artificial and fertile soils. Soil and its fertility are central to their work. Three case studies illustrate this subject, drawn from projects developed by the co-authors at the In Situ agency, highlighting transformations of public spaces that prioritize living ecosystems and the return to natural ground.
In Saint-Étienne, the Forum district on Montreynaud hill suffered from outdated, dysfunctional urban planning. Issues included unusable stepped slabs, vast abandoned underground parking, uninhabitable ground floors, unmanageable outdoor spaces, impoverished condominiums, and growing urban isolation. Initially, no significant modifications were planned. However, productive discussions with local authorities and state services led to a radical alternative: demolishing underground parking to restore natural soil. Using backfill from nearby stream dredging and demolition materials, the area's topography was entirely reshaped. This major transformation facilitated pedestrian connectivity and natural continuity, converting the formerly fragmented and mineral-heavy district into a green, open, and tranquil area integrated into the city.
In Rouen, the port area, built from rubble of buildings destroyed during the Second World War, extended 6 km as a sterile platform. The riverside promenade project introduces extensive planted borders, meadows, and groves, radically transforming the space. This large esplanade has become a significant park supporting new ecosystems and activities. Formerly sterile and polluted soils have transformed into fertile, vibrant environments along the Seine.
In Nanterre's Groues sector, a new neighborhood is emerging on a site deeply impacted by industrial history. Initially a limestone quarry in the 19th century, it was backfilled in the early 20th century to host railway activities, abandoned by the century's end. Since then, the site, overrun by spontaneous vegetation, has had significant pollution issues linked to deep backfills. Today, identified by the Paris La Défense developer as strategic for housing and public spaces, the area undergoes extensive soil regeneration planning. Multiple solutions have been proposed to create fertile soils combined with sustainable stormwater management, promoting a largely vegetated landscape.
A specific methodology for characterizing the agronomic potential of urban soils has been developed. This preliminary pedological diagnosis now serves as a crucial basis for drafting earthwork specifications, accurately determining soil volumes to be treated, managing pollution constraints, and defining fertile soils adapted to the intended plant palette.

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Keywords:
Keyword 1: Anthropogenic soils
Keyword 2: Fertility
Keyword 3: Urban landscape
Keyword 4: Renaturation
Keyword 5: Soil diagnosis

P051

Geostatistical and food risk assessment of soils contaminated by trace elements in the city of Dschang (Cameroon)

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As is the case in many cities (Ye et al., 2020), the city of Dschang (Cameroon) is still currently experiencing difficulties in managing waste due to lack of adequate equipment and accessibility to certain districts. This situation forces the population to find alternative palliative measures for managing their waste. Waste are either dumped (sorted or not) in areas set aside for this purpose in the neighborhoods, spread over cultivated plots, buried, or incinerated, leading to the proliferation of illegal dumpsites. Waste can contain trace elements (TE) such as As, Cd, Cr, Cu, Hg, Ni, Pb and Zn from, e.g., metalworks, boiler fabrication, car repair, printing, agriculture, which can contaminate soil, water and air (Okeke et al., 2024), with consequences on the quality of food crops in such urban neighborhoods. Ultimately, all the direct and indirect exposure of residing populations to these TEs affects public health (Kabata-Pendias, 2000).
In Dschang (Cameroon), 71 sites with various uses were analysed. Soils from locations associated with metal-related activities exhibited the highest levels of contamination (in $mg.kg^{-1}$: As 9.1; Cr 209.3; Cu 228.3; Pb 88.9; Zn 979), followed by household waste dumps and agricultural plots, which showed similar levels to cultivated low-lying areas. The observed decrease in TE concentrations with depth (notably for Zn) supports the hypothesis that the enrichment of soils with TE is primarily of anthropogenic origin. The spatial analysis of TE contamination, utilising a geostatistical approach (which identifies anomalies based on the upper vibrissae (Tukey, 1977)), indicated an underestimation of health risks associated with the consumption of crops from several sites in the urban area of Dschang. Specifically, 88.7%, 56.3%, and 52.1% of the sites exceeded the Food Crops Reference Value (FCRV (ARS, 2022)) for Cr, Zn, and Cu, respectively. Additionally, the number of contaminated sites for each TE varies depending on the method employed: Cu>Zn>Pb>Cr>As>Ni>Cd according to the geostatistical approach, Cr>Zn>Cu>Ni>Pb>As>Cd according to the FCRV approach. Our study indicate that utilizing soil as a food source at multiple sites in the urban area of Dschang, where waste management is poorly regulated, poses a health risk to consumers of the crops cultivated there.

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Keywords:
Keyword 1: Food production
Keyword 2: geostatistical analysis
Keyword 3: soil pollution
Keyword 4: metal distribution
Keyword 5: urban soils

P052

Co-constructing Nature-based Solutions: Emerging Insights from Franco-Japanese Collaboration

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Nature-based Solutions (NbS) offer an integrated, resilient and sustainable approach to contemporary environmental and societal challenges. This presentation introduces two emerging projects developed between France and Japan: a territorial initiative in Abashiri, northern Japan, and a comparative research program led by French and Japanese institutions.

At the heart of both initiatives lies the inspiration of the traditional Japanese Satoyama model. This concept refers to landscapes located between inhabited areas and wooded hills, shaped over centuries by balanced interactions between human communities and their environment. In these territories, local populations have developed integrated management practices: forest maintenance, terraced agriculture, natural irrigation, soil care and organic resource recycling. These systems promote biodiversity while supporting food security and local livelihoods. Satoyama thus represents a vision of landscape as a cultural ecosystem, where production, preservation and daily life coexist in harmony.

The NbS project in Abashiri (Hokkaidō) follows a territorial watershed-based approach, connecting forests, farmlands, rivers and coastal areas. It addresses water pollution caused by phosphorus runoff from agriculture, which contributes to the degradation of aquatic ecosystems and a decline in fish catches. In response, the project promotes the use of biochar, a plant-based charcoal derived from thinned forest wood and inspired by Satoyama practices. Biochar is used to enhance soil structure, retain water and adsorb excess phosphorus. Once saturated, it is recycled locally as fertilizer or energy. The system is complemented by vegetative buffers, rainwater retention zones, filtering strips, and coastal depollution initiatives. Led by Toho LEO, a Japanese company specialized in green infrastructure, in close partnership with local communities, the project embodies a circular, place-based and ecologically integrated approach.

In parallel, an ongoing research program brings together the LAREP (ENSP Versailles-Marseille), the CEREMA – France's national public agency for ecological transition, sustainable planning and territorial engineering – and Toho LEO. The program aims to demonstrate the effectiveness of NbS while exploring the relevance of traditional ecological wisdom, such as that found in Satoyama, and the central role of landscape as a tool for territorial understanding, interdisciplinary design, and mediation across scales, cultures and stakeholders. In a comparative logic, several sites are currently under consideration. In France, two CEREMA Living Labs - in Trappes (Île-de-France) and Petit & Grand Quevilly (Seine-Maritime) - provide experimental sites to study NbS in contrasting urban environments. Versailles and Marseille, where the LAREP campuses are located, could also enrich the study: the former at the intersection of historical heritage and urban development, the latter facing Mediterranean and coastal challenges. On the Japanese side, Kyoto and Kobe offer complementary perspectives. Kyoto, the former imperial capital, is deeply rooted in centuries-old landscape management traditions based on the balance between culture and nature. Kobe, a contemporary port metropolis, faces urban density, natural risks and coastal ecosystem pressures.
By engaging in this cross-cultural dialogue, the program seeks to identify practical conditions for the implementation and appropriation of NbS. Grounded in real-world experimentation and shared landscape perspectives, it aims to generate exemplary approaches demonstrating the potential of NbS to address today's urgent challenges.

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Keywords:
Keyword 1: Nature-based Solutions (NbS)

Keyword 2: Franco-Japanese cooperation
Keyword 3: Satoyama
Keyword 4: Territorial resilience
Keyword 5: Landscape-based Solutions

P053

Soil and Water Bioengineering as Nature-Based Solutions and a tool for landscape architecture

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The European Union, aware of the degree of degradation of our ecosystems, has set a strategy aimed at inverting biodiversity loss trends and speeding the transition to a green economy and efficient use of resources by 2050, so that the biodiversity and ecosystem services can be protected, valued and appropriately restored. This approach fights against the deterioration processes and fosters the restoration of degraded areas and has led to the approval in June 2024 of the European law on nature restoration. It is now more necessary than ever to apply those tools that will enable us to meet the binding targets , based on nature

Soil and Water Bioengineering (SWB) is a discipline that combines engineering with biology, using native plants and plant communities as construction materials for soil erosion control in degraded environments. The term "engineering" refers to the use of technical and scientific data for construction, stabilisation and erosion control purposes, and "bio" because these functions are related to living organisms, mainly native plants, with biotechnological properties and to restore ecosystems and increase biodiversity. In this approach, the potential of native plant communities is a key factor in achieving the overall objectives of planned interventions. SWB work designs involve both the integration of intrinsic adaptive information processes and legitimate design approaches (i.e. involving stakeholders in the project and work strategy).

Soil and water bioengineering encompasses nature-based solutions that provide sustainable solutions to mitigate and adapt to climate change and effective restoration approaches suitable for degraded situations. Today, there is a growing awareness that nature is a very powerful source of viable solutions that harness and exploit the properties of natural ecosystems and services. The practice of SWB is in line with the principles of NBS (Nature-Based Solutions) "inspired and supported by nature". Nature-based solutions provide sustainable, cost-effective, versatile, and flexible alternatives for different objectives: Technical, Environmental, Landscape Integration, and Socioeconomics. In this context, SWB techniques offer interesting synergies with urban green and blue infrastructure strategies.

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https://doi.org/10.1007/978-3-030-75929-2_17

Keywords:
Keyword 1: Green infrastructure
Keyword 2: Soil erosio control
Keyword 3: Climate change adaptation
Keyword 4: Ecoengineering
Keyword 5: Biotechnical solutions

P054

Multi-Scale Grid Analysis of Carbon Storage and Landscape Pattern in Beijing's Urban Green Spaces

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Against the backdrop of global climate change and China's "Dual Carbon" strategy, understanding the mechanisms through which land use and land-cover change (LUCC) influences regional carbon storage and identifying optimization pathways are critical for low-carbon development in megacities. As green spaces serve as critical carriers of terrestrial carbon cycling, the dynamic interplay between their landscape pattern and carbon storage directly shapes the sustainability of urban carbon sink functions. Focusing on Beijing's green spaces, the study integrates a technical framework of multi-scenario spatial simulation, carbon storage quantification, and landscape pattern optimization. Utilizing land use data from 2005 to 2020 and 10 driving factors, the PLUS model was employed to simulate land use patterns under natural development (ND) 、urban development(UD) and ecological protection (EP) scenarios for 2035. Carbon density was localized and calibrated via the InVEST model to predict multi-scenario carbon storage, while Fragstats 4.2 software quantified landscape indicators. The Spearman correlation coefficient was used to determine the correlation between carbon storage and landscape indicators at different grid scales, and the linear regression equation was used to further explore the linear relationship between the two. The results show that: 1) Carbon storage exhibits a spatial dichotomy of high aggregation in ecological barrier zones (northern and western regions) and depletion in urban core areas, with the EP scenario significantly enhancing carbon sequestration through stringent woodland and grassland conservation; 2) The green space carbon reserves of Beijing in 2005 and 2020 are 181.9396×106 t and 180.2747×106 t, respectively. In 2035, the carbon storage of ND scenario is reduced by 2.05×106t,the carbon storage of UD scenario is reduced by 3.01×106t, while that of EP scenario is increased by 3.36 ×106t. 3) In 2035, shannon's diversity index (SHDI)and shannon's evenness index (SHEI)show a downward trend under the three scenarios, with a large decline in UD scenario, a continuous decline in contagion index (CONTAG) under ND and UD scenarios, and a slight increase in EP scenario. 4) SHDI and SHEI were significantly negatively correlated with green space carbon storage, while CONTAG was significantly positively correlated with green space carbon storage, identifying 4–6 km grids as a sensitive scale for optimization. Accordingly, a three-tiered optimization strategy is proposed: 1) Rigorously protect high-carbon-density mountain forests and wetlands, constructing a wetland-woodland-cropland composite corridor network; 2) Implement hierarchical land-use regulation within 4–6 km grid units to curb urban sprawl and mitigate fragmentation; 3) Establish a cross-regional carbon compensation mechanism across the Beijing-Tianjin-Hebei region to foster synergistic ecological synergies. This study provides a theoretical paradigm and practical toolkit for low-carbon spatial restructuring in high-density megacities and the operationalization of carbon neutrality targets.

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Keywords:
Keyword 1: green space
Keyword 2: multi-scenario simulation
Keyword 3: carbon storage
Keyword 4: landscape pattern

P055

Multidimensional Cognition and Designing Approaches Centered on Land: Reclaiming the Cultural Imagination of Land in Landscape Architecture

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In public perception, land often exists as a background that is too common to be noticed. Within landscape architecture, discussions on land primarily focus on ecological and technical aspects, such as soil pollution remediation, plant suitability, and microbial regulation. However, research on soil as an active design medium and the development of targeted planning methods have been largely overlooked.

The relationship between humans and land is inseparable, shaping movement, perception, and spatial experience. Landforms influence circulation, textures tactile sensations, and material composition determines the flora and fauna that can thrive. Additionally, land interacts with wind to produce natural sounds, contributing to the sensory experience of landscapes. Despite its fundamental role, land is often treated as a passive surface rather than an active design element.

This research revisits the concept of land through a de-territorialized lens, exploring its multiple meanings in landscape architecture to develop a more comprehensive cognitive framework. Through case studies of land-based design methods, it examines how designers can derive inspiration from land and foster regionally distinctive landscape imaginations.

From a cognitive perspective, land can be understood through five key dimensions. It is "integral", forming a continuous material entity while also carrying cultural and phenomenological significance; As an "intermediary", it serves as both a morphological medium for landscape prototypes and a structural component spatial organization; Its "material"— characteristics—texture, temperature, humidity, and light—shape sensory experiences, influencing human perception and interaction[1]; Functioning as "biotic" system, land sustains life while acting as a dynamic interface for ecological and climatic exchanges; Moreover, its "temporal" dimension reveals traces of past functions and transformations, embedding history within the landscape. By systematically elaborating on these demensions, the paper reveals the multiple meanings of land in landscape construction.

From an operational perspective, the study proposes three land-based design methods. "Organizing the folds" creates distinct surface forms that generate diverse spatial experiences and ecological conditions. "Curving the surfaces" involves carefully shaping landforms to communicate ecological and social processes to broader audiences. And "guiding the processes" encourages natural succession, allowing soil, plants, and organisms to continually establish and disrupt existing orders over time. These strategies are illustrated through the Barcelona Botanical Garden, the external environment of the Louvre-Lens Museum[2], and the planning of Jiangyangfan Ecological Park in Hangzhou.

Rich landscapes emerge from both our discoveries within the land and our interventions upon it. In an era where scientific and technological approaches dominate landscape architecture studies, it is essential to reimagine land with an imaginative perspective. By integrating cognitive exploration with practical methodologies, this study seeks to restore land as an active force in shaping meaningful landscape experiences and spatial narratives.

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Keywords:
Keyword 1: landscape architecture
Keyword 2: land
Keyword 3: cognition
Keyword 4: design approach
Keyword 5: surface

Guiding cities through what is alive: Rainwater and water landscapes

P056

Climate Change and Vulnerabilities in Coastal Communities: Examining Impacts on Homes and Livelihoods in Noveleta, Cavite

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The escalating impacts of climate change have profoundly affected ecosystems and vulnerable communities worldwide, particularly in tropical regions. In the Philippines, coastal areas such as Noveleta, Cavite, face significant challenges, including coastal erosion, frequent flooding, and environmental degradation exacerbated by climate change and inadequate infrastructure. This study explores the socio-environmental and structural vulnerabilities of Noveleta's residents, focusing on housing conditions and livelihoods tied to fishing and fish drying. Field observations and interviews revealed that residents employ sustainable practices, such as recycling construction materials from typhoon-damaged houses, to adapt to their harsh environment. However, this cycle of rebuilding with fragile materials proves unsustainable and perpetuates vulnerability. The construction of a breakwater has further exacerbated flooding and pollution, highlighting the unintended consequences of poorly integrated infrastructure projects. This research emphasizes the need for a collaborative approach, involving local communities, professionals, and government units, to address these challenges. Potential solutions include designing climate-resilient housing, improving infrastructure such as fish ports, and promoting policies that support affordable, durable building materials. The findings highlight the importance of interdisciplinary collaboration and inclusive, context-sensitive planning to foster resilience and sustainable development in vulnerable coastal communities. Noveleta serves as a compelling case for how integrated interventions can address the multifaceted impacts of climate change on marginalized populations.

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Keywords:
Keyword 1: Cavite
Keyword 2: Coastal Community
Keyword 3: Housing
Keyword 4: Climate Change

P057

Performance Evaluation of Low Impact Development-based Campus Stormwater Management under Different Climate Change Scenarios

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Under the dual influence of climate change and urbanization, urban flooding caused by heavy rainfall has become an increasingly severe challenge. As the largest single planned area within a city, university campuses face significant flood risks similar to other urban regions. However, existing university campuses often exhibit a planning tendency that prioritizes engineering solutions while neglecting ecological benefits, leading to insufficient attention to flood control. Therefore, scientific design approaches are urgently needed to improve campus stormwater management. The concept of a “Sponge City” provides a China-specific water management strategy to address urban pluvial flooding. Among various approaches, Low Impact Development (LID) has been recognized as a crucial strategy for implementing Sponge City principles.

In this context, our study emphasizes that the sponge-style renewal of university campuses should be an integral part of Sponge City construction. This research focuses on the student residential area of Chongqing University in China, where an integrated stormwater management strategy based on LID principles is applied, comprising permeable pavements, rain gardens, infiltration trenches, and bio-retention cells. The objective is to effectively control stormwater runoff, mitigate flooding risks, and enhance campus resilience while assessing the effectiveness and applicability of the proposed management strategy.

This study develops a methodology based on the Storm Water Management Model (SWMM) to simulate the campus environment under baseline conditions (1991–2020), near-future (2021–2040), and mid-future (2041–2060) scenarios. The study evaluates the performance of each LID type under three Representative Concentration Pathways (RCPs): RCP 2.6, RCP 4.5, and RCP 8.5, focusing on peak flow reduction, surface runoff mitigation, and infiltration capacity. The results indicate that, compared to the baseline conditions, the implementation of LID strategies in the near-future scenario can reduce surface runoff by approximately 30%, 25%, and 23% under RCP 2.6, RCP 4.5, and RCP 8.5, respectively, while achieving an estimated rainwater conservation or reuse rate of 30%, 28%, and 18%, respectively. The findings confirm that integrated LID strategies are effective in reducing surface runoff and peak discharge, demonstrating their high potential for adapting to future extreme rainfall events. In conclusion, this study highlights that LID-based sponge-style renewal of university campuses can effectively enhance the resilience to climate change and extreme rainfall while providing a scientifically, reasonable and practical approach for sustainable campus planning and design.

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Keywords:
Keyword 1: Stormwater
Keyword 2: Low Impact Development
Keyword 3: Climate Change
Keyword 4: Sponge City
Keyword 5: Campus

P058

Open Spaces in the Urban Amazon: Landscape Planning and Wetlands in Macapá/AP, Brazil

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Macapá, the capital of the state of Amapá, has since the eighteenth century, served as an important field for urban experimentation in the pursuit of an ideal city model for the Brazilian Amazon. The city is intersected by multiple water bodies connected to the basin of the Amazon River. Within this context, urban expansion has been marked by plans, strategies, and efforts that at times seek reconciliation and, at other times, promote the denial of this complex hydrographic network, which integrates unique biophysical and cultural configurations.

In Macapá, the presence of rivers and *igarapés*, characteristic of Amazonian floodplain ecosystems, is prominent. However, the region constitutes an ecotone, exhibiting characteristics of the Amazon and the Cerrado, where floodable fields and wetlands, locally known as "*áreas de ressaca*," extend. These areas form drainage systems interconnected with a main watercourse that guides water flow and establishes a natural communication process between rainfall and the Amazon River, remaining flooded throughout the year.

The urbanization process has frequently disrupted this natural cycle, whether through rapid large-scale infrastructure projects or gradually via informal settlements. Initially characterized by stilt houses ("*palafitas*"), a traditional dwelling model of Amazonian riverine populations — these areas have undergone a process of population densification that ultimately leads to landfilling water bodies for the construction of permanent structures. This dynamic results in environmental degradation, exacerbating issues such as flooding and sedimentation while also deepening social inequalities.

Despite changes in land and water use, as well as socio-economic inequalities associated with urbanization, Macapá's urban expansion has prioritized spatial homogenization without considering proper landscape planning. This approach has burdened infrastructure services, increased the cost of living, and aggravated environmental and social problems, leading to significant environmental degradation.

This research is based on the premise that there is a gap in knowledge regarding "*áreas de ressaca*" from a landscape architecture perspective. It argues that landscape planning tools can contribute to a better understanding of these areas, recognizing that open spaces play a central role in this debate and that specificities of Macapá's "*ressaca*" spaces remain insufficiently studied. The study asserts that the characteristic open spaces of this region can play a crucial role in the spatial configuration of a city that, despite being located in an area of great environmental and cultural value, still faces a process of peripheral urbanization. However, these spaces could serve as references for a more balanced relationship between city and nature.

The research highlights that in Macapá, there are unique ways of coexistence and singular typologies of open spaces, particularly those associated with wetlands, where specific cultural manifestations also take place. Considering the relevance of "open spaces" to landscape planning in both Brazilian and international contexts, this study explores the possibility of classifying new categories of these spaces in Macapá. This approach may assist both the State and the local population in recognizing the potential of these areas, reducing stigmas, enhancing the quality of life for residents, and serving as a model for other Amazonian cities in similar contexts.

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Keywords:
Keyword 1: Open spaces
Keyword 2: Amazon
Keyword 3: Landscape planning

Keyword 4: Wetlands

P059

Microclimate-Adaptive Design Strategies for Riverfront Pedestrian Bridges

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Ensuring thermal comfort for pedestrians has become a critical challenge in landscape architecture amid intensifying urban heat islands and global warming. While existing studies focus on ground-level urban spaces, the unique thermal stress experienced on elevated riverfront bridges remains unaddressed. This research proposes an innovative retrofit framework to transform urban river-crossing bridges into multifunctional infrastructures that actively regulate microclimate.

Three key interventions are developed centered on water-sensitive design principles: photovoltaic canopies that provide solar shading while harvesting renewable energy, mist spray systems using filtered rainwater for evaporative cooling, and airflow accelerators to enhance natural ventilation. The methodology combines on-site thermal measurements along Guangzhou's urban waterways with ENVI-met simulation modeling, focusing on the synergy between water dynamics and microclimate modification. The canopy design intercepts solar radiation while channeling rainwater to supply mist systems, creating a continuous water-energy loop.

This approach redefines bridges as active climate mediators rather than passive infrastructures, aligning with IFLA's emphasis on resilient water landscapes. By integrating rainwater management with adaptive thermal control, the framework demonstrates how linear waterfront structures can become climate-responsive corridors. The strategies offer practical solutions for cities to enhance thermal equity in vertically disconnected public spaces while promoting sustainable water-energy symbiosis.

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Keywords:
Keyword 1: Microclimate Adaptation
Keyword 2: Riverfront Bridges
Keyword 3: Water-Sensitive Design
Keyword 4: Thermal Comfort
Keyword 5: Climate Resilience

P060

Optimal Calculation Method of Size of LID Facilities for Rainwater Harvesting Green Space Based on NSGA-II Algorithm and Application

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In recent years, urban waterlogging caused by extreme weather events such as heavy rainfall and intense typhoons under climate change, coupled with disrupted natural runoff processes from rapid urbanization, has made stormwater management and rainwater recycling crucial for resilient city development. Sponge city planning featuring Low Impact Development (LID) facilities has gained increasing research attention in urban stormwater management. However, current LID implementations face challenges including insufficient multi-objective quantitative criteria for facility layout and sizing, poor interoperability between simulation platforms and design tools, and the need to optimize traditional trial-and-error approaches that prioritize subjective layout decisions over systematic verification. To address these issues, this study establishes an integrated stormwater optimization platform by embedding SWMM engine into Grasshopper parametric modeling environment. This innovation enables real-time feedback between design modifications and LID facility configurations, effectively bridging computational analysis and design implementation. The research introduces NSGA-II algorithm during facility combination optimization, simultaneously considering stormwater control efficiency and construction costs as dual objectives. The Pareto-optimal solutions derived from precise calculations provide cost-effective layout schemes that balance drainage performance with economic viability, overcoming the limitations of conventional methods that neglect resource efficiency. The research team validated this methodology through the stormwater management design for Nanyang Academic Town. Comparative analysis demonstrated that the optimized LID solutions achieved equivalent hydrological performance while reducing construction costs by up to 20.37% compared to traditional approaches. This study proposes a scientific quantitative framework for LID facility layout and sizing in sponge city green spaces, offering optimized strategies for efficient urban stormwater management systems under intensive development scenarios. The workflow advances the integration of multi-objective optimization algorithms with parametric design tools in ecological infrastructure planning.

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Keywords:
Keyword 1: Rain-harvesting Green Space
Keyword 2: SWMM
Keyword 3: Low Impact Development
Keyword 4: Sponge City
Keyword 5: Multi-objective Optimization

P061

Tradition-based Resilience Mechanism of Water Network in Riverine Cities: A Case Study of Kunshan City, China

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Kunshan City, located in the southeast of Jiangsu Province, is a Chinese water town interwoven with rivers and bridges. As a typical social-ecological system, the traditional water network reflects the ecological wisdom and nature-based resilience by local residents since ancient times. Based on hydrological data[1] and evolution mappings, this paper took the old city region of Kunshan surrounded by the four main rivers as the case study. We use GIS spatial analysis, analytic hierarchy process (AHP) and space syntax to analyze spatial characteristics[2], [3] from the perspective of resilience, and explain how to built a resilience network for urban sustainability[4] in people-land-water relationship. From different perspectives of macro, meso, and micro, the local characteristics are identified: (1) Riverside geolocation selection for seeking benefits of channels as well as avoiding harm from floods, (2) Multi-dimensional urban layout with reasonable redundance, (3) Architectural details adapted to lifestyle in water towns. Then, the connection between the material space of water networks and the development of civil communities is established, which explains its role in building the accessibility of a resilience mechanism on the basis above. Through the resilient assessment of planning land and the social organization in monitoring, warning, and responding periods while confronting with the climate change or disaster impacts, it contributes to a framework of resilience mechanism. Guided by spatial resilience, ecological resilience and social resilience, the resilience mechanism is formed with adaptability, resilience, and transformation as the three resilience forces. Finally, the strategies for enhancing urban resilience are summarized to guide the ecological services on climatic buffering, disaster response, and designs for survival. This research proposes a resilience mechanism guided by the concept of urban resilience, providing valuable insights and reference for resilience improvement in other human settlements under a close hydrological connection and resilience-oriented urban planning in cities facing similar challenges.

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Keywords:
Keyword 1: Resilience Mechanism
Keyword 2: Riverine City
Keyword 3: Traditional Ecological Wisdom
Keyword 4: Spatial Characteristics
Keyword 5: Water Network

P062

The Role of Sacred Landscapes in Human-Environment Interactions: Cultural Significance and Ecological Conservation in India

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The study of human-environment has traditionally focused on settlements, the modification of the environment for agriculture, shelter, and water-management systems. These diverse viewpoints are combined by the understanding that cultural places, especially sacred ones and are products of collective human activity and are thus culturally formed.
Sacred places and landscapes exist in both natural and built environments. What sets these spaces apart is not the degree of human modification, but the nature of the activities performed there. Ordinary spaces become sacred through human actions, particularly those of a spiritual or religious nature, such as rituals or ceremonies. Sacred places form a temporal and spatial network that spans a geographic region, linking various sacred sites through the rituals conducted at each location. Rituals at sacred places are often remembered with cultural materials such as offerings, monuments, or buildings, which serve to mark and preserve the sanctity of the site.
India, a culturally rich country, is home to numerous sacred sites that play a crucial role in maintaining the ecology of their regions. These sacred landscapes, often protected and revered by local communities, help preserve the area's flora and fauna. The protection afforded to these areas by their spiritual significance ensures that the natural environment remains undisturbed.
These landscapes are not only of immense cultural value but also hold significant ecological importance. For example, the sacred groves of Kerala, known as "Sarpa Kavu," are small patches of forest dedicated to serpent deities, and their preservation has helped maintain biodiversity in these regions.
This paper focuses on understanding the value of these sacred landscape in terms of how it was managed and maintained in the past. The traditional techniques of how these sacred landscapes were protected with the help of case examples through the country.

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Keywords:
Keyword 1: Scared Landscape
Keyword 2: Ecology
Keyword 3: Local communities
Keyword 4: Culture
Keyword 5: Conservation

P062

Des cours d'école déminéralisées pour changer le rapport à la nature

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Plusieurs générations d'enfants ont connu ces cours de récréation bitumées dépourvues de supports ludiques, facilement surveillées par des maîtres et des maîtresses installés sur un banc à vue panoramique. La plupart du temps, l'espace central y était occupé par un terrain de foot et les filles étaient reléguées en périphérie. Depuis les années 2010, les enjeux climatiques ont poussé les politiques publiques à inciter les établissements scolaires et les mairies à revoir ce modèle. Et, c'est en 2018, que la ville de Paris devient pionnière des cours « Oasis » qui, depuis, s'égrènent sur tout le territoire.
Ce concept de cours « oasis » se développe autour de la déminéralisation des sols, de la réduction des ilots de chaleur, de l'accueil de la biodiversité, de la valorisation de l'eau, de la diversité des supports ludiques… La démarche se veut co-construite avec le corps enseignant, le personnel d'entretien mais aussi les enfants. Le verdissement des cours se propage et l'analyse des effets sur le climat urbain s'amorce. Climat au sens météorologique, avec la baisse des températures mesurées par la ville de Paris et climat au niveau sociétal, avec des récréations apaisées et un espace mieux partagé entre les genres. C'est aussi l'apprentissage de la nature qui s'améliore dans ces espaces moins normés. L'évolution physique des élèves et le contact avec des matériaux vivants font mûrir un lien moins sécuritaire à l'extérieur, à la nature, au paysage. Cette première invitation dépasse peu à peu le champ de la récréation, les enseignants finissent par mener leurs cours en extérieur, dans la cour ou en dehors de l'établissement avec « l'école du dehors » ou les aires éducatives soutenues par l'Office Française de la Biodiversité. Et à l'inverse de grandes villes en Europe, profitent de ces projets de verdissement des écoles pour ouvrir ces espaces au public les week-end et lors des vacances scolaires. Les limites entre les « zones » de la ville tendent à s'assouplir, la multifonctionnalité prend corps.
Les bénéfices directs sont nombreux et les effets sur cette nouvelle génération d'adultes ayant grandis dans des cours de récréation végétalisées sera à mesurer dans le temps.
Ce résumé s'appuie sur un article rédigé par Laurence Renard pour le collectif Paysage de l'Après Pétrole à partir d'exemples de réalisation de la ville de Paris et de la ville de Magny-les-hameaux (dans les Yvelines) où elle est maire-adjointe.

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Keywords:
Keyword 1: cours d'école
Keyword 2: oasis
Keyword 3: déminéralisation
Keyword 4: verdissement

P063

Ravine Reconnect: Restoring Landscape Connectivity in a Growing Metropolis

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Toronto's lakefront and riverine landscapes are its most valuable assets, yet they are not understood holistically as a system like Chicago's or Boston's Metropolitan Park Systems. Formed at the end of the last ice age by the meltwaters of receding glaciers draining into the Great Lake Ontario, streams and rivers carved deep ravines into the landscape of the city, which now protect ecological corridors of deep forest cover, biodiversity, and cool microclimate in the middle of Canada's largest city. Because of their rugged topography and volatile hydrology – as the natural drainage corridors of the city – and due to the creation of Conservation Authorities after the Hurricane Hazel disaster of 1954s, these ravine landscapes have been spared from development as Toronto grew, and continues to grow at unprecedented rates. The ravines make up a significant portion of the city's estimated 30% urban tree canopy cover, regulate its temperature and air quality, and mitigate urban flooding during storms. Their value cannot be fully captured in monetary terms, since they also provide ecological corridors to support biodiversity and provide people access to nature close to home in city.

Despite the strong legacy of conservation, centuries of infrastructure development for the growing city have fragmented the ravines. They persist as a collection of neighborhood parks and preserved natural heritage areas - not as a fully integrated, continuous city-wide system. They are bisected by roads, railways, utility corridors, and sometimes interrupted by private property, golf courses, and other infrastructural uses. While these infrastructural corridors could potentially expand and connect the ravine system as a broader city-wide network to provide access from all neighborhoods, they often have different ownership structures and landscape management regimes that do not support biodiversity and ecological functions, and act as barriers. Many such gaps in the ravines system exist, particularly through lower income neighborhoods, where access to green space is needed most.

Although the Toronto Region Conservation Authority and City of Toronto are advancing the Ravine Strategy to revalue and restore the ravine system, implementation funding for the initiative is relatively small. Building on these efforts, the Ravine Reconnect project, seeks to engage students and the broader public in advocacy to build support for greater investment in improving connectivity of the ravine system. Funded by an Landscape Architecture Canada Foundation grant, the project includes an online ArcGIS Story Map and design research course at the University of Toronto, investigating design, wayfinding, mapping and communications strategies as tools for building awareness and support for an integrated ravine system. The project aims to create an image of Toronto's potential Metropolitan Park System in the public imagination, and help to cultivate a broader community of advocates to foster ongoing support and creative solutions to restore equitable landscape connectivity across the growing city region.

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Keywords:
Keyword 1: landscape connectivity
Keyword 2: landscape management
Keyword 3: ravines
Keyword 4: advocacy
Keyword 5: design research

P064

Optimization of Low Impact Development Facility Layout Based on Water-Carbon Coupling Under Climate Change

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Introduction

Global climate change has intensified the frequency and severity of extreme weather events, posing significant challenges to urban stormwater management and ecosystem stability. Low Impact Development facilities, as nature - based solutions (Liu et al., 2022), have shown potential in mitigating urban flood risks and enhancing carbon sequestration (Li et al., 2023). However, existing research primarily focuses on short - term benefits under single rainfall events, lacking dynamic assessments of long - term performance under future climate scenarios (Berndtsson et al., 2019). This study focuses on shallow mountainous areas, exploring the long - term benefits and dynamic changes of LID facilities based on water - carbon coupling mechanisms, aiming to provide scientific support for urban stormwater management and carbon reduction.

Methods and Results

The study employed the SWMM hydrological model, dynamic vegetation growth models, and Life Cycle Assessment (LCA) methods, combined with CMIP6 climate projection data, to simulate the dynamic changes in hydrological and carbon benefits of LID facilities over a 50 - year period (2025 - 2075) (IPCC, 2021). (1) Based on CMIP6 climate projection data (2025 - 2075), a vegetation growth model was constructed to simulate the annual growth rates and leaf area index (LAI) of different plant communities, calculating biomass and carbon sequestration benefits (Luo & Weng, 2011). (2) Annual rainfall sequences were generated from climate data, and LID facility parameters were dynamically adjusted using the vegetation growth model to simulate the hydrological performance of various LID layouts over 50 years (Sun et al., 2024). (3) The carbon emissions of LID facilities were quantified across their entire lifecycle, including construction, operation, maintenance, and decommissioning phases, to assess their carbon benefits (Eyring et al., 2016). (4) The NSGA - II algorithm was employed to balance hydrological benefits, carbon benefits, and economic costs, optimizing LID facility layouts and generating Pareto - optimal solutions. The optimized layout was then applied to Shijiazhuang Longquan Lake Park (Sun et al., 2020). (5) The results show that the optimized LID facility layout significantly enhances stormwater regulation and maximizes carbon reduction benefits under extreme rainfall scenarios.

Discussion and Conclusion

This study, through dynamic simulation and multi - objective optimization, reveals the long - term performance evolution of Low Impact Development (LID) facilities under climate change, overcoming the limitations of traditional single - rainfall event analyses. By balancing hydrological benefits, carbon benefits, and economic costs, the research provides an innovative approach to optimizing LID facility layouts in shallow mountainous areas. The results demonstrate that vegetation growth and climate change significantly impact the long - term effectiveness of LID facilities, and optimized layouts can effectively enhance their hydrological regulation and carbon sequestration capabilities. Future research could further explore the adaptability of LID facilities in different geographical regions and integrate smart monitoring technologies to improve their long - term operational efficiency.

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Keywords:
Keyword 1: Climate Change
Keyword 2: Water-Carbon Coupling
Keyword 3: Low Impact Development
Keyword 4: Multi-Objective Optimization
Keyword 5: Shallow Mountainous Areas

Guiding cities with society: Use, memory, artistic creation

P065

Landscape as the dynamic model of high-density urban renewal: Shanghai as a case

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The rapid expansion of large-scale urbanization has profoundly transformed regional and global landscape patterns. Cities in China are now undergoing significant changes in population distribution, economic structures, and land-use patterns. However, the lack of integration between urban renewal practices and landscape ecology has led to considerable challenges in this unprecedented urbanization process. Recent practice in Shanghai has showed landscape strategy can act as a dynamic model of high-density urban renewal by emphasizing the flexibility of program and activation of public memory.
Dongsiwenli, located along the Suzhou River in Shanghai, is one of the city's most central districts and among the last remaining large-scale Shikumen residential clusters. As a historical urban district shaped by water and land transportation, Dongsiwenli is bordered by rivers on two sides and green spaces on another, with winding roads forming a distinctive spatial pattern. With Shanghai's rapid urban expansion, the government initiated a redevelopment plan for Dongsiwenli to enhance its commercial value. However, despite the completion of land acquisition by government in 2013, the area remained vacant for over a decade. While several renowned design firms, including David Chipperfield Architects, proposed redevelopment schemes, none successfully met both public and governmental expectations. The district's waterfront historical buildings and cultural heritage attracted significant attention from conservation advocates. As one of the most expensive land areas in Shanghai, the primary challenge preventing its redevelopment lies in balancing historical preservation with commercial interests while maintaining the public memory of its waterfront landscape.
In October 2024, after a decade of vacancy, a comprehensive urban renewal project for Dongsiwenli was officially launched, emphasizing three key design strategies: 1. **Multi-layered landscape integration**: Combining high-density development with a vertical multi-layered landscape approach to harmonize historical buildings and new high-rise structures. 2. **Waterfront landscape extension**: Expanding riverfront green spaces into the urban core through linear water-themed elements, symbolizing the historical significance of the river. 3. **Public space enhancement**: Receding the flood control embankment to enlarge accessible waterfront areas and increase public space availability.
This project represents an interdisciplinary collaboration among ecologists, landscape designers, architects, urban planners, and commercial consultants. Through innovative three-dimensional landscape strategies, it seeks to establish a meaningful relationship with the local environment and cultural context, reinforcing public memory and everyday urban life while accommodating the financial imperatives of land-based revenue within Shanghai's broader urban development framework.

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Keywords:
Keyword 1: landscape urbanism
Keyword 2: urban renewal
Keyword 3: waterfront

P066

City walk as a tool for urban imagination and identity formation: Observations from Beijing and Shanghai

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In recent few years, the normalization of pandemic control policies in China has restricted the development of medium- and long-distance travel, leading to the rise of short-distance "City Walk" based on daily living environments. This trend is so prominent that "City Walk" has become a highly visible keyword on various social media platforms, and the influence has lasted for such long even the pandemic period has pasted. According to QianGua data from July 2024, in the past 90 days, topics related to City Walk have garnered over 26.47 million views, with more than 1.1 million related notes and interactions.

In essence, City Walk is a form of public cultural behavior that takes daily living environments as its destination, characterized by spontaneous urban exploration along specific routes. Current studies on City Walk indicate that such public cultural activities in urban public spaces reflect deeper needs for urban cultural imagination and identity recognition.

This research is based on the following hypothesis: In China's rapidly growing mega-cities like Beijing and Shanghai, the exponential urban development and influx of a large number of migrants necessitate a reconstruction of city and self-identity for various social strata and groups. The swift rise of City Walk suggests that certain urban elements, such as public spaces, architecture, and connecting routes, form a public space framework that meets people's psychological needs and are selectively highlighted by City Walk. Therefore, the widely discussed and practiced City Walk routes contain certain common characteristics that can be tools for constructing popular urban imagination and identity.

This study will be divided into two parts: a literature review and field research.

Firstly, a systematic literature review and in-depth analysis in the fields of political sociology, participatory art, and urban design will be conducted to review globally representative "City Walk-like" theories (such as Walter Benjamin's concept of the flâneur and Lucius Burckhardt's strollology) since the Industrial Revolution, thereby establishing a theoretical cognitive framework for City Walk.

Building on this premise, the research investigates the emergence of “city walk” in various Chinese cities in the context of the COVID-19 pandemic. Six city walk routes were selected in both Beijing and Shanghai, and through participatory observation and qualitative analysis, the study addresses two primary dimensions: 1) Urban Imagination—what types of images are captured by participants during their walks, and how these images are cognitively processed and interpreted; 2) identity formation—how the captured urban images are transformed into knowledge and experience, and the meanings they convey. In the context of deglobalization, the findings offer a complementary perspective on how walking, as a form of urban ethnography, can deepen our understanding of the relationship between cities and their residents. Additionally, these insights offer important implications for urban planning, as they challenge abstract assumptions about public space and urban development. In a world where lived experience of cities is increasingly obscured by rapid growth, walking offers a means to ground urban planning in more tangible, human-centered approaches.

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Keywords:
Keyword 1: City Walk
Keyword 2: Urban Inclusivity
Keyword 3: Public Space
Keyword 4: Identity
Keyword 5: Imagination

P067

Exterior furniture design with local characteristics through analysis of traditional exterior furniture and activities from Japanese historical drawings

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Sitting is one of primitive behavior for human beings but its style differs by regions and culture. However, today, furniture is becoming standardized globally.
This paper focuses on historical exterior furniture design and activities in Japan by observing the pictorial drawings to realize the relationship between each original environment and site-specific design in the pre-Westernization era (the Edo period).
As a result, the following are clarified.
I)Eight types of exterior furniture was identified:1)wider bench with wooden structure and tatami floor (*endai*), 2)woven straw rug (*mushiro),*3)straw tent, 4)wooden table, 5)straw screen (*yoshizu*), 6)paper umbrella, 7)fabric partition, 8)stall. 1)*endai*, 2)*mushiro*, 3)tent, and 4)table are the most common furniture accounting for 90% of all cases.
II) Four types of body postures are identified: a)sitting on the floor, b)sitting on a chair, c)standing, d)lying. “a)sitting on the floor” is the most common with 50% of the total. b)sitting on a chair and c)standing are also major, with 46% of the total.
III)The relationship between body postures and furnitures revealed four combination; (A) a)sitting on the floor and b)sitting on a chair for 1)*endai,* (B) a)sitting on the floor for 2)*mushiro*, (C) a)sitting on the floor and b)sitting on a chair for 3)tent, and (D) c)standing for 4)table.
IV)Nine place categories were identified in the drawings, revealing the relationship between furniture, body postures, and places: i)temple and shrine spots, ii)botanical spots and scenic spots, iii)road spots and transportation hub spots.
(1) 44 cases for i)“temples and shrines spots” are found. All postures in this research are found.
(2) In ii)case of “botanical spots and scenic spots”, a)sitting on the floor, b)sitting on a chair are mostly found, and 1)*endai* is major and 2)*mushiro* is minor.
(3) In iii)case of “road spots and transportation hub spots” , only b)sitting on a chair are found and 1)*endai* and 3)tent is major.
Based on these results, four points can be revealed to discuss.
Firstly, since furniture in that time was made of cloth and plant-derived materials, it is light and carriable. 1)*endai* and 2)*mushiro* were particularly flexible, as they could be folded, resized, and adapted to various settings.
Secondly, it reveal that 1)*endai* can be accept for multiple body posture activities with a single furniture. 1)*endai* has both edges for sitting and wider surface for riding on , so that it allow multiple activities.
Thirdly, each furniture is seen to be used in each environment. Although since 1)*endai* is often used both in a relaxing place and a busy public place, it has flexibility regardless of location.
Finally, 4)table was mainly used in commercial settings, such as events and shopping streets. It is used without chairs, so that people use it in a standing position. This use is to be due to the characteristic of crowded public spaces in the Edo period.
In conclusion, it realizes that historical Japanese furniture did not have forms and orientation to induce specific posture, and that it showed maximum flexibility in adapting to its environment.

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Keywords:
Keyword 1: public space design
Keyword 2: exterior furniture
Keyword 3: historical design
Keyword 4: public space activity
Keyword 5: vernacular design

P067

Nature-Based and Emotionally Optimal: Design Insights from Comparative Studies in Urban Wilderness Parks

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As cities increasingly embrace nature-based solutions to tackle environmental challenges, urban park design must balance both ecological sustainability and emotional well-being. This session explores how different types of urban green spaces—**Artificial Parks (AP)**, with their carefully curated landscapes, and **Wilderness Parks (WP)**, which prioritize a more natural and untamed setting—shape visitors' emotional experiences. While Wilderness Parks are already valued for their ecological benefits, we investigate whether they also offer deeper emotional engagement and stress relief compared to more structured parks.

Our research focuses on three parks in China: Fishtail Park in Nanchang, Huqiu Ecological Park, and Suzhou People's Park. We analyzed a total of over 900 survey responses across all sites using advanced statistical methods such as Structural Equation Modeling (SEM) and Linear Mixed-Effects Models. The study identifies two key emotional mechanisms in Wilderness Parks: **transcendent engagement**—where visitors' thoughts drift beyond immediate reality, fostering a sense of escape and reflection—and **emotional associations**, particularly with migratory birds, which tie into cultural and poetic traditions.

The findings highlight key design insights that landscape architects and urban planners can apply to create more emotionally enriching parks. Visitors who experienced **transcendent engagement** in Wilderness Parks reported significantly lower stress and mental fatigue, suggesting that open, immersive, and unstructured landscapes play a crucial role in psychological restoration. Meanwhile, those who formed **emotional connections with migratory birds** associated these experiences with stronger place attachment, social bonding, and a greater appreciation for land stewardship. These results emphasize how cultural and ecological elements work together to enhance the emotional value of green spaces.

The session will begin with an in-depth discussion of the **design strategies** implemented in these parks, highlighting a variety of emotional elements embedded in Wilderness Park design. We will also explore how specific park features contribute to **improved restorative effects, strengthened place attachment, and enhanced public perception**. The second half of the session will focus on these survey findings and their **design implications**, offering **actionable takeaways** for professionals looking to integrate these emotional benefits into urban park projects.

Overall, this session will reveal insights demonstrating that Wilderness Parks are not just ecologically valuable but also uniquely positioned to foster emotional well-being. By understanding this value proposition, designers can better optimize parks for emotional benefits while reinforcing ecological, nature-based solutions with evidence-backed outcomes. These insights provide a practical framework for integrating emotional and ecological considerations into park planning, helping cities create public spaces that nourish both people and nature.

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Keywords:
Keyword 1: urban park
Keyword 2: ecological design
Keyword 3: nature-based solution
Keyword 4: emotional benefits
Keyword 5: landscape performance

P068

Digital and Classical: A Study on the Restoration of Classical Garden Plantscape in China's Yangtze Mid-Reach Region

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Plantscape refers to the scenery, view and image formed by plants as the main scenic elements. Classical Chinese gardens organically combine the plantscape with the Chinese understanding of the principles of nature, the ethics of society and the philosophy of life to form unique concepts and design techniques, which not only have essential historical value but also have a guiding significance for the construction of human settlements. However, the current research in plantscape features analysis and design techniques predominantly relies on direct material interpretation, which faces challenges such as inadequate integration, insufficient dynamic assessment, and pronounced subjectivity.
Conventional restoration methods, such as digital modeling, 3D laser scanning and point cloud technology, are often time-intensive and operationally complex while exhibiting limitations in precision when applied to gardens with non-extant sites or significant alterations. Therefore, this study proposes an integrated methodology combining digital humanities quantification and artificial intelligence to deconstruct historical archives and generate restorative visualizations, focusing on the mid-reach region of the Yangtze River in China.
Firstly, focusing on the three types of historical books: local chronicles, literary collections (garden records, poetry, biographies, historical garden paintings), and ancient tree documentation, we integrated the literature information by elements to build a research database. Through word frequency statistics, co-occurrence and clustering of KH Coder, the statistics of plant categories and the network relationships between plants and other garden elements are derived, to clarify the spatial and temporal distribution of plants and the characteristics of design techniques. Secondly, the study emphasizes the detailed examination and restoration of the plantscape. Taking the database as the data source for text learning, the Generative Pre-trained Transformer 4 is combined with Midjourney and Stable Diffusion to generate the garden landscape, and the expert judgment is used to correct the images, evidence-based garden plantscape restoration maps are drawn, and the effects of different spaces and time sequences are simulated, to interpret its landscape style and spatial characteristics dynamically and situationally. Finally, employing the typological research paradigm to analyze and compare the garden cases in sufficient depth to summarize the particularities and commonalities, to form a theoretical paradigm on plantscape construction.
How to realize the combination of “digital” and “classical” has become an important issue in the research of garden heritage nowadays. The classical gardens in the mid-reach region of the Yangtze River are a precious cultural heritage, with the expansive grandeur of real mountains and real water and the charm of multiculturalism. The study of classical gardens restored by artificial intelligence can display and disseminate the characteristics of the gardens, and also provide a reference for the future artificial intelligence technology in the restoration of garden heritage. The research results provide an important basis for exploring the inheritance and development of classical gardens, the internal logic of using the past for the present, and their modern value, and are of great significance in guiding how to optimize and enhance the urban living environment nowadays.

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Keywords:
Keyword 1: Plantscape

Keyword 2: Restoration
Keyword 3: Classical Chinese gardens
Keyword 4: Digital humanities
Keyword 5: Image-generative Artificial Intelligence

P069

Weaving Memory into Landscape: Ji Gong Temple as Scenic Architecture

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Scenic Architecture (风景建筑，*Fengjing Jianzhu*), a distinct architectural typology in China, refers to public buildings embedded within scenic areas(Zheng and Hua 2007). Rooted in traditional Chinese structures such as pavilions, terraces, and towers, these buildings have historically served as crucial spaces for leisure, religious rituals, and cultural interactions, embodying an enduring relationship between humans and nature. Since the 1980s, the rapid expansion of scenic tourism has led to the proliferation of modern scenic architectural projects, generating increasing scholarly interest in their design strategies and cultural significance(Cai 1983;Zhou 1987).

However, the international recognition of scenic architecture remains limited due to inconsistencies in translation. Some scholars in China translate it as 'Landscape Building'(Liu and Xue 2024), emphasizing its physical attributes , while others use 'Landscape Architecture'(Peng et al.2022;Wang and Li 2025), leading to conceptual ambiguity in international discourse. This study adopts 'Scenic Architecture'to precisely capture the distinctive attributes and theoretical significance of this typology.

This research employs a historical analysis and a case study methodology. It first traces the historical trajectory of Chinese scenic architecture, examining its transformation from religious to public-oriented spaces. The study then focuses on Ji Gong Temple（济公院，*Ji Gong Yuan*，1987–1989) at Tiantai Mountain Scenic Area, Zhejiang Province. Perched on the cliffside, the temple responds sensitively to the site's complex terrain. It was fund through donations from the local Association and residents and was designed pro bono by renowned Chinese architect Qi Kang（齐康）(Qi and Chen 1990). The project commemorates Ji Gong, a legendary figure revered for compassion and justice. However, it transcends its commemorative function, creatively integrating social interaction with collective memory and regional culture.

The study analyzes Ji Gong Temple through four interconnected dimensions:

1.Use: Modern Adaptation of Religious Functions

Examining how the design responds to the functional diversification driven by tourism, integrating religious commemoration with everyday social activities for locals, tourists, and religious practitioners.

2.Memory: Abstraction and Representation of Collective Narratives

Investigating architectural strategies for translating collective memory into spatial abstraction and symbolism, strengthening emotional resonance between visitors and the local community.

3.Place: Vernacular Architecture as Generative Strategy

Exploring the innovative adaptation of local vernacular architecture, emphasizing spatial organization, construction techniques, and material selection reflective of regional identity.

4.Nature: Constructing a Picturesque landscape

Analyzing the approach toward minimal environmental impact, maximizing architectural adaptability, and integrating seamlessly with the site's complex topography. It demonstrates how architecture participates actively in reconstructing scenic perception and landscape experience.

Guiding Landscapes through Scenic Architecture, Ji Gong Temple stands as a transformative project that bridges tradition and contemporary urban life, despite its modest size of only 2,000㎡. Ultimately, this study argues that Ji Gong Temple exemplifies scenic architecture's multifaceted role—as cultural memory carrier, social infrastructure, vernacular innovation, and landscape reshaper. It contributes to international architecture and landscape discourse by clarifying the unique conceptual boundaries of scenic architecture and illustrating its potential as a tool for guiding collective experiences and social interactions within scenic environments.

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Keywords:
Keyword 1: Scenic Architecture
Keyword 2: Ji Gong Temple
Keyword 3: Collective memory
Keyword 4: Social Participation
Keyword 5: Perception of Nature

P070

Perception and Emotional Response in Virtual Landscapes: A Framework for Adaptive and Participatory Landscape Design

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As climate change and rapid urbanization reshape human settlements, virtual reality (VR) has emerged as a transformative tool in landscape design, providing new opportunities for sustainable planning, cultural heritage preservation, and participatory engagement. Despite its growing application, the impact of virtual landscapes on human perception, emotional response, and decision-making remains underexplored. This study investigates these dynamics through the Perception-Cognition-Reaction (PCR) framework, examining how individuals experience, interpret, and respond to virtual environments. By integrating digital simulation technologies with place-based awareness and sustainable design principles, this research aims to bridge the gap between technological innovation and socially responsive landscape strategies.

This study pursues three key objectives:
1. Identifying multimodal perception mechanisms in virtual landscapes by analyzing how sensory cues—including visual depth, spatial composition, and auditory feedback—shape spatial cognition and emotional engagement.
2. Assessing behavioral responses in virtual landscapes, particularly how immersive environments influence environmental awareness, decision-making, and participatory interaction patterns.
3. Exploring VR's potential to enhance urban resilience, with a focus on fostering public sensitivity to climate adaptation, ecological dynamics, and the preservation of local heritage and memory.

Methodologically, this research employs a mixed-methods approach, combining biometric analysis, eye-tracking, spatial navigation studies, and user interaction experiments to quantify perceptual and affective responses across diverse virtual landscape scenarios. Case studies focus on digitally reconstructed coastal adaptation sites, historical urban spaces, and ecological restoration areas, serving as testbeds for evaluating VR's capacity to simulate climate-responsive and culturally meaningful landscape solutions.

Preliminary findings suggest that immersive virtual landscapes significantly enhance users' sensitivity to environmental transformations, strengthen place attachment, and foster more informed public engagement in sustainable planning. Participants exhibited greater spatial awareness, deeper emotional connections to landscape features, and an increased willingness to engage in collaborative design discussions when interacting with interactive VR-based scenarios. Furthermore, real-time environmental changes in VR—such as rising water levels or vegetation shifts—elicited stronger cognitive retention and a more profound understanding of climate adaptation strategies compared to traditional 2D planning methods.

These findings underscore VR's transformative potential in bridging technical urban adaptation strategies and community-driven planning efforts. By integrating virtual landscape simulations with participatory decision-making frameworks, this research highlights the evolving role of landscape architects as mediators between digital innovation and place-based sustainability. The study concludes by proposing a VR-integrated participatory planning model, empowering urban communities to visually and experientially engage with landscape futures, fostering resilient, adaptive, and socially inclusive urban strategies that reflect use, memory, and artistic creation.

This research contributes to the growing discourse on digital landscape perception and climate-responsive design, advocating for an interdisciplinary approach that merges computational modeling, environmental psychology, and public engagement. By leveraging VR as a medium for reimagining past, present, and future landscapes, the study emphasizes its role in guiding cities toward more socially embedded, memory-driven, and creatively adaptive environments.

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Keywords:
Keyword 1: Virtual landscapes
Keyword 2: perception-cognition-reaction
Keyword 3: emotional response
Keyword 4: cultural memory
Keyword 5: participatory design

P071

Re-Indigenizing Border Cities: Landscape Guiding Indigenous Revival Through Cultural Memory

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The colonial history of Arizona has profoundly impacted the minority populations, particularly Native communities. Deterritorialization, combined with cultural repression and marginalization, has left deep intergenerational trauma embedded in the collective memory. This historical trauma continues to influence Indigenous peoples' daily lives in modern border cities. Recently, Indigenous students commuting across the U.S.-Mexico border have emerged as a unique form of re-indigenization. However, the border wall spatially symbolizes intergenerational trauma and political violence, perpetuating systemic injustices and fueling cultural alienation among these students.

Despite these challenges, cultural memory's duality—its negative dimensions, which expose historical injustices, and its positive aspects, which foster resilience and identity—plays a critical role in advancing the process of re-indigenization in modern contexts. This study examines how these dynamics can be addressed through landscape design to support Indigenous cultural heritage and identity.

Focusing on the U.S.-Mexico borderland in Arizona, this study investigates how colonial history continues to shape ethnic trauma and social injustice through geopolitical infrastructures (e.g., the border wall) and everyday spatial practices. It explores how landscape interventions reshape collective memory, integrate Indigenous cultural heritage into students' daily commutes, and strengthen their sense of identity, ultimately contributing to the re-indigenization of modern urban spaces.

Grounded in trauma-informed landscape theory, the research proposes a walking trail network that integrates native plants and ceremonial elements, such as medicine wheels. Through key design nodes, such as memory gardens, students are encouraged to actively engage in participatory design, explore Indigenous landscapes—including wilderness roads and seasonal wetlands—and express self-perception through Mexican mural art. These activities arouse students' spiritual resonance with Indigenous cultural landscapes, which provides a pathway for healing intergenerational trauma from both physiological and psychological perspectives. The proposed approach also contributes to the ecologically sustainable and culturally inclusive development of border cities.

Cultural memory has two dimensions. Rather than one-way enduring trauma, its positive aspects catalyze revitalizing Indigenous culture. Today, to resist the segregation of the border wall, Indigenous communities are reclaiming their nomadic traditions. This research constructs a shared agriculture system across the border wall, where significant migration and power shifts occur. Within the whole system, products from one stage are transported to the other side of the border, simultaneously becoming raw materials for the next stage. This process will build economic and cultural bonds to reduce urban segregation and restore connections between separated borderland communities.

In the context of re-indigenization, the research aims to break down geographical and ideological divisions by integrating memory narratives of diverse cultural groups. Future urban spaces will feature inclusive landscapes that foster mutual understanding among multi-ethnic residents. This approach operates as a spatial practice reference to advance racial justice and social equity in postcolonial discourse. However, given that there are still legislative restrictions on cross-border education, the research must adhere to the existing policy framework. Nonetheless, landscape architects should embrace social responsibility and incorporate humanistic considerations into landscape interventions. Such actions will facilitate welfare and policy improvements, ultimately generating broader social benefits.

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Keywords:
Keyword 1: Re-indigenization
Keyword 2: Border city
Keyword 3: Cutural landscape
Keyword 4: Memory
Keyword 5: Intergenerational trauma

P072
AI-based design of classical Chinese garden rockeries

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The current application of artificial intelligence (AI) has triggered a fundamental transformation in the design mode of landscape architecture. Generative models have demonstrated powerful data-driven and innovative potential in the field of landscape design. Traditional landscape design has long been constrained by an experience-dominated creative mode, lacking objective evaluation and scientific methods. It suffers from issues such as long design cycles, limited innovation, and the difficulty in meeting the diverse needs of various scenarios.The design of rockeries, an essential part of traditional Chinese gardens, presents challenges due to the irregular and variable shapes of the rockeries. Designers often use physical models or computer modeling to deliberate on the shapes. However, this approach is not only inefficient but also often results in significant discrepancies between the completed work and the design plan.To solve this difficulty, this study introduces AI methods and constructs a three-dimensional design framework of "parametric layout - intelligent generation - human-machine collaborative optimization". Firstly, based on the Grasshopper platform, the Populate 2D function and Random function are introduced to generate the positions of the main rocks. Then, in combination with the Voronoi algorithm, a Voronoi polygon structure is constructed, and random distribution schemes of secondary rocks are generated around it. Subsequently, adjusting the displacement parameter x and the included angle θ allows for adjusting the density and angular relationships of the rocks, thus optimizing the overall planar layout of the rockery. Finally, the optimal planar position scheme of the rockery is output. After that, rockeries images that conform to the aesthetic characteristics of classical Chinese gardens are selected. Joy Caption2 is used to reverse-infer the labels from images, and the prompt words are manually adjusted to construct a dataset of rockeries. The generated dataset is used to train the model based on Flux. By adjusting parameters such as learning_rate and max_train_steps, the LoRA model for rockeries is obtained. Then, a generative design workflow from the 2D planar layouts of rockery to 3D models is established on the ComfyUI platform, and the planar position scheme of the rockery is imported. The self-trained LoRA model of rockeries is utilized as the training model, combined with text descriptions and the ControlNet model. By adjusting the training steps and iterating multiple times, 2D effect images of the rockery are generated. After that, the Tripo model is introduced to automatically generate three-dimensional solid models of the rockery. Multiple schemes are generated through repeated training, and the optimal scheme is output based on the aesthetic judgment of human experience. Structural optimization adjustments are then made to the individual rocks to obtain a complete rockery design scheme. This study uses AI methods to deconstruct and reconstruct the aesthetics of traditional garden rockeries. Taking the design of classical Chinese rockeries as an example, it innovatively constructs a generative technology for 3D spatial forms, realizes the closed loop of the intelligent design process from 2D planar layout to 3D structural optimization, and explores the AI-based generative design method.

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Keywords:
Keyword 1: Landscape Architecture
Keyword 2: Artificial Intelligence
Keyword 3: Generative Design
Keyword 4: Rockeries Design
Keyword 5: ComfyUI

P073
Torrent Plaza: may the river live

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Some people say the campus of Grenoble University illustrates perfectly a story of nature and violence. That the buildings, with their brutalist look, resemble huge rocks that would have felt from the top of mountains that surround the Grenoble valley. Indeed the city – and its campus – lie between three mountain ranges through which the Isère River flows. The violence of the water, the landslides and the width of the sky accentuate the sublimity of the landscape.

Amid this effervescent architecture, the former-called Diderot Plaza, renamed as Torrent Plaza, reminds the river and its bridges. The Grenoble campus has decided to revive its tradition of commissioning art. As a park of knowledge, it also ambitions to be a park of sculpture. The school's management has called on the advice of the Delta studio, which has been entrusted with the task of artistic direction. The Observatorium artist collective's project has been chosen, and **arpentère** helped put its artwork in perspective with the existing landscape of the campus.

Inspired by the dramatic loss of biodiversity and the increased risk of flooding, this artist collective imagined a piece of art around which **arpentère** designed a plaza. This artwork is composed of the Baumstam, a big red trunk-bridge made of concrete. This sculpture unifies a great esplanade where runs the other composition of the Observatorium collective: a river of life, on the remains of a tarred road.

Arpentère specifically worked on developing the surrounding area. Issues of dimension, materials and ground leveling occupied our minds. We decide to create a smooth incline in the ground so that all the rainwater reaches the symbolic river.

Rivers connect separate worlds. So do bridges, and, at a larger scale, art. They raise curiosity for another environment, another side, for other people. Given its shape and its nature, the concrete river of the Torrent Plaza is crossable and serves more as a connective item rather than a border. It is a poetic gesture that formalizes the link between students, university staff and the rest of the site.

Upcycling is at the heart of the project's values. Existing asphalt on other parts of the campus was broken and reused in a creative way to compose the concrete river. With simple means, this material forms a singular and undulating topography. Free of any constraints, a variety of plants inspired from colors of riverine forests flourish in the gaps between the unsealed opus incertum.

The campus of Grenoble University is generally understood by pedestrians from the city as a huge and open park. Firmly rooted in this tradition, the Torrent Plaza converts sculpture, architecture and landscaping into a work of art. This square is an answer to a need for a generous, intimate and informal meeting place for thousands of users, may they be students, teachers, or just neighbors.

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Références, Arpentère, Paris, 2025, La place du Torrent, Arpentère, 56

Keywords:
Keyword 1: water
Keyword 2: bridge
Keyword 3: upcycling
Keyword 4: sculpture
Keyword 5: collaboration

P074

Reconnecting the Urban Fabric: A Mobility-Driven Approach to Revitalizing Wuhan's Historic Railway Corridor

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Located in Wuchang District, Wuhan City, China, the Northern Loop of the *Wujiu Railway* has a history dating back as far as 1918. After a century of splendor, it has eventually withdrawn from the stage of history and fallen into decline within the city. Traversing the urban core, this former industrial corridor—once a critical transportation artery—embodies the city's collective memory. However, its prolonged disuse has transformed it into a linear, dilapidated urban void, as if it were a fissure *cutting* the urban fabric apart. This manifests in two dimensions: first, the derelict linear infrastructure's physical barrier effect on urban functional connectivity; second, the erosion of industrial heritage values caused by disconnecting the neglected site from its historical role as a transportation hub.

To address these challenges, this study proposes a " Mobility-Driven Revitalization of Post-Industrial Living Corridors" framework, which is implemented through dual intervention strategies of spatial mobility and cultural mobility, to reactivate the industrial site as a socio-spatial nexus, *thereby advancing equitable urban regeneration*.

In terms of spatial mobility, first, it is easier for residents to move to the site via *soft-edge design* and dissolving existing roadbed elevation differences, so as to *enhance site accessibility and vitality*. Second, it is feasible to increase the number of pedestrian routes perpendicular to the railroad tracks by means of footpaths and elevated paths, so as to reduce the difficulty that residents have in moving across the site space, and thus reduce the segmentation of the urban area by the linear space.

In terms of cultural mobility, this study explores the landscape application potential of industrial relics through functional conversion and railroad relic form/material preservation, thereby reviving the relics' cultural significance via landscape interventions.

Through the landscape strategy proposed in this study, the industrial heritage space along the northern loop of the *Wujiu Railway* will be effectively activated to become a vital community lifeline and bridge urban divides, thereby advancing equitable urban development.

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Keywords:
Keyword 1: Urban Fabric Reconnection
Keyword 2: Mobility-Driven Revitalization
Keyword 3: Historic Railway Corridors
Keyword 4: Spatial-Cultural Hybrid Strategies
Keyword 5: Equitable Urban Regeneration

P075

Modular Buildings from Traditional Materials as an Element of an Authentic Regional Landscape

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The integration of modular buildings into authentic regional landscapes requires a careful balance between modern construction technologies and traditional materials. This article explores the benefits of modular construction, the adaptation of these structures to cultural and environmental contexts, and their potential role in preserving regional identity. By incorporating locally sourced materials and architectural elements, modular buildings can harmonize with traditional surroundings while offering efficiency and sustainability.

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No references

Keywords:
Keyword 1: authentic landscape
Keyword 2: foothill landscape
Keyword 3: regional landscape
Keyword 4: Modular buildings
Keyword 5: Environmental Impact

P076

The aesthetics of the savannah: pondering the scenic potential of the cerrado, a Brazilian savannah, for the landscape architecture

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Brazil is covered by several biomes - the Amazon, the Atlantic, the Caatinga, the Pantanal, the Cerrado and the Pampas - but there is often an introjected taste in the population that sees forest formations as more beautiful than savannahs or grasslands. Therefore, the cerrado, a Brazilian savannah that covers 24% of the country, although it has singular aesthetic qualities, is still little valued in landscaping.
In the last decade, research has intensified in different parts of the biome's territory such as Alexandre Sampaio, Júlio Pastore and Mariana Siqueira, drawing attention to its conservation, given the serious threat of extinction; functional importance, particularly as a cradle for the waters of the South American continent; and scenic beauty.
Aligned with this, the aim of the work is to systematize the main aesthetic and functional attributes that justify and value the use of native vegetation in landscape architecture in the biome's territory.
To make landscape architecture it is to compose with the use of vegetation, according to principles of harmony, balance of masses, arrangements of sizes, textures and colors. Various landscaping currents have marked the way in which nature has been interpreted and designed by different authors and cultures throughout history. Among them, the new perennial movement – associated with the work of Piet Oudolf, Noel Kingsbury, James Hitchmough, from the mid-1980s onwards – seeks to design gardens that look natural, but which are arranged in a careful balance of structure, color and functionality of vegetation communities. The prioritization of lower strata – grasses and herbaceous – which are perennial and highly adapted to the biome, is an important assumption to minimize irrigation, avoid the use of pesticides, value climate seasonality in terms of the life cycle and flowering of species and promote biodiversity.
The aesthetics and functionality of the cerrado are very congruent with this current. Thus, with a diversity of landscapes – forest, but mainly savannah and grassland – the cerrado has a variety of ground cover grasses, herbaceous with different textures and blooms, and shrubs and trees in the form of sculptural vases. Furthermore, it is marked by typical seasonality – with a rainy period from October to March, when the vegetation is vibrant and blooming, and a dry period from April to September, when the vegetation shrinks. The cerrado has oligotrophic soil, which is rich in aluminum and poor in basic nutrients, and vegetation unassuming and tortuous with well-developed root system, which characterizes it as an “inverted forest”.
Despite this, the empirical use of this vegetation in gardens is proving not to be an easy task, given the restrictions on their adaptation to the altered urban environment, difficulty in breaking seed dormancy and slow growth of some species. So, the result of the work is the systematization of information and illustrations, based on accumulated empirical experiences, for the use of cerrado vegetation in landscaping, considering the aesthetic and functional characteristics of vegetation – individually and collectively – and the ease of propagation, adaptation and maintenance. Ultimately, the work fulfills the ethical role of valuing the local landscape.

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Keywords:
Keyword 1: naturalistic landscaping

Keyword 2: savanna (cerrado) landscaping
Keyword 3: landscape aesthetics
Keyword 4: native landscaping
Keyword 5: cerrado vegetation

P077
PROBLEMS OF SUSTAINABLE DEVELOPMENT OF ALMATY CITY BY MEANS OF LANDSCAPE ARCHITECTURE IN THE CONTEXT OF GLOBAL WARMING

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The paper presents the current environmental and social problems of the largest city of the Republic of Kazakhstan – Almaty. The historiography of the issue of the formation of the cultural landscape of the city, the dynamics of the indicator of the degree of greening of the territory per inhabitant in the draft master plans of Almaty is presented, it is noted that a culturological approach is used to develop a new architectural and landscape model with a characteristic regional identity. A search is being carried out for the relationship between the inheritance and development of regional traditional and modern cultural values in the figurative characteristics of the objects of landscape architecture in Almaty.

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Keywords:
Keyword 1: sharply continental climate
Keyword 2: cultural landscape
Keyword 3: culturological approach
Keyword 4: natural identity

P078

Spatial Equity in Football Field Distribution: A Comparative Study of Key and Non-Key Football Development Cities in China

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Amid China's ongoing implementation of the National Fitness Strategy, the pursuit of spatial equity in urban sports infrastructure has emerged as a central concern in contemporary urban planning. Football, positioned at the forefront of China's sports institutional reforms, has witnessed substantial expansion in facility construction. However, this growth is accompanied by persistent challenges: uneven geographical allocation of fields, suboptimal utilization rates, and stagnated advancements in competitive prowess. Current scholarly discourse remains deficient in systematically addressing the spatial dynamics of football facilities, thereby undermining evidence-based urban policy formulation. To bridge this gap, this study employs an interdisciplinary approach, integrating spatial equity theory with empirical analysis of nine national key football development cities and nine non-key counterparts. Leveraging multi-source geospatial datasets (POI, road networks, demographic statistics) and advanced analytical techniques—including GIS spatial tools (kernel density estimation, nearest neighbor index, service area analysis, accessibility mapping) and machine learning algorithms (random forest regression)—the distribution patterns of football fields and their interplay with regional football development are systematically examined.
The analysis reveals three principal findings:

1. **Divergent Spatial Agglomeration**: Key cities exhibit polycentric spatial configurations characterized by multi-layered clusters (average nearest neighbor index <1), high-density distributions, and diversified field types (e.g., training centers, neighborhood mini-pitches). In contrast, non-key cities demonstrate monocentric layouts (index ≈1) dominated by large-scale stadiums at urban peripheries.
2. **Equity-Accessibility Disparities**: While key cities achieve robust public transport accessibility (85% population coverage within 1km of transit hubs), non-key cities face critical service deficits, with under 50% of residents accessing fields within standard service radii. Notably, economically prosperous cities exhibit 25–30% higher accessibility metrics than less affluent peers.
3. **Drivers of Football Development**: The random forest model highlights service radius coverage ($\beta = 0.42$, $p<0.01$) and public transport accessibility ($\beta = 0.38$, $p<0.05$) as paramount spatial determinants, collectively explaining 68% of regional football performance variance. Socioeconomically, per capita GDP ($R^2 = 0.57$) and disposable income ($R^2 = 0.49$) emerge as dominant predictors.

Guided by these insights, a tripartite optimization framework is proposed:

1. **Equity-Oriented Spatial Restructuring**: Non-key cities should transition from centralized models to decentralized networks via neighborhood-scaled facilities (5/7-a-side pitches), targeting >70% service coverage and 15-minute walking accessibility thresholds.
2. **Institutional Synergy**: Establish public-school partnerships to unlock underused scholastic sports assets, creating hybrid community-campus field-sharing systems.
3. **Space-Sensitive Urban Acupuncture**: Revitalize underutilized urban spaces—park edges, interstitial pocket parks, and infrastructural voids beneath elevated roads—through adaptive reuse as modular "football + green recreation" hubs.

This research empirically substantiates the interdependence of spatial justice principles and sport policy design, providing a transferable methodology for assessing facility equity in emerging football economies worldwide.

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Keywords:
Keyword 1: Spatial equity
Keyword 2: Service accessibility
Keyword 3: Urban planning
Keyword 4: Football field distribution
Keyword 5: Random forest model

P079

Unveiling Cultural Services of Urban Green Spaces: A Public Perception Analysis Using Large Language Models

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Urban green spaces provide essential cultural services that significantly contribute to residents' well-being and quality of life. However, these cultural services are typically categorized using Western-centric frameworks that may not adequately capture the nuanced experiences within Chinese cultural contexts. This research aims to identify cultural service types of green spaces in Wuhan, China, through analyzing social media data without imposing predetermined classification frameworks.
The study employs a novel methodological approach that combines large language models (LLMs) with natural language processing techniques to analyze unstructured text data from popular Chinese social media platforms. Rather than applying existing cultural ecosystem service classifications, this research adopts an inductive approach where cultural service types naturally emerge from public narratives. The methodology involves comprehensive data collection from social media platforms documenting residents' experiences in Wuhan's major green spaces, followed by text processing and pattern recognition using DeepSeek-based content analysis.
Specifically, the research examines multiple dimensions of experience: activities (what people do), perceptions (what people notice), emotions (how people feel), and meanings (values people attribute). This multidimensional analysis captures the dynamic nature of cultural services as experiential processes rather than static categories. The temporal aspects of these experiences are also considered, exploring how seasonal changes and different times of day influence cultural service perceptions, an element often overlooked in traditional frameworks.
A distinctive feature of this research is its comparative analysis of public and official perspectives. By analyzing both social media posts (public perspective) and official WeChat public account articles (official perspective), the study identifies potential gaps between how urban residents actually experience green spaces and how these spaces are conceptualized in official discourse. This dual-perspective approach provides unique insights into the alignment between urban planning intentions and public perceptions.
The methodological rigor is ensured through a three-tiered validation framework: (1) stability verification through repeated analyses with varying parameters, (2) expert evaluation by landscape design, cultural studies, and urban planning specialists, and (3) questionnaire verification with Wuhan residents. This comprehensive validation strategy ensures the credibility of identified cultural service types without relying on predetermined frameworks.
This research advances landscape planning theory by developing culturally responsive understandings of green space values that emerge from local contexts rather than being imposed by external frameworks. For practitioners, the findings offer insights into creating urban spaces that better reflect and respond to residents' cultural needs and perceptions. Additionally, the methodological approach demonstrates how digital humanities techniques can be leveraged to capture public perceptions of landscape in ways that complement traditional research methods.
By revealing how urban residents perceive, experience, and value green spaces through their own expressions, this research contributes to more inclusive, culturally sensitive approaches to urban landscape design and management that honor the rich traditions of Chinese human-nature relationships while addressing contemporary urban challenges.

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Keywords:
Keyword 1: cultural ecosystem services
Keyword 2: social media analysis
Keyword 3: urban green spaces
Keyword 4: perception-based design
Keyword 5: large language models

P080

Students and landscapes: unlocking the relationship between students' experience in greenspace, nature connectedness and pro-environmental orientation

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Background: Spending time in greenspace is positively associated with nature connectedness and pro-environmental orientation (Teixeira *et al.*, 2023; Wilkie and Trotter, 2022). This is particularly important, with the ongoing climate crisis and biodiversity loss (Samus *et al.*, 2022). University is a transitional stage from childhood to adulthood, hence crucial to developing environmental responsibility (Janmaimool and Khajohnmanee, 2020). University campuses have the potential to play a key role in promoting biodiversity in urban environments (Vallejo, Aloy and Ong, 2009), as they can link conservation, research and education (Colding and Barthel, 2017; Moerman and Estabrook, 2006). Students represent the future generation of decision-makers and are at a crucial stage in their lives where their behaviours are shaped. This study, therefore, aims to explore the relationship between use and experience in greenspace, nature connectedness and pro-environmental orientation in university students.
Methods: Research methods include observation, photo-elicitation, and walking interviews. Literature suggests that greenspaces are under-used among students (Woolley, Somerset-Ward and Bradshaw, 2020; Jim and Chen, 2006). Hence, for greenspaces to contribute to sustainable behaviours, we need to better understand how the student population experiences them, and what encourages their use and experience of nature within these greenspaces.
Results: Observation sessions revealed that weather is a significant enabler (and barrier) for greenspace use among students. During cold and rainy days, fewer students were seen using greenspaces. In greenspaces which provide shelter (e.g., pergolas), students were only seen in those areas. During warmer days, students prefer sitting on the grass or walls, rather than on 'formal' sitting amenities like chairs and benches. Furthermore, students seem to prefer flexible seating (e.g., movable tables and chairs).
During interviews, students described the vital role greenspaces play in contributing to their mental health and wellbeing. Having a well-maintained greenspace close to lecture locations encouraged students to use it during breaks and enabled them to relax. Furthermore, several students noted that the sight and sound of water enhanced their mental restoration. Interviews also showed that students' sense of nature connectedness is promoted by natural elements such as water, vegetation and the presence of wildlife. Natural elements also contributed to students' pro-environmental orientation, through visual appeal. However, in most cases this was only true in greenspaces the students felt an emotional attachment to.
Conclusions: Research findings can assist universities and municipal authorities, both hosts to students, in tying education practice and policies to the landscape planning and design of greenspaces that will enhance students' nature connectedness and pro-environmental orientation. Through this, we can harness theory and practice to better the health of both people and the environment.

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Keywords:
Keyword 1: Greenspace
Keyword 2: Experience
Keyword 3: Nature connectedness
Keyword 4: Pro-environmental orientation
Keyword 5: University students

P081

Landscape Urbanism and Social Resilience: A Comparative Study of Community Spaces in New Towns, Shanghai, China

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Landscape design is more than just spatial arrangement; it actively shapes social processes in urban areas. In new towns surrounding metropolitan regions, where planning frameworks strive for uniformity and smart growth, community landscape systems frequently produce diverse social impacts and ecological consequences across different socioeconomic groups. This research investigates the role of landscape design in fostering social cohesion and preserving collective memory within urban environments.

The study analyzes two communities within the same new town, employing the theoretical framework of landscape urbanism. Community A, an upscale area for urban elites, contrasts with Community B, a standardized district for relocated, lower-income residents. A mixed-methods methodology combines spatial diagnostics and social perception analysis to elucidate distinct socio-ecological dynamics within these contexts. The methodology innovatively integrates quantitative tools—such as three-dimensional spatial analysis, ecosystem service quantification, and heat maps of public space utilization—with qualitative techniques, including oral histories, emotional mapping, and behavioral annotation. The Social Values for Ecosystem Services (SolVES) model enhances the analysis by providing a quantifiable assessment of the social value embedded in landscape systems, while observations of spontaneous public activities illuminate variations in community self-organization capacities.

Findings highlight that Community B, through organic public interactions and rearticulated collective memory, achieves higher place attachment and stronger social cohesion than Community A. This suggests that landscape systems' effectiveness in guiding social processes hinges not only on design but also on socioeconomic context. However, a striking example emerges in Community A's huge green slope, which evolves into a public landscape infrastructure. This shared leisure space attracts diverse citizens, embodying landscape urbanism's capacity to bridge communities, enhance ecological resilience, and foster urban unity—key elements of guiding cities with society.

By developing a Community Landscape Social Production Index using the SolVES model, this study introduces a novel framework for assessing landscapes' social value. The results affirm landscape urbanism's role in reshaping social dynamics and offer practical insights for designing resilient, inclusive new town communities. The multifunctional green slope, for instance, illustrates how landscapes can serve as canvases for creation and memory, enriching urban life while addressing social justice.

This research advances the discourse on guiding cities by illustrating how landscape design fosters use, memory, and creativity in new towns. It offers a replicable methodology and practical strategies for landscape architects to enhance social cohesion, equity, and collective identity. By connecting physical form to societal outcomes, the study highlights landscapes' transformative potential in creating vibrant, memory-rich, and socially integrated urban communities.

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Keywords:

Keyword 1: Landscape Urbanism
Keyword 2: Social Cohesion
Keyword 3: SolVES
Keyword 4: New Town
Keyword 5: Ecosystem Services

P082

Reclaiming Spatial Efficiency in Shrinking Cities: Scenario-Driven Predictive Modeling and Multi-Criteria Evaluation for Vacant Land-Green Space Optimization

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Backgroud: Urban shrinkage has emerged as a critical global phenomenon marked by spatial inefficiency, characterized by increasing vacant land parcels and underutilized public infrastructure (Nassauer & Raskin, 2014). This spatial degradation disproportionately impacts vulnerable communities, often home to aging populations, low-income households, and marginalized groups (Sha & Cheng, 2024). Compared to stable cities, shrinking cities exhibit significantly higher crime rates (Liu et al., 2024), reduced neighborhood cohesion, and weakened civic attachment (Frazier et al., 2013). Within this context, new green space provision have proven to be effective measures for promoting social integration and residents' well-being (Liu et al., 2024) while reactivating the dormant lands over the shrinking cities (Lima et al., 2020). However, shrinking cities face systemic constraints from fiscal austerity and human capital loss, which significantly restrict green space expansion and siting decisions (Kim et al., 2020). The key challenge lies in identifying spatially appropriate and economically viable green space locations through evidence-based planning approaches.

Objectives: To address land use mismatches and support community regeneration, this study constructs an integrated framework with two interrelated objectives:
(1) Develop a scenario-driven predictive modeling tool to map vacant land dynamics under different shrinkage scenarios;
(2) Establish a multi-criteria cost-benefit evaluation model to prioritize vacant land for green space development based on community-specific socioeconomic needs and future trends.

Methods: The study employs a three-phase approach to address the research objectives.
1) Vacant Land Identification: Develops a remote sensing-based spatial analysis framework using YOLOv11 for high-resolution land use classification and manual validation to identify vacant land parcels;
2) Dynamic Vacancy Forecasting: Constructs a scenario-driven evolutionary model integrating Random Forest algorithms and socioeconomic variables (e.g., population decline rates, housing abandonment patterns) to predict vacant land dynamics under different community shrinkage scenarios;
3) **Multi-Criteria Prioritization:** Establishes a parcel-scale cost-benefit evaluation framework quantifying land acquisition and consolidation costs against regeneration benefits (social, environmental, economic) through stakeholder-informed criteria weighting, ensuring alignment with community-specific needs.

Findings: The study reveals two critical outcomes: First, the adaptive forecasting tool identified significant spatial-temporal variations in vacant land dynamics across shrinking communities, influenced by population density gradients, building stock characteristics, and zoning function. Second, the multi-criteria cost-benefit model demonstrated a mismatch between low-acquisition-cost parcels and high-impact regeneration opportunities, necessitating trade-off analysis between economic feasibility and community needs.

Contributions: Theoretically, this study advances shrinkage research by integrating scenario-driven predictive modeling with stakeholder-informed cost-benefit analysis to link demographic trends with spatial outcomes. Practically, it provides policymakers with actionable tools (vacancy risk maps and priority rankings) to optimize green space investments in fiscally constrained environments. By aligning land reuse with community goals, the framework shifts urban management from reactive maintenance to proactive revitalization, offering scalable strategies for global shrinking cities.

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Keywords:
Keyword 1: Urban Shrinkage
Keyword 2: Vacant land dynamics
Keyword 3: Deep Learning
Keyword 4: Multi-criteria decision analysis
Keyword 5: Community regeneration

P083

Soft Guidance as Mnemonic Infrastructure: Playful Reassemblage of Individual Affect in Collective Space

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This study investigates the application of game design principles to spatial guidance in landscape architecture to facilitate the reclamation of individual culture and memory as a means of advancing social justice. By analyzing China's anti-ludic Confucian traditions, the research reveals a cultural tension between collective morality and personal ludic expression, reflecting the systemic erasure of individual experiential narratives within collective environments. Through deconstructing three evolutionary phases of ludic guidance design—“functional guidance”“didactic guidance”and “dialogic guidance”—we identify parallels between game-level navigation systems and classical Chinese garden-making techniques. Unlike Western landscape norms prioritizing ecological routing, Chinese garden design centers on individualized poetic immersion, termed "scene-entering" design (rujing). The study demonstrates how "soft guidance" strategies create choice architectures that balance designer intentionality and user agency. Findings propose a tripartite framework where landscapes operate as: 1) functional scaffolds for interaction, 2) didactic tools for revealing local memory, and 3) dialogic platforms enabling co-creative meaning-making between residents and environments. This synthesis challenges conventional layered landscape paradigms, positioning ludic guidance as an infrastructural medium for materializing affective individual experiences in collective spaces. By linking game-based navigation to landscape infrastructure, the research advocates a play-centric approach to actualize the "scene-entering" concept in contemporary urban contexts, amplifying individual mnemonic experiences while forging new synergies among art, memory, and ecology.

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No references

Keywords:
Keyword 1: Game design
Keyword 2: Spatial guidance
Keyword 3: Social memory
Keyword 4: Landscape architecture
Keyword 5: Participatory spaces

Guiding cities with society: Participatory approaches and governance strategies

P084

The underestimated but increasing role of gender-sensitive guidance in the urban landscape field: insights from the German WILA initiative

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Women in Landscape Architecture (WILA) Festival and gender-sensitive urban planning share very similar challenges, or how diversity creates added value.

Given their underrepresentation as offices' CEOs or in the (landscape) architecture field, why are women and gender-diverse people essential planning partners for a better building culture?
These are just a few questions (and reasons) which led the Berlin planners initiative n-ails e.V. (female network of architects, interior and landscape architects, engineers and urban planners) together with the Berlin German Chamber of Architects to launch the Women in Architecture Festival in 2021.
Visibility, dialogue and diversity were the keywords of this first event, experiences were exchanged and a manifesta with goals aimed at politics and institutions was published.
Following the success of the 2021 Berlin edition, WI(L)A will take place throughout Germany in June 2025.

The organization and program of the next WILA Festival reflect new perspectives. For example, the team 2025 consists of an increased number of employees and younger colleagues compared to the first event. Colleagues will be encouraged to specialise in construction management, a historically male-dominated field (as confirmed by the survey made by Laure and another colleague during the bdla landscape construction days in January 2025).
The evolutions of both the German Federation of Landscape Architects (bdla) and the German Chamber of Architects in a rather conservative architecture field are notable. As they are generally no longer employers' organizations, they are adapting and thus supporting multi-level change.
To illustrate:
- according to a survey conducted by the construction industry, women were a minority in this German industry, representing only 13% of the workforce in 2022...(!)
- the German Chamber of Architects provides accurate data about gender gaps too.

We must address how our planning sector needs to evolve to provide sustainable solutions for both climate resilience and social sustainability. This last one, social sustainability, is a key component to achieve the United Nations Sustainable Development Goals, while gender-sensitive systematic consideration is definitely not a 'nice to have'. This is particularly true in Berlin, with the '*Guidelines for a fair, inclusive and caring city*' presented for International Women's Day 2025.
More than three decades after the reunification this is a wink at the history of the vibrant German capital and its divided history, between the more progressive and gender-egalitarian East Germany (as state socialist country) and the surprisingly more traditional West Germany (male-breadwinner model).
Several projects demonstrate the influence of gender-sensitive planning, which can be implemented with moderate financial means.

Having attended the *1st Diversity in Architecture (DIVIA) Conference* in autumn 2024 and the latest bdla event '*gender-sensitive, diverse, inclusive: strategies for offices and planning*' this March, Laure Aubert is above all co-organising the WILA festival edition 2025 in Berlin (as well as past 2021).
She is eager to reflect on and discuss issues that concern us all, and to give WILA the opportunity to expand beyond a single German initiative through interactions with congress attendees.

Let's landscape architecture lead the change on all levels!

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Keywords:
Keyword 1: Inclusive, caring city
Keyword 2: Equality Under Construction
Keyword 3: Diversity in Architecture
Keyword 4: Women in Landscape
Keyword 5: Professional associations

P085

Informal Farms in Urban Wastelands as a Platform for Identity Expression: A Case Study in Xi'an

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Urban wastelands, characterized as abandoned, underutilized, or functionally vague spaces, are often regarded as "spatial fragments" or "marginal spaces" in urban development, typically lacking clear functional designation and planning objectives (Gandy, 2013). In the Chinese context, these urban wastelands often include informal farms established by neighboring urban villages or other communities using minimal materials and basic construction methods. The emergence of such informal farms is entirely spontaneous, driven by self-organized actions of the surrounding communities. To some extent, according to the research framework of “geographies of ruralization” proposed by Krause (2013) and Gillen et al. (2022), this phenomenon can be interpreted as an expression of urban village residents’ response to the loss of a sense of belonging and identity in the context of rapid urbanization (Krause, 2013; Gillen et al., 2022). However, informal farms often lack legal land-use rights and remain excluded from formal urban planning frameworks. This exclusion places them in a "gray zone", where their existence largely depends on local governmental tolerance and discretionary enforcement. Despite these challenges, these spaces hold significant ecological, cultural, and social value. They contribute to reducing carbon footprints, reinforcing the identity and sense of belonging among urban village residents, and empowering marginalized groups. However, these dimensions remain underexplored in existing research (Hanxi, 2024).

This study examines the significance of informal farms in urban wastelands in Xi’an, a city in northwestern China, in shaping the identity, cultural recognition, and sense of belonging among urban village residents. The research methods use field observations, in-depth interviews, and textual analysis to investigate the informal farming within these urban wastelands.

The study reveals two key findings. First, the shared labor, resources, and spaces associated with informal farming foster increased neighborhood interaction and strengthen social networks through collaboration. Additionally, urban informal farming helps preserve rural memory, reinforcing residents’ sense of belonging and responsibility toward their community, thereby enhancing overall community cohesion.

This research fills a critical gap in the study of identity and social belonging regarding informal farms within urban villages. Through empirical analysis, the findings highlight the significant role of informal farms in reconstructing identity and maintaining social belonging. Future research should explore how these informal farming spaces can become more publicly accessible and be integrated into formal urban planning frameworks.

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Keywords:
Keyword 1: urban wasteland
Keyword 2: informal farm
Keyword 3: social identity

P086

Fostering Conviviality in Landscapes and Public Spaces: Lessons from Hanoi

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As landscape architecture increasingly engages with social sciences, a new field of research is emerging at the intersection of public space design and intergroup sociability. This study explores how environmental factors influence interactions between different social groups through a case study conducted in Hanoi, Vietnam. It focuses on Tan Mai, one of the city's most densely populated districts, where rural migrants face social discrimination and limited access to public spaces.
In response to these challenges, HealthBridge, ThinkPlaygrounds!, and UN-Habitat developed a playground and community garden in 2019 to foster interactions between migrants and non-migrants. A post-occupancy evaluation conducted in the summer of 2022 combined field observations, semi-structured interviews, and surveys to assess the project's impact. The results highlight specific spatial configurations and a hierarchy of environmental factors that influence sociability while also revealing obstacles that can reduce the social potential of public spaces.
This research critically examines the applicability of Western theories on urban sociability in the Global South and underscores the importance of design strategies tailored to specific local contexts.
The presentation will be structured around four key themes:

1. The convergence between landscape architecture and social sciences, emphasizing the growing need for interdisciplinary approaches to designing socially inclusive spaces.
2. The role of environmental design in shaping social interactions, particularly in dense urban contexts where public space is scarce.
3. The methodological challenges of evaluating sociability in public spaces, especially in non-Western contexts, and the potential of interdisciplinary research to refine analytical frameworks.
4. Practical lessons for landscape architects worldwide, highlighting the importance of integrating social dynamics into the design process.

By bridging landscape architecture and social sciences, this study contributes to a growing body of research that positions public space design as a key driver of social cohesion. The findings challenge traditional design paradigms by demonstrating that fostering sociability is not merely about ensuring physical accessibility or spatial flexibility but requires a nuanced understanding of the relationships between space and social behaviors.
This presentation will provide landscape architects with insights into designing public spaces that actively promote intergroup interactions. By drawing inspiration from practices and social dynamics in the Global South, practitioners can refine their approaches to inclusivity and adaptability, ensuring that urban landscapes support diverse social experiences. As the profession evolves, adopting research-based methodologies will be essential to creating public spaces that not only accommodate but actively encourage meaningful social encounters.

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Keywords:
Keyword 1: Public space
Keyword 2: Intergroup contact
Keyword 3: Environmental factors
Keyword 4: Conviviality space
Keyword 5: Interactions

P087

Access to Wellness: Analyzing Spatial Equity in Urban Green Spaces for Well-Being in Pasig City, Metro Manila

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Urban green spaces such as parks, outdoor recreational facilities, and natural features are pinnacle elements in urban planning, with a utility for the people and the environment to mitigate pollution, noise and excessive heat, foster social cohesion, and improve residents' overall well-being (World Health Organization. Regional Office for Europe, 2016). In addition, multiple research has supported the direct benefits of the natural environment to humans as these contribute to lowering their cortisol levels and providing them with a peaceful retreat from the bustling city life (IMPACT, 2024; Jimenez et.al., 2017).

However, global urbanization has led to urban sprawl, thus declining access and engagement to these green spaces (Barton & Rogerson, 2017). In the Philippines, Metro Manila faces rapid urbanization, posing a continuous decline in green spaces. This concern was amplified during the COVID-19 pandemic when people started looking for more of them during lockdown, pointing to a long-term need for more equitable green spaces, supporting sustainable development and fostering people's well-being (IMPACT, 2024; Noszczyk et al., 2021).

The Pasig Green City Program is an initiative by Pasig City, NCR, Philippines that promotes clean air, safe water, and urban forests. With sustainable initiatives spanning regulated transportation systems, disaster risk management, and environmental conservation, Pasig serves as a model for urban sustainability (ICLEI, 2021). However, in terms of green spaces, Pasig City (approximately 35 hectares in land area) only contains 70.18 ha of public green spaces, which is below the World Health Organization's standards: 0.5-1ha of public green space within 300m of their home (Argamosa et.al., 2017). Thus, it remains to be seen whether Pasig's goals for sustainable development, green spaces, and spatial equity through the PGC program hold up to global standards post-pandemic.

Hence, this study employs the Quantum Geographic Information System (QGIS) to analyze the distribution and accessibility of green spaces in Pasig City. The findings reveal significant inequities in spatial distribution, with many green spaces concentrated in certain towns while others lack public access. Consequently, many residents would travel considerable distances to experience the benefits of open green spaces, highlighting the need for a more equitable distribution.

To address these challenges, the study proposes three key interventions: (1) the development of public parks in underutilized spaces to expand accessibility, (2) the enhancement of streetscapes through tree-lined pedestrian pathways to improve urban walkability, and (3) the creation of riverfront esplanades to maximize green corridors along Pasig River. These strategies aim to bridge gaps in green space accessibility and cultivate a city prioritizing people and the environment.

The study underscores the importance of integrating green spaces into urban planning to enhance environmental sustainability and public health. By addressing disparities in accessibility, Pasig City can set a precedent for other urban centers striving to create climate-resilient, livable cities. With the city's slogan, Pasig City: Umaagos ang Pag-asa (Flowing with hope), the findings provide valuable insights for policymakers, city planners, and stakeholders in designing a more inclusive and equitable urban landscape that supports the well-being of all Pasigueños.

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Keywords:
Keyword 1: Urban Green Spaces
Keyword 2: Green City
Keyword 3: Spatial Equity
Keyword 4: Well-being
Keyword 5: Accessibility

P088

Study on Tourists' Landscape Preferences of National Park Based on Machine Learning

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For a long time, tourist groups have shown considerable interest in the recreational use of national parks. Different groups of tourists exhibit varying recreational preferences for different national parks, and numerous researchers have explored this topic. Xie Jiehang, Zheng Mingming, and others have employed machine learning as a research tool to analyze textual reviews left by tourists on social media platforms. Through these analyses, they have investigated tourists' evaluations of specific national parks, providing valuable insights for the improvement of park management strategies.[1-4] Similarly, Xin Xin, Wang Guotai, and their colleagues have integrated travel-related social big data with machine learning models, enabling the preliminary development of travel recommendation systems based on tourist preferences. [5-7]Current research on tourist preferences has achieved a high level of rigor and employs a wide range of technologies. However, the integration of social big data with machine learning remains relatively underdeveloped. Existing studies primarily focus on textual data while neglecting image data, thus limiting the comprehensiveness of the findings. To address this gap, this study aims to leverage the advantages of both social big data and machine learning to conduct a more comprehensive and accurate analysis. In order to precisely investigate landscape preferences among tourists visiting national parks and to provide effective strategies for national park management, this study selects Pudacuo National Park in Yunnan, China, as a research case. A combined approach utilizing social media data and machine learning evaluation methods is employed to analyze tourist landscape preferences, complementing the limitations of previous research. The research process begins with data collection and organization from multiple online platforms using Python 3.11. Subsequently, a machine learning method—cascaded multimodal decomposition bilinear pooling—is applied to deeply process the collected data and extract key informational elements from image files. Following this, label detection and multi-attribute element detection methods are used to analyze the distribution of various landscape elements, thereby enabling an initial exploration of tourist preferences across different social media platforms. The findings reveal distinct tourist preferences for landscape elements in Pudacuo National Park across three platforms analyzed in this study—Weibo, Tik Tok, and Mafengwo App—each exhibiting unique characteristics. Based on these results, this study provides targeted recommendations for park management, focusing on enhancing the attractiveness of natural environmental elements. Given that most tourists demonstrate a high level of interest in the natural environment, it is crucial to prioritize the conservation of Pudacuo National Park's ecological integrity. Special attention should be given to the potential negative environmental impacts associated with increasing tourist numbers. Furthermore, without compromising ecological sustainability, efforts should be made to maximize the utilization of alpine landscape elements to enhance the park's overall appeal and, in turn, strengthen the social attractiveness of the city in which it is located.

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Keywords:

Keyword 1: social media data
Keyword 2: machine learning
Keyword 3: tourist landscape preferences
Keyword 4: governance strategies

P089

Ethnocultural Narrative-Driven Social Role Transformation in Botanical Gardens: An Example from the Practice of Xishuangbanna Tropical Botanical Garden, China

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Since botanical gardens are the primary interface between plant civilization and humans, their design must be grounded in the principles of cultural cognition. As carriers of "perceived landscapes," botanical gardens need to tackle the community's fundamental need for the reestablishment of social roles in order to empower the living environment in the context of global environmental change and landscape democratization. This study uses Xishuangbanna, a typical area of ethnic minority cultures in China, as a case study to examine how botanical gardens can support the synergistic development of cultural inclusivity, ecological resilience, and social equity. It is based on the objective of creating a national botanical garden system in China. Utilizing the cognitive paradigm of "the unity of man and heaven" and the theoretical framework of ecological "meaning-image," this study gathers visitor evaluation data from Xishuangbanna Botanical Gardens and community narratives from public platforms such as Ctrip and Ma's Woo via a Python program. It integrates ROST CM6 semantic analysis software with NVivo for text cleaning and coding, employing frame analysis to systematically compare the perceptions of local residents and tourists regarding the natural elements of the botanical garden. The study aims to elucidate the function of cultural translation mechanisms in closing the knowledge gap between scientific conservation and local contexts, while also offering empirical evidence for the development of a culturally narrative program for botanical gardens with regional attributes.

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Keywords:
Keyword 1: Botanical gardens
Keyword 2: Cultural sustainability
Keyword 3: Community participation

Keyword 4: Social role transformation
Keyword 5: Ethnocultural narratives

P090

Co-creating micro-scale Nature-Based Designs in Tshwane, South Africa: balancing stakeholder interests in the design process

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Globally, co-created nature-based solutions are increasingly used to address infrastructure challenges in urban green spaces driven by factors such as climate change and rapid urbanization. However, little is known about how diverse stakeholder expectations— across sectors—are navigated as part of these projects. This study examines the role of landscape architects in such transdisciplinary projects to facilitate deeper community engagement in urban green space projects. Specifically, it explores the practicality of integrating co-creation into standard landscape design processes and the challenges and opportunities this brings.
Our presentation draws on insights from the CONSUS (Collaboration on Nature-Based Solutions for Sustainable Cities) project, which fosters community buy-in, ownership, and stewardship of urban green spaces in Tshwane, South Africa. By bridging communities, academia, and local governments, CONSUS co-creates micro-scale design initiatives to activate sustainable green and blue spaces. Now in its second year, the project has built strong momentum, enhancing community engagement in the Mabopane Green Space. The study took place in a marginalised peri-urban community in the City of Tshwane, South Africa and employed desktop research, site surveys and scoping exercises, 18 focus group discussions, 25 informal conversations with residents, participant observation of two city-led and nine team-led co-creation workshops. Qualitative content analysis was used to examine the collected data. Our findings suggest that multiple interrelated factors could hinder the co-creation process and influence its practicality including, time and budget constraints, approval processes, and differing knowledge exchange styles and expectations. However, transformative change emerges through enhanced stakeholder capacity, stronger community bonds, and increased awareness among city officials of community needs. Landscape architects could play a critical role in this co-creation process, which, in our case, led to deep community engagement but was challenged by complex collaborations, extended time frames, and sustained funding. Despite challenges, micro-scale nature-based solutions through co-creation show the potential to foster inclusivity, reciprocal learning, and long-term sustainable urban green space transformation.

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Keywords:
Keyword 1: collaboration
Keyword 2: cross-sectoral partnerships
Keyword 3: design process
Keyword 4: landscape architecture

Keyword 5: sub-Sahara Africa

P091

Inclusive Nature-based solutions as a tool for promoting just sustainability transition

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As an innovative concept and a practical approach, nature-based solutions (NBS) are becoming actively used in planning and designing sustainable, resilient cities and communities while addressing the triple planetary crisis. Effective stakeholder engagement is essential for integrating NBS into environmental stewardship, ensuring that diverse perspectives and interests are integrated, and that NBS intervention contributes meaningfully to ecosystem resilience and social equity (Raymond et al., 2023). Therefore, inclusivity is one of the main principles for NBS design and implementation, ensuring the fair distribution of resources and benefits, particularly among marginalized communities (Gionfra et al., 2023; IUCN, 2020).

Drawing on experience from NBS-related projects (e.g., CONNECTING Nature, RECONECT, and EmpowerUs), this paper examines approaches that align NBS with the interests of diverse stakeholders (e.g., policymakers, scientists, private organizations, and civil society groups, including Indigenous communities) (Dushkova and Haase, 2023; Dushkova and Kuhlicke, 2024; Dushkova et al., 2025). It also highlights the roles these stakeholder groups can play in achieving a just sustainability transition. Additionally, we explore various governance mechanisms/models (including participatory ones) that integrate diverse knowledge systems, such as scientific research and local traditional knowledge, including Indigenous ecological practices.

The research identifies key principles of inclusivity throughout the NBS co-creation process, encompassing capacity building, stakeholder involvement, participatory design, and equitable distribution of benefits. It also addresses challenges that hinder access to NBS benefits, such as socioeconomic barriers, lack of representation, and power imbalances. Presented case studies of community-led NBS interventions illustrate the effectiveness of inclusive approaches that, beyond achieving their primary objectives, also provide multiple co-benefits (e.g. fostering social cohesion, supporting ecosystem restoration, creating green job opportunities, etc.). The analysis enables the development of a structured checklist of actions to ensure the inclusivity of NBS interventions, emphasizing their contextual relevance, the transparency and legitimacy of the co-creation process, and the long-term viability of NBS. By embedding these principles, NBS interventions can maximize environmental and social co-benefits while addressing systemic inequities.

Ultimately, this paper argues that achieving genuine co-governance for transformative change requires such stakeholder participation in NBS that goes beyond informing and consulting thus reaching higher levels of co-creation, namely engagement and empowerment. This approach is key to unlocking the full potential of NBS as catalysts for a just sustainability transition in the face of climate change, biodiversity loss, and environmental pollution.

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Keywords:
Keyword 1: nature-based solutions
Keyword 2: stakeholder engagement
Keyword 3: co-creation
Keyword 4: justice
Keyword 5: sustainability transition

P092

Four Landscape and Heritage Plans for Four Nantes Districts: Supporting Residents to Develop a Landscape Strategy for Each District.

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We propose to present the approach of the "Landscape and Heritage Plan" initiated and developed over the years in four Nantes districts. This approach, started in 2015, builds on the landscape plans (introduced by the 2013 « Loi Paysage ») while adapting to the specifics of an urban context in transition. The sectors studied were chosen because they are located outside the major neighborhoods concerned with urban planning and renewal : less studied, less observed, and less heard parts of the city.
Although our methodology has evolved over the years, the specific challenges of these studies remain consistent:

- How to base a landscape approach on the knowledge of a working group of residents, leveraging their in-depth understanding of the district and living spaces (history, local heritage, geography, lifestyles, daily movements, presence of nature, landmarks, polarities, etc.).
- How the landscape architect can, in an educational role with the residents, facilitate a better understanding of the city and its landscape issues.
- How to propose a guiding plan structured around the landscape, existing, known, and future heritage (both material and immaterial), and uses.
- How to work and make concrete proposals for residential neighborhoods located outside major urban projects but still subject to urban changes and dynamics: densification, loss of connections to nature spaces, lack of nearby public spaces, and spaces for meeting and living for residents.
- How to transmit these proposals and support the city services, so that actions (which often require cross-sector involvement) can be organized, prioritized, and implemented in response to residents' expectations.

To achieve this, the methodology is divided into two phases:

- The first phase is based on pedagogy and facilitation with residents (groups of 15 to 40 people). This lasts 6 to 9 months and helps to develop the foundation of the study: the "neighborhood portrait." This is carried out through workshops held both indoors and on-site. Then, still based on fieldwork, the residents' intentions and concrete, location-based action proposals to improve their living environment are expressed, thematized, and organized to form a guiding plan, complete with spatially defined actions.
- The second phase is dedicated to transmitting the work and the expectations expressed by the resident group to the metropolitan services and elected officials. Across departments, the municipality processes the requests and commits to providing responses. The responses may take various forms: changes to urban regulations (modification and adjustment of urban planning documents), urban studies, public space projects, local developments (e.g., to encourage walking or cycling), creation of mediation or knowledge tools, resident involvement in establishing specifications for future buildings, or support for citizen initiatives in favor of neighborhood life.

References:
EEG, GP, LR
30/03/2025
Nantes

Keywords:
Keyword 1: Landscape plan
Keyword 2: Citizen dialogue
Keyword 3: District scale

Keyword 4: Uses/users

P093

Co-Creating Change: Seedbed Interventions as Catalysts for Equitable Urban Planning—The Case of Umeå

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The ongoing urbanisation and densification at the intersection with increasing environmental and health crises demand a holistic, equitable, and inclusive approach to urban planning, which has also been highlighted in the EU Green Deal's inclusive approach to sustainable urban planning aligned with the UN SDGs' "Leave No One Behind." This article introduces the seedbed intervention as a novel, community-driven, co-creative approach to Nature-based Solutions (NbS) that addresses gaps in equitable and inclusive urban planning frameworks. On the case of Umeå (Sweden), the article introduces the seedbed intervention approach and demonstrates how the approach facilitates the development of locally appropriate and sustainable NbS. The results show that the seedbed intervention approach improved the alignment between local needs and NbS design, connected diverse user groups, and catalysed curiosity, interest, and participation among citizens with the help of applying art-based methods. By demonstrating the practical application of a seedbed intervention, this research contributes to the development of scalable frameworks for more equitable and inclusive urban planning.

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P094

Unveiling the mismatch between urban green space equity and subjective well-being using explainable machine learning

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Background:
The perception of urban green spaces is crucial for human well-being. In the era of inventory planning, the focus of urban planning and construction in China is gradually shifting toward the comfort and happiness of urban residents. Green space justice, as a critical task in planning research, has not yet fully explored the connection between its equity disparities and subjective well-being (SWB). This study utilizes social media data and machine learning to delineate the mismatched distribution between urban park green spaces (UPGSs) equity and residents' SWB, aiming to support governments in effectively allocating resources and reducing costs while promoting public well-being.
Objectives:
This study has three objectives: (1) to reveal the mismatched relationship between the accessibility of urban park green spaces (UPGSs) and residents' SWB; (2) to explore the underlying factors contributing to this mismatch and the differences in their contributions; and (3) to interpret the interrelationships among these factors, analyze the mechanisms behind the mismatch, and provide actionable insights for scientific decision-making in urban planning.
Methods:
We employed an improved Gaussian two-step floating catchment area（2SFCA）method to calculate the accessibility of UPGSs within the outer ring of Shanghai, China. Using the Baidu NLP open platform, we tracked the emotional health dimensions of residents within the study area through social media platforms. Sentiment scores from massive social media texts were analyzed, and the evaluation results of green space equity levels and SWB data in geographic grids were averaged for matching analysis. Subsequently, SHAP-XGBoost regression was used to identify factors significantly associated with the mismatch between street spatial quality and SWB and to analyze the interaction effects among these factors.
Results:
The Gaussian two-step floating catchment area （2SFCA）method and Gini index analysis revealed inequities in park green space distribution within the study area, as well as a geographic mismatch between park accessibility and SWB levels. Mismatch distribution maps highlighted the spatial heterogeneity between urban park green space levels and SWB. Machine learning identified over ten factors, including housing prices, road network accessibility, land-use mix, ndvi, and nighttime light index, contributing to the mismatch, with housing prices having the highest contribution value.
Discussion:
As vital public assets, UPGSs play a crucial role in enhancing residents' quality of life and overall well-being. Through the appropriate allocation of spatial and social resources, urban park green spaces can positively influence residents' happiness. This study focuses on identifying urban factors that affect high-quality matches (where SWB significantly exceeds park accessibility). By addressing these disparities, cities can create more inclusive and sustainable green space environments for all residents, which holds significant implications for future urban planning and design practices.

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Keywords:
Keyword 1: Environmental justice
Keyword 2: Social equity
Keyword 3: SWB
Keyword 4: Mismatch
Keyword 5: Shanghai

P095

How Social Media Becomes an Accelerator of Gentrification: A Case Study of Chengdu Luxelakes Park

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With the widespread use of social media, its influence on urban residents' daily consumption decisions and travel choices has gradually increased (Joassart-Marcelli and Bosco, 2024). An increasing number of urban residents rely on social media to obtain recommendations about dining, entertainment, shopping, and urban spaces. Social media plays a crucial role in shaping perceptions of urban spaces and influencing consumption patterns (Ash, Kitchin and Leszczynski, 2018). At the same time, gentrification, as a process of urban space reshaping driven by capital or government (Smith, 2002), often manifests as high-income groups gradually replacing low-income groups, accompanied by changes in community business models, commercial upgrades, and the reconstruction of cultural landscapes (Davidson and Lees, 2005).

In recent years, the role of social media in accelerating this process has gradually become evident, although its specific mechanisms remain underexplored. This study takes Chengdu Luxelakes Park as the research subject and collects user-generated content with the “Luxelakes Park” geotag from the Weibo platform. Using a Python web scraper, 516 valid posts were obtained, and 52 of them were analyzed in-depth. By utilizing the BERT model for topic identification, combined with NLP and sentiment analysis to assess the emotional tendencies of the texts, and employing the Folium mapping tool for data visualization, this study explores how social media constructs perceptions of urban spaces and promotes the process of gentrification.

The study found that content related to Luxelakes Park primarily focuses on scenery reviews, dining check-ins, and leisure activities, accounting for approximately 70% of the total. The content mainly emphasizes spatial labels such as "high-end," "artistic," and "refined," with a clear consumer-oriented focus. Positive emotions account for as much as 85%, concentrated in the core scenic areas, while negative emotions are focused on the peripheral areas with inconvenient transportation. Public issues and the voices of indigenous residents are almost absent in the content, reflecting the cultural selectivity in social media narratives and the implicit compression of public space.

In addition, commercial elements such as cafes and art installations frequently appear, reinforcing the symbolic consumption value of the space. These attract middle- to high-income groups and drive capital accumulation, presenting typical gentrification characteristics in a digital context. The role of social media in gentrification is not only reflected in spatial promotion but also in emotional mobilization and cultural narratives that reconstruct urban imaginations, thus achieving the reproduction of the meaning of space.

This study points out that social media, as a digital re-creation mechanism of urban space, drives gentrification in a subtle and gradual manner. In future urban governance, it is important to recognize the role of social media in constructing spatial discourse and to be alert to the digital evolution of cultural exclusion and social inequality. By balancing consumer promotion with the expression of cultural diversity, it is possible to establish a more inclusive and equitable urban space communication system.

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Keyword 1: China
Keyword 2: Social media

Keyword 3: Gentrification
Keyword 4: Park

P096

Reconceptualizing the Role of Landscape Architects: A Process Analysis of Xinxiang Garden, Jiangxinyuan Neighborhood, Wuhan, China

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In China's urban micro-renovation context, *community gardens* have emerged as innovative governance tools. While scholars advocate for designers to act as collaborative partners and propose participatory frameworks, such idealized models disrupt traditional design workflows and struggle with implementation autonomy. This study examines how landscape designers proactively negotiate their roles by deconstructing and reconstructing their practices within participatory processes.

The *Xinxiang Garden* micro-renewal project in the Jiangxinyuan community (Wuhan, Hubei) is chosen as the research subject. It is a two-year initiative focusing on facility and landscape upgrades for green spaces between three residential buildings. The team established a multi-party co-creation model, determining site functions based on the community culture and resident opinions and encouraging full-process participation.

The study first examines how public participation is integrated into activity plans through textual analysis. Then, it combines in-depth interviews and participatory observation to analyze designers' conflict resolution approaches and their evolving relationships with residents across four phases, while exploring the underlying operational logic of community governance implementation.

It reveals that the designers constructed the social role of "collaborators" in the project by "introducing, breaking, and rebuilding" the identity of professionals. In the research phase, designers, as intervened by the public relations department, build a professional identity with order and neutrality, connecting with residents mainly through interviews; in the design phase, designers receive feedback through formal and public meetings. Questioning and rebuttal subverts the professional authority, thus breaking down the boundaries between the designers and the residents and motivating them to participate; During construction, designers transformed themselves into laborers, joining residents in site cleaning, plant growing, and facilities decorating; in the maintenance phase, they become advisors, providing guidance and professional support to the local team. Meanwhile, the active responses addressing challenges and conflicts by designers are reflected in the strategies like "compromise details", "collective action", and "tangential direction" , which motivate residents to utilize their skills and ideas, enhancing their autonomy.

Despite persistent conflicts, designers' reactive agency inadvertently disrupted the community's entrenched power equilibrium, activating latent connections among residents. The designers' value lies not in problem-solving but in **sustaining problem vitality**, keeping divergent voices in friction to ensure their **power structures are adaptable and fluid**. By transcending traditional roles as mere "service providers" or "authoritative problem-solvers," designers might find a way to assert professional autonomy through intermediary practices that reframe community development as perpetual dialogue rather than a deliverable product.

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P097

Measuring and Optimizing the Nighttime Environmental Equity of Public Spaces in High-Density Urban Areas: An Empirical Study of Shanghai

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With the transformation of modern societal rhythms, urban residents' leisure and social activities increasingly extend into nighttime. However, current landscape planning and design for urban public spaces predominantly focus on daytime functionality, resulting in insufficient nighttime landscape layouts and quality to meet residents' after-dark demands. This environmental inequity is particularly acute in high-density urban areas, necessitating systematic solutions. This study established an analytical framework to evaluate environmental equity in nighttime public spaces, selecting Shanghai's high-density Central Activity Zone as a case study. By integrating multisource geospatial data and employing machine learning techniques, we systematically investigated the coupling coordination degree between nighttime landscape supply (NLS) and residents' activity demand. Focusing on low-coordination areas, spatial correlations and heterogeneities between NLS and nighttime vitality were further analyzed. A four-dimensional optimization strategy—"functional integration, transportation retrofitting, safety enhancement, and cultural empowerment"—was proposed. Key findings include:Over 70% of the public spaces in the study area exhibit low coupling coordination, with a spatial differentiation pattern characterized by a "core-periphery" structure; (2) In low-coordination areas, functional attributes of public spaces exert the most significant influence on nighttime activity, ranked in descending order as nighttime shopping, dining, entertainment, tourism, and exercise; (3) Accessibility factors (e.g., metro station proximity and street network density) significantly enhance nighttime vitality, particularly in commercial open street districts within the urban core; (4) Safety factors (e.g., nighttime illumination) and cultural factors (e.g., cultural facility density) positively impact nighttime vitality, with particularly pronounced effects in waterfront public spaces. This study highlights the environmental equity challenges of nighttime public spaces in high-density urban areas and provides a transferable methodological framework. The findings offer scientific insights for planning and redesigning nighttime landscapes, contributing to the enhancement of nighttime public space vitality and the realization of spatial equity. The research has theoretical and practical implications for fostering all-hour livable cities in high-density urban environments.

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Keywords:
Keyword 1: Nighttime Landscape
Keyword 2: Public Space
Keyword 3: Environmental Equity
Keyword 4: Coupling Coordination
Keyword 5: High-Density Cities

P098

Public Participation Synergy Mechanism for Migratory Bird Conservation in Natural Heritage Sites—An Empirical Study in Yancheng Coastal Wetlands

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As the most ecologically intact protected area type under the framework of the *World Heritage Convention*, natural heritage sites bear the strategic function of maintaining Earth's life-support systems[1]. Along the East Asian-Australasian Flyway (EAAF), Yancheng Coastal Wetlands, as China's first coastal wetland World Natural Heritage site, serve as a critical stopover for 415 bird species and 23 globally endangered species, holding exemplary significance. However, under the dual pressures of rapid urbanization and ecosystem complexity, the region faces challenges such as insufficient monitoring network coverage, limited forms of public participation, and a lack of data feedback mechanisms[2], urgently requiring the establishment of a more systematic and diversified collaborative conservation mechanism.

This study focuses on a **"public participation–data feedback–value communication"** synergy mechanism, integrating ecological modeling and spatial analysis to explore collaborative pathways for enhancing monitoring efficiency and ecological awareness. The research first employs the MaxEnt model to construct habitat suitability prediction models for key species such as the Red-crowned Crane and Saunders's Gull, validated against field bird observation data. Subsequently, the InVEST model is used to rasterize habitat quality assessments in coastal areas, generating ecological importance classification maps, which are overlaid with MaxEnt results to identify priority conservation zones. MSPA morphological spatial analysis and ecological corridor simulations are further introduced to evaluate current connectivity levels and propose optimization strategies[3][4][5].

Key findings include:

① Public observation data exhibit significant spatial clustering in urban fringe and agricultural wetland areas, complementing traditional monitoring zones and filling gaps in intertidal and industrial port regions;

② Observation content displays a prominent **"flagship species narrative bias"**, where charismatic species like the Red-crowned Crane dominate over one-third of records, while ecologically sensitive but less visible species (e.g., shorebirds) receive insufficient attention, reflecting an imbalanced species communication structure;

③ The synergistic monitoring network constructed from multi-source data significantly improves identification efficiency and spatial coverage of ecologically sensitive areas, while emotional narratives further enhance community residents' identification with conservation goals and willingness to participate.

The study demonstrates that a value communication-oriented public participation mechanism can overcome the limitations of traditional conservation models in monitoring precision and public mobilization through spatial data complementarity and communication strategy innovation[6].

Ultimately, a **"pan-regional monitoring network–hierarchical communication strategy–community collaboration"** framework is established, providing an operational and scalable practical pathway for transboundary migratory bird corridor conservation across three dimensions: **data integration, ecological cognition, and spatial governance**.

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Keyword 2: Coastal Wetlands
Keyword 3: Heritage Value Communication
Keyword 4: Public Participation
Keyword 5: Synergistic Monitoring Network

P099

Urban Barrage: Production Mechanisms and Sociocultural Implications of Public Space Signage Systems

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This study conducts a systematic inquiry into the genesis, governance, and evolutionary dynamics of symbolic signage systems within urban public spaces. Diverging from the static attributes inherent in conventional architectural environments, urban signage operates as a semantic network constructed through textual, graphical, and landmark-based symbols. While materially constrained by spatial coordinates, its signification processes remain fundamentally embedded within socio-cultural structures. Crucially, these systems demonstrate dual governance characteristics: they are simultaneously shaped by top-down regulatory frameworks and permeated by bottom-up creative appropriations. Informal signage exemplifies this tension, with its self-organized production mechanisms revealing citizens' agency in co-designing public spaces. Notably, commercial signage—particularly storefront displays that integrate functional communication with aesthetic expressions—emerges as paradigmatic cases of participatory spatial semiotics.

The research pioneers the conceptual framework of **"urban barrage"**, drawing analogies from the kinetic overlay, performative temporality, and text-image symbiosis observed in digital media's real-time comment streams (known as *danmaku* or *barrage*). This metaphorical lens facilitates the development of a dynamic model for analyzing textual signage's spatial behaviors. Three investigative axes structure the inquiry: 1) decoding the generative principles and developmental trajectories of urban barrage; 2) unmasking the dialectical interplay between institutionalized planning regimes and emergent spontaneous orders; 3) evaluating its instrumental potential in participatory urban regeneration. Employing street-level observational methodologies across typologically diverse communities, the study categorizes signage ecosystems through tripartite criteria—production craftsmanship, design agency allocation, and spatial dependency configurations. Through comparative analysis of planned governance models versus organic growth paradigms, the investigation particularly dissects the socio-technical mechanisms underlying informal barrage proliferation.

Empirical findings establish urban barrage as a pragmatically-driven symbolic regime whose formal attributes exhibit strong functional correlations with spatial typologies, usage contexts, and user demographics. The observed interplay between standardization and customization not only materializes the power negotiations between municipal regulatory apparatuses and commercial aesthetic entrepreneurship but also spatially encodes the stratification patterns of cultural capital distribution. Significantly, as ephemeral media artifacts, urban barrage demonstrates unique capacities in activating transient spatial appropriations while functioning as grassroots urban design interfaces. The study culminates in proposing a responsive governance framework that orchestrates formal-informal signage symbiosis. This approach advocates for reconciling regulatory coherence with place-specific identities through adaptive policymaking, thereby advancing a tactical urbanism paradigm that harnesses temporary usage strategies and participatory renewal mechanisms.

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Keywords:
Keyword 1: Urban barrage
Keyword 2: Public space
Keyword 3: Signage system
Keyword 4: Production mechanisms
Keyword 5: Spatial governance

P100

Enhancing Thermal Comfort for Elderly Summer Activities: Participatory Design guidelines for Urban Greenways

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[Background]
Climate change, marked by global warming, renders older adults—a vulnerable population—more susceptible to adverse impacts. Adverse thermal environments increase illness risk among elderly individuals during outdoor activities and may lead to fatalities. Greenways in high-density urban areas serve as vital green spaces for daily leisure and physical activities among elderly urban residents. High-quality greenways are essential for promoting healthy aging and can help mitigate social inequalities in access to physical activity.
[Objective]
Currently, greenway planning and design predominantly follow a “top-down” approach. However, there is insufficient attention to the actual usage experience of greenway users, particularly among elderly users. This study employs participatory design to investigate the thermal comfort requirements and influencing factors of elderly individuals during summer activities on greenways. It undertakes user-centered, interdisciplinary collaborative design and translates the findings into actionable engineering practice guidelines. The study aims to provide a reference for the design and governance of inclusive greenways using a bottom-up approach.
[Methods]
This study selected eight typical spaces along the urban central greenway in Beijing, each characterized by distinct activities. Under typical summer conditions, a 10-day experiment was conducted, during which random questionnaires were administered to elderly users to collect data on their activity status, subjective thermal perception, environmental perception, and individual information. Concurrently, meteorological parameters were measured. Statistical analysis methods were employed to quantify the relationships between thermal perception and influencing factors. Additionally, greenway design recommendations were collected from elderly users.
[Results]
The results indicated that: 1) Elderly individuals engaged in different activities exhibited varying thermal sensitivities. Notably, some elderly people were willing to participate in outdoor activities during periods of extreme thermal stress, which extended beyond previous understandings. 2) Acoustic perception significantly impacted the thermal comfort of the elderly, with the trend of this impact correlating with the level of thermal stress. 3) Among individual factors, chronic disease status significantly impacted the thermal comfort of the elderly. Chronic disease patients reported lower thermal comfort than healthy elderly individuals, with the gap in thermal comfort increasing as thermal stress levels rose. Integrating data results and spatial design recommendations from elderly user representatives, guidelines for inclusive greenway design and services were developed, covering vegetation, surface materials, water features, and facilities, to meet the diverse thermal needs of the elderly during summer. These guidelines aimed to maximize the potential of greenways to encourage outdoor activities and safeguard the physical and mental health of the elderly.
[Conclusion]
This study quantitatively investigated the thermal perception characteristics of elderly greenway users in summer and their relationships with activities, environmental perceptions, and individual factors, aiming to provide guidance on landscape design and services to improve the thermal environment of greenways. Designers were positioned as coordinators who integrate planning requirements, public needs, and interdisciplinary technical resources to deliver specific and actionable strategies for landscape design. The study emphasizes the importance of balancing technical rationality with humanistic care. Through this bottom-up approach, the study offers a pragmatic paradigm for developing inclusive green infrastructure in the context of climate change.

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Keywords:
Keyword 1: Elderly thermal comfort
Keyword 2: Participatory design
Keyword 3: Urban Greenways
Keyword 4: Acoustic-thermal interaction
Keyword 5: Chronic disease

P101

Study on Stakeholders' Sense of Belonging in Xichong Dark Sky Community Based on Social Capital Theory

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The issue of light pollution has worsened due to accelerated urbanization and the growth of the nighttime economy. The development of International Dark Sky Communities, a new type of International Dark Sky Places, faces the complex challenges of reshaping the relationship between people and the land while coordinating various interests. Effectively combating light pollution and protecting the nighttime ecological environment, while considering the livelihoods of residents and the rational development of the nighttime economy, has become an urgent problem that needs to be addressed. This study extends beyond traditional views of environmental regulation. It devises an analytical model based on the "value perception - attribution mechanism - synergistic path" coupling framework of Social Capital Theory and Creating Shared Value (CSV).
We use the Xichong International Dark Sky Community in Shenzhen, China, as a case study to explore the cognitive mapping of night sky resource value among four key stakeholder groups: local residents, businesses, scientific research institutions, and astronomy enthusiasts. We achieve this by integrating semi-structured interviews, social network analysis, and policy text analysis. The four mechanisms guiding their economic interests, social integration, cultural identity, and ecological conservation emerge as we examine the contradictions in their needs and development. This study highlights the mechanisms that foster a sense of belonging.
Our findings reveal significant disparities in how stakeholders perceive the value of night sky resources: locals and businesses are generally more inclined to value instrumental rationality, emphasizing the economic worth of these resources, while scientific research organizations and astronomy enthusiasts tend to prioritize values, focusing on ecological and cultural preservation. It is crucial to consider the structural, relational, and cognitive components of social capital to bridge the gaps in expectations and enhance stakeholders' sense of belonging. Consequently, we propose a strategic framework for "night sky value co-construction" aligned with the dimensions of social capital: (1) establish a cross-domain governance alliance to enhance the institutional trust network and governance structure through information sharing and coordination mechanisms; (2) create an "astronomy+" scenario economy to foster close interactions among the government, businesses, communities, and scientific research institutions, leading to mutually beneficial outcomes; and (3) cultivate a nighttime cognitive community to aid members in developing their ecological and cultural identities and reinforce the internalization of the value of star protection and awareness of necessary actions.

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Keywords:
Keyword 1: Landscape Architecture
Keyword 2: Dark Sky Community
Keyword 3: stakeholder
Keyword 4: Social Capital Theory
Keyword 5: Creating Shared Value

P102

Evaluating the Quality of Small Urban Public Open Spaces (SUPOS) in Tianjin through a User-Centered Approach

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The increasing demand for citizen participation in shaping their living environments calls for inclusive methodologies that bridge hyper-local needs with city-wide sustainability goals. In Tianjin—a rapidly urbanizing metropolis balancing historic preservation, industrial transformation, and ecological resilience—small public open spaces serve as critical laboratories for testing participatory design's capacity to advance social equity. Grounded in the European Landscape Convention's definition of landscape as "dynamic human-nature interactions," this study decodes how co-design processes can transform underutilized urban spaces into vibrant civic assets across 70 small public open spaces in six key districts of Tianjin (Heping, Nankai, Hexi, Hebei and Hedong).

Using established theories of successful public space design, this study employs a user-centered approach, integrating statistical correlation analysis (SPSS) and spatial mapping (GIS) to evaluate key design factors influencing public space success. Through on-site data collection across 70 public spaces, behavioral analysis, and spatial observations, the research quantifies the impact of spatial configurations on user engagement, social vitality, and environmental quality. The combination of GIS-based spatial analysis and SPSS statistical modeling allows for an evidence-based evaluation of how design attributes impact spatial utilization patterns. These insights contribute to data-driven decision-making for urban planners and landscape architects, reinforcing the role of participatory design in creating resilient and inclusive public spaces.

The study also examines the evolving role of landscape architects as mediators and facilitators within multidisciplinary teams, working alongside urban planners, local governments, and civil society organizations. Their role in advising and co-creating urban spaces with residents is critical to achieving representative and inclusive outcomes. Additionally, the research highlights the responsibilities of elected representatives and technical departments in fostering bottom-up engagement, securing long-term sustainability, and implementing governance frameworks that integrate community aspirations.

By integrating quantitative and spatial methodologies, this research provides a replicable framework for evaluating public space effectiveness, contributing to both academic discourse and practical urban design strategies. By advancing participatory methodologies that balance expert knowledge with local perspectives, this study demonstrates how small-scale public space interventions can promote accessibility, inclusivity, and environmental resilience, ultimately fostering equitable and vibrant urban landscapes in China's evolving urbanization landscape.

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Keywords:
Keyword 1: Urban Public Spaces
Keyword 2: User-Centered Design
Keyword 3: Participatory Planning
Keyword 4: Social Equity
Keyword 5: Inclusivity

P103

Optimizing built environment characteristics in both new and old urban communities for guiding the heat-resilient city's development

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Climate change and urbanization have intensified heat waves and the urban heat island effect, posing significant heat risks to cities worldwide. This urgency aligns with the *United National Sustainable Development Goals* (SDG), especially SDG 11 (Sustainable Cities and Communities) and SDG 13 (Climate Action), which emphasize integrated planning and interventions to enhance urban climate resilience. Responding to climate change has been incorporated into China's national strategy. Many cities have begun to explore climate-resilient development. How to integrate climate change actions into urban renewal actions is worth discussing. However, existing studies primarily focus on the urban scale, with limited attention to the urban community scale. It is difficult to form scientific and effective interventions. Hence, assessing urban thermal environments and proposing targeted heat mitigations are essential for advancing and guiding heat-resilient cities. This study proposes an approach to assess and optimize the built environment characteristics of urban communities regarding heat risks. Taking Chengdu, China as a case study, this study categorized communities into old and new based on building age, with 428 communities in total. First, it employed linear regression analysis to model the relationship between fraction of vegetation coverage (FVC) and land surface temperature (LST) in each community, quantifying the cooling efficiency (CE) of community green spaces through slope coefficients. and comparatively analyzed the CE in the new and old communities. Additionally, using a Boosted Regression Tree (BRT) model, it investigated nonlinear relationships between CE and five key factors: building density (BD), floor area ratio (FAR), sky view factor (SVF), road density (RD), and percentage of impervious area (PIA). The results reveal that the new communities exhibit higher CE than the old communities, with about 0.004℃ higher average CE. In the new communities, the relative importance of these factors on CE is as follows: SVF (42.13%), PIA (16.80%), BD (14.38%), RD (13.86%), and FAR (12.83%). However, BD (29.41%) exhibits the highest relative importance in the old communities, followed by RD (23.38%), PIA (18.58%), FAR (16.25%), and SVF (12.38%). Targeted built environment optimizing strategies to enhance community green spaces CE are proposed. This study provides a new insight into the research on the community-scale heat environment, and the results offer scientific references for heat mitigation decision-making.

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Keywords:
Keyword 1: Climate change
Keyword 2: Cooling efficiency
Keyword 3: Community green space

Keyword 4: Built environment
Keyword 5: Heat-resilience city

P104

The Experience and Lessons of Japan's Full-Lifecycle Public-Private Partnership Participatory Governance Model in Urban Parks

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Post-pandemic urban parks have gained heightened significance as vital public spaces, yet existing infrastructure fails to meet evolving societal needs—from diverse recreational demands to age-inclusive design—while chronic underfunding during economic downturns has undermined traditional public funding models. Private capital integration often falters due to conflicting priorities and weak accountability, as seen in early PFI (Private-Finance-Initiative) experiments. Japan's adaptation of the British PFI over two decades has yielded a distinctive PPP (Public-Private Partnership) model that balances market-oriented operations with regulatory oversight. This model enables sustainable park governance by aligning socioeconomic value generation with equitable service provision, establishing a globally recognized paradigm for sustainable park governance in the new era.
This study examines Japan's public-private governance mechanisms in urban park administration using official policies, guidelines, reports, and empirical case studies. It employs a structured analysis to: (1) outline current developments and challenges in park infrastructure; (2) trace the evolution of collaborative governance models, introducing six principal mechanisms; and (3) analyze representative PPP projects to highlight features of Japan's full life-cycle management. Evaluating the model's strengths and constraints, the study offers cross-border policy insights for optimizing sustainable urban governance through state-market synergy.
The results of the study show that Japan has established a comprehensive PPP model for urban parks encompassing six principal mechanisms: the Designated Administrator System, the PFI (Private Finance Initiative) System, the Park-PFI System, the Urban Park Renovation Agreement System, the Installation-Management Permission System, and Public Facility Operation Projects. This PPP model exhibits three distinguishing features: (1) Multi-Scale Coverage: Japan's PPP model for urban parks follows a hierarchical structure spanning city-level, park-level, and facility-level dimensions. Through careful institutional design and differentiated application, this model promotes synergy between internal park governance and broader urban development. (2) Flexible Full-Lifecycle Adaptability: the model demonstrates full lifecycle adaptability, providing modular institutional solutions for park construction, renovation, management, and operational phases. This phased governance architecture ensures PPP applicability through customized contractual instruments and performance metrics at each development stage. (3) Comprehensive Support Framework: Japan has established a multifaceted support system comprising legal, regulatory, and incentive-based mechanisms. The structured collaboration mechanism balances top-down governmental supervision with bottom-up civic monitoring, effectively reconciling commercial viability with public interest preservation.
By promoting close public-private collaboration, the model effectively alleviates financial and operational burdens on government agencies. This approach has significantly increased the number, scale, vibrancy, and quality of parks, creating a new paradigm of park development characterized by funding efficiency, dynamic growth, and high-quality outcomes. Despite challenges like limited transparency, complex procedures, local government capacity constraints, corporate monopolization, and restricted financing options, Japan's evolving urban park PPP model remains a valuable reference. The government should stimulate private capital participation by enhancing the legal framework, developing a systematic practical system, and ensuring reasonable returns, thereby facilitating a comprehensive transformation of parks from construction to operation. Simultaneously, strengthening government oversight and public supervision is essential to ensure that market-driven operations do not deviate from public welfare objectives, achieving a coordinated development of social capital and the public interest.

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P105

Research on Resistance Behavior of Citizens in Urban Public Space Margins from the Perspective of Daily Life Practice Theory

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While China's urban public space governance remains predominantly governed by hierarchical regulatory frameworks and law enforcement agencies, this model has precipitated conflicts between central policies and residents' practical needs. The limited capacity and jurisdictional radius of administrative departments have rendered many peripheral zones of public spaces as "liminal spaces" where managerial authority becomes blurred—a dual realm of institutional neglect and grassroots experimentation. Residents' behaviors in these areas can be elucidated through Michel de Certeau's (1984) Practice of Everyday Life theory, which examines how ordinary individuals deploy flexible "tactics" to subvert or circumvent institutional control, thereby carving out autonomous survival spaces and cultural meanings.

Recent academic inquiries have gradually shifted focus from material renovation to social process analysis, particularly emphasizing citizens' subjective agency. However, existing studies remain constrained by three critical limitations: (1) Overemphasis on "temporary" resistance behaviors while neglecting their potential for "institutionalization"; (2) Insufficient exploration of their implications for long-term urban governance transformation; and (3) Underrepresentation of localized cultural dimensions. This study addresses these gaps through a case-based analysis of Nanjing citizens' resistance strategies against urban disciplining in marginal public spaces, differentiating between active resistance (direct violation of regulations) and passive resistance (strategic utilization of regulatory vacuums).

The research adopts participatory observation in two cases:
1.Illegal fishing activities in the prohibited zone of the Qinhuaihe River (active resistance)
2.Homeless encampment practices beneath city bridges (passive resistance)
By immersing as ordinary citizens within fishing communities and homeless groups, researchers documented daily routines, communication patterns, and patrol evasion strategies. Thematic interviews with selected cases complemented observational data, followed by comparative text analysis between recorded practices and policy documents to identify regulatory contradictions.

Case Analysis
1.Qinhuaihe River Fisheries: Fishermen transform prohibition into game rules through temporal-spatial tactics—exploiting regulatory time lags and edge zone characteristics to conduct guerrilla-like fishing practices. Beyond meeting subsistence and leisure needs, these actions construct community identity and challenge state monopoly over public space.
2.Bridge Underneath Encampments: Homeless groups employ "low-tech strategies" (e.g., fabric Canopies, improvised furniture) and "physical presence" (extended occupation) to convert undefined bridge underspaces into habitable territories. These practices force administrators to acknowledge their existence, occasionally prompting policy adjustments.

Through de Certeau's lens, these cases transcend mere "management issues" to reveal ongoing negotiations between urban power and daily life. The study demonstrates how tactical practices:

Deconstruct rigid governance protocols
Challenge official spatial definitions
Expose policy failure roots
Explore elastic governance possibilities

Policy Recommendations
Future governance should evolve beyond punitive "prohibition-punishment" models by:

Embracing spatial democratization through flexible rule design
Cultivating multi-stakeholder collaboration mechanisms
Integrating local cultural identities with participatory planning
Balancing institutional rigidity with vernacular practices
Developing "place-specific" management strategies involving residents as co-designers and

landscape architects as mediators
This research contributes to theoretical innovation in urban governance by substantiating Lefebvre's (1974) triad of spatial production—demonstrating how everyday practices can reshape material spaces, social relations, and power configurations. It further advances the application of de Certeau's concepts in Chinese urban contexts, providing methodological references for studying grassroots resistance in hybrid public spaces.

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P106

Exploring stakeholders' intention to support tourism in national parks: A dual-stage SEM-ANN approach

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The effectiveness of participatory planning and multi-stakeholder governance has become increasingly evident in national park system development. This study examines community participation mechanisms and outcomes in national park governance, with China's Wuyishan National Park as a case study. By developing an evaluation framework for community participation in governance, we analyze the role of communities and their pathways to rights realization in national park management decision-making. The research employs a mixed-methods approach, combining questionnaire surveys (n = 326) and in-depth interviews to assess the impact of three dimensions of pursuing justice—distributive, interactional, and procedural justice—on tourism support and governance effectiveness.Structural equation modeling reveals that community empowerment plays a crucial mediating role in the relationship between pursuing justice and supporting tourism, with significant differences in the strength of influence among the three dimensions of pursuing justice. Further artificial neural network modeling confirms the existence of non-linear relationships, improving predictive accuracy. The research findings offer both a theoretical foundation and practical guidance for multi-stakeholder collaborative governance in national park development, offering key implications for promoting community participation, optimizing governance structures, and achieving a balance between conservation and development.

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Keywords:
Keyword 1: Community tourism empowerment
Keyword 2: Support for tourism
Keyword 3: Government management
Keyword 4: National park

P108

Unveiling the Perceptual Cultural Service from the Perspective of Women's Intergenerational Differences: A Participatory Mapping Approach to Urban Park Governance

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Globally, under the dual agendas of sustainable cities and gender equality, how urban green spaces should meet the needs of differentiated groups has become a critical issue. As women's roles in urban development grow increasingly prominent, female perspectives on urban park management and design are gaining importance. Existing research includes studies on gender-based differences in urban green space needs, yet few address intra-group variations among women, such as intergenerational disparities in park perception. Current methodologies for studying differentiated groups often suffer from limited public engagement and oversimplified analytical dimensions. To address these gaps, this study employs semi-structured interviews, questionnaires, and participatory mapping (PPGIS) to investigate perceptual differences within female subgroups. Cultural Ecosystem Services (CES) are adopted to characterize the perceived importance of women's interactions with urban parks. By analyzing intergenerational differences in CES perceptions among women, this research aims to provide methodological support for refining gender-inclusive urban park management strategies.

To address the above issues, we selected 37 urban parks in Beijing as a case study, inviting 370 female participants to rate their perceptions of Cultural Ecosystem Services (CES) through questionnaires. Participatory GIS (PPGIS) was employed to identify spatial locations of CES perception types among the participants, followed by kernel density analysis to assess the impact of intergenerational differences within the female population on the spatial heterogeneity of CES perception types. Random forest modeling was applied to identify landscape elements with potential influences on intergenerational CES perception differences among women.Key findings revealed intergenerational divergence in CES perceptions within the female population. Quantitative analyses demonstrated significant intergenerational differences: younger and middle-aged female groups prioritized park landscapes with scenic beauty and pleasant environments, while older females favored spaces featuring recreational facilities and health-promoting amenities. This demand dichotomy underscores the necessity for refined urban park management that transforms women's differentiated experiences into resilient linkages for social inclusion. Furthermore, the contributions of landscape elements varied markedly across age groups (youth, middle-aged, and elderly), with distinct factors influencing CES perceptions in multiple categories.By analyzing intergenerational CES perception differences among women, park managers can implement targeted strategies—such as enhancing female-friendly design and optimizing high-activity zones for women—to achieve precision in park governance. These insights bridge gender-specific needs with landscape planning, advancing equitable and inclusive urban green space development.

Theoretically, this study advances the understanding of intergenerational differences in perceptions among female populations and enriches the theoretical framework of gender-inclusive spatial design. Practically, it provides methodological support for refining urban park management strategies grounded in gender-sensitive perspectives. The research confirms that integrating participatory approaches into public perception evaluations effectively enhances urban parks' service efficacy for differentiated demographic groups.

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Keywords:
Keyword 1: Women's Intergenerational Differences
Keyword 2: Participatory Mapping
Keyword 3: Gender-Inclusive Design
Keyword 4: Urban Park Management
Keyword 5: Cultural Ecosystem Services

P109

Analyzing Day-Night Shifts of Public-Perceived Cultural Ecosystem Services in Urban Parks: A Social Media Approach for Park Governance in Beijing

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The global nighttime economy drives demand for 24/7 urban spaces, yet governance approaches diverge: European cities restrict nighttime park access for safety, while Asian metropolises like Beijing, Tokyo, and Seoul—empowered by youth culture and policy support—actively expand nocturnal accessibility. Beijing's designation of 30+ parks for nighttime use since 2022 exemplifies strategies balancing safety with socio-cultural vitality. However, functional shifts in Cultural Ecosystem Services (CES)—intangible benefits from aesthetic, recreational, and spiritual interactions—across day-night cycles remain understudied. Asian parks'emphasis on nighttime engagement contrasts with Western safety-centric models, offering potential alternatives for sustaining CES temporally. This study investigates day-night CES dynamics in Beijing's parks through social media analytics, revealing how lighting, design, and social economics shape nocturnal provision. Findings highlight Asia's unique governance potential: integrating cultural vitality into nighttime management rather than mere risk mitigation, thus redefining 24/7 urban resilience. To address these gaps, we adopted a CES assessment framework to investigate differences in day perception across urban park types.
By leveraging social media data, we explored variations in public CES perceptions between day and night in different park categories, including the mechanisms through which underlying factors influence day-night CES. Focusing on Beijing, China, we selected three park types with high night activity: comprehensive parks, historic gardens, and specialized parks. First, we collected daytime and nighttime social media data, conducted textual analysis to quantify CES across time frames, and performed park-type-specific analyses. Spatial patterns of CES variations were further examined for each park category. Subsequently, random forest modeling was applied to identify determinants of day-night CES differences, incorporating park characteristics, lighting conditions, and socioeconomic factors. Key findings revealed divergent patterns in public CES perceptions across park types and time frames.
Quantitative analyses confirmed significant day-night CES disparities across urban park types. In specialized parks, daytime perceptions were dominated by recreational activities, while nighttime perceptions in specialized parks—along with day and night perceptions in comprehensive parks and historic gardens—were primarily shaped by aesthetic experiences. Specialized parks exhibited pronounced day-night divergences across multiple CES categories, whereas comprehensive parks showed marked temporal variations in inspirational experiences and place attachment, and historic gardens displayed distinct day-night differences in recreation and nature education.This functional dichotomy underscores urban parks' core value as nighttime hubs, not only extending daytime roles but also fostering unique nocturnal perception dynamics. Additionally, the contributions of underlying factors varied significantly between park types and timeframes. These findings emphasize the necessity of incorporating day-night dynamics into CES assessments to guide temporally adaptive park management. By leveraging day-night CES distinctions, managers can implement targeted strategies—such as enhancing nighttime spatial heterogeneity and optimizing high-vitality nocturnal zones—to refine park design and operations.
Theoretically, this work advances spatiotemporal CES frameworks by demonstrating how diurnal-nocturnal transitions reshape ecosystem service hierarchies. Practically, it challenges Western safety-centric models by proposing adaptive Asian strategies.These findings underscore urban parks'dual role as round-the-clock social-ecological hubs.

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Keywords:
Keyword 1: Day -Night Differences
Keyword 2: Urban Park Governance
Keyword 3: Social Media Analytics
Keyword 4: Cultural Ecosystem Services
Keyword 5: Urban Park Types

P110

The Spatiality of Networks: Urban Farming as a Design Practice in Madrid

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In Madrid, only 7 hectares of its 60,000 expanse are designed, maintained and used collaboratively in a multi-species dynamic: the community farming network. This program emerged organically in the early 2010s and was formally recognized in 2014. Currently, the network comprises over sixty initiatives, functioning as true oases of urban vitality in contrast to the majority of conventionally designed public spaces in the city. These productive gardens constitute a catalogue of critical practices that interrogate disciplinary issues central to design practice: co-authorship, aesthetics, or the participation of more-than-human agents. At first glance, these fragments of everyday landscape appear disordered and capricious, but on closer study we can see an intelligent, specific and adaptable design that mediates between a complex assemblage of materials, species, temporalities and actors. Likewise, behind the apparent similarity of the urban orchards, we can see that each of them respond to a specific physical and eco-social context, showing a diversity of solutions.

The aim of this presentation is to value and learn from emerging farming practices in Madrid where design is a collaborative and more-than-human process, considering spatial, relational and governance aspects in an equitable manner. The study is based on the hypothesis that design in these spaces is determined by the configuration of its actor-network, identifying patterns and recurring elements that facilitate a better understanding of urban farming dynamics. The methodology is based on a comprehensive analysis of 65 urban farming plots that comprise the program. The consistency of this material allows for a rigorous comparison of its design and evolution. To this end, two research lines have been deployed in parallel: a detailed spatial analysis and a qualitative investigation based on interviews.

In the first line of study, specific drawings of each plot based on field visits have been developed. These records include detailed information of their spatial composition, incorporating variables such as the immediate context, perimeter limits, total area, and the arrangement of elements present in each plot (tool shed, greenhouses, shade and composting areas, meeting spaces, vegetation and cultivation areas). The second line of study was based on semi-structured interviews, designed to elucidate the network of actors operating in each project. This methodology has enabled the identification of the governance model adopted in each initiative and the number of key members. It has also revealed the participation of peripheral actors whose influence extends beyond the boundaries of the plot.

The study reveals the importance of reappropriation and transformation of available resources within the city. A pattern of "hacking" and remixing of materials provided by the municipality is evident, where participants modify them to adapt to their specific needs. The recirculation of organic matter and self-produced materials plays a fundamental role. The resulting spatial configuration is understood to be influenced by the network of actors involved, highlighting the importance of more-than-human commons in shaping the built environment. This illustrates how urban farming fulfills a social and ecological function, as well as promotes situated strategies for spatial production in urban environments.

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Keywords:
Keyword 1: Urban Farming
Keyword 2: Actor-network
Keyword 3: Codesign
Keyword 4: More-than-human commons
Keyword 5: Spatial practice

P111

PlayScape: Reimagining a Mixed-Use Sports Complex Through Value Landscape Engineering in Taytay, Palawan

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Recreational spaces are essential for community well-being, yet many rural areas in the Philippines lack adequate sports and recreational infrastructure. This study proposes a mixed-use sports complex in Taytay, Palawan, to address the municipality's growing need for accessible, multifunctional public spaces. Unlike standalone sports facilities, a mixed-use approach integrates sports, commercial, and community functions, ensuring economic sustainability and year-round use. To navigate financial and operational challenges, this study applies Value Landscape Engineering (VLE) to develop cost-effective and sustainable landscape design strategies. VLE enables a life-cycle financial analysis, optimizing maintenance costs, environmental impact, and resource efficiency (Rosenberg et al., 2011). A qualitative case study, primarily utilizing secondary data, informs the research. The findings underscore key landscape design strategies that enhance cost-effectiveness, sustainability, and aesthetics, offering a replicable model for similar rural developments.

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Keywords:
Keyword 1: mixed-use development
Keyword 2: sports complex
Keyword 3: value landscape engineering
Keyword 4: Palawan

P112

Collaborative Landscape Study and Local Engagement in the Context of the Landscape Plan Projects in the Northern Vosges Region

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This collaborative landscape study focuses on enhancing the quality of life and the landscape framework within seven communes along the GR53 and GR531 hiking trails. Commissioned by the *Pays de Niederbronn-les-Bains* and led by landscape architect Gabriel MILOCHAU, the project aims to integrate citizen participation and reflection into a broader Landscape Plan strategy. The project, which was completed in 2023, centers around seven micro-residencies that encourage community engagement in the transformation of public spaces, while also intersecting with other initiatives, such as bivouac sites, resting areas, and scenic viewpoints along the hiking trails, including the redevelopment of the Sources de la Liese site.

A successful landscape project is one that is co-created and shared with the community. In this case, the seven micro-residencies are designed to be structurally transformative for each of the seven communes, with each residency targeting a specific site or theme. Gabriel MILOCHAU, as the lead designer, plays a central role in shaping the seven projects. The design process also benefits from input from a variety of experts, brought in as needed for specific public engagement activities and based on the particular needs of each site.

The approach involves three main phases: site selection, collaborative project design, and public restitution. In the first phase, the team works with local authorities and a steering committee to adjust the scope of the original program and ensure alignment with the communities' needs. In the second phase, three workshops are organized to animate, listen to, and engage local residents and stakeholders in a collaborative process of project co-design. This participatory approach allows for the translation of community ideas into concrete proposals, enriched by the professional experience and expertise of the landscape architects.

The final restitution phase culminates in a celebratory event, marking the conclusion of the co-design process. This event includes artistic and plastic interventions by the landscape architect, providing an opportunity for the community to witness the fruits of their collaboration and marking the beginning of the project’s realization.

The project’s outcomes are encapsulated in a booklet that compiles the seven micro-residency experiences. Additionally, a shared visual identity is created for each site, featuring a common graphic design that will be displayed in municipal halls across the seven communes. This visual identity reinforces the interconnectedness of the various projects, while also highlighting each site’s unique characteristics. The ongoing dialogue and consultation between the project team and local communities have given rise to a renewed vision of the Northern Vosges, complementing the 19th-century heritage of the Club Vosgien hiking trails and establishing a distinct landscape narrative for the 21st century.

The landscape design team, guided by the Landscape Plan, adopted a holistic approach, combining a landscape architect’s eye for site analysis, a deep understanding of the regulatory framework, and a sensitivity to the spirit of the place. This multidisciplinary approach ensures that each project reveals the unique essence of its location while contributing to a cohesive and evolving landscape narrative.

References:
MILOCHAU G 03292025 **Collaborative Landscape Study Vosges du nord**

Keywords:
Keyword 1: Consultation
Keyword 2: Co-Construction
Keyword 3: Landscape Plan

Keyword 4: Residency
Keyword 5: Rurality

P113

Controllable Generative AI for Landscape Design: A Color-Guided Interactive Framework

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Background：Amidst the global agenda addressing climate change and urban resilience construction, landscape architecture design is undertaking the multidimensional governance mission of coordinating ecological security, cultural identity, and social equity. While generative artificial intelligence (AI) technology has significantly enhanced design efficiency, its algorithmic opacity and process uncontrollability have confined community participation to terminal solution selection, failing to achieve dynamic adaptation between design requirements and site-specific characteristics. This misalignment between technological tools and governance objectives severely constrains the practical value of intelligent design in sustainable development.

Problem Statement：The resultant technical limitations manifest as prevalent "black-box" defects in existing generative design tools: 1) During layout generation, users cannot effectively intervene in spatial relationships between elements, leading to potential disconnection between algorithmic outputs and actual site demands; 2) The absence of real-time interaction mechanisms forces stakeholders to passively accept final outcomes, obstructing their engagement throughout the design process.

Methodology：To address these challenges, this study proposes an intervenable intelligent design system that redefines human-computer collaboration through algorithmic transparency:
1）Data Engineering：A multi-source dataset comprising 9,286 landscape plans was constructed, with semantic segmentation annotation applied to six elemental categories (green spaces, water bodies, roads, pavements, vegetation, and structures). Color encoding generated RGB-Mask structured data pairs (e.g., purple for building footprints), establishing visual mapping foundations for interactive element editing. The annotated data underwent standardization in COCO format and vectorization processing in SVG to support element-level spatial relationship regulation.
2）Dual-Phase Generative Models：Layout Generation Model: A Pix2Pix generative adversarial network (GAN) framework was trained with independent generators. Inputting single-element masks (e.g., building contours), adversarial learning completed spatial distributions of other elements to generate comprehensive layouts.
3）Rendering Model: An end-to-end image translation model was developed, mapping layout diagrams to high-definition colored plans (2048×2048 pixels) through encoder-decoder architectures that learn material-texture correlations.

Interactive Optimization Mechanism
1）A participatory layout adjustment system was developed featuring: Intent-Driven Generation: Imported site data (roads/buildings in vector format) underwent SVG-Tensor conversion. Users defined elements through color-coded vector drawings (e.g., purple for new structures), triggering pre-trained models to generate initial layouts.
2）Dynamic Feedback Loop: Integrated Fabric.js editing modules enabled element-level translation/scaling operations. Adjustment commands were encapsulated into JSON instructions via FastAPI, activating regeneration workflows. A "generate-validate-iterate" cycle allowed interventions across all design phases, ensuring outputs complied with site constraints.

Conclusions & Future Work
This study establishes an integrated "generation-verification-iteration" framework, transforming traditional "black-box" generation into an interactive and controllable process. By enhancing algorithm transparency, it reconstructs human-machine collaboration and provides intelligent assistance for ecological design. In the future, the system will explore multimodal interaction methods to further improve the inclusivity and precision of design governance.

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Keywords:
Keyword 1: Landscape Architecture
Keyword 2: Generative Design
Keyword 3: Generative Adversarial Networks
Keyword 4: Interactive Design
Keyword 5: Explainable AI

P114

The Impact of Studentification on Urban Green Space Equity: A Case Study of Edinburgh

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With the expansion of higher education, "studentification" has significantly affected urban spatial justice, yet its impact on public green spaces remains underexplored. The influx of university students increases housing demand, effects community structure (Miessner, 2020; Kinton, Smith and Harrison, 2016), and strains on infrastructure (Gu and Smith, 2020). In areas with high student populations, green spaces face declining in per capita availability, reduced accessibility, and the marginalization of long-term residents (Jolivet et al., 2023; Baka and Mabon, 2022), raising concerns about environmental justice and community cohesion. This study examines how studentification influences the distribution of green spaces in Edinburgh and its long-term effects on local residents.

Five wards affected by studentification—were selected as case areas (City Centre, Southside/Newington, Morningside, Fountainbridge/Craiglockhart, and Sighthill/Gorgie). Using The Meadows as the focal green space, this study employs GIS spatial analysis, statistical modeling, and resident surveys to evaluate accessibility, resource distribution, and social impact. Firstly, GIS spatial analysis calculates green space accessibility through Euclidean network distance methods , setting walking ranges of 100m, 300m, and 500m to compare spatial. Census and city council data are integrated to assess total green space area, per capita green space, and population density per unit of green space. ANOVA and Tukey HSD tests are used to compare green space accessibility across different studentified communities,=,while a two-stage Hurdle Model examines disparities in green space provision. Additionally, odds ratio (OR) measure variations in green space sharing pressure. To capture residents' perspectives, online and offline surveys, Likert scale assessments (ranging from 1 to 9) and interviews are conducted to analyze frequency of use, satisfaction, and perceived accessibility.

The study findings indicate that highly studentified areas, such as City Centre and Southside/Newington, have significantly lower per capita green space accessibility compared to less studentified wards. In these areas, the proportion of residents with access to green spaces within 500m decreased by 27.4%, while low-studentification areas saw only on 8.2% decline. Population density per unit of green space is 42.8% higher in high-studentification areas, exacerbating competition for green space.. Regression analysis further reveals that a 10% increase in studentification reduces community residents' probability of accessing green spaces by 18.6% ($p < 0.01$), highlighting the impact on long-term residents' usage opportunities.. Survey result indicate a 35.2% decrease in green space usage frequency in highly studentified areas due to overcrowding and environmental degradation. Additionally, 65.3% of long-term residents believe that changes in green spaces have diminished their sense of community belonging and negatively impacted social interactions.
This study confirms that studentification has a negative impact on green space equity, reducing accessibility, intensifying resource pressures, and weakening community cohesion. Future urban policies should prioritize green space equity by optimizing spatial planning, enhancing the adaptability of public green spaces, and ensuring sustainable, high-quality environments for all residents.

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Keywords:
Keyword 1: Studentification
Keyword 2: green space deprivation
Keyword 3: environmental justice
Keyword 4: community cohesion
Keyword 5: spatial inequality

P115

Liminal Spaces-Cognitive Maps Coupling: Landscape Guidance for Urban Parks—Guangzhou Yuexiu Park Case

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In high-density cities, the mismatch between spatial legibility and users' cognitive maps in complex terrain parks has become increasingly prominent. This study focuses on Guangzhou Yuexiu Park, integrating environmental psychology and space syntax theory to explore the coupling mechanisms between liminal spaces and cognitive maps in natural terrain-dominated parks. Through cognitive mapping experiments, Depthmap-based spatial syntax analysis, GIS terrain modeling, and Bluetooth beacon behavior tracking, the research reveals: (1) Slope gradients and visual accessibility are core triggers of cognitive fragmentation; (2) Cultural landmarks enhance spatial anchoring effects but suffer from semantic interference due to surrounding commercial facilities; (3) The formation of cognitive maps relies on somatosensory feedback and visual cues, challenging the traditional "visual dominance" paradigm. A "landscape cognitive threshold" design framework is proposed, including: (1) Gradual visual guidance; (2) Multisensory navigation enhancement; (3) Narrative anchor integration. The study validates the applicability boundaries of Kevin Lynch's "Image of the City" theory in natural terrain parks, expands the practical pathways for synergizing human-centered navigation and environmental conservation under the "Guiding Landscapes" theme, and provides scientific foundations for high-density urban green space renewal.

References:
No references

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Keyword 1: Liminal Spaces
Keyword 2: Cognitive Maps
Keyword 3: Landscape Guidance Strategies
Keyword 4: Spatial Legibility
Keyword 5: High-Density Urban Parks

P116

Beyond Residence: How Workplaces Reshape the Spatiotemporal Visiting Patterns of Urban Green Spaces in Megacities—Insights from Central Shanghai

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Residence and employment are fundamental urban functions that are decisive in shaping spatial structures and determining operational efficiency. With the dual-core evolution of job-residence spatial patterns in megacities, workplaces have become increasingly significant within public service facility systems, not only influencing commuting behaviors but also reshaping urban recreational dynamics, leading to the emergence of a “job-residence” dual living circle in public green space utilization. However, existing planning and management approaches for urban green spaces predominantly rely on a single-anchor evaluation framework that focuses exclusively on residential locations, neglecting the impact of workplaces as a secondary but critical anchor. This narrow perspective results in a mismatch between green space supply and the dynamic demands of a highly mobile workforce, exacerbating resource inefficiencies and spatial inequities in the context of job-residence separation.

This study introduces a “job-residence dual-anchor” framework to address these challenges, breaking away from traditional static planning paradigms and centering on green space accessibility and equity in megacities. A progressive three-stage research framework—“job-residence demand identification, spatiotemporal pattern analysis, and interactive behavior modeling”—is developed to examine the spatial mismatch between green space allocation and job-residence dynamics in central Shanghai.

First, a job-residence-green interactive database is constructed using multi-source spatiotemporal data, integrating LBS-based green space visitation records, mobility trajectory data, and job-residence distribution datasets. Second, a comparative analysis is conducted on spatiotemporal visitation patterns under single-anchor (residence-focused) and dual-anchor (job-residence integrated) models. Using 2D spatiotemporal kernel density analysis, the study evaluates how visitation distance influences visit frequency across four types of public green spaces—pocket parks, community parks, district parks, and city parks—under both single-anchor and dual-anchor models. Third, the study introduces the "flow-driven demand" analysis concept, leveraging commuting trajectory data and applying 3D spatiotemporal kernel density analysis and Gaussian mixture models to identify tidal usage patterns and spatial heterogeneity in green space utilization under the job-residence dual living circle.

Key Findings
Findings reveal that workplaces profoundly shape green space visitation frequency, temporal distribution, and interaction behaviors, with three notable trends:

1. Delayed peak visitation periods in green spaces near workplaces, aligning with work schedules and commuting rhythms.
2. Pronounced tidal effects, characterized by significant temporal fluctuations in visitation intensity.
3. Distinct adaptation patterns across green space types, where pocket parks and community parks predominantly serve single-anchor residential users, while district and city parks exhibit greater adaptability to dual-anchor job-residence demand.

Implications and Contributions
Based on these insights, this study proposes optimization strategies for urban green spaces to better accommodate dynamic job-residence demands, shifting from static equalized supply to demand-driven, adaptive governance. By challenging the conventional single-anchor paradigm, this study introduces a novel job-residence dual living circle framework, systematically unveiling the spatiotemporal dynamics of green space utilization in megacities. The findings provide empirical evidence and theoretical guidance for precise green space resource allocation, fine-grained urban management, and integrated job-residence governance strategies aimed at fostering greater spatial equity and efficiency in urban green space planning.

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Keywords:
Keyword 1: Job-Residence Dual Circle
Keyword 2: Public Green Spaces
Keyword 3: Spatiotemporal Visiting Characteristics
Keyword 4: Tidal Usage Patterns
Keyword 5: Multi-Source Spatiotemporal Data

P117

Gender Differences in Nighttime Public Perceived CES: Exploring Spatial Equity in Urban Riverside Spaces

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The rapid expansion of the nighttime economy and shifting urban lifestyles have heightened public demand for nocturnal leisure, particularly in densely populated metropolitan areas. In response to this demand, urban riverside spaces, characterized by openness and inclusivity, have become essential venues for nighttime activities, offering shared environments for diverse social groups. As their role in urban nightlife grows, understanding public perceptions of nighttime experiential value is crucial for informed planning. However, research in this area remains limited. The public's perceived experiential values—such as aesthetic appreciation, social interactions, and sense of place—are conceptualized as Cultural Ecosystem Services (CES), which are fundamental to human well-being, ecological conservation, and sustainable urban development. Therefore, this study employs CES to represent the perceptual values people derive from nighttime landscapes, translating intangible public perceptions into measurable research dimensions.

Previous studies on CES in urban environments have largely focused on daytime green spaces, with little attention to urban riverside spaces at night, particularly regarding gender differences. Nocturnal environments are often associated with risk and insecurity, with limited consideration of their positive CES. Likewise, urban riverside spaces offer unique CES through dynamic water-land interactions, yet their role in shaping nighttime experiences remains largely overlooked.

To address the research gap, this study investigates gender differences in public perceptions of nighttime CES in urban riverside spaces, using Beijing's Liangma River as a case study. Utilizing Public Participation GIS (PPGIS), the study employed a multi-point random sampling at transportation nodes along Beijing's Liangma River, yielding a balanced sample of 154 participants (76 males and 78 females). We mapped the distribution of CES and Cultural Ecosystem Disservices (CEDs) to examine gender differences in public perceptions and engagement. Moreover, we applied Random Forest analysis to quantify the influence of various landscape elements on perceived CES.

The findings reveal that while both men and women recognize aesthetic and recreational values as the primary CES, women perceived stronger value in social relations, whereas men perceived a more pronounced sense of place. Water features, vegetated landscapes, and illumination design emerge as critical landscape elements in shaping nighttime recreational experiences. Furthermore, women demonstrate heightened sensitivity to environmental conditions and stronger negative responses to inadequate lighting and enclosed spaces, highlighting gender-based differences in spatial perception.

This study underscores the importance of designing gender-inclusive urban environments. By extending the temporal, spatial, and social dimensions of CES research, it explores gender differences in the perceptions and values of nocturnal landscapes, while also considering CEDs that contribute to negative experiences. The findings provide empirical insights for planning more equitable and livable urban spaces that accommodate both daytime and nighttime functions.

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Keywords:
Keyword 1: gender differences
Keyword 2: nighttime
Keyword 3: urban riverside spaces
Keyword 4: cultural ecosystem services
Keyword 5: public perceptions

P118

Ukubuyisela umzila lwesiko lamanzi nomhlaba (Rerouting roots of foundational knowledge in managing water systems and stewarding urban landscapes)

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The understanding of skills as grown and trained by the environments people inhabit, which become integral to culture and tradition, is essential when advocating for the reconciliation of indigenous knowledge as a significant precursor in guiding cities and aiding stewardship through nature's paths and landscape management. The prioritization of monodisciplinary approaches to knowledge acquisition, transfer, and practice has marginalized indigenous knowledge, rendering it outdated and irrelevant in managing landscape systems. This is particularly evident in Africa, where colonial impositions forced Western European modernity, shifting perspectives away from indigenous paradigms centered on relationality and reciprocity (Ferreira, 2017; Ingold, 2000).

Indigenous ways of engagement and practice have informed survival and adapted through cultural and traditional epistemologies, integrating indigenous knowledge systems (IKS) into current urban landscape systems management approaches (Ingold, 2000). In the context of water harvesting, management systems such as stone-lined channels, wadi floodwater diversion, and jessours (dam walls) originated in North African countries like Niger and Tunisia, later inherited by Western European knowledge institutions (Hughes, 2005).

Local community groups and traditional practitioners, whose genealogies are embedded in urban landscapes, embody the role of stewardship. The principles that ground the significance of acknowledging land and landscape systems as fundamental resources—centered on exchange, gratitude through rituals, rites, and practices—contrast with the extraction, exploitation, and overconsumption seen in contemporary spatial development efforts imposed on vernacular, endemic, and cultural landscapes in urban areas (Ncube, 2022). This demonstrates how the dissemination of indigenous relationality offers a foundation to better inform decentralized solutions for protecting natural environments and preserving local knowledge systems.

In drought-prone South Africa, the introduction of urbanization has compromised the function and use of water systems through infrastructure strategies that have not fully recognized the contributions of indigenous knowledge in responding to the water crisis. However, increased climate variability has led to a growing recognition of local community knowledge in water management. Water, as a prominent landscape system, has been protected and managed through IKS but is increasingly vulnerable due to societal and ecological changes and the growing commercialization of indigenous ecological resources. It is necessary to intervene and preserve the value of IKS in managing these systems (McCarter et al., 2014).

This essay aims to reposition indigenous knowledge as a respected body of knowledge that has largely informed pluralistic and diverse ways of co-existence and systems management in South African cities like Cape Town. It also emphasizes the importance of reprioritizing knowledge holders and practitioners as skilled stewards of urban landscapes, offering guidance to generate resilience from a local to a broader scale. The "Pathways to Water Resilient South African Cities" (PaWS) project, led by the Future Water Research Institute, serves as a case study that reveals the collaborative stewardship efforts of the Green Autonomy Ambassadors (GAA) in their community. Additionally, this essay will examine how transdisciplinary approaches that consult past practices and local knowledge holders informed both successes and limitations in the project.

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Keywords:
Keyword 1: Indeginous
Keyword 2: Knowledge
Keyword 3: Systems
Keyword 4: Stewardship
Keyword 5: Landscapes

P119

Analysis of Collective Memory in Historic Districts Using NLP: Digital Participation in the Republican-era Neighborhood of Yihe Road, Nanjing

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Historic districts serve as living cultural heritage, where material landscapes and intangible memories together constitute a city's historical memory repository. In the digital era, conserving these districts presents a dual challenge: the expert-led preservation paradigm is increasingly misaligned with public spatial practices, and the quantitative assessment of cultural memory lacks methodological support. This study suggests that social media data-driven collective memory construction plays a crucial role in shaping the value perception of landscape heritage. Using the Republican-era neighborhood of Yihe Road in Nanjing, China, as a case study, it indicates how digital participation influences public engagement with historic districts.
Applying a BERT-LSTM hybrid model and Hidden Delicacy Distribution Clustering, this research develops a three-dimensional analytical framework of "spatial elements–emotional polarity–memory correlation." It establishes a quantitative mechanism for analyzing landscape memory and a dynamic feedback system for public participation, integrating social media data transmission, landscape memory extraction, and public opinion clustering. By analyzing microblogging data from 2020 to 2024, the study suggests that collective memory formation in the digital era follows a structured process. A "text parsing–spatiotemporal modeling–thematic clustering" approach provides a dynamic, decodable archive for studying collective memory in historic districts while offering a data-driven pathway for participatory design.
Key findings indicate that:

1. Intergenerational Layering of Collective Memory: Collective memory follows a layered structure, consisting of "nostalgic narrative" (Southern Dynasties, Revolution's Mist), "aesthetics of life" (Evening Strolls, Tree Shadows), and "trendy landmarks" (Spring Roses, Memory Framing). Memory carriers arise from the temporal-spatial interplay between material elements (Republican-era architecture, Sycamore Corridor) and intangible factors (chiaroscuro, seasonal orientation).
2. Pulsed Social Behavior Patterns: Social media activity indicates a peak between 20:00 and 23:00 (30.58%), forming a spatial production mode centered on visual documentation. The behavioral chain of "photo check-in → dissemination → recreation" illustrates the reciprocal influence of digital time on material space.
3. Quantitative Model of Landscape Narrative Entropy: The study suggests that landscape memory can be quantitatively analyzed through a three-stage process: textual semantic deconstruction → spatial narrative visualization → memory theme clustering, transforming public unconscious practices into an actionable design language.

By extracting spatiotemporal semantic information from social media, the study proposes a 3C participatory design decision-making framework—"Crawl → Consensus → Co-create"—which systematically integrates natural language processing techniques with landscape memory assessment. The findings indicate that digital footprint analysis effectively balances historical authenticity with contemporary reinterpretations, offering a practical digital solution for realizing the "public vision" of the European Landscape Convention. On a broader scale, the proposed dynamic archival method suggests a scalable, interdisciplinary approach to participatory governance in historic districts, contributing to the paradigm shift from experience-driven to data-enabled landscape architecture.

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Keywords:
Keyword 1: Historic districts
Keyword 2: Collective Memory
Keyword 3: Natural Language Processing
Keyword 4: Participatory approaches
Keyword 5: Cultural Sustainability

P120
Revitalizing Urban Aging Spaces through Exhibition Gardens

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Exhibition gardens originated in the mid-to-late 19th century, initially closely associated with urban expositions. Over time, they evolved into significant accompaniments to urban events such as sports festivals, world expositions, and international conferences, with dedicated horticultural exhibitions themselves becoming major urban events. These urban events, characterized by fixed temporal schedules, paradoxically fostered the mobilization of resources and proactive initiatives under the pressure of time constraints. This dynamic not only accelerated urban development but also spurred the advancement of environmental and landscape planning.

Early urban events focused on comprehensive city reconstruction and new district development, while contemporary initiatives prioritize targeted renewal of aging urban blocks or parks. Through smaller-scale catalytic interventions, these efforts create ripple effects that revitalize entire districts. Exhibition gardens have emerged as significant catalysts in this process. Requiring modest investment and short construction periods, while enabling sustainable long-term management, they have become crucial vehicles for rapidly activating obsolete urban spaces and enhancing cityscapes.

This paper examines three exhibition garden projects recently completed by the authors to demonstrate landscape design-driven urban renewal processes. The first case is the China (Hangzhou) Asian Flora Theme Garden developed for the 2023 Asian Games. By transforming a derelict commercial district lawn into landscape nodes including the Seed Plaza, Friendship Flower Corridor, Auspicious Lotus Pond, Hand-in-Hand Flower Meadow, and Heart-to-Heart Grassland, the project artistically presents distinctive Asian floral displays. This intervention successfully revitalized urban blocks through landscape metamorphosis.

The other two cases belong to the 2024 Seoul International Garden Show, part of Seoul Metropolitan Government's "Han River Renaissance" initiative. Located at Ttukdo Han River Park, the exhibition implemented spot-renewal through 76 themed gardens including designer gardens, community gardens, and corporate gardens. This revitalized the entire riverside landscape belt and urban fabric, positively impacting Seoul's living environment. The authors designed two featured gardens: the Section Garden（class A garden gold award） reveals subterranean soil ecosystems through sectional displays, enabling visitors to appreciate microscopic natural wonders. The Biological Self-Organizing Garden(（class B garden silver award）applies slime mold algorithms to generate landscape configurations, where path networks and structures emerge from big data simulations of organism growth patterns. Both gardens innovatively manifest "Nature's Resilience," attracting numerous visitors and energizing surrounding areas.

In the post-urbanization era, exhibition gardens serve as vital catalysts for organic urban renewal. By integrating natural landscapes, artistic expression, and regional cultural elements, they optimize ecological environments, showcase cultural diversity, and simultaneously generate distinctive, visitor-attracting landscapes. This approach demonstrates sustainable pathways for contemporary city regeneration.

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Keywords:
Keyword 1: Exhibition Garden
Keyword 2: Urban Event
Keyword 3: Organic Urban Renewal
Keyword 4: Revitalize
Keyword 5: Aging Urban Spaces

P120

Fairness and Inclusive Spatial Narratives: The Social Justice Dimensions of Deshengmen Inner Street Public Space Reconstruction

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As the process of urban renewal accelerates, the transformation of public spaces in historic districts often faces challenges such as social exclusion and unequal spatial rights. Striking a balance between improving the physical environment and ensuring social equity is a critical issue of social justice. The Deshengmen Inner Street project, as the first urban renewal initiative in Xicheng District led by a street-level administrative body, constructed inclusive public spaces through a three-dimensional collaborative framework: In the spatial dimension, more than 1,700 meters of street space were redistributed to prioritize accessibility and safety for vulnerable groups; in the functional dimension, traditional commercial practices were integrated with modern demands, preserving the livelihoods of original residents; in the governance dimension, a diversified decision-making mechanism involving government guidance, market operations, and social participation was established to ensure the equitable consideration of all stakeholders' voices. The research findings indicate that space reconstruction guided by social justice not only enhances the quality of the physical environment but also preserves community diversity, preventing the social exclusion associated with gentrification. By retaining the vibrant urban memory rooted in commerce and trade linked to canal transportation, the project respects the spatial rights of different social groups and creates a narrative of public space that combines historical continuity with social inclusion. This practice offers new perspectives on social justice in the renewal of historic districts and underscores the professional responsibility of landscape architects in promoting spatial democratization.

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Keyword 1: Social Justice
Keyword 2: Public Space
Keyword 3: Inclusive Design
Keyword 4: Historic District
Keyword 5: Spatial Rights

P121

Quantifying Perception Gaps for Participatory Landscape Governance in Linear Cultural Heritage — A Case Study of the Grand Canal, China

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As UNESCO urges inclusive stewardship of heritage landscapes, the tension between institutional control and community values remains unresolved. While existing studies on linear cultural heritage predominantly focus on spatial conservation, government-led restoration projects often prioritize material preservation but neglect community memory integration and public participation activation. To address this gap, this study investigates the cognitive disparities between institutional narratives and public perceptions in heritage governance, with a case study of the Yangzhou section of the Grand Canal in China.

This research adopts a mixed-methods approach to quantify governance gaps and propose co-creation pathways. First, two heritage sites—Dongguan Street Historical District and the Ancient Canal—were selected as case studies. A total of 760,000 words of official institutional narratives (e.g., policy documents, promotional texts) and 330,000 words of public perception data (online tourist reviews) were collected. Grounded theory and NVivo15.0 software were employed for open, axial, and selective coding to construct a conceptual model of heritage imagery. Textual component distance analysis (TCDA) was applied to quantify semantic disparities across dimensions, identifying priority areas for governance intervention.

Key findings reveal: (1) The heritage imagery comprises five dimensions—landscape, culture, service, product, and social—with 16 subcategories. (2) Institutional narratives emphasize quantifiable metrics like tourism ambiance (20.6%) and facility services (18.5%), whereas public perceptions prioritize intangible values such as emotional associations (16.5%) and spatial experiences (10.2%), reflecting a mismatch between top-down governance logic and bottom-up social needs. (3) The largest gap occurs in the social dimension (25.671), while the smallest gap is observed in service (18.212), indicating that current governance models concentrate resources on quantifiable areas like facility provision, while neglecting soft demands such as community participation and emotional bonds.

The findings reveal that the gap between official propaganda and tourist feedback stems from a disconnect between the functional supply of governmental narratives and the meaningful demand of public experiences. To construct a cohesive heritage image, this study proposes a “perception gap-governance priority” mapping model rooted in societal needs, alongside collaborative governance strategies for public participation. For the Yangzhou case, governance priorities should be determined by gap indices, with high-risk areas like the social dimension requiring immediate intervention. Practical measures include establishing a “community semantic prioritization” response mechanism, reserving self-organized community spaces in heritage planning, and integrating residents’ oral histories (e.g., canal boatmen’s memories) into waterfront spatial design.

By shifting from expert-led top-down conservation to community-driven bottom-up governance, this research pioneers a new approach to linear heritage stewardship. It advocates transitioning from spatial restoration to value reproduction, fostering synergies between heritage authenticity and social equity through inclusive co-creation processes.

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Keywords:
Keyword 1: Participatory governance
Keyword 2: Heritage perception gaps
Keyword 3: Community narratives
Keyword 4: Landscape justice
Keyword 5: Grand Canal

P122

Synergistic Relationships of Cultural Ecosystem Services in Urban Parks: An Empirical Study Based on MA and NCP Frameworks

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Urban parks play a vital role in the environment, society, and culture, with their Cultural Ecosystem Services (CESs) most significantly enhancing public health, social cohesion, and environmental identity. However, rapid urbanization and shifting public demands have most acutely widened the gap between CES supply and demand. While both the Millennium Ecosystem Assessment (MA) and Nature's Contributions to People (NCP) frameworks classify CESs, their measurement approaches differ, and real-world urban ecosystem studies remain most limited. This study employs both frameworks to assess CES impacts on well-being and public perception in Beijing' s parks, leveraging public participation through social media data to inform policy. Using Python and a convolutional neural network (CNN), researchers trained a machine learning model (79.1% accuracy) on 60 landscape types, then analyzed 63,570 crowdsourced images from Dianping (one of China' s most popular review platforms) to quantify public memories and perceptions across eight CESs: aesthetic value, recreation, spiritual beliefs, education, cultural heritage, inspiration, and biodiversity. Sankey diagrams visualized linkages between landscapes, CESs, and NCP dimensions (learning & inspiration, physical & mental experiences, identity support, and maintaining options), while correlation analysis revealed CES synergies. Results showed the most dominant CESs under MA were aesthetic value (60.31%), recreation (22.49%), and biodiversity (6.76%), whereas NCP highlighted physical & mental experiences (58.15%) as most critical, followed by maintaining options (22.95%), learning & inspiration (13.55%), and identity support (5.66%). Crucially, Sankey diagrams demonstrated how public preferences—such as wetlands and lotus ponds (most linked to mental well-being), running tracks (most tied to active lifestyles), and social play (most reinforcing identity)—directly shape CES demand. The MA framework most clearly captured functional synergies (e.g., biodiversity-inspiration, education-recreation), enhancing park aesthetics and cultural memory. In contrast, the NCP framework most effectively linked CESs to public well-being, emphasizing mental health, social interaction, and participatory perception. By integrating both frameworks, this study not only identifies the most impactful CES synergies but also provides evidence-based insights for policymakers to optimize park design, prioritize high-demand services, and implement public-driven monitoring via social media. These findings most directly support government efforts in equitable green space planning, ensuring CESs meet the most pressing community needs while fostering sustainable urban development.

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Keywords:
Keyword 1: Cultural Ecosystem Service
Keyword 2: Image classification
Keyword 3: Landscape beautification
Keyword 4: Social media data
Keyword 5: Public participation

P123

Christian open spaces as an opportunity – landscape architectural visions for church squares, parish gardens and Co.

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The church *interior* has always been an important subject of theological and architectural history studies and controversies and plays a central role in current discussions about the reorientation and modernisation of churches. In contrast, Christian *open* spaces have been largely ignored in this context. Yet courtyards, squares and gardens have always been integral components of church locations and sacred topographies and could develop great potential as low-threshold meeting places and real 'key locations for climate change adaptation'. This is particularly true in view of the diverse challenges facing the two major churches (in Germany), which are expressed not least in a veritable crisis of relevance and credibility.

In the search for solutions, there is no way for the churches to avoid a serious and self-critical examination of the current social and ecological transformation processes and the resulting questions: How can the churches fulfil their responsibility for creation on a daily basis and in a way that is visible to all? How can the churches contribute to the creation of socially just and sustainable settlement areas and thus assume concrete responsibility for people? How can churches become more involved with society and urban space again and what special spatial qualities can they contribute to new urban spatial networks?

This is precisely where the dissertation project comes in and attempts to develop perspectives for vital 'Christian open spaces' that are holistically integrated into settlement areas and society in cooperation with church parishes and church leaders. Accordingly, in the summer of 2023, all 80 Protestant-Lutheran and Roman Catholic church locations in the state capital of Hanover were initially analysed according to ecological, social and aesthetic aspects. In a second step, future perspectives for six selected open spaces were being developed together with the respective church communities and interested parties from the neighbourhoods. The individual concepts were trialled in the field throughout 2024 in order to generate transferable knowledge for church and public stakeholders over the past few months. In addition to criteria for sustainable Christian open spaces, recommendations for participatory, low-threshold design processes were also developed. The author has already presented these findings and his proposal for a typology of Christian open spaces for discussion at various interdisciplinary colloquia and would now also be very interested in feedback from an international specialist audience

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Paul Tontsch, Christliche Freiräume – Genese, Status Quo und Perspektiven vor dem Hintergrund sozialer, ökologischer und kirchlicher Transformationsherausforderungen, PhD thesis, Leibniz University Hanover, Publication expected in: May 2025

Keywords:
Keyword 1: transformation challenges
Keyword 2: care of creation
Keyword 3: participation
Keyword 4: new spatial networks

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Framework Design and Policy Implications of Citizen Science-Driven Urban Foraging Applications

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BACKGROUND
Urban foraging – the practice of gathering wild edible plants in urban environments – represents not only a historical food procurement strategy but also demonstrates contemporary values in enhancing biodiversity conservation, improving community food security, and rebuilding human-nature connections. However, in high-density urban areas, foraging activities remain inadequately integrated into formal planning systems, with informal practices frequently posing potential conflicts with ecological protection frameworks.
OBJECTIVE
This study integrates social media user-generated content (UGC) and citizen science data to decode urban foragers'behavioral patterns, spatial preferences, and species utilization. By synthesizing these findings, we aim to propose a synergistic application building framework that bridges guided landscape planning with citizen science, resolving conflicts between ecological conservation and public needs while supporting sustainable urban governance.
METHODS
We systematically analyzed 994 valid Xiaohongshu notes (collected via keywords "Foraging for Wild Vegetables in Nanjing" and "Wild Gathering in Nanjing") to identify social media trends, forager demographics, foraging locations, and harvested species. Spatial mapping using GIS integrated iNaturalist biodiversity observations to identify foraging hotspots, with protected area overlay analysis revealing potential regulatory conflicts.
DISSCUSSION
This study reveals the core characteristics of urban foraging practices in Nanjing. The spatial overlap between 58.5% of foraging activities in park green spaces and 73% of high-frequency hotspots within ecological protected areas underscores systemic tensions between informal foraging practices and institutional conservation objectives . These conflicts are further complicated by the varying conservation statuses of the harvested species identified in the study. Such findings highlight the urgent need for adaptive governance mechanisms to reconcile public participation with biodiversity conservation—a gap unaddressed by current regulatory frameworks . To bridge this divide, we advocate for harmonizing foraging behaviors and biodiversity management through digital tools. Specifically, we propose a citizen science-enabled urban foraging application framework with three core modules:
（1）Real-time biodiversity mapping: Delineating permissible foraging zones (e.g., "sustainable foraging areas") alongside protected area boundaries to guide users away from ecologically sensitive regions while prioritizing areas with high user preference and ecological resilience.
（2）Species identification and sustainable harvesting guidelines: Integrating image recognition technology to provide species conservation status (e.g., "Least Concern" or "Invasive") and harvesting recommendations (e.g., "harvest ≤30% per cluster").
（3）Citizen science data interfaces: Enabling users to upload observational data to support dynamic policy adjustments. This module bridges the gap between public practices and institutional oversight through crowdsourced science , transforming casual foraging posts into actionable data streams—a bottom-up governance model validated in European cases .
CONCLUSION
This study advocates for coordinating foraging behaviors and biodiversity management through digital innovation. The proposed citizen science-driven urban foraging application framework not only guides sustainable practices but also empowers policymaking through crowdsourced data. By fostering knowledge sharing and self-regulation, it establishes a "public participation–data-driven–policy iteration" feedback loop. Future studies should focus on pilot implementations of this framework and its integration with urban planning systems to address the legal ambiguities identified in this work.

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Keywords:
Keyword 1: Urban Foraging
Keyword 2: Citizen Science
Keyword 3: User-Generated Content
Keyword 4: Biodiversity Conservation
Keyword 5: Sustainable Landscape Planning

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The Park Enlightenment Movement: The Modernization Transformation of Beijing Jingzhao Park in the Early 20th Century

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Background
As part of Beijing's imperial sacrificial heritage, the Temple of Heaven, Temple of Earth, Temple of the Sun, and Temple of the Moon are located in the south, north, west, and east of the city, reflecting traditional Chinese cosmology. In the process of China's modernization, the transformation of such historical sites into modern parks holds great significance. The renovation of Jingzhao Park (formerly the Temple of Earth) in 1925, led by Xue Dubi, marked an important milestone in this transition. Jingzhao Park was designed with a forward-looking approach, integrating Chinese and Western landscaping concepts to create a multifunctional public space for leisure, education, and civic activities. It introduced key facilities such as a floral exhibition area, a public education hall, and a sports stadium, establishing itself as a pioneering example of modern parks in early 20th-century Beijing.

Methodology
This study utilizes archival documents, historical newspapers, photographs, and literary travelogues to reconstruct the planning and modernization of Jingzhao Park. It particularly focuses on the park's role in public enlightenment, examining educational installations and recurring public activities such as Arbor Day celebrations. A quantitative analysis of periodicals (Dagongbao, Shehui Ribao, Beiping Special Municipal Gazette, Municipal Bulletin) assesses the park's cultural influence. Additionally, the study investigates how Western and Japanese park planning concepts were adapted in China, revealing unique landscape integration features. Field surveys and spatial mapping further explore the park's characteristics and developmental dynamics.

Results
Government Initiative: The transformation of Jingzhao Park, led by the Republican government, reflects its efforts to reform social order and promote civic enlightenment.
Public Education: The park featured a central wall inscribed with traditional moral aphorisms; the "World Garden" simulated global geography with rocks and plants; the "Republican Pavilion" displayed portraits of five ethnic groups symbolizing national unity, accompanied by patriotic story panels; outdoor speech platforms and a library served educational functions.
Sports Facilities: The park was equipped with a public sports stadium and exercise equipment, encouraging physical fitness.
Management & Development: The park adopted a public fundraising and phased construction model: Phase II developed the World Garden, Phase III established the Republican Pavilion and library, and Phase IV completed infrastructure such as pavilions, pathways, and electric lighting. This systematic approach set a precedent for modern urban park development in China.
Public Participation: After Sun Yat-sen's passing in 1925, Jingzhao Park became the designated venue for annual Arbor Day events, fostering continuous citizen-led afforestation efforts that shaped the park's evolving landscape.

Conclusion
As a model case of cultural heritage preservation, Jingzhao Park successfully integrated historical resources with modern public functions, emphasizing civic education and social participation. It attracted a wide range of public engagement, particularly from intellectuals and reformist groups, making it a significant platform for social reform and modernization in early 20th-century China.

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Keywords:
Keyword 1: urban modernization
Keyword 2: public space
Keyword 3: cultural heritage
Keyword 4: civic education
Keyword 5: social improvement

P126

对社交媒体更新的研究从太空生产的角度促成了历史街区

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In the contemporary context of the interweaving of digital wave and consumer culture, China 's historical blocks are undergoing a symbolic transformation from the cultural field to the ' Internet celebrity space '. This process not only involves the morphological reconstruction of material space, but also reflects the complex game between capital logic, power discourse and mass practice. The development of social media reconstructs the interaction between people and cities, forming a series of urban hot spots. Urban space is activated and updated through social media to promote the production and consumption of space. Historical blocks are important landmarks in multi-dimensional cities. Under the spread of social media, many web celebrity spaces have been spawned. It is of great significance to study the renewal and influence of web celebrity space in historical blocks for urban image shaping, urban marketing promotion and historical block construction. The spatial attributes of online celebrities in historical blocks are the result of the interaction of material space, spiritual space and social space. Social media plays a key role in information dissemination and tourist interaction, and promotes the reconstruction and reproduction of spatial meaning.
From the perspective of spatial production, through the empirical analysis of multimodal semantic deconstruction and frequency statistics, taking Harbin Central Street as an example, this paper reveals the hierarchical attention characteristics of landscape elements and their spatial production logic. This paper studies the production space attributes, image perception, factor preference and renewal strategy of the Internet celebrity space in historical blocks under the empowerment of social media. This paper analyzes the three levels of spatial practice, representation space and spatial representation of historical blocks under the influence of social media, and discusses the interaction of material space, spiritual space and social space. Through text analysis and importance-satisfaction IPA analysis ; this paper studies tourists ' preference for the overall image of Central Avenue in eight categories : road facilities, architectural space, street landscape, traffic function, street management, recreation service, commercial consumption and historical humanities. Identify street element types, street facilities, natural elements and architectural elements spatial element preferences through photo annotation ; the renewal strategy of space production is put forward for the network red space of historical blocks.

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Keywords:
Keyword 1: Historic district
Keyword 2: Web celebrity space
Keyword 3: Space production
Keyword 4: Update strategy
Keyword 5: Social media

P127

Subjective Well-Being and Urban Green Space: Exploring the Moderation Role of Walkability

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Introduction: Urban green space is closely related to residents' subjective well-being (Browning et al., 2019; De Bell et al., 2020). However, research on the interactions between urban green space, walkability, and subjective well-being is limited (Zhu et al., 2023). Good walkability may encourage urban residents to have more opportunities to visit and exposure to green space and thus gain more health benefits (Marquet et al., 2022). We aim to explore the following questions: 1) does exposure to urban green space improve residents' subjective well-being in urban areas; 2) does walkability influence the enhancement of subjective well-being through exposure to urban green space; 3) do different characteristics of walkability have varying effects on the enhancement of subjective well-being through urban green space?
Methods: The study used cross-sectional data from the 2015 Chinese Social Survey (CSS), covering 5,329 valid participants across 300 sub-districts in 148 cities from 30 Chinese provinces, and included measures of subjective well-being. Urban green space is captured by the 30m resolution Normalized Difference Vegetation Index (NDVI) dataset in 2015 across the country. We assessed walkability at both the macro- and micro-level to capture sub-district- and street-level features. Macro-level features including intersection density, function density, function mix, accessibility, and street tree coverage were assessed using the road network, points of interest data, and the 30m resolution NDVI dataset in 2015 across the country. Function density is the total number of various points of interest (POIs) per unit area within a road buffer zone. Function mix measures the diversity of facilities in a sub-district, calculated based on Shannon's entropy equation. Accessibility was calculated using a gravity index (Sevtsuk, 2018). Micro- level features including street greenery, visual enclosure, sidewalk (Ki et al., 2023) were assessed using Baidu Street View (BSV) in both 2015 and 2016. Multiple linear regression analyses were employed to examine the moderation effect of walkability on the relationship between green space and subjective well-being.
Results: Exposure to urban green space is positively associated with the residents' subjective well-being. Walkability moderates the positive relationship between urban green space and Chinese residents' subjective well-being. Macro-level function density, street tree coverage, and micro-level street greenery and visual enclosure enhance the positive effects of urban green space on subjective well-being.
Discussion & Conclusion: A key finding of the study is that not all levels of walkability enhance the positive effects of urban green space on subjective well-being. Specifically, function density and street tree coverage may enhance the positive effects of urban green space on subjective well-being, whereas higher accessibility may diminish these effects. Our findings confirm that specific levels of walkability features enhance the impact of urban green space on residents' subjective well-being. Attention should be paid to the provision of amenities and street trees while carefully managing accessibility that may weaken these benefits when making green space planning, thus facilitating residents' access to and use of green spaces.

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Keywords:
Keyword 1: Urban Green Space
Keyword 2: Subjective Well-being
Keyword 3: Walkability
Keyword 4: Street View
Keyword 5: Moderation Analysis

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How Environmental Features Shape City Walk Internet Famous Streets(IFS): Using a Social Media-Driven Participatory Approach

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The proliferation of digital technology has reshaped urban experiences, fostering new forms of interaction such as **City Walk**, a rapidly growing urban leisure activity in the social media era. Unlike walking activities focused on transportation or health benefits, City Walk emphasizes **perceiving the city through its streetscapes, stories, and cultural landscapes**, fostering a deeper connection between individuals and urban environments. Emerging from late 20th-century urban exploration practices, City Walk has gained global popularity, particularly in China, where platforms like Xiaohongshu(RED) and Tiktok have propelled it into mainstream culture. Through online sharing, City Walk has transformed into a **participatory and socially driven urban phenomenon**, influencing public perceptions of cityscapes and contributing to the creation of **Internet Famous Streets (IFS)**—streets that gain widespread attention due to their distinct environmental and aesthetic qualities. However, while social media amplifies urban spaces' visibility, the underlying **environmental features that contribute to a City Walk street becoming an IFS remain underexplored**. Moreover, urban policymakers in Beijing still lack a bottom-up, social media-driven evaluation framework that integrates public perceptions into streetscape planning and decision-making.

This study investigates the **environmental attributes that enhance a CityWalk street's likelihood of becoming an IFS**, using a **Social Media-Driven Participatory Evaluation** approach. We capture public perceptions of City Walk streets by analyzing **click-through data on geographic tags from Xiaohongshu posts**, identifying **102 City Walk streets in Beijing, of which 71 were classified as IFS**. By integrating **social media big data analysis with in-situ video-based street observations** and employing a **binary logistic regression model**, we quantify the impact of various **environmental features** on IFS formation. Our findings highlight that **courtyards/plazas/parks, small planters, and accent colors** play a crucial role in shaping public perceptions of these streets. These elements align with three fundamental urban design qualities—**Imageability, Human Scale, and Complexity**—which collectively enhance walkability and digital visibility. In Beijing, traditional courtyards (Siheyuan) with their historic architecture and spatial layouts, seasonal planting beds featuring native vegetation, and visually engaging facades **enhance a street's aesthetic appeal, amplifying its presence on social media and increasing its likelihood of becoming an IFS.** Beyond their visual impact, micro-neighborhood parks and resident-maintained planting beds—where flowers or vegetables are spontaneously cultivated—**embody inclusivity and public participation, reflecting local lifestyles**, reinforcing its presence in social media discourse.

Through the lens of **City Walk**, this study underscores how digital participation interacts with **urban space renewal**, bridging the gap between online engagement and tangible governance strategies. By linking **environmental design with social media dynamics**, our findings provide **urban planners, policymakers, and cultural tourism developers** with insights on creating **walkable, vibrant, and socially engaging urban environments**. Ultimately, enhancing environmental features along City Walk routes can promote urban vitality, foster social inclusion, and contribute to equitable and sustainable urban renewal.

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Keyword 1: City Walk
Keyword 2: Internet Famous Streets
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Keyword 4: Social-Media-Driven Participatory Evaluation
Keyword 5: Urban Walkability

P129

Six Sections of Community Micro Public Space Systematic Renewal——Exploration of Spatial Renewal of Haidian Street, Beijing, China

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China's urban development has transitioned from a period of expansive growth to one focused on pursuing high-quality development. The imperative now lies in achieving this high-quality development while also optimizing land use efficiency, particularly within the context of Beijing's urban landscape. Urban micro spaces constitute the most prevalent spatial type in the city and are deeply intertwined with residents' daily lives. As Beijing embarks on a new phase of urban renewal, marked by the rejuvenation of existing assets, there arises a pressing need to regenerate and transform a multitude of micro public spaces. These spaces, characterized by their scattered distribution, limited area, irregular configurations, and diverse ownership structures, represent a critical frontier in urban revitalization efforts. How should landscape architects achieve systematic, sustainable, and scientific renewal of micro public space, how to form influence in the process of renewal, how to coordinate multi-interest relations and enhance residents' participation? To solve the above problems, six sections of community micro public space systematic renewal are proposed in this study:

1) Community Public Space Basic Research: This study proposes a community renewal model that integrates research and practice. The basic research aims to explore the users and their needs in the community public space. Based on these research findings, the design team has developed corresponding strategies for the design of community public spaces.

2) Micro Public Spaces - Database: The research team investigated various aspects of existing micro public spaces, including their type, location, area, landscape elements, and other information, and established an online database to collect and store this data. Community residents can view and record micro public spaces around them at any time through mobile terminals.

3) Micro Public Spaces - Design Guidelines: Key design aspects for the systematic construction of micro public spaces include identification system design, facility design, pavement design, etc. The mechanism system construction for micro public space renewal in the design guidelines consists of six steps: participation, proposal, discussion, construction, management, and sharing. Each step is supported by a corresponding toolkit.

4) Micro Public Spaces - Demonstration Sites for Renovation： According to the design guidelines, the research team selected four different types of micro public spaces for upgrading. In order to provide a model for other space renewal designs.

5) Micro Public Spaces - Community Activities： This project utilizes the micro public space renewal demonstration site to organize a series of community participation activities. These activities are included in the community guidelines toolkit. These activities foster communication and interaction among residents while enhancing their sense of ownership.

6) Micro Public Spaces - Multi-partner Management： The project utilizes the community workstation as a platform for multi-party communication. Universities, residents, street governments, and other groups collaborate on this platform to jointly promote the implementation of the Haidian Street micro public space renewal project. Community residents from passive participation to leading action, and gradually enhance the initiative of residents to participate in urban renewal.

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Keywords:
Keyword 1: community governance
Keyword 2: micro public space
Keyword 3: urban renewal
Keyword 4: landscape
Keyword 5: resident participation

P130

How Do Urban Park Types and Landscape Attributes Influence Visitors' Negative Emotions?—— A Case Study in Beijing FirstGreen Isolating Area.

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Landscape, serving as a guiding system for urban dynamic development, requires technological innovation to empower urban planning and effectively address challenges related to urban construction. The advent of big data provides technical support for methodological innovation in landscape architecture planning, presenting novel opportunities for urban park utilization and planning strategies. Utilizing big data in urban park research can overcome limitations inherent in traditional social surveys, such as small sample sizes and limited temporal coverage, and has thus attracted growing scholarly attention. Previous studies have employed multi-source big data and quantitative approaches to evaluate urban parks' service efficiency and inform responsive planning (e.g., Wang Xin et al., Xiao Jinghao et al., Qi Ronghao et al.) [1-3]. Other researchers (e.g., Wang Xinyu et al., Zhu Xun et al.) have analyzed correlations between residents' emotional responses and park attributes, subsequently integrating public sentiment outcomes into urban green space design [4-5]. However, although urban parks generally evoke positive emotions among visitors, few studies have explicitly investigated the causes of negative recreational emotions or directly linked visitors' emotions—as captured through social media data—to the landscape composition and configuration of urban parks. To address this research gap, this study selected 109 urban parks located within the first greenbelt of Beijing as research cases. By innovatively integrating Sina Weibo social media data with sentiment analysis techniques, the study quantified visitors' negative recreational emotions and examined their associations with various influencing factors, including park type, landscape attributes (e.g., vegetation coverage, facility density, spatial accessibility), and surrounding environmental parameters. Results indicated that park road density, entrance fee pricing, and surrounding population density exhibited positive correlations with visitors' negative emotional index (NEI), suggesting that high artificial disturbance and crowded environments tend to induce negative visitor emotions. Conversely, vegetation coverage, water coverage, and transportation accessibility were negatively correlated with NEI, highlighting the beneficial roles of natural elements and convenient facilities in mitigating negative emotional experiences. Furthermore, specific park characteristics—such as park area and popularity—demonstrated bidirectional threshold effects influenced by management quality and spatial functionality. For example, a significant increase in NEI was observed when the per capita park area fell below 5 m² per person.

Based on these findings, this study proposes an "emotion-space" coordinated guiding strategy. At the urban scale, reducing road density at greenbelt edges, increasing the density of public transportation nodes, and optimizing the park network layout are recommended. At the site scale, priority should be given to enhancing the proportion of natural landscape elements within parks and dynamically regulating visitor capacity thresholds based on emotional heat maps. This research validates the utility of big data as a decision-support tool in proactively guided landscape planning, provides empirical evidence for balancing high-density urban environments and social demands, contributes methodological insights for innovation in global sustainable park design paradigms, and presents new opportunities for sustainable urban development.

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Keywords:

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Keyword 2: Social Media Data
Keyword 3: Recreational Emotions
Keyword 4: Governance strategies
Keyword 5: Quantitative Assessment

P131

Spatial Environment-Behavior Coupling Relationship and Evolution Mechanism of Historical Garden Tea Space in Gyeonggi Province Based on Multivariate Heterogeneous Data

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This study focuses on the historical garden tea space in Gyeonggi Province, and uses multivariate and heterogeneous data technology to deeply analyze the coupling relationship between environment and behavior and its evolution mechanism. Historical gardens in Gyeonggi region carry profound history and culture, and tea space, as a unique activity area, integrates natural landscape, architectural structure and human activities. By integrating multiple and heterogeneous data such as historical documents, geographic information and tourist behavior trajectory, a comprehensive research framework is constructed. The complex interaction between environment and behavior is analyzed from the dimensions of spatial layout, landscape elements and user behavior patterns. The study found that the environmental characteristics of tea space in historical gardens significantly affected users' behavioral preferences and activity rules, and the change of people's behavioral needs in different historical periods also promoted the evolution of tea space environment. This study clarified the dynamic change of the coupling relationship between environment and behavior in the time dimension, revealed the driving factors behind the evolution, and provided theoretical support and practical guidance for the protection, inheritance and rational utilization of tea space in historical gardens and modern landscape design, and helped the innovative development of traditional garden culture in contemporary society.

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No references

Keywords:
Keyword 1: Gyeonggi Province
Keyword 2: Garden tea pace
Keyword 3: Environmental behavior
Keyword 4: Coupling relationship
Keyword 5: Evolution mechanism

P132

Revitalization and Utilization of the Three Temples and One Pagoda Complex under Public Participation

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The “Three Temples and One Pagoda” (Wenmiao, Youshengjiaosi, Ziqinggong, and Randeng Pagoda) in Tongzhou District, Beijing, played a vital role in China’s historical water-land transport network. As both the terminus of the northern grain transport system and the gateway for tribute grain into the capital, it held strategic significance. The Randeng Pagoda, one of Beijing’s oldest and tallest surviving Buddhist pagodas, functioned as both a navigational marker and a symbol of Tongzhou’s role in the Grand Canal’s commercial and cultural prosperity.As a key heritage cluster within the Grand Canal Cultural Belt, the site uniquely integrates Confucianism, Buddhism, and Taoism, embodying multi-layered cultural values, including grain transport rituals, Confucian education, and religious traditions. However, with the decline of canal-based transport, the site faces spatial and social challenges. Spatially, severe structural damage, disrupted historical patterns, and prolonged closure of cultural spaces have weakened its integrity. Socially, declining public awareness and fading community engagement threaten its cultural vitality.

This study proposes a framework for the preservation and revitalization of the “Three Temples and One Pagoda” based on cultural heritage conservation and public participation. First, from a cultural revival and spatial restoration perspective, strategies include historical structure restoration, spatial pattern reconstruction, and axis realignment. Following the principles of “minimum intervention” and “authenticity,” structural reinforcements and material restoration will preserve architectural integrity. Additionally, historical records and field research guide the systematic restoration of vegetation, landscapes, and traditional paving to reconstruct the historical environment. Reestablishing the traditional spatial axis enhances the legibility and coherence of the cultural landscape.Second, as an urban public space, the site’s sustainable revitalization requires active public participation. A stakeholder-based approach identifies strategies for different groups. For local residents, transforming the site into a shared community space through public leisure areas, cultural activities, and intangible heritage experiences fosters cultural identity and social belonging. For tourists, optimizing visitor experiences by enhancing service facilities, wayfinding, barrier-free access, and nighttime cultural tourism deepens engagement. Introducing cultural and creative industries linked to canal heritage further supports economic sustainability.For site management, a collaborative governance model incorporating government, market, and community stakeholders is essential. Establishing a cultural heritage protection fund and attracting private-sector investment ensure sustainable funding. Additionally, a “public co-governance” platform engaging community organizations, volunteers, and research institutions promotes inclusive and dynamic heritage management.

By integrating “cultural revival, spatial restoration, and public engagement,” this study provides a strategic framework for the sustainable preservation of the “Three Temples and One Pagoda.” Against the global shift toward “community co-construction and public sharing” in heritage conservation, this approach strengthens cultural identity, enhances urban cultural resilience, and offers a replicable model for the adaptive reuse of similar historic sites.

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Keywords:
Keyword 1: Conservation and revitalization
Keyword 2: Public Participation
Keyword 3: The Grand Canal

P133

Guiding Nightscape Design with Visitors' Preferences: An Eye-Tracking Study in Virtual Reality Environments of Qinhuai River, Nanjing

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The nighttime boat tour experience on the Qinhuai River in Nanjing creatively integrates historical cultural heritage with ecological waterfront landscapes, aiming to preserve culture while promoting sustainable development. However, current planning often prioritizes illuminance levels over perceptual quality, leading to inefficient resource use and overlooking tourists' actual preferences during the tour. [1]

This study focuses on the Dong Wuhuali section of the Qinhuai River for this research. Using panoramic cameras and spherical projection technology, we created a virtual reality environment representing its nighttime landscape. Eye-tracking experiments were conducted in this VR setting to explore the relationship between the visual features of the river's nightscape and visitors' perceptions during the boat tour.[2] This research provides insights for improving nighttime tourism planning in historic river areas and integrates participatory approaches to engage tourists in co-creating culturally enriching and sustainable experiences.

We used an Insta360 panoramic camera to record a predefined sightseeing route along the Qinhuai River, capturing 40 minutes of panoramic nighttime footage, that was then converted into individual panoramic images on a frame-by-frame basis. Additionally, we applied the DeepLabv3+ model to identify key nighttime landscape visual characteristic indicators in panoramic images[3], including the visibility of water bodies, the night sky, buildings, and embankments, as well as brightness and luminance ratio, for semantic analysis.

Hierarchical clustering was used to analyze key visual features of the nighttime scenery, with representative image segments selected as stimuli for the eye-tracking experiments. A VR lab was set up, where eye movement data from sixty participants were recorded using an HTC Vive Pro Eye device. The collected data, including gaze direction, pupil size, and eye movement types, were then processed and analyzed with Tobii Pro Lab software.[4]

Statistical methods, including Pearson and Spearman correlation coefficients, were used to analyze the data. Scatter plots, line charts, and heatmaps were generated to examine the relationship between visual features and eye-tracking metrics. [5]This allowed us to examine the correlation between eye movement data and visual attention preference[6], providing insights into how urban design can align with societal preferences through participatory, data-driven decision-making.

After the main experimental study, we processed and obtained the following key results:
a) Quantified visual characteristics of the nighttime landscape and their spatial distribution;
b) Quantified perceptual preferences (eye-tracking data indicators) and their spatial distribution
c) The relationship between nighttime visual characteristics and visual attention preference, informed by participatory feedback from visitors, which can serve as a model for community-involved design strategies in urban governance.

The results of the study reveal a correlation between the Qinhuai River nighttime design and visitors' visual attention preferences. Based on these findings, we provide optimization recommendations for different sections of the boat tour, grounded in participatory feedback, with the goal of enhancing the promotion of local historical culture while reducing energy consumption. Additionally, the research advocates for governance strategies that incorporate public preferences into urban design, ensuring that future projects are not only sustainable but also culturally enriching and inclusive of public involvement.

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Keywords:
Keyword 1: Urban riverscape
Keyword 2: Nighttime landscape
Keyword 3: Eye tracking
Keyword 4: Virtual reality
Keyword 5: Participatory design

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Abstracts

Posters
TOPIC 2 • Guiding cities

Guiding territories by changing the design of regional projects: tools for intervention at different scales, for multifunctional landscapes

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Cropland Landscape Evolution and Response of Ecosystem Service Value Under Urban Expansion: A Case Study of Beijing

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With the rapid advancement of global urbanization(Bren d'Amour et al., 2017), land use patterns have undergone significant transformations, particularly in highly urbanized regions(Wang et al., 2023). The decline of cropland and the intensification of landscape fragmentation have had profound effects on ecosystem services(Kuang et al., 2022; S. Wang et al., 2021; Yu et al., 2018) .As a representative city in China's urbanization process, Beijing has experienced dramatic changes in land use, with continuous reductions in cropland and increasing landscape fragmentation(Feng & Sun, 2024; Lu et al., 2017). These shifts have significantly impacted ecosystem service value (ESV), warranting in-depth investigation(Zhu et al., 2023). This study analyzes land use changes in Beijing from 1985 to 2020 using geomorphological information mapping and a landscape transfer matrix. The landscape pattern index of cropland was assessed using FRAGSTATS 4.2 to evaluate its impact on ESV. Additionally, the modified equivalent factor method was applied to quantify Beijing's overall ESV, while the ordinary least squares (OLS) and geographically weighted regression (GWR) models were used to explore the influence of cropland landscape evolution on ESV. The results reveal four key findings. First, cropland, grassland, and barren have significantly decreased, while forest and impervious have expanded. Cropland has primarily been converted into impervious and forest, while some forest, grassland, and water have been transformed into cropland, reflecting the dual impact of urban expansion and ecological restoration efforts. Second, despite the reduction in cropland, overall ESV has increased. Forest contribute the most, accounting for over 73%, followed by cropland and water, which together exceed 97%. This suggests that forest expansion has, to some extent, compensated for the ESV loss caused by cropland reduction. Third, cropland landscape fragmentation has intensified. The patch density (PD), largest patch index (LPI), and aggregation index (AI) have declined, indicating that cropland patches have become more scattered. Meanwhile, the edge density (ED) and landscape shape index (LSI) initially decreased and then increased, reflecting growing morphological complexity, which may weaken cropland's ecological functions. Fourth, cropland landscape pattern indices have a significant impact on ESV. LSI exhibits the strongest explanatory power, ED has a negative effect, while LSI and AI positively influence ESV. To mitigate the adverse effects of fragmentation on ecosystem services, it is essential to optimize cropland landscape patterns by enhancing aggregation and connectivity while ensuring strict protection of cropland. This study provides a scientific basis for the planning and policy formulation of cropland landscape conservation in highly urbanized areas, contributing to the stability and sustainable development of urban ecosystem services.

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Keyword 1: Guiding territories
Keyword 2: Cropland landscape patterns
Keyword 3: Ecosystem service value
Keyword 4: Urbanization development
Keyword 5: Beijing City

P135

Landscape ecology to address socio-environmental challenges

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Landscape ecology in Europe is a scientific discipline that aims to understand the social and ecological factors that determine the characteristics of landscapes and their consequences for ecological processes. It is closely related to other research fields such as geography, spatial ecology and landscape architecture. This presentation provides an overview of landscape ecology in France, based on an analysis of current research topics. We explain how landscape ecology can contribute to a better response to current socio-environmental issues. In particular, the conservation and restoration of biodiversity and of the ecosystem functions it sustains depends strongly on the spatial structure of landscapes and their dynamics. Understanding the relationships between the different patterns that can be seen in landscapes and the processes which drive species distribution and dynamics is crucial to defining land-use policies that are favourable to biodiversity. The spatial organisation of landscape components and their management are delivering insights to promote ecological processes that useful for agro-ecological transitions in agriculture and for restoring / complexifying biodiversity and ecosystems in urban areas. Landscape ecology provides the theoretical and methodological frameworks needed to address these issues, drawing on the vast amount of new spatial data available. The human dimension of landscapes plays an increasingly important role in this research, through the development of interdisciplinary approaches. The spatial models produced are often used in participatory approaches to encourage collective action in favour to the restoration of landscapes and ecological processes. In summary, landscape ecology in Europe, together with other disciplines, is contributing to the emergence of concepts and methods for integrated landscape management that combine different issues.

References:
No reference

Keywords:
Keyword 1: landscape ecology
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Keyword 3: environment

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From regional planning to landscape project: scales of landscape intervention in two of Mexico's most dangerous cities

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Celaya and León, two cities in Guanajuato (México), face severe security challenges, ranking among the most violent cities in the world. Additionally, climate change has intensified environmental risks such as extreme weather patterns and water scarcity. Through regional and urban planning, our work has integrated sustainable landscape strategies that enhance resilience, social cohesion, and ecological restoration while redefining the interaction between built and unbuilt environments.
A series of projects at regional, metropolitan, and municipal scales have been implemented to address these issues. The **Ecobulevar** project connects San Francisco, Purísima, León, and Silao with a multi-modal transportation network incorporating public transport, cycling infrastructure, and pedestrian-friendly streets. Simultaneously, it preserves large ecological buffer zones that act as barriers against environmental degradation, promoting biodiversity.
The **Celaya Railway Reuse Project** transforms an abandoned railway infrastructure into a green corridor, reconnecting fragmented urban spaces. Inspired by the Japanese kintsugi concept, this initiative treats urban scars as opportunities for ecological and social reintegration, replacing obsolete infrastructure with sustainable public spaces.
The **Xonotli Agro-Technological Park** integrates agriculture, education, and urban development. It fosters sustainable farming practices, providing experimental fields for local farmers to adapt to new technologies. This project exemplifies landscape multifunctionality by merging production, education, and conservation.
The **León Metropolitan Park** serves as a model for integrating water infrastructure within urban planning. Acting as a flood regulation system, it mitigates hydrological risks while doubling as an extensive green space that enhances urban resilience. The park showcases how water management can be transformed into an aesthetic and functional urban component.
Two additional projects focus on increasing green areas: the **León Metropolitan East Park** repurposes 300 hectares of abandoned military property into protected natural areas, high-performance sports facilities, and recreational spaces, significantly increasing green infrastructure per capita. Meanwhile, the **Línea de Lobos Linear Park** establishes a 32-km ecological buffer, preventing urban sprawl into the Sierra de Lobos protected area. This park highlights landscape architecture's role in controlling expansion while promoting environmental awareness.
Enhancing urban safety through landscape intervention, the **Hidalgo Park Rehabilitation** in León transformed an unsafe park into a vibrant public space by eliminating barriers, improving circulation, and introducing diverse recreational areas. Likewise, the **Adolfo López Mateos Boulevard Regeneration** in Celaya redefines a major urban artery by prioritizing integrated transport solutions, increasing green infrastructure, and revitalizing public spaces, ensuring a balance between mobility and sustainability.
These projects demonstrate how landscape architecture and regional planning can simultaneously address environmental challenges, urban security, and social cohesion. By integrating green infrastructure, mobility systems, and public spaces, our interventions create resilient urban environments while redefining the role of landscape in city planning. Through a multi-scalar approach, these case studies highlight the potential of landscape architecture as a transformative tool in the reinvention of vulnerable urban territories. Moreover, they serve as examples of how landscape projects contribute to mitigating climate risks, managing hydrological resources, and reshaping social perceptions of risk through an educational and participatory approach.

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Keyword 2: Green Infrastructure

Keyword 3: Sustainable Mobility
Keyword 4: Architecture
Keyword 5: Risk Management

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Bridging Scales and Balancing Needs: Block-Scale Green Space Optimization for Multidimensional Revitalization in Shrinking Cities

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Background:
Urban shrinkage is a global challenge, exacerbating environmental degradation (He et al., 2023), socioeconomic inequalities (Sha & Cheng, 2024) and economic decline (Lewis et al., 2022), which complicates urban planning. Urban green spaces have emerged as critical assets in shrinking cities, offering ecological services (Young, 2010), enhancing public health (Bixby et al., 2015), and supporting economic recovery (Kolimenakis et al., 2021). However, current urban planning strategies primarily employ city-scale analysis using landscape metrics (Liu et al., 2024) and accessibility models (Pastore et al., 2025), which overlook block-scale variations and practical implementation barriers. While plot-scale approaches show technical feasibility, they lack systemic integration across urban scales, limiting their real-world effectiveness.

Objectives:
This study addresses two critical gaps: 1) the mismatch between planning scales (city vs. plot) and implementation realities, and 2) inadequate understanding of how urban green space interactions with surrounding urban environments influence multi-dimensional benefits.

Methods:
To address these gaps, we introduced the block scale as an intermediate analytical scale to assess urban green space performance and develop practical planning frameworks. Using Zhangjiakou—a representative shrinking city in northern China—as a case study, our methodology followed four sequential steps:
1） High-Resolution Land-Use Mapping: Develop a fine-grained land-use classification system using the DeeplabV3 convolutional neural network to map urban green space types and other land uses at the block scale;
2）Block-Scale Coupling Indicator System Construction: Construct a multi-dimensional assessment framework to analyze the coupling between urban green spaces and surrounding environments, integrating three dimensions: spatial scale, typological composition, and configurational complexity .
3）Triple-Performance Evaluation: Evaluate urban green space performance across livability (measured by peak-hour park visitation rates), ecology (assessed via three-dimensional green volume and biomass), and productivity (represented by per-unit GDP).
4）Determinant Analysis via Random Forest Regression: Apply a random forest regression model to analyze 832 blocks, using coupling indicators as independent variables and performance shifts across the three domains as dependent variables. Identify critical determinants of green space performance and uncover distinct coupling patterns in shrinking urban blocks.

Findings:
Findings indicate distinct determinants for each performance dimension, alongside trade-offs and constraints among them. Specifically, spatial scale and typological diversity significantly influenced livability, while configurational complexity and green coverage drove ecological performance. Economic productivity was most strongly correlated with proximity to commercial zones, though moderated by green space quality. Effective regulation requires aligning interventions with block-specific performance priorities while balancing competing demands to achieve multi-functional synergies.

Contributions:
This study addresses mismatches between city-scale planning and plot-scale implementation by introducing a block-scale framework to evaluate how urban green spaces interact with their environments to deliver livability, ecological, and economic benefits. It provides planners with evidence-based tools to design context-specific green infrastructure that balances social revitalization, ecological performance, and economic value, while offering computational methods to optimize resource allocation in shrinking cities. By linking block-scale interventions to city-scale systems, the research advances interdisciplinary approaches to sustainable urban design, demonstrating how

targeted green space integration can address environmental, economic, and social challenges in shrinkage areas.

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Keywords:
Keyword 1: Urban shrinkage
Keyword 2: Urban green space
Keyword 3: Neighbourhood
Keyword 4: Performance evaluation
Keyword 5: Urban renewal

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Multi-dimensional Analysis and Restoration of Ecological Integrity in the Giant Panda National Park of China

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This research is set against the backdrop of the sixth mass extinction, where climate change and human expansion are exerting unprecedented pressure on natural regions. National parks, vital for biodiversity conservation, maintaining ecosystem integrity, mitigating climate change, and promoting sustainable development, are facing challenges such as habitat fragmentation and biodiversity loss. There is a lack of comprehensive research on the multi-dimensional characteristics of ecological integrity damage in national parks.

This study focuses on China's Giant Panda National Park, aiming to identify the multi - dimensional characteristics of ecological integrity damage, analyze its causal mechanisms, and design restoration strategies. It also explores the role of landscape architects in multifunctional landscape planning and proposes flexible and adaptive management solutions.

Using a multi-source data and spatial analysis approach, the research quantifies the characteristics of ecological integrity damage across four dimensions: space, time, type, and severity. By integrating remote sensing data, infrared camera monitoring records, and landscape pattern indices, it reveals degradation trends such as habitat fragmentation and reduced activity hotspots for large mammals. Spatial statistical models are employed to parse the driving mechanisms of ecological integrity damage, identifying the interaction of human activities like road construction and community grazing with natural factors.

Based on the diagnostic results, a three - tier restoration strategy is proposed:
1.Core Protection Zones: Establish climate refuges in areas with high ecological integrity to address future climate change.
2.Ecological Corridors: Construct corridors using native plants to connect isolated habitat patches, supporting panda habitat expansion.
3.Multifunctional Buffer Zones: Develop mixed - use areas that combine agricultural activities with ecological conservation, enhancing local economic benefits while reducing habitat disturbance.

The research findings directly support the 2030/2050 goals of the Kunming - Montreal Global Biodiversity Framework. The proposed "Ecological Integrity Index" (EEI) offers a scientific tool for evaluating the conservation effectiveness of global national parks. This project innovatively analyzes damage across five dimensions - space, time, type, severity, and cause - and provides targeted restoration strategies. It contributes to the global goals of biodiversity conservation and sustainable development by offering scientific evidence and practical references for the ecological protection and restoration of national parks worldwide.

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Keywords:
Keyword 1: National Park
Keyword 2: Ecological Integrity
Keyword 3: Climate Change
Keyword 4: Biodiversity Conservation
Keyword 5: Restoration Strategies

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Ecological Balance: Preserving Nature and Developing a Natural Park Area

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"Oleniy" Park, located in the Lipetsk region of Russia, was once rich in forests and meadow-steppe vegetation. Over time, much of the land has been converted into agricultural fields, leaving only a few natural areas. This shift has led to a decline in forest cover and has threatened steppe ecosystems, which are vital for biodiversity and climate regulation (1). Today, the park spans 3,000 hectares, home to species like mouflons, deer, fallow deer, pelicans, and cranes, which roam freely in their natural habitats without enclosures (2).

We conducted a visual-landscape analysis to understand the park's current state. Site visits revealed the park's vastness, noting the diversity of vegetation and wildlife habitats. Local residents emphasized that 90% of the land is used for agriculture, particularly corn farming, but wildlife continues to coexist with these activities (3).

The project seeks to restore the park's ecosystems through a balanced approach. The park is divided into three key zones: an eco-village for agricultural education, a zone for nature exploration, and a minimal-intervention zone to preserve the park's natural beauty. Ecological sustainability is prioritized, with 65% of the park kept in its natural state and 35% allocated for agricultural use. This zoning reduces human impact while maintaining ecological integrity (4). The design includes 60% open areas and 40% closed spaces, with 45% closed, 35% open, and 15% semi-closed zones. These variations will help create microclimates that support biodiversity, providing shelter, sunlight, and food for wildlife (5).

A key part of the project is integrating sustainable farming with ecological restoration. A portion of the park will serve as a vegetable farm, producing crops for local consumption, while "natural rooms" will be created in agricultural fields for picnics and events. An exhibition garden will feature native plants, allowing visitors to participate in planting activities. A flower farm will cultivate decorative plants for sale and host workshops, including bouquet-making and wedding ceremonies (6).

Restoring habitats is essential for maintaining biodiversity. The project will rejuvenate ecosystems such as forests, riparian zones, meadows, and agricultural landscapes. Forest restoration will focus on creating a nursery for native tree species, providing seedlings for reforestation. Mixed planting of trees and shrubs will enhance ecosystem resilience in core areas (7).

Wildlife management will address soil erosion caused by ground squirrels. Feather grasses will be reintroduced to stabilize the soil (8). A regeneration strategy, including native species planting and reducing human impact, will foster long-term ecological resilience. Over time, the park will adapt to environmental changes, ensuring sustainable growth, biodiversity, and ecological benefits (9).

By blending ecological restoration with sustainable land use, "Oleniy" Park offers a model for balancing nature preservation with human development, emphasizing biodiversity in resilient ecosystems.

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Keywords:
Keyword 1: Ecological Restoration
Keyword 2: Biodiversity Conservation
Keyword 3: Sustainable Land Use
Keyword 4: Habitat Restoration
Keyword 5: Ecosystem Resilience

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Urban Agri-Parks: Guiding Cities and Territories Towards Food Security

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Faced with increasing climate change and global supply chain vulnerabilities, cities need innovative solutions to ensure food security. The "30 by 30" initiative in Singapore exemplifies a crucial step toward achieving food security and sustainability. By aiming to produce 30% of its nutritional needs locally by 2030, Singapore addresses its heavy reliance on imports and safeguards its food future. This initiative transforms farming into a future-ready, knowledge-driven industry.

Redefining Urban Landscapes
To achieve food security, cities must reconsider urban ecosystems, integrating ecological processes at different scales. This involves:

- Intensive and Circular Agriculture: Innovative approaches like vertical farming, indoor fish farming, and precision agriculture maximize food production while minimizing ecological footprints. These methods improve yield efficiency, reduce waste, and support climate adaptation.
- Resource Efficiency: Emphasizing water conservation through rainwater harvesting and waste reduction via composting ensures sustainable agriculture. Closed-loop systems transform food waste into energy, enhancing self-sufficiency.
- Empowering Local Farmers: Providing farmers with grants, funding, and training programs equips them with the skills to implement innovative practices.

Integrating Society and Technology
Beyond production, the success of urban agri-parks lies in integrating society through participatory approaches and technological advancements.

- Public Engagement: Agri-tourism, retail experiences, and educational spaces redefine the urban-agriculture relationship, fostering awareness and connection with food systems.
- Knowledge Exchange: Structuring agri-parks into dynamic hubs that offer distinct programmatic experiences demystifies modern agriculture and ensures accessibility for workers, researchers, and visitors.
- Empowering Agri-Entrepreneurs: Providing scalable production spaces with flexible lease models fosters a thriving ecosystem of entrepreneurial farmers and agri-tech innovators.

Addressing Challenges and Opportunities
While the path to food security presents challenges such as limited land and high initial investment, it also offers opportunities for innovation and growth. These include:

- Job Creation: The agri-food sector can generate new job opportunities, driving economic growth.
- Public Awareness: Promoting the importance of food security and the benefits of local production can foster a stronger sense of community.
- Food Safety: Local food production allows for greater oversight and stricter adherence to food safety regulations.

By addressing these challenges and leveraging opportunities, urban agri-parks can serve as models for food resilience, land management, and sustainable living. Singapore's Lim Chu Kang Urban Agri-Park exemplifies this approach, uniting government agencies, farmers, consumers, and researchers to sustain future generations. This unity creates a resilient, sustainable, and secure food future.

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Keywords:
Keyword 1: Food Security
Keyword 2: Urban Agriculture
Keyword 3: Sustainability
Keyword 4: Innovation
Keyword 5: Self-Sufficiency

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The development of the Canal Park: An integrative model for the management of open spaces and sustainable tourism development

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The Hula Valley, located in the northern part of the State of Israel, is a "green lung" for the country's residents, and serves as a tourist area for both domestic and international visitors. The valley is a focal point for nature and birdwatching, serving as a stopover on the migration route of birds from Europe to Africa.
The 'Canal Park' is located at the heart of the valley, in a unique position between two plateaus – the Golan Heights and the Naftali Mountains. The valley was drained in the 1950s for agricultural use. The eastern canal (the Jordan River) is a central component of the Hula Valley's eco-hydrological system and serves as a significant drainage channel. At the same time, it holds great potential for the development of natural tourist sites and ecological tourism, which could contribute to the region's economy and raise public awareness of nature and heritage values.
The master plan for the Canal Park aims to address unregulated activities that result in the occupation of public spaces through camping, entry into agricultural lands, noise pollution, and uncontrolled fires, while creating areas for leisure and recreation.
The park plan is part of the LIFE project (sponsored by the European Union and the regional councils of the Hula Valley), which proposes the development of additional recreational and leisure sites in northern Israel
The Canal Park plan includes the implementation of policies for efficient basin operation and management, focusing on integrating aspects of nature, river systems, and human use. In this context, the plan aims to address the drainage challenges in the area, prevent flooding, support agriculture, and restore the canal to improve system services. The plan also includes the development of areas for hiking and visitor stays within the park and interaction with natural sites throughout the area, creating a balance between environmental preservation, canal restoration, river rewilding and sustainable development.
The project is a collaboration between several official bodies managing open spaces in Israel. The planning is managed by landscape architects in the planning department of the KKL-JNF. A local landscape architecture office is the lead planner in a team that also includes an ecologist and a hydrologist. The landscape architecture team incorporates their recommendations and creates a plan that includes visitor movement, areas for stays including camping, and a plan for earthworks to purify the canal, creating a broad canal section that allows for efficient drainage and prevents flooding.
The plan emphasizes the importance of preserving the economic contribution Canal Park to the regional economy, which has flourished over the past 15 years but has been severely impacted by the war that took place in 2023-2024, during which settlements in the area were evacuated and many businesses were closed. Collaboration between drainage, tourism, and residents will ensure the realization of the Canal Park's potential as a center of balance between preservation, development, and public benefit, and will be part of the rehabilitation efforts for the Upper Galilee region.

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Fundamental research in the relationship between the spatial characteristics of civic green spaces in Setagaya Ward and social capital.

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In recent years in Japan, the weakening of relationships between people and communities and the loss of community is one of the social issues which comes from transformations of the urban system and social structures.
Recently, a systems approach has become mainstream in policy theories of community building, and the planning theory of landscape design is limited.
Therefore, this study aims to clarify how the spatial characteristics of civic green spaces in Setagaya Ward affect the formation of communities and contribute to the fostering of social capital.
This study will be conducted by comprehensively conducting a questionnaire survey to understand the spatial characteristics of civic green spaces and to recognize social capital.
And I conducted a field survey to understand the spatial characteristics of civic green spaces, and spatial elements were quantitatively evaluated using the following perspectives: size of green space, location, access, flow lines within the green space, benches, and visibility.
Next, a literature review was used to classify the six types of management form to understand the actual management status of civic green spaces.
Then, using a questionnaire survey targeting residents living near each civic green space, I ascertained their sense of trust and belonging to the community based on the frequency of use and whether or not they interact in the green space. In addition, an interview survey will be conducted with management entities and long-term users of civic green spaces to explore the actual conditions of interaction among users based on the management style of the civic green space, and the impact of using civic green spaces will be considered.
What we have been able to ascertain as a result at this stage is that the management entities in these civic green spaces are cooperating with Setagaya Ward to host events. In the case of the civic green space in the Seijo district, the Seijo community association has been active in hosting events, while in the case of the civic green space in the Kitakarasuyama district, no events have been held, suggesting that the hosting of events is influenced by the characteristics of district efforts based on the climate and geographical features of the district. No significant difference was found in the number of locations where events have been held in terms of spatial characteristics, with four locations in tree-ring-type civic green spaces and five locations in park-type civic green spaces, suggesting that the zoning characteristics of the civic green spaces are not related to the holding of events. In contrast, it was clear that the elements that provide material for events are largely related to tree species within the civic green space, such as cherry trees, tea trees, cedar trees, and fruit trees. In contrast, the daily use of the green space can be considered in terms of benches, rest areas, traffic flow planning, and visibility from the outside, in addition to natural elements. Therefore, we will consider the elements that promote communication and connection through field surveys and questionnaires.

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Keywords:
Keyword 1: social capital
Keyword 2: community
Keyword 3: park system
Keyword 4: civil green space

P143

From Underutilized Land to Foodscape: AI-Driven Identification of Potential Land for Urban Food Systems

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With the rapid growth of urban populations, agricultural and natural areas are increasingly encroached upon, leading to the loss of natural habitats and land essential for food production. Concurrently, rapid urbanization has led to fragmented urban development and the abandonment of infrastructure, resulting in numerous urban areas becoming vacant land characterized by disuse, underuse, dereliction, or abandonment (Xu & Ehlers, 2022). Urban agriculture emerges as a viable solution to mitigate these challenges by transforming unused spaces into productive foodscapes. This transformation can enhance food provisioning ecosystem services while also strengthening supporting, regulating, and cultural services in areas that would otherwise have minimal ecological value (Wilhelm & Smith, 2018).

This study proposes an AI-driven framework for identifying and evaluating underutilized urban land suitable for conversion into foodscapes within the 23 wards of Tokyo, Japan. Utilizing 10-meter high-resolution spatial and spectral data from Sentinel-2 satellite imagery, the research employs the Random Forest Algorithm within Google Earth Engine (GEE) to identify two primary types of underutilized land: vacant lots and abandoned lots. To ensure accuracy, the classification results are manually verified through Google Street View. Subsequently, a multi-criteria evaluation framework is developed to assess the suitability of identified land for foodscape transformation. The evaluation criteria are structured into three categories: soil, climate, and socio-economic. The soil category includes indicators such as soil organic carbon and bulk density. The climate category evaluates parameters like rainfall and sunlight exposure. The socio-economic category considers residential density, land price, and distance to the city center and direct sales stores. Each criterion is assigned a score reflecting its relative importance to foodscape suitability, and the final suitability score for each land parcel is calculated using a comprehensive weighted method to ensure balanced assessment. Land parcels meeting or exceeding a predefined suitability threshold are selected for further analysis. Based on different policy scenarios, foodscape planning maps are generated using ArcGIS Pro to visualize potential transformations and facilitate an understanding of how these transformations could integrate with existing urban infrastructure. The study also assesses the potential benefits of such transformations, including enhanced local food production, improved urban ecological conditions, and contributions to urban food systems.

Overall, this research introduces a systematic and AI-driven approach to urban land evaluation and planning for sustainable foodscape development. By leveraging advanced remote sensing, machine learning, and spatial analysis, the study provides a replicable model for other metropolitan areas seeking to optimize underutilized land for urban agriculture. This framework not only supports urban food system resilience but also contributes to broader urban sustainability goals.

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Keywords:
Keyword 1: Urban Agriculture
Keyword 2: Food System
Keyword 3: Underutilized Land
Keyword 4: Machine Learning
Keyword 5: Urban Planning

P144

Evaluation and optimization strategy of ecosystem services of provincial capital cities in the upper reaches of the Yellow River

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The upper reaches of the Yellow River extend from its source in the Yueguzonglie Basin of Maduo County, Qinghai Province to the Hekou Town in Tuoketuo County, Inner Mongolia. Spanning plateau climate zones and mid-temperate regions, this area accounts for 53.8% of the Yellow River's total basin area. However, its ecological significance has not received adequate attention in the context of surrounding urban development. Xining, Lanzhou, and Yinchuan—three provincial capital cities within this upper reach—exhibit both commonalities and significant differences.

This study aims to evaluate the current status and service functions of ecological space development in these three cities, construct an ecological space network optimization framework for the study area, and propose systematic ecological space optimization strategies.

First, regarding the evaluation of ecological space service functions, this research employs the Patch-generating Land Use Simulation (PLUS) model and the Integrated Valuation of Ecosystem Services and Trade-offs (InVEST) model. Seven typical ecosystem services were selected: water conservation, soil retention, windbreak and sand fixation, biodiversity maintenance, ecological sensitivity, rocky desertification sensitivity, and soil erosion sensitivity. Quantitative assessments were conducted at a 1-km resolution using ArcGIS 10.8 and the InVEST model.

Second, the study constructs an ecospatial network for the study area based on optimization principles, including key steps such as identifying ecological source areas, establishing resistance surfaces, delineating ecological corridors, and determining critical ecological restoration zones.

Finally, systematic ecological space optimization strategies are proposed according to the distinct characteristics of each city.

This research represents the first systematic analysis of the current state of ecological space and service functions in key urban built-up areas of the upper Yellow River region from an ecosystem services perspective. By establishing an optimized ecospatial network framework, it provides scientific references for adjusting land use patterns and guiding sustainable management of ecosystem services.

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Keywords:
Keyword 1: Upper Yellow River
Keyword 2: Ecosystem services
Keyword 3: Built-up areas
Keyword 4: Landscape pattern

P145

Beyond Boundaries: Achieving Sustainability through Urban-Protected Area Co-evolution in China's PA-adjacent areas

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Sustainable development in areas adjacent to protected areas (PAs), encompassing broader unprotected, multi-use landscapes, is crucial for maintaining regional ecological integrity and enhancing socio-economic resilience. Traditionally, research has examined ecological conservation and economic development separately, largely neglecting the complex spatial interactions among protected areas, urban agglomerations, and surrounding multifunctional landscapes. Furthermore, PA-adjacent areas (PAAs) frequently encounter a dilemma between stringent ecological regulations, potentially constraining socio-economic development, and more permissive land-use policies that risk ecosystem degradation.

Addressing this research gap, this study proposes an innovative conceptual framework, termed "dual-polar influence," which systematically integrates the simultaneous effects exerted by urban agglomerations and protected area clusters on the sustainability of PAAs. We developed a comprehensive sustainability evaluation index to analyze dynamic shifts in conservation effectiveness and community well-being from 2000 to 2020. This evaluation leverages multi-source socio-ecological data, incorporating buffer zones at 3 km, 6 km, and 10 km intervals around China's national nature reserves and their corresponding urban agglomerations. Indicators include ecosystem service provision, biodiversity conservation outcomes, habitat connectivity, land-use intensity, infrastructure connectivity, livelihood diversification, socio-economic resilience, and urbanization pressure.

Spatial econometric methods, particularly the Spatial Durbin Model (SDM) and Geographically Weighted Regression (GWR), were employed to explore spatial heterogeneity and elucidate the primary mechanisms driving sustainability patterns in selected PAA case studies. Specifically, this research aims to identify spatial characteristics and configuration patterns within urban agglomerations and protected area clusters that correspond to higher sustainability outcomes.

This study significantly advances landscape ecological theory by introducing a multi-scale integrated framework for analyzing protected area-urban interactions, thereby addressing a critical research gap related to human-land coupling processes at PA peripheries. Furthermore, by transcending the traditional "protected area versus urban area" dichotomy and adopting an integrated spatial interaction approach involving urban agglomerations and PA clusters, the study provides practical insights for landscape-level conservation planning and policymaking. The outcomes offer valuable guidance for enhancing management practices, ecological planning strategies, and policies aimed at promoting sustainable regional development.

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Keywords:
Keyword 1: Protected Area-adjacent Areas
Keyword 2: Sustainability
Keyword 3: landscape multifunctionality
Keyword 4: Human-Land coupling

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Harmony among Living, Farming and Water: Multi-scale Assessment and Adaptive Strategies for Ecological Risks in Large Lake Riparian Zone

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Large lakes abound with rich blue - green ecological resources and stand as pivotal strategic components within the regional ecological landscape. Functionally, they play out a gamut of essential roles within their respective watersheds, including but not limited to water supply, flood control, irrigation, navigation, fishery, and tourism. However, recent expansions of townships and agricultural development have gradually eroded and damaged the ecological space of the riparian zone. As an area with the most frequent and complex interactions of living-farming-water, the riparian zone is more sensitive to human activities than water bodies themselves, and the ecological risks are prominent. How to effectively identify and address these ecological risks in the riparian zone is crucial for promoting the healthy development of the lake area ecosystem.

This study focuses on the ecological risks of multifunctional landscapes in the riparian zone of Qiandao Lake in China. Qiandao Lake, located in Hangzhou City, is a vast artificial lake created by the construction of a hydroelectric power station and the damming of the Xin'an River, covering a water area of 580 km². The riparian zone stretches approximately 2,297 km, with 40 tributaries flowing through 23 townships in a plume-shaped distribution that converges into the lake. With the economic development of the basin, the artificial construction and farming activities in the riparian zone have become increasingly frequent, leading to prominent problems of soil erosion and pollution. Under such circumstances, how to properly coordinate the relationship among living, farming and water in the riparian zone, and reinvent landscape amidst risks and environmental change has become the key to the effective protection and rational use of Qiandao Lake.

The study quantitatively analyzes the overall lake area, the riparian zone, and the inlets of tributaries at three scales, applying quantitative analysis to develop adaptive measures. Specifically, a water pollution risk evaluation is conducted for the lake area, integrating natural and anthropogenic disturbances to identify the overall risk sensitivity of Qiandao Lake and understand its underlying risk mechanism. For the riparian zone analysis, a deep-learning habitat quality evaluation model is established, and a large-volume hierarchical assessment of 11,556 satellite image tiles is carried out to realize the identification of key risk nodes in the riparian zone.For the assessment of the key nodes - the inlets of tributaries, the ecological risks and changes in 40 inlets are further identified on the basis of the Remote Sensing Ecological Index(RSEI) and Floating Algae Index(FAI), and more targeted development and management countermeasures are proposed to improve ecological problems and maintain the health of the habitats by means of near-natural and light interventions.

Landscape represents a crucial and efficacious means of low - impact intervention for ecological risk issues in the lake area riparian zone. The study assists quantitative assessment with artificial intelligence technology, realizes the diagnosis of ecological risk in the lakeshore zone and the planning decision of regional landscape at multiple scales, which helps the protection, restoration and sustainable use of the lakeshore ecosystem.

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Keywords:
Keyword 1: Riparian zone
Keyword 2: Ecological risk
Keyword 3: Multifunctional landscapes
Keyword 4: Multi-scale assessment
Keyword 5: Management strategies

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Significance of Landscape and Green Building Strategies in Modern Libraries: a case for a tropical island nation

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Libraries are an inseparable component in any community, and they contribute immensely to social capital. The architecture of library buildings plays an essential role in upholding social status and image among users since library buildings reflect the cultural heritage of respective localities. Intertwined with architectural facets of libraries, the environmental components of buildings are becoming crucial to mitigate adverse climate changes. Hence, the objectives of this work are to identify possible incorporation of sustainable building principles in libraries, both existing and new ones, to discover the ways of enhancing the natural surroundings to harbor local birds and animal species, and to recognize the strategies to manage challenges in implementing sustainable technologies and standards. In Sri Lanka, library buildings were constructed using conventional methods and often were not adopting any sustainability principles. Moreover, resource scarcity and non-conformity to standards are major impediments to embracing the environmentally friendly architectural designs. Many of the library buildings do not have rainwater harvesting systems, solar panels, or smart library systems. These buildings are heavily dependent on electric light sources and numerous units of air-conditioners. Besides, the country is located near the equator and gets bimodal monsoonal rain almost throughout the year. During heavy rainy seasons, the access to many of the libraries are inundated, and the drainages are overspilling. One of the major reasons for frequent floods around the libraries is the impermeable layers of concrete and interlocking stones. A few universities and special libraries are blessed with natural patches of greeneries and indigenous plant species, although many other libraries do not have breathtaking surroundings. There are certain challenges identified from interviews with key persons, namely, insufficient budgetary allocation, resistance to change, limitation of physical space, impermeable layer, poor drainage systems, municipality restrictions, and poor policy frameworks. In this regard, two types of sustainable approaches, namely active and passive technologies, are recommended in developing ‘green’ library buildings. Popularly, Leadership in Energy and Environmental Design (LEED) or Building Research Establishment Environmental Assessment Method (BREEAM) are observed as internationally accepted standards and benchmarks, respectively. Under the domain of active technologies, installation of solar panels and photovoltaic systems, energy efficient light bulbs, cloud computing with smart decentralized servers, rainwater harvesting, greywater recycling, sensor-base faucets, and low-flow fixtures. Additionally, AI-driven Energy Management Systems (EMS) or IoT-based Building Management Systems (IBMS) can adjust the indoor atmosphere and regulate the energy consumption in libraries in real time depending on the number of users and the level of operation. Meanwhile, passive sustainable technologies help develop a landscape that supports biodiversity around libraries. Those include building orientation to receive natural illumination and ventilation; exploiting the eco-friendly construction material; visually appealing (guiding) landscape with indigenous plants, public arts, different types of pathways, Zen Garden, using massing and layering techniques, and setting up fountains; high performance building envelope; and using modular and flexible furniture.

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Keywords:
Keyword 1: Green Library Buildings
Keyword 2: Sustainable Technologies
Keyword 3: Guiding Landscape
Keyword 4: Engineering Standards
Keyword 5: Sri Lanka

P148
Les plans de paysage au service de la transition écologique

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Le mot « plan » suggère qu'il s'agit de contrôler ou d'accompagner les évolutions du paysage, un domaine qui est plus une question de ressenti que de mesurable. Malgré ce paradoxe, le nombre et la diversité des démarches entreprises témoignent d'une réelle réussite : les 180 plans identifiés concernent tous types de collectivités et une grande diversité de thématiques. Les premiers plans français ont été expérimentés à la suite de la Loi Paysage de 1993.

Ils s'inspirent des Landschapsontwikkelingsplan (LOP : littéralement « plans d'aménagement paysager ») élaborés aux Pays-Bas. Cependant, l'impulsion nationale est restée faible jusqu'en 2013, date à laquelle le ministère de l'Écologie a lancé des appels à projets annuels. Selon Bertrand Folléa (2001), le plan paysager doit être à la fois réglementaire, opérationnel et pédagogique. Les traductions réglementaires sont utilisées dans les documents d'urbanisme. Les traductions opérationnelles sont des programmes concrets d'embellissement du cadre de vie, tandis que les traductions pédagogiques partagent les « objectifs de qualité paysagère » avec les acteurs locaux.

A l'image des « chartes du paysage » en Catalogne, ou des « conceptions d'évolution paysagère » suisses, les plans paysagers français sont d'abord généralistes. L'installation accélérée d'éoliennes ou de centrales photovoltaïques se heurte dès lors aux réticences des habitants et a conduit à des expérimentations de plans de transition paysage-énergie financés par l'ADEME à partir de 2020. En 2024, la thématique de la biodiversité est introduite par l'Office français éponyme. Les plans deviennent ainsi des outils de transition écologique *par* le paysage.
Cependant, les plans paysagers n'étant ni obligatoires ni directement contraignants, un projet d'aménagement basé sur le paysage nécessite une démarche de long terme avec un fort soutien politique et un appui technique transversal. Si les grandes villes disposent de tels services, l'ingénierie fait souvent défaut en milieu rural. Les lauréats des appels à projets concernés ont du mal à pérenniser leur démarche sur le long terme.

Le Parc naturel régional du Ballon des Vosges a surmonté cette difficulté : il coordonne depuis trois décennies les plans paysagers dans chacune des vallées qui le composent avec les caractéristiques suivantes :

- L'articulation des micro-aménagements et du plan stratégique intercommunal
- L'immédiateté des résultats (qui font adhérer au projet) et la pérennité des stratégies de transition.
- Le partage organisé d'expériences entre élus et techniciens des différentes vallées,

Après trente années de succès locaux « à bas bruit », dans les Vosges et ailleurs, du fait de sa souplesse et de sa capacité à mobiliser la population, il apparaît que le plan paysager est un outil efficace pour mettre en œuvre la transition écologique, notamment ses dimensions « climat » et « biodiversité ».
Encore faut-il que ces démarches soient généralisées par une mise en réseau aux échelles régionale puis nationale, et par des incitations financières ambitieuses pour soutenir les programmes d'actions et l'ingénierie locale.

Les plans paysagers seront alors les vecteurs efficaces d'une transition choisie.

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Keywords:
Keyword 1: Planification
Keyword 2: évolutions du paysage
Keyword 3: transition écologique

Keyword 4: climat et biodiversité
Keyword 5: participation citoyenne

P149

High-Precision Analysis of Rural Ecological Landscapes: A Multi-Scale Approach for Regional Adaptation

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A well-preserved rural ecological environment is crucial for inclusive, safe, resilient, and sustainable rural communities (Yang and Wei, 2024), aligning with global rural revitalization and sustainablility goals (United Nations, 2015). However, existing research often rely on low-resolution data and generalized models, making it difficult to accurately characterize rural landscape features and develop tailored planning strategies. Regional rural landscapes are frequently overlooked, limiting the effectiveness of ecological interventions (Yang et al., 2021). Therefore, constructing a high-precision ecological landscape survey system for rural settlements is the key to advancing rural revitalization.

This study develops a three-level rural ecological landscape survey system integrating multi-source data fusion to improve precision. Focusing on China's national forest and rural areas, the research employs GIS spatial analysis, unmanned aerial vehicle remote sensing, and multispectral analysis. The research objectives include (1) Identify spatial distribution characteristics and driving factors of forest villages nationwide; (2) Enhance landscape classification accuracy at the rural settlements scale; (3) Analyze regional ecological construction differences and propose optimization strategies.

At the national scale, the study uses ArcGIS and Moran's I to analyze the spatial distribution of forests and rural settlement, incorporating natural geography, socio-economic data, and policy factors; At the sample settlement scale, 40 representative villages are selected for high-resolution UAV near-ground remote sensing. The Normalized Difference Vegetation Index (NDVI) is calculated to assess green space coverage, and semantic segmentation (SAM) is applied to interpret remote sensing data for detailed landscape classification. At the settlement scale, field surveys examine landscape patterns, green space utilization, and ecological construction models across different regions.

The findings reveal significant regional disparities in rural ecological landscapes. National-scale analysis shows a distribution pattern where forest villages are denser in the east and sparser in the west, influenced by urbanization rate, economic development, policy support, and village density ($p<0.01$). UAV remote sensing analysis indicates that the average rural green space is 55.29%, with higher coverage in the southeast and lower in the northwest. Remote sensing interpretation efficiently classifies land types, producing refined and high-precision rural landscape maps. . At the settlement scale, eastern rural areas adopt policy-driven ecological strategies, focusing on green space enhancement and ecological park construction, while western rural areas primarily rely on natural resources-based ecological management. Although ecological initiatives have mitigated urbanization-induced land-use conflicts, fragile ecological zones remain underrepresented, limiting overall ecological resilience.
This study establishes a multi-source data fusion system for rural ecological landscape analysis, overcoming the scale and accuracy limitations of traditional methods. The findings suggest that current rural ecological landscape construction remains compensatory, primarily addressing urbanization impacts rather than long-term sustainability. Future approaches should go beyond policy-driven interventions, integrating advanced ecological monitoring technologies, resilience-based planning, and fine-scale investigations. Strengthening regional differentiation strategies will help embed ecological landscapes into rural development, ensuring their sustainable integration into broader land-use planning.

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Keywords:
Keyword 1: Rural Ecological Landscape
Keyword 2: Sustainable Rural Development
Keyword 3: Multi-source Data Fusion
Keyword 4: Semantic Segmentation
Keyword 5: Remote Sensing Interpretation

P150

A Noval Approach to Assessing Perceptions of Urban Greenspace: Insights from Crowdsourced Data and Computer Vision in Amsterdam, the Netherlands

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Under the context of global climate change and urban densification, urban greenspaces are increasingly important for residents. Especially, understanding human relationships and interactions with greenspaces is key to human-centered urban planning and design practices. Growing evidence suggests that residents' perception of urban greenspaces plays a crucial role, often better explaining greenspaces' health and wellbeing benefits than objective green supply metrics and exhibiting more prominent inequality issues. However, due to current limitations in cost and scalability of survey methods, practitioners and policymakers still lack effective tools and resources to assess public green perception.

Here, we developed a novel digital crowdsourcing method that integrates online social media imagery with multiple deep learning-based computer vision techniques to quantitatively investigate public's urban green perception. Focused on Amsterdam, we analyzed over 130,000 publicly-shared urban images from Flickr with ResNet101 semantic segmentation and Google Cloud Vision to automatically extract the embedded visual-spatial information on urban greenspace, and quantified its intensity as representation of green perception. Sample-based expert validation confirmed our method's accuracy.

Our results demonstrate that crowdsourced data combined with deep learning methods can efficiently and effectively capture urban green perception. Spatial quantification revealed the distribution of green perception, with chi-square expectation surfaces identifying perceptual hotspots and coldspots. Nonetheless, we found green perception exhibited only weak correlation with NDVI—the commonly used green quantity metric—and displayed spatial disparities, suggesting that green perception, while associated with objective green measures, potentially captures different aspects of urban greenspaces.

To better explain these disparities, we modeled green perception as a function of urban environmental attributes. Results indicate that availability, accessibility, and attractiveness of greenspaces are all associated with green perception, which may reflect a multidimensional experience of urban greenspaces. In addition to green coverage, biodiversity, vegetation richness, presence of water, and safety positively influenced green perception, while artificiality showed a significant negative impact. Hierarchical clustering and spatial analysis of image content tags further confirmed green perception's link to various human-environment interaction processes, including recreation, wildlife observation, and nature appreciation. Sensitivity analysis revealed that these relationships were more pronounced at smaller spatial scales.

We further examined the spatial equity of green perception distribution, using property values as an indicator of urban socioeconomic status. Results showed a weak but significant positive correlation between green perception and economic status, whereas NDVI did not exhibit this trend. Statistical analysis indicated that higher socioeconomic areas did not necessarily have greater availability of greenspace but demonstrated better green accessibility and attractiveness. This suggests that green perception may exhibit greater inequity than the actual distribution of greenspaces.

Our research presents an effective method for quantitatively investigating green perception through digital technologies and emerging data, providing novel and unique insights into human-greenspace relationships and interactions. Our findings potentially contribute to more targeted support for human-centered and just urban environments.

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Keywords:
Keyword 1: Green perception
Keyword 2: Urban greenspace
Keyword 3: Crowdsource data
Keyword 4: Social media
Keyword 5: Computer vision

P151

Land suitability evaluation based on semantic segmentation and edge recognition -- a case study of Wenzhou Ouhai ecological new city

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[Background]
With the rapid expansion of economic development and urban scale, the demand for urban construction land resources is increasing, and the scope of the city is gradually expanding to the countryside. As the transition section between the deep mountain area and the plain area, the shallow mountain area is facing a strong demand for land development, undertaking more human activities, and its ecological environment and human settlement environment are affected to a certain extent. Therefore, the ecological and land suitability evaluation of shallow mountainous areas has gradually become the premise and basis of planning.

[Study Area]
Wenzhou is located in the hilly area along the southeast coast of Zhejiang Province, China. It is a regional central city in southern Zhejiang and Northern Fujian. Wenzhou Ouhai ecological new city is located in the west of the core area of Wenzhou, in the transition zone between towns and villages. On the whole, it is dominated by hilly landform. In terms of urban function, it is an important growth pole radiating from the central urban area to the West. In terms of ecological function, it is a link node of mountains, rivers, forests, fields and seas.

[Objectives]
Through close cooperation with the local government, this study established a whole process land suitability evaluation framework to coordinate the ecological protection and development needs of shallow mountain areas. Using high-resolution satellite images and advanced remote sensing technology, combined with semantic segmentation and edge detection algorithm, the evaluation index system is established. The effectiveness of this method is verified by its application in Ouhai New Area Project in Wenzhou.

[Methods]
Based on the high-resolution satellite images and remote sensing data of Wenzhou Ouhai new area planning area of 225.63 square kilometers, combined with the text prompts of groundingdino embedded recognition features, this paper generates satellite images, which can be used as the prompts of Sam for target detection, and then uses the segment anything model (SAM) for semantic segmentation. Based on the raster data obtained by semantic segmentation, we use the deep learning based overall nested edge detection (HED) technology integrated in the DNN module of pencv to identify the target range and vectorize it as the data basis for suitability analysis. Combined with fuzzy comprehensive evaluation method and K-means clustering analysis, the impact factor evaluation set of 11 indicators is constructed, and finally the suitability evaluation results of Ouhai ecological new town area are obtained.

[Conclusion]
From the perspective of regional ecology and planning, this paper evaluates the suitability of Wenzhou Ouhai new city, a hilly area in the transition zone between urban and rural areas, based on semantic segmentation and edge recognition, which reflects the innovative integration in the planning of ecological sensitive transition zone. The evaluation results provide a scientific basis for project design and decision-making, balance ecological priorities, and establish a replicable model for government led development projects.

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Keywords:
Keyword 1: hallow mountainous areas
Keyword 2: land suitability assessment
Keyword 3: semantic segmentation
Keyword 4: edge detection
Keyword 5: ecological urban planning

P152

Integrating Circular Economy Strategies into Historic Village Regeneration: Cases Study of Micro-renovation Planning in South China

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Abstract: Although the global attention to circular economy strategy as a key path to achieve sustainable development is increasing, there are few studies on its integration with urban spatial planning at home and abroad. This study attempts to fill the research gap by analyzing the micro-renovation of two historical villages in southern China, Luntou Village in Guangzhou and Sanyanqiao Village in Foshan. The two villages face the dual challenges of rapid urbanization and cultural heritage protection. The mixed method approach including spatial analysis as well as carbon tax-based impact assessment is put forward in both of cases. Moreover, the following five feasible measures of circular economy have been put into practice: 1) Optimize low-emission transportation systems by optimizing pedestrian networks and deploying electric vehicle infrastructure; 2) Adaptively reuse abandoned industrial land and vernacular buildings; 3) Achieve closed-loop material management through construction waste recycling and bio-based material applications; 4) Protect native tree ecosystems by optimizing road section design and encouraging community participation; 5) Ecological restoration of waterfront interfaces using nature-based solutions. Quantitative analysis shows that carbon emissions are expected to be reduced by about 30% through these interventions. The cases study shows that circular economy principles can be implemented in heritage-focused contexts through spatial reorganization, highlighting the importance of conducting context-specific material metabolism analyses and adopting community-centered governance models. The empirical research contributes to the emerging discussion of circular urbanism, providing a replicable framework for combining resource recycling strategies with cultural landscape conservation in developing regions.

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Keywords:
Keyword 1: Circular Economy Strategies
Keyword 2: Micro-renovation
Keyword 3: Historic Village Regeneration
Keyword 4: carbon emissions

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Landscape Architecture Aided Design Workflow Based on Big Data and AIGC Fine-tuning Model: A Case Study of Greenway

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Landscape architecture design practice presents the development trend of segmentation, customization and specialization. Designers are needed to study the design experience in segmented scenarios and come up with customized design strategies. The research aims to explore the path of AI-aided design for customized landscape architecture scenarios. By combining network big data and fine-tuning model technology of AI Generated Content (AIGC), the research aims to bridge the gap between big data analysis research and scenario generation in design practice, ultimately constructing a lightweight AI-aided design workflow for landscape architecture.

The research adopts the Research for Design (RfD) methodology to build a workflow framework for integrating research and design practice, which includes four major processes: 1) Network big data collection: obtain data sets related to the required landscape architecture segmentation scenarios through online social platforms. 2) Intelligent evaluation of network big data: analyze and categorize image data, and filter out the scene images with excellent user evaluation by evaluating the text sentiment evaluation and subsidiary information analysis. 3) AIGC image fine-tuning model construction: utilize the high-quality image dataset obtained in the previous stage to conduct fine-tuning model training based on a mature pre-trained general model. 4) AI-aided design generation: employ the fine-tuned model obtained through training to assist in generating scene images according to the needs of design practice. Based on the intensity of control over the generated content, divide the scene-aided generation into "weakly controlled" and "strongly controlled" aided design scenarios.

The research takes greenways as a typical case to verify the performance of the workflow framework. Image-text data related to Beijing greenways from 2013-2022 were collected from Weibo platform as the original dataset. Image features are extracted using the pre-trained convolutional neural network model InceptionResNetV2 and the image data is clustered by K-Means clustering algorithm. Using SnowNLP to analyze the sentiment of the text associated with the image, obtain the sentiment score, and correct the score by combining the microblog interaction data. Based on the corrected sentiment score to judge the image quality, the image data is gradually cleaned and filtered into a training set for LoRA fine-tuning model training. The developed LoRA model can accurately reproduce the spatial details of the greenway scene and the fitting degree is appropriate. Based on the two major scenarios of "weakly controlled" and "strongly controlled", with the aid of prompt words and the ControlNet, two effective paradigms for generation control are proposed: rapid generation of design intentions and redrawing of existing scenes. In addition, the combined use of other fine-tuned models can achieve tasks of generating error control and drawing style migration.

While limited by non-specialized social media data and immature control methods, the workflow demonstrates adaptability through: 1) Real-user feedback integration for targeted dataset construction; 2) Task-specific model customization; 3) Scalable deployment potential across landscape architecture scenarios. Future improvements should address data ownership issues and enhance professional interpretation of generated outputs.

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Keywords:
Keyword 1: big data
Keyword 2: artificial intelligence
Keyword 3: aided design
Keyword 4: fine-tuned model
Keyword 5: design research

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From Spatial Boundaries to Landscape Units: A 3Z3L Regulatory Framework Optimized by Landscape Character Units in the Pearl River Delta

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In the context of achieving Sustainable Development Goals (SDGs), landscape serves as a critical medium to reconcile conflicts between ecological conservation and socio-economic development. But the integration of landscape approach into multiscale territorial governance remains underexplored, especially in rapidly urbanizing regions in China. The “three-zone and three-line” system is a core part of China's national territory spatial planning. The “ecological protection red line, permanent basic cropland red line, and urban development boundary” are three key boundaries for managing territory landscape changes and development. However, the spatial patches presented in the three lines are unidimensional, discrete, and fragmented geographical map patches, rather than landscape units with "structure-function" correlation. For example, important ecological Spaces may be distributed in natural landscape units, rural landscape units, or urban landscape units. Based on the systematic analysis of the "three-line" regional background, it can better support the realization of planning objectives by linking " spatial patch " and "landscape background". In this study, based on the landscape feature assessment method, the type identification and regional division of landscape features at two scales in the Pearl River Delta are completed: At the regional scale, the outline map of LCA is divided into urban landscape, rural landscape and natural landscape according to landform, land cover and construction land data, corresponding to the ecological protection red line, permanent basic farmland and urban development boundary in the three major spaces. At the urban scale, the detailed landscape feature map is further superimposed with the “three-zone and three-line”, and a total of 46 types of detailed landscape inside the three lines are obtained. Based on this, the spatial relationship between landscape units and "three-line" can be deeply analyzed through the method of spatial superposition, and the mutual nesting relationship between the two types of spatial units can be found: the landscape type inside the ecological protection red line accounted for the largest proportion of highland and hillside landscape, 37.87%; The inner part of permanent basic farmland is the mixed landscape of low mountain countryside, 40.04%. The inner part of urban development boundary is the mixed landscape of low mountain countryside, 10.10%. Generally speaking, the "three-line" territorial space management and control method ignores the interaction between the inner and outer space of the "red line" boundary and breaks away from the macro landscape background. It is difficult for the bottom-line management and control method to achieve effective coordination of the contradiction between human development and nature protection, while the landscape feature unit undoubtedly provides a more comprehensive and overall spatial framework.

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Keyword 1: landscape character assessment
Keyword 2: territory spatial planning
Keyword 3: three major spaces
Keyword 4: three-zone and three-line

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Identification and Evaluation of Landscape Microdomains along the Railway Corridor Using Hierarchical Clustering Model: a TAZARA Railway Case Study

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As landscape architecture increasingly plays a key role in guiding the sustainable development of territories, linear landscapes—a form of anthropized territories within nature—are broadly recognized for their potential in environmental intervention and multifunctional territorial regulation mechanisms. Further exploration of methodologies and technologies remains necessary. Railways, as a prime example of linear landscapes, have evolved with industrialization and urbanization, bridging built and natural environments. Alongside this, landscape microdomains along railway corridors, as critical nodes in the continuous linear landscape, display unique characteristics and encapsulate collective memories of natural evolution, industrial transition, and cultural integration, making them pivotal in addressing key challenges related to enhancing landscape performance, integrating scenic values, and reinventing the territories along the railway corridor.

Due to the extensive spatial coverage, complex existing environments, and insufficient professional responses, research on landscape microdomains along railway corridors faces multiple challenges, including a lack of quantitative methods, absence of digital enhancement technologies, and inadequate data integration. Therefore, there is an urgent need for a parameterized method to identify and evaluate landscape microdomains based on multidimensional data integration from a landscape architecture perspective, providing digital technology support for the multifunctional landscape reinvention of railway corridors. This study focuses on the intersection of the TAZARA Railway and the East African Rift as a case study, integrating existing research on landscape microdomains and emphasizing the spatial heterogeneity of railway landscape microdomains. A system for identifying and evaluating these microdomains is developed, using landscape Character Assessment and spatial information statistics. Additionally, a hierarchical clustering model is applied, which leverages platforms like eCognition, ArcGIS, and Rstudio and integrates technologies including geographic spatial analysis, spatial distance analysis, optimal clustering operations, and principal component analysis. It incorporates 28 types of natural and cultural landscape data—including topography, hydrology, industrial resources, and ethnic groups along the railway corridor—to conduct collaborative quantitative identification, digital mapping, and clustering evaluation of the landscape microdomains in the intersection of the TAZARA Railway and the East African Rift.

Using the hierarchical clustering analysis model, the study quantifies and identifies 10 landscape microdomains through five key steps: defining the research scope, constructing feature indicators, collecting and processing data, performing UHC calculations, and generating maps. These microdomains encompass various landscape types, including agricultural, cultural, ecologically sensitive, and urbanized areas. The research reveals significant spatial variations in land use, ecological protection, and community development across different landscape microdomains, with some landscape microdomains facing critical challenges like ecological degradation, species loss, cultural landscape disappearance, and settlement homogenization. Based on the parameterized identification, typological characterization, and evaluation of landscape microdomains, targeted governance and management strategies are proposed for specific risk scenarios.

This study presents a method for identifying and evaluating landscape microdomains along railway corridors based on a hierarchical clustering model, effectively integrating multidimensional data for clustering analysis of linear landscape microdomains. Additionally, the model facilitates digital mapping and the joint description of key features, offering a reference framework and a scalable numerical model for railway corridor landscape interventions and the holistic development of linear landscapes.

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Keyword 1: Linear Landscape
Keyword 2: Railway Corridor
Keyword 3: Landscape Microdomain
Keyword 4: Hierarchical Clustering Model(HCM)
Keyword 5: Spatial Information Statistics

Guiding territories by changing the design of regional projects: tools for reinventing territories in situations of risk and environmental change

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Alternative project and research practices in tropical environments

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The UFR Health project in Saint-Pierre, in the south of Reunion Island, can probably be described in several ways: as a garden building, as a symbiosis between architecture and landscape, or as an inhabited park. These terms reflect our conceptual intentions, in which the building is in constant dialogue with the landscape, and where the priority is to enhance the user's daily experience through a relationship with the five senses, thanks to the diversity of the ambiences created.
On the bangs of the university campus, this project with its hybrid identity (building/garden) takes root on a flat slope facing the ocean. The design features a simple, contemporary style that makes the project's bioclimatic approach clear throughout the ZAC Indian Ocean.
Great care has been taken to limit the project's footprint, first and foremost thanks to a gentle, highly punctual layout that maintains hydraulic transparency. Priority is given to the use of wood and local materials (guava, cryptomeria, basalt rocks) to limit the carbon impact. The priority is to “work with” the site and work with what already exists to integrate it into the wider landscape. With this in mind, the emphasis is on a high density of vegetation at the heart of themed gardens, which play a major role in the overall comfort of users and the enrichment of biodiversity. The bioclimatic integration of the project is based on three fundamentals: generating shade, creating an ecosystem to enrich biodiversity through themed gardens, and amplifying porosity. Nature penetrates open-hearted buildings.
The garden is thus the intrinsic vector of the project, enabling users to enjoy a variety of sensory experiences throughout the day around a structuring artery: the “Molecule Trail”. This path provides access to a variety of universes via a didactic itinerary that highlights endemic plants with medicinal virtues recognized by pharmacopoeia at every level, through a variety of environments and atmospheres that reveal local specificities. It culminates in the “forest” as a representation of an unchanging ecosystem where everything comes together in a subtle balance... In this perspective, the gardener takes on an essential role in the management and accompaniment of living things. One of the fundamental aspects of this project is its long-term conceptual approach, involving the training of gardeners and the management of the gardens over time. The UFR Health inhabited park appears to be a simple and appropriable evidence of the University's environmental ambitions in its exemplarity and durability. This contribution invites us to explore an alternative project approach in the tropical environment of a site that has become, over the last few months, the focus of a research-action project targeting the evolution of biodiversity levels and the study of user behavior.

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Keywords:

Keyword 1: Biodiversity
Keyword 2: Garden
Keyword 3: Knowledge
Keyword 4: Landscape
Keyword 5: Reunion Island

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Modeling Change, Mapping Futures: A Transferable Atlas Framework from the Champlain-Adirondack and Frontenac Arch Biosphere Networks

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The Champlain-Adirondack Biosphere Reserve (CABN) spans the border of New York and Vermont, encompassing the largest protected area in the eastern United States. Home to approximately 650,000 residents, this region has long served as an ecologically and culturally significant landscape. Since its designation as a UNESCO Biosphere Reserve, however, the area has experienced mounting environmental challenges, including biodiversity loss and habitat fragmentation from urban development and infrastructure expansion (1, 2, 3). In response to these threats and in partnership with the neighboring Frontenac Arch Biosphere Network (FABN), the CABN/FABN Atlas of Climate and Environmental Change has been developed as a transboundary, open-access digital tool to facilitate climate-informed decision-making within Biosphere Reserves and UNESCO Global Geoparks.

Through funded research efforts from a multi-institutional team, this initiative aims to provide a comprehensive and interactive data platform to inform interested and impacted parties within and adjacent to the bioregion and enhance sustainability planning. The project addresses the critical gap in integrative, transboundary frameworks necessary to research and disseminate climate and environmental change data relevant to decision-making and education (4, 5).

The primary objective of the CABN/FABN Atlas is to create an accessible digital platform that integrates diverse datasets to support climate adaptation efforts in the Champlain-Adirondack region (6). By compiling environmental data from educational institutions, government agencies, and local communities, the Atlas seeks to provide a real-time analysis of climate impacts across multiscalar political boundaries. The project also emphasizes environmental education by leveraging digital tools and museum partnerships to enhance community engagement.

A key aspect of the project is the development of a web-based GIS platform and a mobile application that allows real-time data input from community members. This participatory mapping approach (7, 8) ensures that local knowledge is integrated alongside scientific assessments, fostering a more inclusive and holistic environmental decision-making process. The Atlas is also designed to facilitate AI-powered hindcasting and forecasting capabilities to track policy commitments and land cover changes over time (9, 10).

Initial findings from the project reveal significant vulnerabilities within the bioregion. GIS analysis has identified areas at high risk for climate-induced changes, such as increased flooding, habitat degradation, and biodiversity loss (11). Moreover, participatory mapping has demonstrated the value of community knowledge in identifying environmental threats and adaptive strategies (12). Indigenous contributions, in particular, have provided critical insights into land management practices that enhance ecological resilience (13).

We intend for the Atlas to drive sustainable outcomes through relevant climate change models (14). Moving forward, the Atlas will continue to evolve by incorporating real-time environmental monitoring in the Pacific Northwest Region, expanding partnerships to enhance Indigenous-led conservation efforts, and advancing AI-based modeling techniques. The CABN/FABN Atlas project underscores the importance of inclusive, data-driven approaches to climate resilience. By integrating scientific research with local knowledge, this initiative provides a replicable framework for sustainable biosphere reserve management. Future developments will focus on building a transferable framework for other Biosphere Reserves. Through these advancements, the project aims to empower communities and policymakers alike, to bolster resilience through data-informed decision-making.

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Keyword 3: Predictive Modeling
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Keyword 5: Data Science

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From sky to the ground, through the sea and beyond: A ciel, à terre, à mer.

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It's a challenge to tackle sea level rise, flood and erosion of the shoreline in a small town like Genet. Nearby, the Mont Saint-Michel - listed historical monument - its and its bay are protected by dozens of environmental laws and decrees thus freezing the territory and making it almost impossible for any project to succeed. This call for idea supported by the CAUE 50 (Architecture, Urbanism and Environment Council of the Manche department) aims at preparing the population Genet to the changes they are most likely to be facing in the near future, by 2050. Do they have to live with or against the landscape transformations set by the consequences of climate change on this very specific territory?
Our response is based on a fictional story relying on scientific projections where sea level has risen and the shoreline has indeed eroded due to the repetition of flood events.
Here is the storytelling:
Through extreme climatic events, the inhabitants of Genets have agreed to go with the incoming and ebb tide, higher, constant and unalterable power of the ocean. It's a balance between what sea gives and what sea takes back. Inspired by this unremitting and pendulum movement, the ways of living on the shoreline must evolve. Some are forced to retreat in the heights of a near village when others move forward and a territorial scale of solidarity sets up, inspired by local legends and history for a more resilient future.
The local economy is rebuilding itself, developing a new approach for tourism, circulation, urbanism, agriculture, ...relying on what the sky, earth and sea have to offer. Ancient housing has adapted, so has transport and the public space's use. Rain and sea water are now welcome in the streets and share it as one of its major components, guiding the village's life and supporting biodiversity.
By giving the sea a chance to speak for itself, the following approach aims for the awareness of each and every stakeholder. Whether they're human beings, animals, plants, mineral elements or molecular, discussions have started about the consequences of the climate change on Genet territory.
What makes this proposal unique and highly challenging for us as conceptors is the use of comics as an unusual way of communication to represent the project's intentions. As landscape architects we are commonly used to masterplans, plans, cross-sections, details, ... but for this specific and worrying topic we think that expressing our ideas in a less formal way could improve the acceptance of the necessary changes in daily life, though the prism of townscape and landscape as a main guideline. Through a series of pedagogic and playful graphic components, almost like a true comic, locals and visitors have discovered our project with a different perspective, a story where Genet and its territory adapted to the risks threatening the coast, its infrastructure and its inhabitants. A story narrated and guided by the sea.

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Keywords:
Keyword 1: Adaptation
Keyword 2: Risk
Keyword 3: Sea level rise
Keyword 4: Call for idea
Keyword 5: Comics

P159
Risks: Resilience through Landscape

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During the night of October 3-4, 2015, torrential rains hit the French Riviera. The floods caused the deaths of 20 people and material damage amounted to €605 million. The Brague, a small coastal river near Antibes (between Cannes and Nice), particularly overflowed its banks. Four people lost their lives, large campsites and leisure facilities were permanently closed, and the most damaged residential areas were designated for demolition. A new, radically different future must be invented for the Brague Valley, to make it resilient. To this end, the Sophia Antipolis Urban Community (CASA) mobilized a hydraulic engineering firm in 2017, as well as, less frequently, landscape-architects. Thus, the Folléa-Gautier agency is developing a resilience strategy for the Brague Valley, in the form of a master plan, in close collaboration with the President of the CASA and the Prefect, and by mobilizing numerous partners. The landscape architects are documenting the geography and history of the Brague Valley to highlight three major causes of the disaster: the dramatic artificialization of the soil, from the watershed to the plain; the significant reduction of wet meadows; and the artificialization of watercourse routes. They highlight the valley's strengths, weaknesses, and environmental and social dysfunctions, identify potential actions, integrate the development constraints linked to the different hazard zones, propose a strategy organized at four levels, and define, with politicians and the administration, the area for declaration of public utility to control land use along the river banks and enable operational resilience actions. Six years after the completion of the master plan, the aim will be to present this extraordinary experience and draw lessons from it : the project owner's motivations for mobilising a landscaper to adapt an area to the risk, the method adopted, the contents of the master plan and its results.

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Keywords:
Keyword 1: risk
Keyword 2: master plan
Keyword 3: resilience
Keyword 4: landscape
Keyword 5: innovation

P160

Strategy for the recovery of burned areas in the Dry Forest in Chiquitania, Bolivia

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Since July 2019, wildfires in the Bolivian Chiquitania have been destroying ecosystems, including several protected areas, and affecting the lives of many families and the regional economy. Millions of hectares of ecologically rich land, essential for the survival of human life and the economy, have been burned. The restoration of the land affected by the fires is crucial, with a coordinated and sustainable proposal in the current context of climate change.

Preceded by a comprehensive characterization of the burned area and a diagnosis, the **Strategy for the Recovery of the Dry Forest in Chiquitania** includes three phases: emergency stabilization, which involves combating erosion and torrential runoff, treating diseases (due to fire, smoke, and lack of water), applying phytosanitary measures, recovering soil degradation in specific areas, restoring infrastructure, and implementing wildlife conservation actions. Restoration and rehabilitation focus on the study of vegetative and seed regeneration, execution of forestry plans, reestablishment of local productive potential, reforestation with native species and species more resilient to fire and climate change, and providing environmental services related to carbon sequestration (soil correction measures – soil nanotechnology – using *Technosols* or other complementary methods for soil and water recovery before reforestation). Legal measures aim at reviewing and evaluating existing laws, derogation of deforestation laws in Chiquitania, implementing a strategy to enforce the Defensoría de la Madre Tierra established by Law 71 of the Derechos de la Madre Tierra, and planning and management instruments; regional development policies, and forest defense against fires; oversight, surveillance, and firefighting.

The strategy aims to promote the resilience of ecosystems and communities to climate change, as well as define territorial organization models, production models (which promote the sustainable development of the local economy using endogenous resources and the creation of short supply chains – circular economy and bioeconomy), and nature conservation. The recovery of the heritage landscape and tourist routes will involve revitalizing the tourism offer through a participatory process (meetings with stakeholders) and raising awareness through environmental education measures. The creation of pilot projects to enhance family habitats through small enterprises aimed at improving living conditions, work, and local production.

The implementation of the recovery strategy requires a subsequent phase of monitoring, follow-up, and evaluation of the restoration of the burned areas (recovery of biodiversity and ecosystem functions, wind and water erosion, control of biological invasions, accessibility networks, passenger mobility patterns, groundwater and surface water quality, pollutant concentration in the air), the development of the pilot projects and Ecotones resilience.

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Keywords:
Keyword 1: forest risk
Keyword 2: resilience
Keyword 3: circular economy
Keyword 4: soil deterioration
Keyword 5: endogenous resources

P161
Shifting Territories: Sinkholes as Anthropogenic Landscapes

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The immense impact of human agency on the Earth, along with the accelerating force of environmental change, is causing transformations in various territories. Sinkholes, as geomorphological forms occurring in karst plateaus, are both a result of and a contributing factor to these shifts on the ground. These areas are at risk and are treated as natural hazards; however, in many instances, sinkholes are human-caused landforms. These elliptic collapses on the ground jeopardize urban and rural environments since they are abrupt and ambiguous in time, location, and scale. In this context, sinkholes can be discussed into two types: Urban Sinkholes and Natural Sinkholes, both of which may arise from infrastructural failures or agricultural practices involving the careless use of underground water resources. The geological formation of sinkholes is similar in both contexts; they occur when sedimentary rocks dissolve in water and create underground cavities. However, sinkholes are more than mere voids, and they incorporate various spatial and environmental qualities that present juxtaposed territories including production facilities, water bodies or spaces for human and non-human occupancy.

Thus, by examining several sinkholes from Konya, Türkiye (Obruk Plateau) this research aims to map the shifting territories to highlight the subsequent operations on the ground. The research employs mapping as a representational method that becomes a tool for “earth-bound”[1] storytelling, where all narratives are connected, and the complexity of the territory is revealed. By focusing on sinkholes in Obruk Plateau that accommodate a variety of uses -including cheese fermentation space, touristic sightseeing, waterbody or accommodation- this study seeks to reflect the critical situation of the territory by examining sinkhole formation, context and the ways in which the ground is transformed by human agency.

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Keywords:
Keyword 1: Anthropogenic Territories
Keyword 2: Sinkhole
Keyword 3: Ground

P162

Research on Adaptive Characteristics and Resilience Mechanism of Mountainous Settlements from Disaster Response: The Case of Longnan City, China

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Longnan City is a scenic and productive region in southeastern Gansu Province, China. Due to its proximity to earthquake fault zones[1] and Bailong River with great hydrological potential, frequent geological and meteorological disasters became a threat to locals[2], such as collapses, floods, debris flows and other secondary disasters. Therefore, Longnan is a typical area coexisted with natural resources and hazard risks. In the symbiosis with the chancy environment for decades, local residents have mastered the knowledge of resisting harmful disaster. It greatly shows the disaster adaptability and resilient system of human habitat environment in Longnan mountainous.

Taking the mountainous settlements of Longnan in Bailong River Basin as examples, this study analyzes local changes, and divides those adaptive characteristics in three aspects: (1) Site selection: residents chose the spatial placement which is on or adjacent to water sources while avoiding floods. Instead, they retreat to the hillside, turning farmland or public space to a terraced area, which becomes a high redundancy planning in the resilience system; (2) Drainage: The road structure and drainage system in Longnan are inseparable, especially in mountainous residentials. To some extent, the herringbone-shaped roads also function as water ditches, in addition to the underground channels, that built a well-connected and efficient drainage network. While floods or mudslides occurring, this network can greatly alleviate the drainage burden, control surface runoff, and reduce the impact on buildings, contributing to safety and property of locals; (3) Buildings: multifunctional dam yard in Longnan is known as a terrain adapted style[3]. Built across a height difference, dam yard is also a prominent feature of a dominant position, both geographically and culturally. The through-jointed frame in the wooden structure of Longnan residential buildings greatly enhances the bearing capacity[4] to withstand impacts, which makes local settlements have a certain resistance to disasters like earthquakes. In addition, the building materials can be easily and efficiently obtained, reflecting the adaptability of reconstruction after disasters.

Based on human-land coupling system, we use GIS spatial analysis and spatial syntax to describe factors related to disasters and their modes of action[5], [6], [7], and explain how to built a resilience network for sustainabile strategies in mountain-water-human relationship. It explores the role of vernacular wisdom of building resilience system, then resilience mechanism is revealed that adaptability, resilience, and transformation become the three main resilience forces, oriented to spatial, ecological and social resilience of Longnan. Through the assessment of planning land[8], ecological service of disaster mitigation buffer and the social organization of "monitoring-warning-responding" process are summarized for resilience enhancement strategy. This study proposes adaptive measures of geological hazards for urban and rural planning in mountainous area, and provides reference for resilience construction in other cities under similar disaster-risky situations.

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Keywords:
Keyword 1: Resilience
Keyword 2: Disaster adaptability
Keyword 3: Mountainous settlements
Keyword 4: Human-land coupling system
Keyword 5: Sustainability

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Exploring the relationship between 2D/3D urban morphology and land surface temperature: An XGBoost-SHAP framework for residential landscape optimization in Beijing

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Against the backdrop of the continuous advancement of global urbanization, intensive human activities have led to a continuous increase in greenhouse gas emissions, while the encroachment of impervious surfaces on natural landscapes has significantly expanded. The intensity and spatial scope of the urban heat island(UHI) effects have expanded significantly. This poses critical risks and challenges to urban ecological resilience and human health. In-depth exploration of urban residential morphological characteristics and environmental response mechanisms, and active intervention in urban development through landscape layout optimization are crucial for alleviating the UHI effect and guiding sustainable urban planning. This study investigates the interplay between residential morphological characteristics and thermal environments in Haidian District, Beijing, utilizing a self-organizing mapping (SOM) to classify urban residential typologies. A dual-path analytical framework integrating XGBoost regression modeling and SHAP interpretability analysis quantifies the nonlinear impacts of 2D and 3D morphological indicators on land surface temperature (LST). The research results show that: Residential areas in Haidian District are categorized into eight typologies, predominantly characterized by compact mid-rise forms (CMF) and open mid-rise forms (OMF). LST in compact residential forms (CHF/CMF/CLF) exceeds that of open forms (OHF/OMF/OLF) and commercial/sparse building forms (LF/SF), with low-rise zones generally exhibiting lower LST than high-rise counterparts. FAR (Floor Area Ratio) and ISF (Impervious Surface Fraction) emerge as dominant LST drivers, with 3D morphological indicators exerting the strongest influence. ISF and BSF (Building Surface Fraction) correlate positively with LST, while SVF (Sky View Factor) shows a negative correlation. FAR and HRE (Height of Roughness Elements) exhibit nonlinear threshold effects: when FAR < 1.0, increasing HRE reduces SHAP values (cooling effect); however, when FAR > 1.0, higher HRE exacerbates warming. FAR = 1.0 serves as a critical threshold, beyond which vertical greening is required to mitigate the adverse thermal impacts of HRE. Enhancing SVF through "vertical greening + aerial corridors" offsets the warming effects of high-density development, while permeable paving materials and green buffers significantly improve cooling efficiency in low-density areas. Empirical evidence confirms that optimizing morphological parameters through machine learning-driven approaches and establishing a synergistic pathway of "residential landscape optimization - building interface regulation " can effectively improve urban thermal environments. This study proposes a closed-loop design methodology of "data perception - machine learning - spatial intervention", providing actionable references and quantitative support for climate-adaptive urban renewal strategies.

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Keywords:
Keyword 1: residential morphology
Keyword 2: thermal environment
Keyword 3: XGBoost regression model
Keyword 4: landscape optimization
Keyword 5: sustainable planning

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Resilience of an Ephemeral Landscape: The fragile balance between nature and development in a territory coveted by tourism

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The Troia peninsula, a vulnerable cultural and ecological territory at the confluence of the Atlantic Ocean and the Sado River estuary in Portugal, an isthmus that stands as a paradigmatic case of landscape and territorial resilience nowadays in the face of tourism-driven transformations.

It embodies a territory in tension, where the interaction between natural dynamics, such as- dune mobility, coastal erosion or rising sea levels - and anthropogenic pressures such as - real estate speculation, tourism intensification, and infrastructure expansion - shape a landscape that many say, should be able to maintain its flux with minimal intervention in order to prevail over time.

At the heart of this research is the resilience paradox—the ability of an ephemeral landscape to persist through adaptation. Troia is not only a coastal territory but also a complex ecotone, a transition zone where marine, estuarine, and terrestrial ecosystems converge, creating a dynamic interface between land and water.

Historically, this place has witnessed human settlement and resource exploitation. Today, however, intensified pressures for luxury “nature” tourism and coastal urbanization demand a reassessment of planning approaches that consider the ecological integrity of this brittle territory while ensuring socioeconomic sustainability.

Let us pause for a moment on the concept of luxury “nature” tourism, because the valuable asset is the natural, untouched... which is incompatible with the occupation, but can a small European country freeze territories to protect them? The idea of nature based solutions is what we can understand by guiding landscapes?

Climate change intensifies coastal risks, Peninsulas that face sea level rise, need to prepare under increasing anthropogenic stress. Rising sea levels and storm surges threaten barrier dunes, estuarine habitats, and cultural heritage sites, while urban expansion alters sediment dynamics and exacerbates habitat fragmentation. In these scenarios, traditional infrastructural responses—such as hard coastal defenses—often disrupt natural morphodynamic processes, highlighting the need for alternative planning frameworks that prioritize nature-based solutions and adaptive governance.

A fundamental question emerges: how can tourism-dependent territories navigate this dynamic between development and environmental resilience? Or is it that we need to change concepts and understand development as comprehensive of each conjuncture?
"It occurs in natural areas with tourist attractions (...)Their mere presence causes the original natural appeal to vanish."

This study explores how integrated landscape strategies—rooted in an understanding of ecotonal dynamics—can guide planning policies to accommodate natural fluctuations rather than resist them. By leveraging ecosystem services and promoting soft-engineering solutions such as dune restoration, dynamic zoning, and managed retreat, the study argues that coastal tourism landscapes can transition toward adaptive models that reconcile economic interests with ecological stewardship.

Conclusion
As climate change intensifies coastal vulnerability, territories like Troia must shift from reactive conservation to proactive landscape adaptation. This research reframes tourism urbanism as a regenerative, nature-inclusive process, advocating for flexible, ecosystem-based approaches to territorial planning.
Can ephemeral landscapes become models of resilience rather than spaces of unsustainable exploitation?
Can Troia provide some answers?

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Keywords:
Keyword 1: landscape resilience
Keyword 2: tourism
Keyword 3: coastal landscapes
Keyword 4: ecosystem services
Keyword 5: territorial planning

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Decoding Multidimensional Eco-Wisdom in Stormwater-Resilient Construction of Traditional Villages in Western Beijing, China

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[Objective] With the accelerating global climate change and urbanization, frequent extreme rainfall events pose significant threats to rural human settlements. Traditional villages in Western Beijing, distinguished by their unique natural environment and cultural heritage, serve as critical representatives of mountainous settlements in Northern China. The Eco-Wisdom embedded in their historical spatial planning for Stormwater-Resilient strategies urgently requires systematic exploration. Grounded in resilience theory, this study analyzes the Stormwater-Resilient characteristics of spatial planning in these villages, unravels their nature-society co-adaptation mechanisms, and provides theoretical foundations and practical references for contemporary rural disaster prevention and sustainable development.
[Methods] This study selects 17 Traditional Villages in Western Beijing as typical objects， and employs interdisciplinary methodologies. Firstly, through historical archival research and field investigations, the stormwater-adaptive characteristics of spatial elements such as village location, street layouts, and architectural typology are systematically examined. Secondly, GIS spatial analysis is utilized to extract hydrogeographic data (including elevation, slope, and catchment path), which is then integrated with SWMM (Storm Water Management Model) to simulate surface runoff processes under historical rainfall scenarios. Thirdly, grounded in social resilience theory, the role of social organizations and collective memory in stormwater management is analyzed through villager interviews and local chronicle studies.
[Results] The findings reveal that the Stormwater-Resilient capacity of Traditional Villages in Western Beijing manifests through four coupled characteristics: (1) Village siting in accordance with the natural substrate: village siting mostly follows the principle of “avoiding floods by seeking higher grounds”, relying on the slope of the mountain to form a natural barrier to intercept floods, and at the same time, utilizing the natural ravine as a water-conducting corridor to reduce the risk of waterlogging; (2) Multi-Scale Hydrological Regulation Networks: A dynamic 'Intercept-Store-Drain' tri-level water system operates at macro scales, such as ponds, culverts and ditches. At micro scales, permeable infrastructure (scattered drainage outlets, infiltration wells, porous pavements) significantly enhances land permeability. (3) Residential construction combining the idea of flood prevention and storage: Dwellings integrate stone foundations, elevated plinths, and pitched roofs, while wall materials (such as rammed earth and woolen stone) have the functions of both water storage and anti-washout, embodying the Eco-Wisdom in Stormwater adaptation. (4) Kinship-Based Collaborative Governance: local people have collective actions for resource allocation and post-disaster recovery, forming adaptive socio-hydrological networks.
[Conclusion] Traditional villages in western Beijing have formed an efficient human-water symbiosis mechanism through a multi-level resilience framework of systematic embeddedness in natural landscapes, redundancy design for buffering extreme impacts, and dynamic maintenance of physical space by social capital. This study suggests that modern urban-rural stormwater planning should transcend singular engineering approaches by adopting traditional eco-wisdom through three integrated pathways: spatial elasticity reservation, micro-facility networking, and community self-organization cultivation. Concurrently, adaptive digital optimization can enhance traditional mechanisms while preserving biocultural integrity, thereby achieving dual objectives of ecological security and cultural continuity. These findings provide innovative insights for improving stormwater resilience in mountainous traditional villages and contribute historical wisdom to the localized theorization of resilient rural planning.

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Keyword 1: Stormwater-Resilience
Keyword 2: Traditional Villages
Keyword 3: Spatial Planning
Keyword 4: Eco-Wisdom
Keyword 5: Western Beijing

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Heat Health Risk Assessment for Vulnerable Groups in Urban Public Spaces: A Case Study of Tongzhou District, Beijing

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The combined effects of urbanization and climate change have intensified the urban heat island effect, leading to the deteriorating thermal environment in public spaces. This poses a significant health threat, particularly to vulnerable groups with low physiological tolerance and limited adaptive capacity, such as low-income populations, the elderly, and children (Zhu and Yuan, 2023). Current heat risk assessment frameworks are largely designed for general populations, lacking precise analysis of vulnerable groups, which limits the effectiveness of heat warning systems and response measures (Shartova et al., 2024). This study constructs a heat health risk assessment focusing on vulnerable groups in Tongzhou District, Beijing, using the Second Green Corridor as a case study, to provide a scientific basis for optimizing urban green space planning.

The study targets selected urban subdistricts in Tongzhou District, a rapidly developing urban sub-center, where the Second Green Corridor serves as a key heat-mitigation infrastructure. A tripartite assessment framework was developed, encompassing thermal hazard, heat exposure, and vulnerability dimensions. The thermal hazard dimension was analyzed using ENVI open-source remote sensing data, where surface temperatures were divided via the single-window algorithm to identify high-temperature zones that exacerbate heat risks (Hu et al., 2015). Heat exposure was evaluated by integrating census and POI data to quantify the population density and distribution of vulnerable groups, including residents aged ≥65, children ≤5, and low-income populations, during peak heat period. Heat vulnerability was assessed through a thermal adaptive capacity model developed using a combination of the Analytic Hierarchy Process (AHP) and Entropy Weight Method (EWM). This model integrated key indicators such as aging rates, low-income population ratios, per capita green space availability, and healthcare facility density. The final heat health risk index was computed using GIS spatial overlay analysis, the study area was categorized into five risk levels: high, medium-high, medium, medium-low, and low via the natural discontinuity grading method.

The research findings demonstrated a central-radial distribution of heat health risks, with the highest risks clusters concentrated in central Beiyuan subdistrict and adjacent zones. These areas exhibited compound stressors from concurrent heat exposure intensification and socioeconomic vulnerability amplification. Medium-high risk areas, predominantly in Xinhua subdistrict and Beiyuan periphery, faced similar demographic burdens but had moderate green space accessibility, However, these areas remained critically constrained by inadequate healthcare infrastructure. Low-medium areas showed a dispersed spatial configurations coupled with systemic green equity deficits.

The findings highlight a strong spatial correlation between heat-exposed areas and vulnerable populations , indicating that Tongzhou District, as Beijing's urban sub-center, faces intensified health risks for mobility-restricted and low-income residents during extreme heat events.. This phenomenon not only compromises residents' physiological well-being but also contributes to widening social inequities, as vulnerable populations have fewer adaptive resources to mitigate heat stress.. To address these challenges, tiered mitigation strategies proposed based on risk levels. In high/medium-high risk zones, establishinterconnected green networks and optimize shaded pedestrian routes prioritizing vulnerable groups; In medium/low-risk areas, implement targeted improvements in green space quality and accessibility. These strategies enhance equity-driven urban planning in climate-vulnerable regions.

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Keyword 1: Urban Heat Island

Keyword 2: Heat Health Risk
Keyword 3: Vulnerable Populations
Keyword 4: Equity-driven Urban Planning

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Les territoires au défi de la Beauté(Les paysages désirables d'un monde meilleur)

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Depuis dix ans, le collectif Paysages de l'Après-pétrole étudie les expériences de territoire. Leurs innovations environnementales, sociales et économiques ont mis en place les multiples formes d'une transition de notre société vers un équilibre entre les hommes et entre ceux-ci et le milieu ambiant. Les « paysages de l'après-pétrole » sont ces territoires où les formes, les sons, les odeurs que ces sociétés ont adoptées s'offrent comme autant de quêtes du bien-être.
La dimension de la beauté du paysage apparaît lorsque le territoire est ancré dans son assise géographique et historique, quand on comprend de façon simple le mode de vie des habitants, et quand la spécificité des lieux est respectée.
Le paysage est ici à la fois l'objectif et le levier de la transition et sa beauté comme « promesse de bonheur » apporte une désirabilité opportune.
Les paysages européens ont été façonnés à différentes époques par des modèles *culturels* . Des projets politiques volontaristes y ont conjugué l'utile et l'agréable pour donner une magnificence à la prospérité.
Or, l'accès à l'énergie bon marché notamment du pétrole a exempté, depuis quelques décennies, d'une intelligence des lieux fondée sur la sobriété et l'économie de moyens, tandis que de nouvelles techniques balayaient les syntaxes et le style de la culture de l'espace.
On a alors mobilisé des professionnels de l'urbanisme des paysages pour concevoir de nouveaux projets. Ils avaient dessiné des jardins pendant des siècles. Ils apporteront désormais leur approche « par le paysage » à ces espaces quotidiens mal vécus par leurs habitants.
Mais travailler sur un lieu exige de partir de son histoire et de sa géographie pour y faire émerger des formes spécifiques et nouvelles d'excellence. La beauté des projets révèle et magnifie la singularité de chaque territoire. Les diagnostics élaborés à partir des regards croisés des spécialistes, mais aussi des populations locales, amènent à prendre en compte leurs visions de la beauté, combinant différentes exigences sur le même espace. La présence de la beauté anime enfin la résonance entre les différentes échelles : le grand territoire, une exploitation agricole ou un quartier de ville…
La participation des élus et des habitants à une redécouverte partagée est un préalable nécessaire pour élaborer un diagnostic, puis un projet. Cette expérience est trop souvent balayée comme naïve et inutile. Or il s'agit d'obtenir des participants une attention flottante ouverte à la réalité des choses. Un état de contemplation partagé, un émerveillement parfois... Pour le professionnel, il s'agira qu'émergent les formules les plus appropriées exprimant la beauté d'un lieu. La recherche d'un consensus sur l'harmonie d'un paysage met en place la responsabilité et la compétence de chacun.

Parler de la beauté est une révolution anthropologique. La beauté est la forme la plus radicale de rupture avec la raison technicisée qui a présidé à l'ère des Trente Glorieuses mais aussi le contre-modèle d'une transition écologique réduite à des tableaux de chiffres.

C'est pourquoi la beauté peut et doit constituer le fondement des démarches paysagères comme une méthode efficace et démocratique pour engager la bifurcation écologique.

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Keyword 4: révolution anthropologique
Keyword 5: Participation habitante

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Landscape pattern analysis and related countermeasures in the conflict area between wild boar and railway in China

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Backgrounds： In recent years, with the increase of railway mileage and the expansion of wild boar population in China, the ecological conflict between wild boar and railway is increasingly intensified. The frequent conflicts between wild boar and railway not only cause huge economic losses but also pose a serious threat to personal safety. Current studies on human-boar conflict focus on farmland, protected areas and urban areas, and the relevant countermeasures are mainly prevention, and few studies are focused on the control countermeasures in the conflict areas between railways and wild boar.
Method & Aims： In this study, we took the conflict area between wild boar and railway in China in the last 3 years as the research object, and based on the theory of landscape ecology, we used GIS spatial analysis, MaxEnt species distribution model and circuit theory corridor simulation to reveal the spatial coupling mechanism between wild boar activities and railway network.
Results & Conclusions： (1) Conflict hotspots are concentrated in areas with high habitat fragmentation rates and high railway cutting indices; (2) plant density in the 500-m buffer zone along the railway is positively correlated with the frequency of wild boar occurrence; (3) the spatial layout of existing protective facilities and Wildlife crossings is insufficiently matched with wild boar migration paths. In response to the findings, regulatory countermeasures are proposed: (1) optimize the landscape pattern, including optimization of the connectivity of potential habitat corridors for wild boar, buffer zone construction, and restoration of target habitats; (2) design user-friendly engineering facilities, including planning of protective facilities, Wildlife crossings, and AI dynamic monitoring and early warning systems with variable-frequency acoustic and optical repellent devices; (3) explore ways to integrate railway development with habitat planning through the establishment of biodiversity offsetting policies and implementation guidelines to mitigate human-boar conflicts and improve biodiversity conservation effectiveness and social participation.

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Keyword 1: human-boar conflict
Keyword 2: landscape pattern
Keyword 3: wildlife lethality/roadkill
Keyword 4: railway ecology
Keyword 5: biodiversity offset

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Factors Influencing Solar Radiation in Urban Green Spaces: A Systematic Review from a Public Health Perspective

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Global warming and climate change are altering the urban living environment, often for the worse. Solar radiation is one of the key energy sources contributing to global warming. Excessive solar radiation, however, has negative effects on human health, such as increasing the risk of skin cancer and glaucoma. Urban green spaces, as key public areas, directly impact residents' health. The accessibility and quality of urban green spaces reflect urban equity and serve as key indicators of fairness. In recent years, architects and landscape architects have increasingly focused on the negative health impacts of solar radiation and have worked to mitigate these effects by improving urban green spaces.

This study explores the themes of 'landscape' and 'solar radiation. The relevant literature from Web of Science and Google Scholar was analyzed using the PRISMA method, with data visualization tools, CiteSpace, to conduct a systematic review.

The research is categorized into four areas: scenarios, methods, radiation types, and landscape elements. The results show that current studies primarily focus on the intensity and distribution of UVB radiation in green spaces and the impact of landscape features on UVB. Existing research also examines the effects of solar radiation in green spaces on human thermal stress. However, research on solar radiation in green spaces is still in its early stages, with a lack of comprehensive studies on the effects of different solar radiation bands on mental health.

Therefore, future research should focus on more comprehensive studies of solar radiation's effects and explore the adjustment function of landscape in the public health, to enhance sustainability and equity of the urban. This study has proposed the basic theories to enhance human well-being by urban green space. Based on current research trends, this study suggests that future research framework should be categorized into Application Scenarios, Health Types, Assessment models.

This study proposes a new research framework and classification while highlighting future research directions. It has significant practical implications for enhancing the contribution of urban green spaces to human well-being and promoting urban sustainability, resilience and equity.

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Keyword 1: Landscape architecture
Keyword 2: Solar radiation
Keyword 3: Urban climate
Keyword 4: Public health
Keyword 5: Urban resilience

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Solastalgia & Environmental Change

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In 2005, the Australian philosopher Glenn Albrecht created the term "solastalgia". Composed of the two words "solace" and "nostalgia", it describes a form of emotional or existential distress caused by negatively perceived environmental changes. "*Solastalgia is a form of homesickness that one gets when one is still 'at home'* " (Albrecht, 2005, p. 48), as people no longer recognize the environment they knew and loved.
Albrecht's research focuses on the impacts of open cut coal mining on the Upper Hunter people of New South Wales, Australia, and solastalgia was originally conceptualised as the result of man-made environmental change. However, it can also be applied to climate change hazards (winter and snow conditions) and natural disasters (forest fires, cyclones, volcanic eruptions, etc.). For example, the qualitative study led by Ashlee Cunsolo et al. (2013) examines the links between climate change, a changing sense of place, and health in the Inuit community of Rigolet, Nunatsiavut, Canada. Inuit are experiencing rapid and acute climatic and environmental changes: decreased snow and ice quality, stability, and extent; increased frequency, duration, and intensity of storms; changes in the abundance, quality, and location of wildlife and vegetation. These changes negatively affect feelings of place attachment by disrupting hunting, foraging, trapping and travelling and transform vernacular landscape. In this context, the concept of solastalgia explains the distress and sadness experienced when a place to which individuals and groups are attached changes in a way that disrupts familiar activities.
This presentation calls for an understanding of solastalgia as an indicator of people's perceptions of risk and environmental change: it can be used by landscape architects to describe and analyse who loses what, at multiple geographical scales (Elliot, 2018). Solastalgia is both a theoretical and practical tool for thinking and designing ecological and sustainable projects in uncertain territories.

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Keywords:
Keyword 1: solastalgia
Keyword 2: loss
Keyword 3: sense of place
Keyword 4: natural hazards
Keyword 5: philosophical concept

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Heritage Conservation of Volcanic Stone Traditional Villages in a Changing Climate: A Study of Thermal Comfort Enhancement in Shique Village

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Shique Village, located in northern Hainan Province, is a 1,400-year-old vernacular landscape and one of the most distinctive South Asian subtropical traditional settlements. However, extreme heat events, urbanization from tourism, and modernization have led to labor migration and village hollowing(Xu and Chen, 2017). **Similar villages in the region face the same threat, with these heritage landscapes on the verge of disappearing**(Wang et al., 2022; Zou et al., 2025).

The study aims to enhance the thermal resilience of human settlements as an entry point, explore the divergent characteristics of the mechanisms affecting thermal comfort in different functional spaces within subtropical rural areas, and provide scientific solutions.

The research methods include :
(1) Semi-structured interviews were used to obtain information about traditional villages affected by the thermal environment.
(2) Multi-scale spatial data acquisition is carried out by Unmanned Aerial Vehicle (UAV) oblique photogrammetry, handheld panoramic camera photography, and miniature weather station monitoring.
(3) Microclimate simulation using UTCI (Błażejczyk et al., 2013)as a measure of thermal comfort was carried out using the ENVI-met 5.0.
(4) Conduct zonal linear regression on the simulation results to identify the thermal environment characteristics and influencing factors of multiple types of spaces.
(5) Based on the analysis results, develop localized optimization strategies for the village microclimate.

The results show that the factors affecting climate comfort in traditional villages are complex and possess significant heterogeneity.
(1) For the whole area of the village, the Water Area (Avg ΔUTCI=6.35 ℃) and Tree Cover Area (Avg ΔUTCI=2.69℃) provided strong cooling capacity, and the lanes with a downwind layout produced a local ventilation effect, which provided a comfortable environment for the inner part of the village.
(2) The thermal comfort of the public space (Avg UTCI=39.70 ℃) was mainly adjusted by the Building Density (β=0.620) and Sky View Factor (β=0.512) whereas the microclimate of the courtyards and lanes (Avg UTCI=39.97 ℃) was significantly correlated with the Water Body Proximity (β=0.427) and Building Density (β=0.330).
(3) Combining the experimental results with the economic conditions of Shique village, we propose the modification of the Lane Cooling System, Native Vegetation Replanting and Low-cost Shade Facilities based on thermal comfort simulation as the means of regulation.

This study reveals the high heat stress faced by traditional settlements under climate change and provides a replicable framework for improving rural thermal comfort. It enhances the quality of the living environment while preserving the authenticity and uniqueness of heritage landscapes. It is hoped that this means will promote the return of native inhabitants and the regeneration of community vitality, and trigger the regeneration of the labour industry and the value-added of the cultural tourism economy. It should be emphasised that the sustainable survival of traditional settlements still needs to break through the single perspective of protection(Sesana et al., 2021; Liu et al., 2023), and future research will further crack the deep-rooted conflicts between heritage protection and development with a multi-dimensional analysis framework.

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Keyword 1: Heritage Conservation
Keyword 2: Traditional Village
Keyword 3: Thermal Comfort
Keyword 4: Microclimate Simulation
Keyword 5: Shique Village

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Focusing on blue carbon, landscape architects become designers of ecological economies and coordinators of social resources.

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Global climate change and marine pollution pose substantial challenges to the coastal environments, especially in coastal tourist cities that heavily rely on ecological environments for resource allocation and industrial development. As one of the key restoration methods, blue carbon development can alleviate the impacts of climate change on coastal ecosystems by establishing algae farms and restoring mangroves which are significant marine carbon sinks. Although most coastal cities have abundant salt marshes, algae, and mangrove resources, the potential for blue carbon development remains largely underutilized.

Taking Cancun, Mexico as an example, its eastern shoreline has long been affected by sargassum from the Atlantic Ocean and the Gulf of Mexico, which not only disrupts the balance of the ecosystem but also severely impacts its pillar industry - tourism. This study aims to explore the potential of Cancun in blue carbon development based on the ecological control and resource utilization of Sargassum, in conjunction with restoring the mangrove and proposing a solution that can balance ecological restoration with tourism development. The ultimate goal is to extend this ecological restoration and resource conversion system to other coastal cities facing similar challenges. As designers of ecological economies and coordinators of social resources, landscape architects should not only promote ecological restoration to enhance coastal resilience but also facilitate sustainable industrial transformation, educate local communities on blue carbon and marine conservation, create employment opportunities, and advocate for the equitable distribution of resources in coastal tourism cities.

The research methodology is based on dynamic optimization strategy design, proposing phased solutions to address the specific challenges in Cancun. The first stage involves analyzing and simulating the current state of the ecosystem. Data on the lifecycle and flow patterns of sargassum will be collected, and ecological simulation techniques will be applied to assess the dynamic distribution of the algae and its impact on the coastal ecosystem, providing foundational information for subsequent design. The second phase focuses on proposing a spatial layout strategy based on mangrove system optimization to enhance the synergy between ecological and social functions. By studying the natural purification capacity and pollutant treatment efficiency of mangroves, the lagoon system will be re-planned to channel purified seawater into the city, addressing Cancun's water scarcity. The third phase focuses on utilizing sargassum by designing a processing system to convert excess algae into ecological fertilizers and biodegradable materials. Community-based seaweed processing farms will promote resource utilization and ecological restoration. A socio-economic and policy framework will be developed to explore long-term support for coastal community resilience.

The significance of this study lies in constructing a new path of landscape development that integrates ecological restoration and economic growth, providing feasible solutions for coastal cities facing ecological crises. This study not only optimizes the cycling capacity of Cancun's ecosystem, but also contributes to the comprehensive management of coastal ecosystems worldwide by enhancing carbon sequestration efficiency, innovating resource utilization methods, and introducing community-oriented ecological economic models, offering a a practical example of nature-based solutions in balancing urban and natural development.

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Keywords:
Keyword 1: Blue Carbon
Keyword 2: Coastal Restoration
Keyword 3: Community Engagement
Keyword 4: Resource Optimization
Keyword 5: Environmental Equity

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Predicting Ecosystem Dynamics with Machine Learning Simulation Model: Surtsey Island Case Study

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Forecasting ecosystem changes and environmental impact assessment is crucial for landscape architecture in terms of promoting sustainable development, rehabilitation processes, and ecosystem services (Zhang & Deal, 2020, p.210). However, stemming from ecosystem relations' intricate, nonlinear, and dynamic nature (Evans et.al., 2013), forecasting ecosystem changes has been a crucial challenge across multiple disciplines, including landscape architecture, for several decades. Previously, researchers in our field attempted to develop an environment predicting methodology to calculate the environmental impact on various design projects. Still, those studies carried multiple limitations, such as being two-dimensional simplified systems (Walsh, 1997) or being designed according to specific habitat conditions (Seeley et al., 2002) (Bartell et al., 2020). Most importantly, they used a singular unit of impact for both living organisms and external environmental factors of the ecosystem to break down the interactions between them (Odum et al., 2000). Therefore, developing a comprehensive forecasting tool that considers deep interaction between the living organisms and the environmental conditions that build the referred habitat was critical to aid decision-making. This research uses this logic and aims to develop an ecosystem simulation that simultaneously calculates the interaction between multiple species and environmental factors.

Surtsey Island in Iceland was selected as the site due to its relative isolation, being undisturbed by human activity, and well-documented reports since its emergence in 1964. Annual records of the living organism's occupation and environmental factors were monitored, and the data were collected manually to build, train, and test the machine learning simulation. Relations within the ecosystem are categorized into three main classes: between living organisms, between environmental factors, and between living organisms and environmental factors. Datasets were selected due to their structure and relations with the ecological systems. These data were organized by filling missing values using the mean of respective columns and standardizing the year range (1990-2020) by a custom function. The compiled data spanned, totaling over 25,000 individual records. Based on insights from the correlation matrix, the model is built using selected features: biomass (biomass g/m²), annual average temperature, annual average wind speed, sun exposure, and vascular plant count as the target variable. A Gradient Boosting Regressor is trained by splitting the data into training (80%) and testing (20%) sets. Model performed a near-perfect r2 score of 0.9983. This presents approximately 99.83% of the variance in vascular plant count prediction. With a Mean Squared Error (MSE) of 17.08, the average deviation between the predicted and actual plant count values is relatively small, demonstrating a valid predictive correlation.

Based on the logic and methodology of this research, landscape architects can use a multi-layered natural environment forecasting program to predict the environmental impact of their design. Still, we need to evaluate the proposed methodology's validity and accuracy with other sites for future research.

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Keywords:
Keyword 1: Ecosystem simulation
Keyword 2: Machine Learning
Keyword 3: Environmental Data Analysis
Keyword 4: Ecological Modeling
Keyword 5: Gradient Boosting Regressor

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Sustainable Construction of Rural Human Settlements in "Post-Dismantling Areas" Driven by Human-Land Relationships: A Case Study of Guiyu Town

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The acceleration of urbanization and industrialization has exacerbated unsustainable production practices in rural areas, leading to severe degradation of rural human settlements. As mediators of human-land relationships in rural development, landscape architects must prioritize the exploration and implementation of regionally tailored strategies. This study focuses on Guiyu Town, once infamous as the "Global E-Waste Capital," utilizing Fengxin Village's "post-dismantling area" as an experimental unit. The study area was categorized into four functional zones: river corridors, basic farmland, waste storage facilities, and residential areas. A phased restoration framework was implemented through two core strategies: **soil remediation** and the **"ECO-UNIT"** system.
For soil remediation, efforts initially targeted contaminated agricultural land. Pioneer tree species were prioritized to reconstruct plant communities, enhancing biological stability and accelerating ecosystem recovery. After a designated remediation period, conventional crops were reintroduced. Under the "ECO-UNIT" strategy:

1. **Water System Optimization**: Leveraging existing river networks and ponds, a wastewater purification system and wetland habitats were designed. Sustainable stormwater management and recycling technologies were applied to improve water absorption capacity, mitigate flooding risks, and enhance ecological resilience.
2. **Agrarian Landscape Revival**: Farmland was rehabilitated by reintroducing regionally characteristic crops (e.g., rice, corn, rapeseed), restoring agricultural productivity, and preserving local farming traditions.
3. **Adaptive Reuse of Industrial Heritage**: Abandoned e-waste dismantling structures were repurposed as museums or educational centers, integrating environmental science outreach to highlight the hazards of e-waste.
4. **Community Space Activation**: Underutilized spaces in residential zones were transformed into multifunctional public areas to foster social engagement and spatial vitality.

Through landscape architectural interventions, this study established a replicable, scalable "ECO-UNIT" ecological restoration model. The model aims to centralize environmental governance, optimize infrastructure, and disseminate best practices, supporting Guiyu's bid to become a **National "Urban Mine" Demonstration Base**. By integrating the theoretical logic of human-land relationships, this research proposes a sustainable framework for post-dismantling areas, emphasizing **natural ecosystem conservation**, **regionally contextual spatial design**, and **socio-cultural revitalization**. The findings provide a transferable paradigm for rural human settlement reconstruction in similar post-industrial contexts globally.

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Keywords:
Keyword 1: human-land relationship;
Keyword 2: post-dismantling area
Keyword 3: rural human settlements
Keyword 4: sustainable development
Keyword 5: soil remediation

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Urban Green Space Spatial Pattern Optimization for Noise Resilience: A Case Study of Lyon, France

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Urban noise pollution severely impedes the high-quality growth of urban spatial quality and sustainable environmental management. As an environmental danger, it jeopardizes urban sustainability and citizens' quality of life, necessitating effective planning. Urban green areas, because of their adaptability and flexibility in spatial layout alterations, can be used as a strategic instrument to reduce urban environmental noise pollution. As a result, integrating numerical and spatial data to create an effect mechanism and maximize the use of limited urban green space for noise reduction and acoustic environment enhancement has become critical. However, urban noise is geographically diverse, with significant variations in noise dispersion among locations. Furthermore, previous research on green space noise reduction focuses mostly on micro-scale evaluations of vegetation form, type, and planting density, with little study of the macro-scale effects of urban green space on noise.Therefore, there is an urgent need to create a replicable, operable, and practical framework for noise pollution reduction that can be used across multiple study domains to improve scientific, targeted, and appropriate acoustic environment optimization tactics. In this regard, this study examines the influence mechanism of urban green space on noise pollution in Lyon's city center, France. Specifically, the following aspects are investigated: First, urban noise levels are assessed utilizing noise mapping and big data platforms. Second, correlation analysis is utilized to determine how spatial variability influences the relationship between green space patterns and noise distribution. Geographical detectors are used to determine the spatial influence weight of green space pattern indices on noise distribution, and geographical weighted regression analysis reveals spatial correlations between these indices and noise distribution. Based on the findings, an optimization strategy is created that incorporates hierarchical governance, regional adjustment, and multi-pattern optimization. Finally, the effectiveness of urban green space layouts in noise attenuation is assessed by comparing noise pollution levels before and after intervention. The findings show that: 1) spatial heterogeneity has a significant impact on the correlation between green space patterns and noise distribution; 2) green space area, aggregation, and patch density have a significant influence on noise spatial distribution, with networked green spaces having a greater impact; and 3) the mode and spatial extent of green space patterns on noise distribution vary significantly across urban areas. Zoning and grading-based adjustments to green space patterns significantly reduce noise pollution, particularly near traffic networks, with significant variability in noise attenuation benefits across adjustment techniques. This study intends to provide a scientific foundation and decision-making tool for urban green space design and environmental management with a focus on noise reduction.

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Keywords:
Keyword 1: Urban Noise Pollution
Keyword 2: Green Space Optimization
Keyword 3: Noise Attenuation Strategy
Keyword 4: Spatial Heterogeneity
Keyword 5: Environmental Risk Management

P176

U-Net Deep Convolutional Neural Networks in Landscape Planning: Progress, Challenges and Future Prospects

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Rapid urbanization has significantly intensified human interference with natural ecosystems. The unregulated expansion of cities has placed immense pressure on ecological green spaces and land use, posing serious challenges to urban planning and sustainable development. Traditionally, the identification and extraction of large-scale landscape elements have relied on manual interpretation of remote sensing images, a process that is often inefficient and prone to errors (Falk et al., 2019). However, with the rapid advancement of deep learning technologies, substantial breakthroughs have been achieved in landscape pattern assessment and planning. Among these advancements, U-Net has emerged as a classical deep convolutional neural network with a unique encoder-decoder structure, excelling in pixel-level image segmentation tasks. Its effectiveness has made it a crucial tool for landscape element extraction and environmental monitoring. This paper systematically reviews the applications of U-Net in landscape planning over the past decade (2015–2024), with a focus on its role in extracting landscape elements, monitoring environmental conditions, and optimizing urban green space planning. The findings highlight three key areas where U-Net has demonstrated exceptional performance. First, U-Net achieves efficient extraction of water bodies and green spaces by integrating a lightweight channel attention mechanism and a content-aware feature reorganization module. This approach enables precise identification of rivers and wild waters, effectively addresses the challenge of "same spectrum of foreign objects" and supports dynamic monitoring of land use changes while predicting future green space distribution (Mäyrä et al., 2023). Second, by leveraging the high reflectivity of vegetation and an enhanced attention mechanism, U-Net demonstrates strong performance in tracking vegetation cover changes (Maurya et al., 2023) and identifying pollutants. It maintains high segmentation accuracy even in low-quality images or when training data is limited (Saharia et al., 2023), significantly enhancing ecological monitoring and disaster warning capabilities. Third, through local and global optimization, the improved U-Net enhances the extraction of spatial details and the detection of architectural changes in dense and fragmented urban environments (Ji et al., 2019). This advancement provides a scientific foundation for promoting more orderly urban expansion, optimizing spatial layouts, and improving green space planning, highlighting its broad application potential (Pan et al., 2022). Despite its advantages in high-precision image segmentation and long-term remote sensing data analysis, U-Net still faces several challenges. These include limited segmentation accuracy for small-scale targets, constraints in model generalization, and high computational resource requirements (Wu et al., 2023). To enhance its applicability, future research should explore multi-scale feature extraction and attention mechanisms to improve small-target recognition, develop lightweight network architectures to reduce computational demands, and integrate multi-source data to enhance model stability and generalization in complex environments. Additionally, expanding U-Net applications in areas such as ecological protection, disaster warning, and climate change adaptation will further promote its widespread implementation. This study highlights U-Net's potential in landscape planning and land transformation management, offering a valuable decision-making tool for cities addressing environmental risks and sustainability challenges through technical optimization and expanded applications.

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Keywords:
Keyword 1: U-Net
Keyword 2: landscape planning
Keyword 3: deep learning
Keyword 4: remote sensing image
Keyword 5: image segmentation

P177

A new framework for mitigating urban heat island effect from the perspective of network

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The heat island effect has become a common regional climate phenomenon in the process of global urbanization. Coastal cities in particular also face ecological and climatic challenges such as typhoons and coastal erosion. Urban blue-green space (BGS) has a cold island effect, but many studies only focus on the cooling efficiency and patch area, without considering the impact of the overall patch connectivity on surface urban heat island (SUHI) effect. In this study, from the perspective of an ecological network, a combined cooling pattern of “point (source) line (cooling corridor) surface (cooling range and important area)” was proposed. Compared with the traditional cooling model that relies on patch area, the point-line-plane cooling network has significant advantages in cooling efficiency, ecological stability, and ecological cost-effectiveness. Firstly, morphological spatial pattern analysis (MSPA) and landscape connectivity index used to identify cold and heat sources with high diffusion potential. Then, circuit theory (CT) is used to organize the source areas to form cooling corridors. Finally, the threshold of corridor cooling distance and the important areas affecting network connectivity are analyzed. Taking Haikou as an example, the study identified 13 heat sources and 21 cold sources, extracted 74 cooling corridors, determined the threshold of cooling distance to be 1100 m, formed a cooling network pattern, and identified a total of 11.45 km2 of important areas affecting the network, including 4.71 km2 of key areas and 6.74 km2 of obstacle areas. This framework can provide a new idea for climate-resilient urban planning.The framework can provide new ideas for climate-resilient urban planning, improve urban climate resilience, guide the synergistic evolution of urban spatial layout and climate resilience, and contribute to the realization of a sustainable urban vision.

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Keywords:
Keyword 1: Combined cooling pattern
Keyword 2: Heat island effect
Keyword 3: Landscape planning
Keyword 4: Circuit theoryCircuit theory

Guiding territories with legislative and social advances in planning: Organisation of large territories

P178

Slow, Saunter and See: The Methodology of Slow Tourism in Yunnan, China

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Amidst the rapid urbanization and accelerated lifestyle observed globally, rural tourism and cultural practices in China encounter obstacles, including uniform development and shallow experiences for visitors. This study introduces a methodological framework that emphasizes the principles of "Slow, Saunter and See," which aims to "reduce the speed of engagement and enhance awareness," in order to investigate its practical implications and sustainable benefits within the context of rural tourism and cultural experiences. Gradual: Rebuilding the temporal framework to stimulate the inherent dynamism present in rural regions. Conventional tourism and cultural practices often engage in the pursuit of social status, whereas proponents of "slow travel" emphasize the importance of granting tourists and local communities more time to connect and engage meaningfully. In countryside environments, the concept of "slow" reflects an appreciation for the inherent pace of time, which prolongs the visits of guests and encourages collaboration and knowledge exchange between urban dwellers and rural inhabitants, thereby enhancing the genuineness of the rural community. The practice of sauntering serves as a methodological approach that prioritizes the deceleration of physical movement, thereby enhancing awareness of spatial perception. From a design perspective, it is essential to move away from the concept of designated "check-in spots" and instead focus on creating a network that encourages non-linear exploration. By employing vernacular design, it becomes possible to encourage visitors to meander aimlessly, leading them to uncover unforeseen pleasures, which can significantly enhance their engagement duration and increase the chances of their return visits. Vision extends beyond mere visual perception, facilitating an interaction between the observer and the observed. Engaging in dialogue and interaction between visitors and local inhabitants can deepen tourists' connection to regional culture, shifting rural tourism from mere consumption to a significant form of production. This trend may motivate young people to move back to their places of origin in search of employment, thus contributing to the rejuvenation of rural communities. The "Slow-Saunter-See" framework redefines the concepts of time, space, and perception, transitioning cultural and tourism advancement from a focus on "space creation" to an emphasis on "meaning creation," which yields numerous beneficial outcomes. From an economic perspective, it harmonizes the interplay between immediate profits and sustainable operations by offering experiences that add significant value. The presence of tourists enhances local culture by facilitating detailed observations and encourages both the preservation and advancement of cultural practices. Consequently, the statement articulates that it enhances local culture through the comprehensive insights of tourists while fostering both the preservation and evolution of regional traditions. This strategy will foster sustainable development methodologies, advocate for designs that require minimal intervention, and reduce the ecological footprint on rural regions in China. This approach offers a valuable Chinese viewpoint on the sustainable advancement of rural areas worldwide and examines the potential challenges facing rural tourism and cultural practices in China.

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Keywords:
Keyword 1: rural tourism
Keyword 2: landscape architecture
Keyword 3: design method
Keyword 4: walking

P179

Integrating Biocultural Diversity into Large-Scale Landscape Planning: A Governance Approach for Karst Regions

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Karst landscapes are home to unique biological resources and indigenous cultural heritage, forming complex socio-ecological systems. However, these regions face increasing threats from ecological degradation and cultural erosion, posing significant challenges to conservation strategies. Traditional conservation efforts often prioritize biodiversity while neglecting the interwoven cultural dimensions, resulting in fragmented and ineffective management approaches. To address this gap, this study explores how biocultural diversity conservation can be integrated into large-scale territorial planning and governance frameworks, ensuring a more adaptive and inclusive approach to landscape management.Using the Miaoling Mountains as a case study, this research develops a governance-oriented model that aligns biocultural conservation with regional policy frameworks. The approach consists of three key components: (1) incorporating biocultural diversity assessments into spatial planning processes, (2) designing an integrated conservation network that enhances landscape connectivity, and (3) implementing a multi-stakeholder governance framework that balances ecological protection with socio-economic needs. The proposed framework builds upon priority conservation areas and corridor networks identified through spatial modeling but moves beyond ecological assessment by embedding these insights into land-use policies, community co-management strategies, and adaptive regulatory mechanisms.Results indicate that nearly half of the Miaoling region faces misalignment between biological and cultural diversity, necessitating a governance-driven approach. The conservation network, consisting of 29 primary corridors, 76 secondary corridors, and 25 key nodes, provides a strategic foundation for territorial management. To operationalize this strategy, an adaptive governance model is proposed, engaging governmental agencies, local communities, researchers, and civil organizations in co-developing policies that integrate conservation with sustainable land use. This study underscores the importance of shifting from isolated conservation initiatives to integrated territorial planning, offering a replicable model for managing biocultural landscapes in karst regions and beyond.

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Keywords:
Keyword 1: Biocultural Landscape Governance
Keyword 2: Integrated Spatial Planning
Keyword 3: Karst Territorial Management
Keyword 4: Multi-Stakeholder Conservation
Keyword 5: Connectivity-Based Planning

P180

Constructing an Index System for Urban Park Health Assessment: Case Studies of Community Parks in Quanzhou and Xiamen

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The concept of "urban park health assessment" originates from China's annual "urban health assessment," an initiative designed to diagnose urban challenges. Just as cities face various issues, parks also encounter corresponding problems. Establishing an index system for the "health assessment" of parks provides a structured approach to evaluate their current conditions and guiding future development.

This study examines community parks in Quanzhou and Xiamen, proposing an index system comprising 15 key indicators and 29 sub-indicators across four core dimensions: overall park condition, user experience, functionality, and management. The research methodology consists of three phases: (1) Analysis of Existing Evaluation Systems – identifying strengths and limitations of current assessment frameworks; (2) Development of the Indicator System – formulating the system based on governmental green space policies, park design standards, and literature review; and (3) Case Study Application – integrating expert assessments with visitor satisfaction surveys to account for both expert perspectives and public experiences.

On-site evaluations demonstrate that the proposed indicator system effectively identifies the strengths and weaknesses of urban community parks in terms of ecological health, public activities, service facilities, and management. The system offers two distinct advantages:
(1) Integration of General and Specific Indicators – General indicators provide a holistic assessment of park characteristics, while specific indicators highlight performance at a more granular level, enabling precise problem identification.
(2) Dimensional and Element-Based Classification – A dimension-based classification (e.g.aesthetics, recreation, management, maintenance) facilitates the identification of thematic issues but lacks practicality for on-site evaluations. Conversely, an element-based classification (e.g. entrances, vegetation, water features, landscape nodes, service facilities, historical heritage) enhances field applicability. By integrating both approaches, the system balances theoretical rigor with practical feasibility.

The proposed index system provides a quantitative basis for urban park planning, construction, and management. Furthermore, if the "urban park health assessment" becomes a government-led annual evaluation process similar to the "urban health assessment," the index system for urban park health assessment has the potential to serve as a powerful tool for promoting park development and optimizing urban green space management. In fact, some cities and provinces in China have already started exploring this initiative, and in this context, the proposed index system offers an effective framework for practical implementation.

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Keywords:
Keyword 1: Urban park
Keyword 2: index system
Keyword 3: park indicator

P181

Landscape Atlases: a Practical Framework for Territorial Transformation

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The increasing complexity of urban and territorial transformations in the face of global climate change necessitates new tools for guiding landscape adaptation and resilience. If landscape is to be understood as a guiding force in territorial development, as proposed by the European Landscape Convention, then structured frameworks are required to translate this guidance into actionable methodologies.
Landscape atlases serve as such a framework, offering an interpretative and collective tool for understanding, managing, and designing landscapes in transition. This paper explores how landscape atlases can operationalize the concept of "guiding landscapes" by providing structured, data-driven, and participatory methodologies. Unlike traditional cartographic representations, the landscape atlas is a dynamic and evolving tool that integrates historical, ecological, cultural, and socio-economic layers. It not only captures the complexity of landscapes as perceived by local communities but also facilitates decision-making by synthesizing multi-scale environmental and territorial data.
This approach ultimately leads to the identification of territorial units that provide the specific information needed for decision-making. From a professional standpoint, the research holds immense value for policymakers, planners, and practitioners involved in spatial planning and management. By providing a methodological framework for analyzing landscape layers and identifying territorial units, the document equips professionals with valuable tools for effective decision-making in regional planning. Furthermore, the development of landscape atlases offers a practical solution to the challenges faced in implementing spatial programs, thereby contributing to the sustainable development agenda.
With over 409 landscape atlases (Atlas de Paysage) produced in France at different scales—ranging from micro to macro levels—this study highlights how these atlases serve as tools for identifying, characterizing, and assessing landscapes. These atlases incorporate a variety of perspectives, integrating expert analyses, policy frameworks, digital tools, and local knowledge to support sustainable territorial planning. By functioning as "spaces for different narratives," they provide valuable insights into both ecological and socio-cultural transformations, helping planners navigate complex urban and rural changes.
By bridging landscape interpretation, data systems, and participatory engagement, this study argues that landscape atlases can transform theoretical landscape guidance into a practical, accessible, and scalable methodology for urban and regional planning. This approach has profound implications for landscape architects, planners, and policymakers, ensuring that landscape guidance is not just a conceptual ideal but a tangible, action-oriented framework for sustainable territorial transformation.

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Keywords:
Keyword 1: Landscape Atlas
Keyword 2: Territorial Management
Keyword 3: Participatory Methodologies
Keyword 4: Spatial Planning
Keyword 5: Landscape Approach

P182

Restoring Coastal Stability: Marine Landscape Pattern of Cystoseira and Posidonia oceanica by the Computational Distribution Model

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Coastal landscapes, as dynamic interfaces between marine and terrestrial ecosystems, are increasingly vulnerable to erosion-induced vegetation deformation. Rising sea temperatures, biodiversity loss, and human-induced alterations accelerate coastal erosion, leading to the degradation of critical marine vegetation (Boudouresque et al., 2020). Erosion disrupts sediment balance and destabilizes coastal ecosystems, necessitating the integration of nature-based solutions into landscape architectural planning. The loss of Posidonia meadows in Spain and Italy has led to costly shoreline replenishment due to rapid coastal retreat (Telesca et al., 2015). Land cover comparisons between 2010 and 2020 reveal significant declines in coastal vegetation and mangrove forests due to increasing soil salinity, seawater intrusion, and sedimentation shifts (Ground Truth Information, 2020). These changes highlight the urgent need for landscape-driven restoration strategies to enhance coastal resilience and mitigate further ecological degradation. Given the accelerating effects of climate change, data-driven restoration planning is essential for ensuring coastal resilience and biodiversity conservation.

This study proposes a marine landscape restoration pattern for the Mediterranean, derived from ecological, vegetative, and coastal interaction data from past Posidonia oceanica and Cystoseira restoration projects. Data analysis is conducted to map seawater temperature, salinity, wave motion, acid level, depth, coastal population density, and coastal vegetation patterns in the Mediterranean. By integrating marine species distribution data from the Ocean Biodiversity Information System (OBIS), environmental parameters from the Copernicus Marine Service, and satellite imagery, an ecological pattern is developed to assess habitat suitability. This pattern is constrained by the growth parameters of Posidonia oceanica and Cystoseira, providing a preliminary assessment of potential restoration sites. The data is standardized through a computational distribution model (Sozer, 2024), which predicts the probability of Posidonia oceanica and Cystoseira presence based on key environmental thresholds, including seawater temperature, wave exposure, sediment transport, and species resilience.

Findings indicate that high-erosion areas with rising sea temperatures, variable sediment transport, and human pressure are the most vulnerable and suitable for Posidonia oceanica and Cystoseira restoration. The model uses different datasets to map restoration patterns, linking species distributions and ecological data. By developing a restoration map that correlates coastal erosion trends with marine vegetation degradation, this study guides landscape architects in designing coastal projects that enhance marine and terrestrial resilience. Future research will focus on refining site selection, assessing marine-vegetation interactions with coastal ecosystems, and integrating socio-economic factors.

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Keywords:
Keyword 1: Marine landscape
Keyword 2: coastal ecosystem restoration
Keyword 3: coastal resilience
Keyword 4: erosion mitigation
Keyword 5: computational distribution model

P183

The Role and Challenges of the California Environmental Quality Act (CEQA) in Landscape Conservation

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California is celebrated for its varied landscapes, encompassing the Pacific coastline, mountain ranges, agricultural regions, grasslands, and desert ecosystems, demonstrating significant ecological diversity and intricate geomorphological, vegetative, and hydrological patterns. These landscapes provide essential ecological functions and have a significant historical and cultural heritage. Since the mid-19th century, geological processes and anthropogenic activity have collaboratively influenced the state's landscapes. Natural phenomena such as earthquakes and coastal erosion have historically influenced topography, while population growth, urbanization, and resource extraction have intensified changes in land cover, leading to landscape fragmentation and reduced ecological connectivity. Infrastructure development and urban expansion jeopardize environmentally sensitive regions, threatening both natural and cultural heritage while increasing conservation problems. In response to these challenges, California enacted the California Environmental Quality Act (CEQA) in 1970, intended to balance economic development with ecological integrity and cultural continuity of landscape resources, while planning and managing territories, controlling urban sprawl, and coordinating the needs of multifunctional areas to integrate or mitigate environmental changes. The environmental impact assessment framework is essential to CEQA, requiring a comprehensive, multifaceted research of development suggestions that may lead to significant landscape alterations. Developers must submit an Environmental Impact Report (EIR) that evaluates potential impacts on geomorphology, vegetation, hydrology, and landscape connectivity using remote sensing, GIS analysis, and landscape modeling, in addition to assessing visual quality, cultural landscapes, and land use alterations. CEQA requires the implementation of mitigation measures, such as ecological restoration and green infrastructure, to alleviate the negative impacts of development activities. CEQA offers a scientifically accessible framework for decision-making, ensuring that projects promote economic development while preserving California's natural and cultural landscapes and maintaining the long-term stability of ecological services. This article comprehensively examines the legislative framework, fundamental principles, historical development, and importance of CEQA within the environmental management system, emphasizing the law's particular effects on landscape conservation. The article analyzes CEQA's function in safeguarding natural landscapes, assessing visual and aesthetic impacts, and preserving cultural landscapes, while demonstrating its application and efficacy in many environmental scenarios through representative case studies. This paper analyzed the primary advantages and potential disadvantages of CEQA in landscape conservation and guidance, while also investigating avenues for enhancing the legislation to tackle contemporary environmental issues, refine landscape management strategies, and improve the effectiveness of sustainable development, with the goals of offering theoretical foundations and practical insights for the advancement of environmental laws and informed decision-making.

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Keywords:
Keyword 1: CEQA
Keyword 2: landscape guidelins

Keyword 3: the legislatve framework
Keyword 4: guiding territories

Guiding territories with legislative and social advances in planning: towards a right for nature

P184

Tracking Greenness Inequality in Shanghai: Spatial Evidence and the Institutional Imagination of a Right to Nature

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As ecological degradation and urban inequality intensify globally, the idea of a right to nature has emerged as a normative framework for reimagining the relationship between cities, people, and the more-than-human world. While urban greenness is increasingly recognized for its environmental and social value, its uneven distribution reflects deeper tensions in how nature is produced, accessed, and governed. In rapidly urbanizing contexts like China, where developmental rationalities and spatial control dominate urban planning discourse, questions arise not only about who benefits from urban nature, but whether nature itself holds any status within the legal, epistemic, and institutional frameworks that shape the city.

The study constructs a comprehensive multi-dimensional framework to evaluate green space justice at the neighborhood scale, integrating remote sensing, spatial analysis, and socio-institutional interpretation. The analysis includes: (1) quantity-based indicators (green coverage ratio per community), (2) quality dimensions (typologies of green spaces, presence of public amenities, ecological characteristics), (3) accessibility metrics (proximity to public green spaces within 500m walking buffers), and (4) temporal change assessed through NDVI time-series (2000–2020) derived from Landsat imagery and analyzed using Theil-Sen trend estimation. Over 1600 neighborhoods were categorized by income levels and urban typologies using census and land-use data.

The results reveal multi-scalar inequalities in greenness. High-income communities tend to enjoy not only larger and greener areas, but also better-quality and more accessible green spaces, often bolstered by targeted ecological investments or private green enclaves. Conversely, lower-income neighborhoods suffer from triple deficits: limited green coverage, poorer green quality, and lower accessibility, alongside slower greening trajectories or even net ecological loss. These disparities expose the socio-political and economic mechanisms through which nature is selectively planned, distributed, and legitimized in alignment with growth-first urban priorities.

In conclusion, greenness inequality reflects a broader failure to institutionalize nature as a shared right and a collective good. Despite the growing global traction of the “right to urban nature” discourse, its articulation remains marginal in Chinese urban governance, constrained by anthropocentric planning norms, developmentalist priorities, and the absence of enforceable green equity frameworks. This condition reveals not only a governance gap but also a deeper conceptual one: nature continues to be framed as an externality, rather than as a co-inhabitant of the city with legitimate claims.

By making these spatial and institutional absences visible, this study contributes to the evolving institutional imagination of what a right to urban nature could entail. It calls for a paradigmatic shift in the way green space is managed, moving from its treatment as an engineered utility to its recognition as a domain of political negotiation, legal innovation, and shared ecological citizenship. Future frameworks may require integrating rights-based planning instruments, ecological standards, and multispecies perspectives to more fully realize the presence and protection of nature within the urban realm.

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Keywords:
Keyword 1: Green justice
Keyword 2: Urban green space
Keyword 3: Institutional governance
Keyword 4: Multi-dimensional framework
Keyword 5: China

P185

Assessing Variations in Multi-Stakeholder Perceptions of Landscape Values: A Combined PPGIS and LCA Approach in Qinghai Lake National Park, China

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As a social-ecological system, national park encompasses a wide range of ecological, historical, cultural, social and aesthetic values. A bottom-up model of public participation in assessment would be beneficial to the planning and management of national parks. Differences in the public's personal experiences, social backgrounds, etc., lead to differences in the understanding of landscape values among different stakeholders. How to assess the multiple landscape values from the perspective of different groups of stakeholders needs to be explored.

Landscape is an area perceived by people, whose character is the result of the action and interaction of natural and human factors. In this cognitive context, Landscape Character Assessment (LCA) can serve as a platform linking public perception with the landscape. However, existing LCA researches typically focus on objective assessments of landscape elements, which may fail to effectively capture the subjective perceptions of the public. Public Participation Geographic Information System (PPGIS) is an effective tool linking public perception to spatial localization, which has been widely applied in the planning and management of national parks and other natural protected areas. This study will combine PPGIS with LCA to explore the landscape value perceptions of different stakeholders based on the identification of landscape characteristics.

The research will take Qinghai Lake National Park as a case study. Qinghai Lake is the largest inland saltwater lake in China, which has attracted much attention due to its typical and unique landscape resources as well as the complex social background involving multiple interests. The study will focus on two of the most central and conflict-prone groups in Qinghai Lake National Park, tourists and local community residents, and explores their differing perceptions of the value of the Qinghai Lake landscape.

The methodology consists of three steps. First, a framework for public landscape value perception will be constructed. Landscape resources in Qinghai Lake National Park will be systematically analyzed to select key factors which are convenient for the directly perception of stakeholders. These factor are then spatially processed, and clustering analysis will be used to identify landscape character types and areas. Then the landscape value perception evaluation system will be established based on the LCA results. Second, the PPGIS method will be employed to capture the landscape value perceptions of different stakeholders. Participants will be asked to place colored markers on the LCA map, score the marked areas, and provide explanatory information for their ratings. Third, differences in landscape value perceptions between tourists and local residents will be analyzed to guide practical decision-making. ArcGIS will be used to process the collected point data, identifying high, medium, and low-value areas which has been recognized by different groups. The landscape value perception map will be superimposed and analyzed to identify areas of disagreement and consensus. This analysis involved comparing the differences in their perceptions of landscape value as well as the regions where their views overlapped. This research provides a scientific basis for developing more inclusive landscape management strategies, aimed at reducing the negative impact of value conflicts on National Parks.

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Keywords:
Keyword 1: Landscape Values
Keyword 2: Landscape Character Assessment
Keyword 3: Public Participation GIS
Keyword 4: Multiple Stakeholders
Keyword 5: National Park

Guiding territories with legislative and social advances in planning: Evolution of heritage landscapes

P186

Symbiosis and Risk: The Dual Impacts of Trees on the Soil-based Heritage Conservation

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Soil-based heritages constitute a vital component of world cultural heritage, which not only reflect ancient human societal activities but also demonstrate dynamic coupling between historical sedimentation and contemporary functionality in modern landscapes(Zhang et al., 2012). Along with climate change, global soil-based heritage sites are exposed to more significant risks(Machat, C., & Ziesemer, J., 2017). Regarding biological factors, vegetation exhibits an annual 25% increase in underground biomass, creating conflicts between tree root systems and their displacement of soil structures(Grabosky & Gucunski, 2019), which has led to the degradation of the apparent morphology of the soil-based heritages. Nevertheless, trees also provide rainfall interception and soil stabilization(Xiao et al., 2024). The dual impact mechanism and the assessment methodology of trees form a critical foundation for heritage vegetation management, representing a current research gap.
In this study, a noval risk assessment framework is constructed based on the digital perspective using airborne LiDAR and hyper-spectral data. The root system and foliage are characterized by individual tree segmentation, branch and foliage separation, and tree species clustering methods with point cloud data. Then the comprehensive risk evaluation model of the soil-based heritage is established based on six aspects: depth, distribution, biochemical characteristics of different trees' root systems and surface area, porosity, roughness of vegetation leaves. The study selects Yangzhou ancient city ruins as a representative of soil-based heritage sites to evaluate and finely verify the current status of dual impacts caused by trees in the site. This study also compares three vegetation management scenarios to evaluate the risk reduction ability of different strategies. We found that: (1) The result of the risk assessment framework was significantly consistent with the ground survey data; (2) The model showed that the site still faced significant natural risks and presented spatial heterogeneity characteristics, in which the southeast area was subjected to the intensity of disturbance by the trees' root , highlighting the urgency of vegetation control; (3) In the scenario simulation, through selective thinning of the dominant trees and maintaining the forest window structure in moderation performs best, which can lead to a significant reduction in the risk index.
The noval framework proposed in this study provides a new perspective for the protection of soil-based heritage sites, bridges the gap of dual impact mechanism of and assessment method of trees for heritages, and provides support for multi-source data for the refined management of soil-based heritages. Practically, this study informs policy for heritage management and provides planning suggestions aligning conservation with national regulations for Yangzhou ancient city ruins.

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Keyword 1: Soil-based heritage

Keyword 2: Airborne LiDAR
Keyword 3: Dual impact mechanism
Keyword 4: Risk assessment framework
Keyword 5: Vegetation management scenarios

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LANDSCAPES TRANSITION Black Sea Transboundary'sCoastline-BETWEEN ECONOMIC DEVELOPMENT AND PROTECTION OF NATURE, WHAT IS THE PLACE FOR TOMORROW'S HERITAGE?

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The 2025 Heritage Discovery Workshop is the second edition of an exchange between young French landscape designers from the 3rd year of ESAJ and 4th year of the Department of Spatial Planning and Environmental Engineering of theU.S.A.M.V in Bucharest, Romania (https://usamv.ro/site-vechi/index.php/en/education/facultes-et-departements.html) on issues of transitional landscapes in Romania.

This Franco-Romanian exchange between students of theE.S.A.J. and theU.S.A.M.V. will be in continuity with the one conducted in 2024 in the region of Campulung Muscel, Judet Arges where we were sensitized to issues of agro-heritagesylvo-pastoral montagnard at one of the Carpathian gates around Câmpulung.

Students for this year 2025 lead a work of reflection and project support on the theme of fragility of the landscapes of the Romanian coastline. The workshop addresses the issue of balance between the economic development of a territory and the needs for nature protection.
Through its thousand-year history, but also by its geography made of surprising contrasts, this territory of plateaus and plains overlooking the lower course of the Danube is unique in Europe. The Romanian coastline, which stretches for 234 km from Sulina to Vama Veche, consists of a series of natural landscapes inhabited by an ethnographic mosaic. The landscape achieved by the ethnographic mosaic in which Indo-Europeans, Semites and Mongols, Latins, Germans and Slavs form a miniature Asia and Europe. An immense living museum – this is the epitome of the living world at the mouth of the great river."

Traveling the coast of the Romanian Black Sea from the Danube Delta to the Bulgarian border, during 1 week and students this theme for 1semester, students are led to take a look and formulate proposals for conserving the territory from a landscape approach. mixing the great landscape and taking support on three particular site of the Delta: Mila 23, Périprava and Letea.

We would like to present the approach and work in the framework of the European landscape meetingsPartners
Ro - ASOP, Ivan Patzaichin Association , foundation Pro patrimonio,
FR - Embassy of France in Romania, Ministry of the ecological transition, Ecole du patimoine de Chaillot

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Author's: *Collective publication by ESAJ School of the landscape' transition* - Date: 2023-2024 - Title: LE VÉGÉTAL DE DEMAIN À VOLVIC (FR) - Place of publication: Fédération des Parcs Naturels Régionaux de France, Publisher: Volvic city and the Auvergne Volcanoes Regional Natural Park./ through the Small Town of Tomorrow programme, in partnership with between the town of Volvic and the Auvergne Volcanoes Regional Natural Park - Volume number: 1000 units and web diffusion - page 60

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The Grands Sites de France: between heritage and adaptation to climate change

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The Grands Sites de France are exceptional landscapes attracting large numbers of visitors. A significant proportion of their perimeter is protected under the French law of 1930 on the 'protection of natural monuments and sites of artistic, historic, scientific, legendary or picturesque character'. The local authorities in charge of the management are committed with the French State at achieving a balanced development integrating long-term preservation of the site, welcoming visitors and local economic growth. They are leading concerted, cross-disciplinary and coherent territorial projects with a view to obtaining the Grand Site de France label awarded by the French Minister for the Environment. As protected and inhabited landscapes, the Grands Sites de France are laboratories for the sustainable and innovative management of rural areas. The Grands Sites de France network brings together the 22 sites that have been awarded the label and the 31 that are working towards its obtention. They represent 1.7% of the French territory, are home to 1.2 million inhabitants and welcome over 40 millions of visitors every year.
Since its creation at the end of the 1970s, the Grand Site de France policy has evolved toward a more ambitious policy. Originally, it was based on the rehabilitation and management of specific natural monuments that had been damaged by tourism. The Grands Sites have been developing or supporting renaturation projects at relatively small scale such as the rehabilitation of Cap d'Erquy-Cap Fréhel, which was awarded the French landscape prize in 2022. Since then, they also have become experts on integrated visitor flow management. More recently, the Grand Site de France policy has taken into account vast landscapes, requiring a dynamic and forward-looking vision integrating sustainable tourism, local economic development, agriculture, forestry, biodiversity, rural planning, energy transition, adaptation to climate change, etc. As a result, local authorities are increasingly turning to the essential tools and skills of landscape design.
The Grands Sites de France are custodians of the heritage value of the protected site within their perimeter. They are responsible for preserving its identity, which has always been at stake but is now even more challenged with climate change. To do this, they are developing methods to encourage the collective expression of heritage and landscape core values to maintain. Elected representatives, technicians and inhabitants, can therefore project themselves into major changes as long as they do not jeopardize these essential values. Furthermore, the Grands Sites de France have developed various adaptation strategies, such as landscape study to adapt to climate change at the Marais de Brouage, forestry laboratory to adapt plant species at Bibracte - Morvan des Sommets, flexible management of the coastline at the Presqu'île de Giens, site house integrating the challenges of climate change in the Baie de Somme, and so on, proving that tools and landscape culture are relevant to develop solutions to cope with climate change. As the Grands Sites de France are important touristic sites, through communication and interpretation tools, they also commit to share a culture of landscape resilience with a large public.

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P189

Disappearing cultural heritage in the context of modern flood defence systems

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As climate problems become more and more serious, the probability of natural disasters increases. One of the natural disasters that kills a relatively large number of people each year is flooding (Jigyasu, 2016). There are two general approaches to flood protection: one is to build flood defences artificially, and the second is to use nature to reduce flood pressure by improving the natural environment. Modern flood control systems such as dykes, reservoirs and artificial rivers have played a key role in reducing flood disasters and protecting human lives and properties, but they have also had a profound impact on many cultural heritages(Barthel-Bouchier, 2016). A large number of historical sites, ancient buildings, villages and cultural landscapes have been submerged, relocated or destroyed as a result of flood control projects(Harrison, 2015). This paper will compare the ancient site landscapes affected by flood control policies in the Yellow River Basin in China and the Rhine River Basin in Europe. In this way, we will explore the impact of modern flood control techniques on ancient landscape sites.

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Keyword 1: Landscape Sites
Keyword 2: Flood control Planning
Keyword 3: Cultural Heritage

P190

Cultural Landscapes Through Routes: The Case Study of the Lycian Way

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Routes connect urban areas, including historic towns and cities, as well as rural landscapes. These connecting pathways are essential for social, economic, and cultural exchange. Roads have historically played a crucial role in shaping cultural landscapes, serving as conduits for movement, trade, and social interaction. However, rapid urbanization and infrastructure expansion often lead to the degradation of landscape heritage along historic and scenic routes. This research explores the intersection of road infrastructure and landscape heritage, proposing an integrated conservation framework that balances cultural preservation with sustainable development.
Both rural and urban settings, as cultural landscapes connected through paths, represent the interrelationship between people, place, and identity over time. This research provides an overview of cultural landscapes and explores how ancient routes have evolved, while also assessing the effects of modern infrastructure on the environment, heritage, and identity.
The Lycian Way connects urban and rural areas, linking historic towns, cities, and natural landscapes. The interaction between nature and culture highlights heritage and identity similarities across civilizations. The Lycian Way, which traces a network of ancient paths that facilitated communication between the city-states of the Lycian Federated Union thousands of years ago, consists of Roman roads, old pathways, and mule tracks. It bears traces of Anatolian, Greek, Roman, and Byzantine civilizations, all of which have settled, modified, or altered the landscape over time.
For thousands of years, this region has demonstrated that societies, despite living in different eras and adhering to different religions and philosophies, share concrete cultural similarities. Due to the region's mountainous terrain and deep valleys, local villagers still rely on these ancient paths to reach their agricultural lands. In certain areas, the roads are supported by retaining walls constructed from rocks extracted from the land. These small communities continue to use traditional agricultural methods, growing crops for local consumption, accessing their olive groves via these paths, and grazing their livestock.
The consequences of easier access to rural and agricultural areas include the loss of both natural and cultural landscapes, the erosion of traditional ways of life, and the degradation of cultural and landscape heritage. In contrast, in protected rural and natural areas, nature continues to shape human culture. Civilizations have left their imprint on these landscapes for thousands of years. However, infrastructure development and landscape planning that disregard cultural values—such as ancient roads—contribute to the destruction of cultural landscapes and the loss of millennia-old heritage.
Although this study focuses on the southwestern coast of Turkey, its analysis of ancient paths, agricultural landscapes, and the impacts of modern infrastructure reveals cultural and historical similarities with other Mediterranean regions. This research contributes to the growing discourse on landscape heritage and mobility by emphasizing the role of roads as cultural corridors. The proposed strategies provide a replicable model for balancing infrastructure development with heritage conservation, ensuring that roads continue to serve as both functional transportation networks and vital elements of cultural identity.

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Keywords:
Keyword 1: Landscape heritage
Keyword 2: Historic roads
Keyword 3: Cultural landscapes

Keyword 4: Heritage conservation
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P191

Optimizing Conservation Boundaries of Cultural Heritage in Beijing's Suburban Hilly Areas Based on Ecological Sensitivity

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As urban expansion and environmental changes accelerate, balancing cultural heritage conservation with ecological protection has become an urgent challenge. This study focuses on Beijing's suburban hilly areas, a region of high ecological sensitivity and rich cultural heritage, aiming to develop a scientifically grounded framework for optimizing the conservation boundaries.
This research integrates data on various cultural heritage sites, including sections of the Great Wall (Jizhen, Changzhen, and Zhenbaozhen), traditional villages, gardens, temples, and ancient routes in a Historical Geographical Information System (HGIS). The Analytic Hierarchy Process (AHP) is employed to assign weights to different heritage types based on their historical and cultural significance, while kernel density analysis reveals their spatial distribution patterns. This approach identifies two key zones: the Key Heritage Area (KHA) and the General Heritage Area (GHA).Simultaneously, an ecological sensitivity assessment is conducted, incorporating factors such as topography, geological hazards, vegetation cover, hydrological systems, and human disturbances, highlighting regions critical for maintaining ecosystem health and delineating the Key Ecological Area (KEA). By overlaying the result of ecological and cultural aspects, areas facing conflict between heritage conservation and ecological priorities were identified. The findings reveal two primary conflict types: KEA-KHA and KEA-GHA. For KEA-KHA conflicts, the study recommends reducing human activity intensity within heritage core zones and establishing buffer areas to minimize ecological disruption. In KEA-GHA zones, a low-intensity maintenance approach is proposed to preserve both heritage value and natural landscapes. For instance, in the Great Wall area, human activities are confined to paths designated within scenic area plans, preventing direct contact between tourists and the unmaintained sections of the wall. This also helps avoid excessive intrusion of tourism facilities into the surrounding natural areas. Meanwhile, traditional villages are encouraged to adopt environmentally friendly development practices such as eco-agriculture experiences, hiking and outdoor exploration, and cultural history exploration.
By integrating the spatial distribution analysis of cultural heritage with a sensitivity assessment of the natural substrate, this study provides a detailed, data-driven framework for optimizing conservation boundaries of cultural heritage in Beijing's Suburban Hilly Areas, ensuring the sustainable coexistence of cultural heritage and natural environment, and contributing to the long-term planning and development in this area.

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P192

The Dynamic Development Charm of Landscape Planting in the Summer Palace in China

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The Summer Palace is one of the four famous gardens in China. It was included in the first batch of national key cultural relics protection units by the State Council of the People's Republic of China in 1961, and was included in the World Heritage List by UNESCO in 1998. The Summer Palace is a typical representative of artificial mountain and water gardens. By artificially creating mountain and water landscapes, planting flowers and trees, and constructing buildings, natural mountain and water landscapes are reduced and imitated within a small scope, playing a crucial role in the development of the entire eastern garden art and cultural form. Plants, as the only living elements in gardens, have supported the vivid evolution of the plant landscape in the Summer Palace from ancient times to the present day, and are still the epitome of plant landscaping.
The study first conducted research on historical classics related to the Summer Palace, such as style maps, historical documents, imperial poetry and prose, and local chronicles. A research library was systematically organized to provide a good material foundation for subsequent research.
Secondly, research and verification were conducted on the plant species in the historical period of the Summer Palace, and dynamic records of existing plant species were recorded to form an ancient and modern seedling table, providing reference for the application of plant species in landscape gardens.
Thirdly, dynamic and information-based management of ancient tree resources has been carried out for more than 10 species and 1600 ancient trees in the park, including pine, white pine, round cypress, side cypress, locust, purple magnolia, magnolia, mulberry tree, Chinese catalpa, and wood fragrant flower, to assist in the protection of ancient trees.
Fourthly, research has been conducted on plant culture, mainly drawing on the charm of plant culture from the names of scenic spots and couplets and plaques in the Summer Palace, and exploring the garden owner's gardening ideas.
Finally, the unique construction techniques exhibited by plants in different types of spaces such as forest, waterfront, garden, and land in the Summer Palace were classified, allowing us to appreciate the control and creativity of garden designers in the skillful planting.

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Keyword 4: historical classics
Keyword 5: development

P193

Quantification of multi-dimensional spatial visual feature perception of Chinese historical gardens based on deep learning and machine learning

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With urbanization, historical gardens have enhanced residents' quality of life, boosted local tourism, and strengthened cultural identity. Chinese historical gardens, with millennia of development, encapsulate traditional gardening techniques. Understanding their landscape character and visual influence on visitor preferences is key to sustainable development. However, existing quantitative research on visual perception has limitations in feature selection, data processing, and analysis. A multidimensional quantitative framework is proposed, integrating subjective perception evaluation with objective visual indicators. The framework under discussion employs multi-dimensional refinement to categorize objective visual features, incorporating spatial organization relationships based on two-dimensional planes, as well as landscape element features, depth features, color features and texture features derived from three-dimensional scene images. By introducing the theory of spatial syntactic analysis, SegNet image semantic segmentation algorithm with DINOv2 model and other computer vision analysis techniques, the accurate extraction of visual features is achieved. In addition, an interpretable machine learning model is used to reveal the non-linear relationship and threshold effect between objective visual features and landscape perception in historical gardens based on analysis methods such as SHAP and PDP. Finally, three typical historical gardens (the Garden of Cultivation, the Canglang Pavilion, and the Net Master's Garden) in Suzhou City, China, are used as empirical research objects to verify the effectiveness of the framework in practical application. The main results are as follows:
1. The organization of the two-dimensional planar space of historical gardens has been shown to influence the three-dimensional spatial perception of visitors to a certain extent. Furthermore, areas within historical gardens with a high degree of global integration and connectivity tend to offer a superior perception of spatial connectivity and legibility.
2. The spatial perception of historical gardens is influenced by multiple factors. Spatial connectivity and legibility are shaped by image elements such as the proportion of classical buildings, road openness, and green visibility, as well as color features like saturation and image texture. Spatial complexity depends on elements like building and rockery proportions, color diversity, and depth features such as average image depth. Spatial mystery is determined by element complexity, water proportion, road openness, and depth features like foreground ratio.
The objective of this study is to analyze in depth the mechanism of influence of spatial visual features on landscape perception in Chinese historic gardens. This will allow for further exploration of the core paradigm of historic garden design, and for the provision of a theoretical basis for its sustainable conservation and development.

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Keywords:
Keyword 1: Landscape perception
Keyword 2: Chinese historical gardens
Keyword 3: Deep learning
Keyword 4: Machine learning

P194

The Nahuas have come this far: Landscape architecture practice and future cultural landscapes, case study Anahuac Farm Program, Oregon

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This communication focuses on the potential of 'cultural landscapes of the future,' emerging from the migration and cultural hybridity of Indigenous peoples in North America, as they adapt and negotiate with one another and a landscape of arrival. Through the exploration and design support of the creation of an agri-**cultural** center founded and managed by Mesoamerican Indigenous farmworkers in the Willamette Valley, Oregon, the research asks if and how this center can serve as a model for future systems of Globally Important Agricultural Heritage[1] in the face of climate change. The Anáhuac Farm Program, a pilot project accompanied by its parent organisation, the Capaces Leadership Institute, reflects the intersection of traditional Mesoamerican agricultural practices (Zapotec, Purepecha, Nahuatl, Mixtec, Maya, and others) with local land stewardship systems. The Anàhuac Farm Program offers an innovative framework for land use, bridging cultural heritage (including dance, languages, culinary arts, and spiritualities) and contemporary sustainability practices. Conducted as part of a Project-Led PhD between 2022 and 2023, this research highlights the role of cultural hybridity in shaping landscapes and agricultural systems that are both culturally significant and ecologically sustainable. Through ethnographic fieldwork, including participant observation, semi-directive interviews, and the collaborative design of an ethnobotanical garden on the 22-hectare farm, the study explores how this initiative preserves and passes on Intangible Cultural Heritage through landscape to future generations. The Anáhuac Farm Program, is also introducing mésoamerican traditional crops to the higher latitude of the Willamette Valley—potentially serving as an early model for climate change acclimatisation. By expanding agricultural zones and diversifying crops suited to new climates, this initiative has the potential to pioneer resilient farming practices in response to shifting environmental conditions. In the case of the Anáhuac Farm program, the 22-hectare site weaves together centuries of history and a plurality of agri/cultures. Their own mesoamerican tapestry reaches out to weave in those who were there before them: from an initiative to restore the Indigenous Kalapuyans' White Oak and Camas prairies, to the way Norton Creek is canalized across the property and even the way the trains can be seen passing through the valley floor along the NS axis of the Jefferson Grid. The ongoing design work for the farm underscores the evolving role of landscape architecture in creating spaces that are not only functional but also culturally and ecologically rich, demonstrating the potential of migratory cultural landscapes to inspire future global agricultural heritage systems.

[1] as defined by the FAO

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Keywords:
Keyword 1: Migration
Keyword 2: Mesoamerican
Keyword 3: Agriculture
Keyword 4: Landscape
Keyword 5: Culture

P195

Study on the Evolution of Green Space Morphological Characteristics along City Walls - A Case Study of China and Netherlands

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As a significant category within the cultural heritage framework, military heritage has received increasing scholarly attention in contemporary reservation studies. In the process of progressive urbanization, the fortified landscape, including walls, bastions and moats, is undergoing a functional shift from military use to urban living space. The ancient city walls and their adjoining green spaces, which once served as military fortresses, have evolved into spatial intermediaries connecting historic districts with modern urban areas, as well as buffer zones for heritage conservation. These linear green corridors along the city walls, distinguished by their unique spatial form and strategic location, have become key structural elements in the spatial reorganization of the city. Vertically, they enhance heritage accessibility through continuous recreational corridors; horizontally, they act as a transition zone between the urban core and periphery, facilitating the organic integration of the historic core with the modern built environment. This two-dimensional spatial strategy not only enriches the diversity of the urban green system, but also establishes a hierarchical network that maintains a dynamic balance between heritage conservation and urban development. In this context, *ICOMOS Guidelines on Fortifications and Military Heritage*, developed by the International Scientific Committee on Fortifications and Military Heritage (ICOFORT), was officially approved in 2021 as the pioneering normative document specifically dedicated to this category. The guidelines provide a systematic overview of the key components of the heritage of military fortifications, from conceptual definitions and methods of value assessment to conservation strategies and intervention methods, making the revitalization of historic urban fortified areas a broadly supported societal initiative.
European fortifications prioritize self-contained defensive structures, typically adopting regular geometric forms, whereas Chinese city walls integrate urban planning with natural topography to achieve organic spatial configurations. This study conducts a comparative analysis of two distinct typologies: Chinese city walls characterized by quadrangular layouts with terrain-adapted modifications, and the Dutch star-shaped fortress system. The research methodology employs a life cycle framework, combining ArcGIS spatial analysis and historical map interpretation to trace the formation, decline and transformative regeneration of the defense landscape. Through the lens of temporal stratification theory, the investigation reveals the drivers of evolution across historical periods, with a particular emphasis on the obsolescence of military functions and their adaptive reuse in dynamic urban environments. Furthermore, it elucidates the mechanisms by which these former fortification systems were integrated into the urban park network.
The results of the study show that the evolution paths and transformation strategies of the green spaces along the city wall in China and the Netherlands are differentiated by cultural genes and natural geographical conditions. At the same time, the study provides a systematic solution from historical conservation to dynamic adaptive renewal of the walled city green space, and promotes the transformation of the linear heritage space from single conservation to ‘social-ecological-cultural’ composite value reproduction, providing a reference for sustainable renewal of historical towns and cities.

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Keywords:

Keyword 1: military heritage landscape
Keyword 2: city wall
Keyword 3: green space morphology
Keyword 4: heritage landscape
Keyword 5: bastion

P196

Social Media and Cultural Heritage: Dissemination, Perception, and Sustainability in the Forbidden City

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The widespread use of social media has fundamentally reshaped the way of cultural heritage is disseminated and experienced（Wang et al., 2018）. User-generated content (UGC) and influencer-driven trends have expanded the visibility of heritage sites, shaping tourist behaviors and cultural perceptions. However, social media-driven tourism often emphasizes symbolic and visually appealing "check-in" experiences over deeper engagement with historical and societal narratives（Richards, 2007）. This shift raises concerns about whether digital platforms enhance accessibility while simultaneously encouraging superficial interactions with cultural heritage. Using the Forbidden City as a case study, this research investigates whether social media contributes to fragmented cultural cognition, explores its impact on heritage engagement and preservation, , and examines strategies for sustainable cultural dissemination.

This research adopts a mixed-methods approach, integrating quantitative and qualitative analyses of social media content. Posts about the Forbidden City on Weibo between 2023 and 2025 were collected and analyzed using natural language processing (NLP) techniques to assess how social media influences the depth of cultural perception and the sustainability of heritage engagement. The RoBERTa sentiment analysis model was employed to evaluate visitor sentiment, while LDA topic modeling categorized content into two primary themes: cultural narratives (history, architecture, and socio-cultural aspects) and commercial consumption (cultural merchandise, check-ins, photography, and food). Additionally, semantic network analysis was used to detect trends of fragmented cultural cognition, and the S-BERT text embedding model measured semantic similarity across themes to evaluate the depth of cultural knowledge dissemination.

The results reveal a dual effect of social media on cultural heritage engagement. While digital platforms have broadened access to heritage sites, they have also reshaped user perceptions, prioritizing consumer-driven experiences over historical engagement（Li et al., 2016）. LDA analysis revealed that commercial content accounted for 68% of posts and received significantly higher engagement rates than cultural narratives, suggesting a preference for personalized and commodified interactions with heritage.. Semantic network analysis showed that consumption-oriented keywords, such as "Forbidden City cats" and "Guochao cultural products", dominated user discourse, whereas references to historical and architectural significance constituted only 29% of associations. The dominant content format relied heavily on visual expression, with posts featuring images, short videos, and emojis, limiting textual engagement with historical knowledge.. However, sentiment analysis indicated that 87% of posts expressed positive emotions, and while cultural content had lower representation, it exhibited 15% higher emotional engagement than general posts, suggesting an underlying interest in heritage appreciation despite the predominance of consumer-driven content.

This study highlights the complex and often contradictory impact of social media on cultural heritage engagement. While social platforms enhance accessibility and encourage youth participation, algorithmic -driven content promotion favors personalized and commercial experiences over in-depth cultural narratives. Moving forward, heritage institutions must refine their social media strategies by leveraging algorithmic recommendations, digital storytelling, and interactive content to foster deeper cultural engagement and ensure the sustainable dissemination of heritage.

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Keywords:
Keyword 1: Social media
Keyword 2: cultural heritage dissemination
Keyword 3: user-generated content (UGC)

Keyword 4: cognitive fragmentation
Keyword 5: cultural consumption

P197

Climate-Resilient Heritage Landscapes Through Living Heritage: Adaptive Evolution of the Historic Centre of Macao Amid Environmental Change

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Background: The accelerating impacts of climate change are fundamentally transforming heritage landscapes worldwide, creating an inherent contradiction between dynamic environmental change and traditional conservation principles of authenticity and integrity (Cacciotti et al., n.d.; Sesana et al., 2021). This contradiction is especially pronounced in organically evolved landscapes of high-density coastal cities, where traditional protection paradigms—predominantly technical and top-down—have proven inadequate (Nicholls & Cazenave, 2010). The concept of "organically evolved landscape" acknowledges that heritage landscapes must continue to evolve while preserving their cultural significance amidst socio-economic changes and climate challenges (Ripp & Gustafsson, 2023). The Historic Centre of Macao, a UNESCO World Heritage site reflecting centuries of Chinese-Portuguese cultural exchange, embodies this challenge as a living coastal heritage landscape confronting climate uncertainties.
Objective: This research develops an innovative framework for cultural heritage conservation that embraces change through living heritage theory, exploring how heritage landscapes can adapt to climate pressures while maintaining their evolving cultural significance and community values.
Methods: The study employs literature review, field investigations, community stakeholder surveys, expert interviews, and space syntax analysis to construct a dynamic protection framework: "identification-cooperation-evaluation-implementation-maintenance." This framework systematically analyzes traditional climate wisdom embedded in Macao's urban evolution, evaluates current protection measures and challenges, and assesses spatial vulnerabilities within the historical district (Li Ji et al., 2022; Wang et al., 2023).
Results: Our findings reveal a rich repository of indigenous knowledge in Macao's historical development—from wind-responsive urban forms to hybrid building technologies that mitigate tropical climate impacts. Current protection systems, while policy-robust, lack climate-specific risk assessment mechanisms and meaningful community engagement. Based on these findings, we propose five interconnected adaptation strategies: (1) reinterpreting traditional climate wisdom for contemporary application; (2) engaging core and peripheral communities as conservation stewards; (3) enhancing spatial resilience through microclimate interventions; (4) implementing proactive risk management; (5) evolving regulatory frameworks to balance preservation with adaptation needs.
Conclusions: This research expands living heritage theory into climate adaptation discourse, demonstrating how historically evolved landscapes can maintain their cultural continuity while adapting to environmental changes. Rather than simply preserving physical forms, our approach addresses the challenge of heritage landscapes that can no longer maintain traditional states by embracing controlled evolution guided by community values and indigenous knowledge (Megarry, 2023). This contributes to reimagining alternative conservation approaches that preserve the "spirit of place" while allowing landscapes to transform with changing environmental conditions—a vital perspective for coastal heritage sites worldwide facing the climate crisis.

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Keywords:
Keyword 1: living heritage theory
Keyword 2: heritage landscape evolution
Keyword 3: climate adaptation
Keyword 4: heritage resilience
Keyword 5: collective resilience

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Cultural Ecosystem Services in Industrial Heritage Parks: Social Media Analytics of Public Perception

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Cultural Ecosystem Services (CES) constitute an essential component of ecosystem services, referring to non-material benefits people obtain from ecosystems through spiritual fulfillment, cognitive development, reflection, and aesthetic experiences. Current research conceptualizes heritage as a dynamic process with multiple values, focusing increasingly on its public impact beyond traditional conservation approaches. CES provides an innovative methodological framework for assessing heritage landscapes' social value by identifying and quantifying the cultural utility of landscape elements. As industrial heritage gains recognition, industrial heritage parks have emerged as significant urban cultural landmarks that integrate conservation with sustainable development. These parks embody dual attributes of industrial cultural value and ecological value. User-generated content (UGC) from social media, with its advantages of large sample sizes and broad spatiotemporal coverage, offers valuable data for CES assessment. Analyzing industrial heritage parks through this lens can reveal their unique perceptual characteristics, informing scientific understanding of industrial heritage's intangible values and supporting site-specific conservation strategies.

This study selected multiple typical Chinese industrial heritage parks and employed the following methodology: (1) Data collection and preprocessing: crawling user review texts from Dianping; (2) Dictionary construction: extracting high-frequency words using word segmentation tools and establishing CES and landscape element dictionary frameworks, with expert teams classifying high-frequency words to build perception dictionaries; (3) Sentiment analysis: using Baidu Natural Language Processing and machine learning models for high-precision emotional calculation, with scores ranging from 0 (low emotion) to 1 (high emotion); (4) Statistical analysis: examining relationships between landscape elements (independent variables) and emotional scores (dependent variables) through multiple regression analysis, and constructing co-occurrence matrices to quantify relationships between landscape elements and CES.

The results show significant differences in visitors' perceived importance and satisfaction across CES categories, with cultural heritage and recreational tourism ranking high in both importance and satisfaction. Different landscape elements variably influence visitors' emotions, with industrial facilities, heritage sites from heritage landscape elements, and plants from natural landscape elements significantly affecting emotional experiences. Furthermore, landscape element heterogeneity significantly impacts CES perception, revealing complex coupling relationships between heritage conservation, natural landscapes, and public perception.

In conclusion, this research evaluates public perceptions of Chinese industrial heritage parks through CES framework analysis of social media UGC data, extending CES research into urban contexts while broadening industrial heritage valuation approaches. It offers theoretical and methodological support for integrating heritage practices with new technologies, enhancing understanding of industrial heritage's intangible values and informing site-specific conservation strategies.

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Keywords:
Keyword 1: Industrial heritage parks
Keyword 2: Cultural ecosystem services
Keyword 3: Public perception
Keyword 4: Social media data
Keyword 5: Sentiment analysis

P199

Pista sa Poblacion: Augmenting Festival Districts Through Space Syntax and Landscape Generative Design - Case of Bacolod's Masskara Festival

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The future of festival landscapes in the Philippines is increasingly influenced by urban development, as seen in the Poblacion district shaped by the Bacolod's MassKara Festival. Traditionally, these central districts of festival cities act as vibrant centers for pedestrian activity, commerce, and street performances during festivals. However, rapid urbanization has altered not just the streetscape character of Bacolod's festival, but also the systems and spaces at play in these temporary but highly valuable festival landscapes. This change is reflected in the redistribution of festival spaces toward emerging urban districts (EUDs) and a growing concentration in the tourism corridor, which has become new hotspots, thereby reshaping the urban fabric of the original festival grounds of the Poblacion districts.

In response to these challenges, the integration of Landscape Urbanism and Landscape Generative Design emerges as a proactive approach to preserving one of Bacolod's most significant cultural landscapes. This strategy examines the use of Space Syntax to observe, analyze, and investigate spatial patterns and the development of festival loyalty in relation to the urban landscape. Through urban analysis, ethnographic and field observations, as well as Public Participation Geographic Information Systems (PPGIS), the study looks at how festivalgoers engage with streetscapes, plazas, and vendor areas of festival grounds. The insights gained are then transformed into Generative Designs, ensuring that festival landscapes remain walkable, accessible, optimized for stakeholders, and culturally responsive to the changing urban environment.

Consequently, this research proposes temporary landscape typologies that align with the tangible and intangible attributes associated with the MassKara Festival and offers recommendations to reinvigorate the landscape character of Bacolod's Poblacion district. Additionally, the findings contribute to the establishment of a Philippine Festival Urbanism Framework, suggesting data-driven spatial interventions that improve festival accessibility, urban mobility, and environmental sustainability.

Lastly, by merging generative design, landscape architecture and planning, this research creates adaptable landscape typologies, models, and frameworks that enhance festival experiences while addressing sustainability, mobility, and equitable spatial distribution—ultimately safeguarding a culturally important Philippine festival and its landscape in the face of urban drivers of change.

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Keywords:
Keyword 1: Philippine Festivals
Keyword 2: Poblacion
Keyword 3: Landscape Generative Design
Keyword 4: Festival Urbanism

P200

Spatial Characteristics And Value Recognition Of The Maritime Silk Road Cultural Heritage From The Perspective Of Cultural Geography

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The Maritime Silk Road cultural heritage serves as a significant testament to maritime civilisation, characterized by its extensive temporal span, wide geographical distribution, and diverse cultural attributes. It embodies active navigation practices, prosperous trade, and rich humanistic exchanges, narrating the history of maritime communication and cultural interaction. Cultural geography, with its focus on the interaction between geographic space and cultural phenomena, provides a framework to deepen the understanding and value of Maritime Silk Road cultural heritage.

Despite its historical importance, the spatial distribution pattern and formation mechanism of the Maritime Silk Road's tangible cultural heritage in China remain insufficiently explored. Additionally, the interaction between the heritage's cultural values and geographic space lacks comprehensive analysis, limiting its effective preservation and sustainable utilization.

This study investigates the tangible cultural heritage along the Maritime Silk Road in China through spatial statistical analysis and Geo Detector (factor detection and interaction detection). By examining the spatial distribution patterns, regional characteristics, and formation mechanisms, the research constructs a digital spatial map to depict the heritage's historical and cultural narratives. The study further explores the interaction between regional culture, historical lineage and economic activities, and the space is further revealed to form to depict the heritage's historical and cultural narratives. The results indicate that the Maritime Silk Road cultural heritage exhibits significant accumulation characteristics across four major exchange zones: the Yellow Sea and the Bohai Sea, the Yangtze River Basin, the East China Sea and the Taiwan Strait, and the South China Sea and the Pearl River basin. The distribution of heritage varies notably across different historical periods, showcasing distinct spatial heterogeneity. The interplay between economic trade and cultural exchanges has shaped a multi-dimensional heritage value space, highlighting the dynamic interactions between cultural, historical, and economic factors in the formation of the heritage landscape.

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Keyword 1: Cultural Heritage
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Keyword 3: Cultural Geography
Keyword 4: Value Recognition
Keyword 5: Spatial Characteristics

P201

Reconfiguration of Dynamic Heritage Landscapes: A Study on the Adaptive Evolution of 19th-Century Chinese Gold Mining Settlements in Bendigo.

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Based on a case study of Chinese settlements patters across the city of Bendigo, Victoria, during the mid-19th-century Australian gold rush, this paper explores the evolution of its surrounding heritage landscape. Research focuses on 150 Sq Km of this historic site, located, on the northern foothills of the Great Dividing Range, which was dramatically altered over a period of ten years, from 1851-1861, due to the social, economic and prospecting pressures of 30,000 miners from around the world, with 6000 or one in five miners being indentured Chinese sojourners from southern China. While the region currently lists over 700 registered heritage sites, only five of these acknowledge the transient camp network of this once extensive Chinese community. The research employs a mixed qualitative and quantitative approach, involving an extensive analysis of 184 newspaper articles, art works, heritage reports, and historical planning maps, to reconstruct the settlement patterns and spatial distribution of the Chinese miners. Results indicate that the Chinese community in Bendigo formed a highly flexible social network during the gold rush to cope with rapidly changing opportunities and challenges. This flexibility allowed the Chinese immigrants to seize the economic opportunities presented by the gold rush while adapting to changing natural and social environments. It reveals how these communities appeared to engage in continuous spatial reorganization in response to resource exploration, social exclusion, and cross-cultural negotiation. This adaptability was evident not only in the relocation and clustering of settlements, but also through ongoing cultural practices such as festival celebrations. Furthermore, the study highlights that these heritage sites have preserved their cultural significance through sustained community cultural activities. This research provides a valuable reference for the conservation of similar immigrant heritage landscapes worldwide, underscoring the importance of cultural adaptability and the role of intangible cultural heritage in maintaining the vitality of heritage landscapes.

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Keywords:
Keyword 1: Chinese Gold Diggers
Keyword 2: Bendigo
Keyword 3: Heritage Sites
Keyword 4: Settlement Patterns
Keyword 5: Gold Rush

P203

Traditional villages in southwestern mountainous areas based on point cloud data spatial graph

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This article focuses on agricultural traditional villages in the southwestern mountainous areas, using them as research samples for heritage landscapes, and conducting research on the integration of human land relationships based on point cloud data spatial maps. The research aims to construct a research framework applicable to traditional villages in the region, and to reveal the inherent generation and development laws of traditional village heritage landscapes through the construction of multidimensional spatial maps. These laws are the expression of people's wisdom in endowing space, and the type characteristics are applied to heritage landscape protection and development practices. The research utilizes digital methods such as point cloud technology, combined with interdisciplinary theory, to establish a high-precision point cloud database, conduct hierarchical graph research, and construct a composite evaluation model for human environment relationships. The research results can theoretically provide reference for the construction of traditional village heritage landscapes and the Yangtze River Basin ecosystem. In practice, they can accurately guide the research on traditional village landscapes in southwestern mountainous areas, preserve digital information, and assist in the construction of disciplinary specialties. This is of great significance for promoting the sustainable development of traditional village landscapes in southwestern mountainous areas.

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Keywords:
Keyword 1: Landscape heritage
Keyword 2: Traditional villages
Keyword 3: Point cloud data
Keyword 4: Hierarchical graph
Keyword 5: Digital technique

P204

Prospective Study on Climate Change and the Evolution of Landscapes in Brittany by 2070

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Resulting from the evolution of lifestyles and population development over several centuries, landscapes constitute one of Brittany's main attractions, in terms of residential appeal, tourism, culture, and more. Modifying them, whether intentionally or not, poses the threat of losing an ancient history and identity, as well as an undeniable economic risk. Given that the climate crisis is already causing and will continue to cause significant changes to Breton landscapes, it is essential to identify the consequences and share the challenges in order to anticipate and prepare for rather than merely endure these changes.

To this end, the Regional Directorate for the Environment, Planning, and Housing Development of Brittany (DREAL Bretagne) launched a forward-looking study on climate change and landscape evolution in Brittany by 2070. This initiative aims to set in motion a reflection process that will eventually lead to the development of a shared action plan, in collaboration with the Landscape Observatory led by the Brittany Environmental Observatory (OEB).

As part of this study, an initial phase focused on selecting Breton landscapes considered archetypal. The Departmental Directorates for Territories and the Sea (DDTM) were asked to propose images of landscapes from their regions that they deemed emblematic of Brittany.

Following the collection, a workshop was held on June 26, 2023 at the DREAL headquarters, bringing together representatives from DREAL, DDTM, and OEB, with the aim of qualifying the landscapes submitted for selection, and defining the appropriate framework and scale. A preliminary list of archetypal landscapes was thus established.

In a second phase, an extensive research effort was conducted to develop three climate scenarios for 2070, integrating resource- and energy-efficient lifestyles. Each scenario was based on a series of assumptions regarding key factors such as climate conditions, demographics, technological advancements, and relationships with nature.

During a workshop held on June 10, 2024, in Rennes, which brought together around twenty participants from DREAL, DDTM, and other partner organizations (such as OEB), the two selected landscapes were projected into the three developed scenarios. This allowed for the visualization of three possible futures for each landscape.

The participants, divided into three subgroups (one per scenario), were invited to imagine how the two landscapes might evolve by 2070 based on their assigned scenario. They considered key factors—climate conditions, demographics, technology, and the relationship with nature—one by one. Participants were then asked to classify the projected changes as desirable, inevitable, or intolerable.

Each imagined future was presented through a visual representation, illustrating the landscape in 2070, a text describing the main contextual elements, and another text outlining the landscape's key features in that future, along with the major changes that occurred between 2024 and 2070.

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Keyword 1: Climate change
Keyword 2: Forecasting
Keyword 3: Breton landscapes
Keyword 4: Evolution
Keyword 5: Imagination

P205

Pista sa Poblacion: Augmenting Festival Districts Through Space Syntax and Landscape Generative Design - Case of Bacolod's Masskara Festival

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Urban growth is reshaping Philippine festival settings, as seen in the MassKara Festival's shift from Bacolod's historic Poblacion district to emerging urban districts (EUDs). Once central to pedestrian activity, trade, and cultural gatherings, the Poblacion's spatial and cultural fabric is being altered by decentralization and redevelopment.

This study responds by integrating Landscape Urbanism and Generative Landscape Design Process, using Space Syntax and Public Participation GIS (PPGIS) to analyze festivalgoer interactions with streetscapes, plazas, and vendors. Ethnographic observation and urban analysis highlight how spatial fragmentation impacts cultural continuity and accessibility.

To address these shifts, the research incorporates AI—specifically large language models (LLMs)—as interpretive and generative tools within the design process. AI aids in framing theoretical insights, synthesizing data, and constructing spatial typologies grounded in both local context and festival dynamics.

The result is a set of adaptive festival landscape typologies that enhance navigability, inclusivity, and cultural integrity amidst urban transformation. The "Festivalscapes" offer data-informed design solutions that improve accessibility, mobility, and environmental resilience for diverse stakeholders.

By fusing landscape architecture, AI, and spatial analytics, the study offers a scalable, forward-thinking approach to preserving intangible heritage while reimagining festival spaces for a more equitable, resilient urban future.

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Keyword 1: Philippine Festivals
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P206

Reinterpretations of Spomenik: Cross-Cultural Semantic and Emotional Dynamics on Social Media

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Spomenik, meaning "monument" in Slavic languages, refers to WWII memorials built in socialist Yugoslavia. In recent years, these sites have gained renewed attention on the internet. On social media, Spomenik has been widely debated, leading to its recontextualization beyond its historical roots. Despite the growing interest in Spomenik, existing research has primarily focused on the history, aesthetics, and symbolism of these heritages, with limited exploration of their evolving perception as digital cultural heritage within a global context. This study explores two questions: How do social and cultural factors influence these changes? How has Spomenik's perception evolved over time?This study employed a multi-step approach that combined natural language processing technology with a cross-cultural comparative framework to analyze the evolution of public perception of Spomenik as digital cultural heritage on social media. The research collected user-generated comments from the most discussed Spomenik videos on two mainstream online video-sharing platforms (bilibili.com and youtube.com), where the video content was identical. 2836 valid comments were cleaned and analyzed, originating from over 20 countries/regions and 1956 users, with a time span from September 2024 to February 2025. Also, 574 comments are collected from ugc platforms(douban.com and reddit.com) with a time span from February 2011 to February 2025 to analyze the sentiment trends. Additionally, we conducted semantic analysis, sentiment analysis.
The results showed significant differences in semantic content and emotional orientations across platform comment sections. On Bilibili, a Chinese-majority video-sharing platform, the majority of user comments highlighted Spomenik's historical significance, describing it as a symbol of national heritage and a reminder of the socialist era. Approximately 59.56% of Bilibili comments expressed positive emotions with only 3.05% expressed negative emotions, with users praising its aesthetic appeal, architectural craftsmanship, and historical value. In contrast, YouTube comments exhibited a more polarized and critical sentiment. Approximately 36.91% of YouTube users expressed negative emotions and 34.34% of them expressed positive emotions, often citing concerns over Spomenik's current societal relevance or potential misuse as a symbol of controversial political themes.
Meanwhile, from a temporal trend perspective, on other platforms (Douban and Reddit), although the comments on Douban fluctuate, they remain generally positive. In contrast, the comments on Reddit show noticeable changes over time, with a significant division between positive and negative opinions. This sentiment suggests a fragmented cultural perception of Spomenik, with some viewers questioning its contemporary value and others engaging in heated debates about its historical significance.
By examining these comments, we provide a nuanced view of how cultural contexts shape attitudes toward historical symbols in contemporary society. This contrast highlights the dynamic process of semantic reconstruction within the historical monument landscape in a globalized, digital environment. The study underscores the pivotal role of cross-cultural communication in shaping the meaning of cultural symbols, with the internet serving as a platform for both preservation and reinterpretation. As Spomenik's meaning continues to evolve in these digital spaces, the cross-cultural polysemy observed in this study provides valuable insights into the broader implications of how historical legacies are reshaped in the modern era.

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Keyword 1: Spomenik
Keyword 2: Digital Cultural Heritage
Keyword 3: Social Media
Keyword 4: Semantic Reconstruction
Keyword 5: Cross-Cultural Perception

P207
Cultivating Culture: Revitalizing Allan Gardens

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Botanical gardens have long reflected colonial histories such as serving as sites for the display of plants that symbolized colonial conquests and collections. Today, these landscapes are being reimagined as inclusive, vibrant, and culturally-rich places. This transformation is exemplified by the ongoing revitalization of Allan Gardens, a 160-year-old botanical garden and public park in Toronto, Canada. Led by the Friends of Allan Gardens, a volunteer-based charitable organization, this initiative integrates cultural plants, practices, and knowledge of diverse communities into the garden's evolution.

Toronto, one of the world's most culturally diverse cities, provides a unique context for redefining the role of botanical gardens in the 21st century. Traditionally, Allan Gardens adhered to a Victorian-era model that emphasized plant classification through a Eurocentric lens. The Friends of Allan Gardens are actively shifting toward an approach that fosters reciprocal relationships between people and plants. This includes reinterpreting historical influences by engaging with the landscape in ways that reflect contemporary social and ecological realities. A core aspect of this transformation is reconstituting relationships between people and plants. Cultural plants shape our histories, our memories, and our communities, they are the plants we are drawn to, the ones that ground us both culturally, and physically to the land.

The Friends of Allan Gardens engage in collaborative processes to redefine the garden to reflect the community's culture, needs, and aspirations. This participatory approach repositions the botanical garden as a space for ecological education, storytelling, and engagement. At the same time, the Friends recognize the role of Allan Gardens' Victorian-inspired greenhouse architecture and landscape design. Rather than freezing the garden in time, the approach integrates the historical built-form with new knowledge systems and community-driven initiatives. Landscape architects play a critical role in this process, guiding design interventions that respect both the garden's heritage and evolving community needs.

The revitalization of Allan Gardens exemplifies how botanical gardens can transform from static colonial relics into vibrant cultural spaces. By fostering community-led efforts and incorporating diverse cultural plants, these heritage landscapes can reflect the multiplicity of voices and histories they contain. Allan Gardens underscores the potential for botanical gardens to become relevant, dynamic, and inclusive spaces that serve contemporary communities while respecting historical legacies. This offers valuable insights for landscape architecture and heritage conservation, demonstrating how these places can honor both past and future. Cultivating the plants that are important to us, and doing so in community, strengthens our relationships with the land, our cultures, and one another.

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Keywords:
Keyword 1: Heritage Landscapes
Keyword 2: Botanical Gardens
Keyword 3: Cultural Plants
Keyword 4: Stewardship
Keyword 5: Conservation

P208

Incisures of the ecumen: landscape-mediation as a critique of the many ways of life on the cerrado, the Brazilian savannah

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The ancestral peoples of the Americas, as well as various ancient societies attest to the cosmovision of a harmonious life between humans and non-humans in the wild, not only as a path to well-being, but also as an experience of a living civilization which demonstrates the ability to confront and resist colonial modernity (Acosta, 2016).
Important landscape thinkers attribute the origin of the term to the introduction of painting by the European Renaissance (Serrão, 2016). Concurring with this, Berque (2010) proposes an even more remote origin for the landscape concept, referring to fourth-century China; considering that this society, by creating the term *shanshu*, to designate “the hills and the waters”, broadened the conceptualization of the term to not only what is sensitively contemplated by the eye, but also to what is represented by the pictographs of painting, literature and gardens.
Nineteenth-century geographers made a major contribution to the concept, especially from Alexander von Humboldt's Pictures of Nature, which broadened the understanding of landscape as a mode of territorial organization, unveiling the beauty of each region, and also the collective way of life in which each culture manufactures the land.
The approach to landscape in philosophy, from Simmel's 1913 work onwards, recognizes that nature is undivided and that the tendency of its fragmentation by modernity is symptomatic of the very separation of man and nature.
Concurrent with this, the concept of the landscape as an ecumene (Berque, 2012) emerges to understand it as a common “mediation” between Man and the Earth and Man with himself; to understand it not only as an object, the surface of things, but also as a “trajection”, a movement in which the subjective world and the objective world never cease to interact, in flux, matter and products. In this spectrum, Descola (2013) highlights that the landscape of native peoples expresses not a surface, but multiple flows, experiences and products of this common human-environment way of life, while Latour points out the infinitesimal network of interrelations between human and non-human actors and the environment.
The ecological crisis of neoliberal society is prompting a revival of the landscape-ecumenical understanding to safeguard threatened biomes, such as the Cerrado. The biome was occupied by traditional populations, but it has become one of the world's largest agricultural frontiers, constituting an immense matrix of agrosystems – monocultures/ livestock – which covers more than 50% of the territory and generates major impacts, between small mosaics of protected areas (388 in total) and indigenous, quilombola and family farming settlements (72, 30 and 217,531 in total respectively), which absorb the impacts and conserve the environment.
The work critically analyzes the mosaic of ways of life as a mosaic of landscapes on the Brazilian cerrado. The results show photographic iconographies that elucidate the landscape not only as a material and symbolic product, but also as flows and interactions between these different actors and the biome. The conclusions point to the connection between these mosaics of protected/traditional areas as a powerful, bottom-up force for safeguarding the biome.

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Keywords:
Keyword 1: political ecology
Keyword 2: landscape-ecumen

Keyword 3: ways of life
Keyword 4: cerrado, brazilian savannah
Keyword 5: safeguarding the landscape

P209

Evolution of modern protection policies for China's scenic heritage under the dual objectives of ecological civilization construction and cultural inheritance

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Scenic heritage（Feng Jing Heritage 风景遗产） is a unique "cultural landscape" in China. The core connotation of traditional Chinese scenery (Feng Jing) is closely related, which is a heritage type that highly combines nature and humanities, with a focus on transcending humanistic spirit. It is closely related to landscape structures, celebrity stories, and celebrity poetry, and contains deep connotations such as natural morality and social education. Based on the construction and protection of traditional Chinese social landscapes, scenic heritage has been inherited in the current national and urban/rural spaces. From the famous mountains and rivers of royal landscape worship, such as Mount Tai and Mount Hua, to the related scenic heritage such as West Lake and the Lanting built by literati and ink masters, as well as a number of scenic heritage carrying common memories of local urban and rural areas, it has become an eternal witness of the inclusiveness of Chinese civilization, representing the Oriental Wisdom Heritage System.In the process of modernization, due to the lack of scientific and systematic cognitive system and recognition mechanism, scenic heritage is facing the compound threat of space fragmentation and value digestion. The fragmentation and even extinction of scenic heritage caused by urban expansion, the decline of humanistic spirit and ecological dilemma are not only reflected in the fragmentation of physical space, but also triggered a profound crisis of cultural inheritance. This paper will sort out the historical origin of the concept of scenic heritage and its changes in modern policy protection. Reviewing the dual power mechanism and real contradiction between ecological protection and cultural inheritance in the modern scenic heritage protection in China, and the insufficiency of heritage value identification and heritage connotation interpretation in the heritage protection method dominated by western culture in China, summarizing the crisis faced by the scenic heritage at present, and combining with the wisdom of the traditional scenic heritage protection, we try to put forward some optimization directions to promote the protection and inheritance of the scenic heritage, which is a special type of heritage, in our country. and try to propose some optimization directions to promote the protection and inheritance of the special heritage type of scenic heritage in China.

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Keywords:
Keyword 1: Chinese Scenic Heritage
Keyword 2: Cultural Landscape
Keyword 3: Ecological Civilization
Keyword 4: Chinese Heritage Policies
Keyword 5: Oriental Heritage Wisdom

P210

A new fantasy for long hiking trail in the Northern Vosges

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The Vosges du Nord Regional Nature Park's landscape project aims to enhance the experience of long hiking trail by promoting the area's unique and varied landscapes (UNESCO MAB). The project is part of the Landscape Plan for the *Traversée du Massif des Vosges*, an emblematic route also known as the GR®53 or "red rectangle", which runs for 105 km from Wissembourg to Saverne (Alsace, France).
The initiative stands out for its sensitive and inclusive approach, aimed at making the landscape accessible and attractive to all. It is not limited to iconic "postcard" landscapes but also encompasses more intimate landscapes and those of daily life. The aim is to create an authentic connection with nature, while raising awareness among visitors and residents alike of the richness and preservation of their environment.
The implementation of the *Traversée du Massif des Vosges* Landscape Plan is a territory project comprising around twenty actions. The three most emblematic projects are the Haltes de la Traversée du Massif des Vosges, the Fenêtres du Paysage and the Bivouacs des Vosges du Nord. The Haltes, marked with a red border, serve as information and rest points, offering gorgeous views of the villages and their history. The Fenêtres du Paysage (landscape windows) are made of local wood, inviting visitors to contemplate and rediscover the surrounding countryside. Finally, the Bivouacs offer a unique overnight experience in the forest, with raised platforms and facilities for hikers.
Dialogue has been a central pillar of this project, involving local communities and partners from the earliest stages. This collaborative approach has ensured that the projects are not only consistent with local aspirations, but also deeply rooted in the community fabric, guaranteeing their relevance and sustainability.
The fundamental principles of the project are sobriety, sustainability and reversibility. The materials used, such as local wood and pink sandstone, are chosen for their harmonious integration into the landscape, their low impact on the environment and their durability. The facilities are designed to be reversible, often founded on piles or screwed into the ground, thereby limiting the impact on the structure and quality of the soil. This approach aims to create new picturesque views and a renewed imagination of the Northern Vosges for the 21st century, while respecting and enhancing landscape heritage.
In short, this landscape project is a celebration of the Vosges du Nord, aimed at promoting responsible tourism and strengthening the bond between the local people and their territory. It demonstrates a collective commitment to enhancing and preserving the region's exceptional landscapes, while offering enriching experiences for visitors and walkers alike.

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Keywords:
Keyword 1: Landscape Plan
Keyword 2: Hiking Trail
Keyword 3: Regional Nature Park
Keyword 4: Mountain forest
Keyword 5: Look-outs

P211

Santorini's Urban Landscape: Integrating Heritage, Memory, and Spatial Design

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Santorini's urban landscape serves as both a historical and geological record, shaped by its Minoan heritage, the Bronze Age settlement of Akrotiri, and its volcanic transformations. The island's vernacular architecture, including whitewashed cave dwellings, blue-domed churches, and compact street networks, represents a tangible expression of its cultural memory. This research examines how these architectural elements function as both repositories of historical narratives and structural frameworks for contemp1orary urban design while offering adaptable frameworks for contemporary urban resilience.

The study explores the role of landscape architecture in preserving and interpreting embedded cultural memories through participatory design methodologies. Santorini's distinctive topography, sculpted by the Aegean Sea and shaped by repeated volcanic activity, provides a crucial framework for examining the relationship between natural and built environments in constructing place identity. The research evaluates how spatial configurations influence collective memory, social engagement, and adaptive reuse of historical forms.

Public engagement and heritage interpretation strategies are considered essential in ensuring that intangible cultural assets are recognized and integrated into contemporary urban design. Examining the interaction between traditional settlements and evolving public spaces, the study aims to identify methods through which historical narratives can be made more accessible while reinforcing a shared sense of identity. Santorini's built environment, deeply connected to its geological past, offers a model for understanding how landscape and architecture shape long-term social and cultural resilience.

By investigating how traditional spatial arrangements promote interaction and community resilience, this research highlights the role of landscape architects in balancing heritage conservation with modern urban needs. The findings contribute to broader discussions on the intersection of memory, vernacular heritage, and contemporary landscape practices, ensuring that shared spaces remain meaningful, inclusive, and reflective of their historical and environmental context.

The objective of the study is to bridge the gap between heritage preservation and evolving urban development, offering insights into how participatory design, place-based identity, and adaptive reuse strategies can be applied to culturally significant landscapes like Santorini. The results will inform approaches to designing resilient urban spaces that maintain historical integrity while supporting contemporary social dynamics. By examining how cultural memory is embedded in architectural and landscape forms, this research provides a framework for integrating heritage values into sustainable urban development practices.

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Keywords:
Keyword 1: Place identity
Keyword 2: Vernacular architecture
Keyword 3: Volcanic landscape
Keyword 4: Climate adaption
Keyword 5: Santorini island

P212

The Champagne landscape, inherited, alive and thriving, in which winegrowing know-how has been passed down from generation to generation.

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Vines, people and their hands shape the Champagne landscape.
The landscape designer's commitment here is to make people feel and understand this monumental landscape :
- for local residents : the interest and uniqueness of their landscape
- for visitors : the discussion between man and the vine.
The landscape project's ambition is to develop sites that reflect this cultural heritage and offer paths of discovery.
The themes driving the transformation of these spaces are :
- The vineyard, its rows of vines, the 4-season hillside landscape.
- The vine, its grape varieties (Chardonnay, Meunier, Pinot Noir), its growing methods, its chalk subsoil.
- The winegrowers, their hands, their ancestral gestures, their tools, their huts, the ancestral plants associated with vine cultivation, the work of the vineyard over the months.
The Jardin de Vignes project, started in 2009, This collection of gardens and viewpoints blends with the monumental “grand” landscape listed as a UNESCO World Heritage Site on July 4 2015, titled “Les Coteaux, Maisons & Caves”. It is also criss-crossed by new itineraries for pedestrians, cyclists, mountain bikers and horses.
The idea is to help visitors understand the heritage value of this “cultural landscape” in its area of involvement, and not just in its core zones. In the medium term, one of the limits is to saturate the Coteaux Historiques with visitors. It is therefore useful to maintain the tourist dynamism by extending destinations to the commitment zone. Sharing this heritage is possible because most of the villages embrace the vineyards, and this common thread is a plus to energize, unify and bring projects to fruition. The Épernay conurbation is the second driving force, along with the communes. The landscape designer guides them to ensure that the themes complement each other in terms of content, and that in terms of form, each garden has its own specificity in keeping with the theme, offering a unique experience. One of the special features of these gardens is that they have an outdoor museography component: showing the past (crowded vines, wickerwork, acacia stakes, etc.) and the present (mediation, landscape reading, aromas), while at the same time being a living space for local residents.

The other original feature of this project is that it is multi-site, and its 7th stage has been reached in 16 years. It should be noted that 3 gardens existed before the UNESCO classification. The future is still in the making.
Mobility has its part to play in this project, whether on foot, by bike or by car. Navigating in this sea of vines from one place to the next offers a perception of the network of paths and rows of vines at different speeds. This assemblage stimulates an atypical sense of discovery. The scale of this monumental landscape becomes even more perceptible.
This landscape can also be considered as a very large garden with 16 000 pairs of hands for 280 000 of mostly small parcels (midle size 1200m2).
The vine is a plant of civilization.

References:
Ariane Smythe and Benoît Vignes graduated from ENSP Versailles 2002 and opened their firm in 2005.
They works at all scales, from the garden to the territory, from urban streetscapes to natural areas, in design, project management. This complete duo have been rewarded for the Nelson Mandela Park in Epernay (Victoire d’Or du Paysage 2014). They also carry out studies focusing on the specific characteristics of the Champagne landscape.

Keywords:
Keyword 1: Evolution
Keyword 2: Cultural heritage
Keyword 3: Champagne
Keyword 4: Garden

Keyword 5: Outdoor museography

P213

Study on the landscape characteristics viewed from the foot of the mountains in Hakuba Village

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In recent years, with the implementation of the Landscape Law, efforts to create good landscapes have become increasingly active in rural and mountainous areas, and there is also a demand for town development that makes use of natural resources. In some mountainous areas, footpaths have been developed at the foot of the mountains, where people can easily stroll and enjoy the scenery, and the foot of the mountains are considered to be a highly useful area for town planning that makes use of natural resources. The foothills of Hakuba Village are a good area for town planning that makes use of natural resources.

The aim of this study is to clarify the characteristics of the landscape in Hakuba Village by investigating the objects visible from viewpoint sites in the foothills and the impressions of the views from these viewpoint sites.

In extracting viewpoints at the foot of the mountain, six viewpoints were extracted from the 12 viewpoints designated by Nagano Prefecture in the village, by defining the viewpoints that deserved to be at the foot of the mountain with reference to the degree of slope.
The first step in the analysis is to analyse the landscape components.
Landscape photographs were taken at the six viewpoints in the field. The landscape components were then classified and the proportion of the elements was calculated for each viewpoint site.
Second, an analysis of visible land use is carried out.
To investigate what is visible from each viewpoint, the visible area is calculated using ArcGIS. In the landscape viewed from the foot of the mountains, land uses such as towns, fields and rivers account for a larger proportion of the visible area than in the landscape viewed from high mountain areas. Therefore, it is assumed that land use is likely to be positioned as a factor influencing the landscape and the impression of the landscape.
Therefore, the visible area and land use are superimposed and the proportion of visible elements is calculated.
Third, an impression assessment is carried out.
Impressions of the landscape are assessed through a questionnaire survey and compared with the land use analysis for discussion. The questionnaire survey will be conducted on village residents, non-villagers and people from overseas, and the differences in landscape evaluation will be measured to confirm the need for landscape regulation.

By comparing the analysis of impression evaluation with the analysis of landscape components and visible land use, it will be possible to understand which elements give which impression, both at eye level and on a flat surface. Through these considerations, we aim to gain basic knowledge about the landscape that can contribute to town planning that takes the foothills into account.

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Keywords:
Keyword 1: Landscape
Keyword 2: Foothills
Keyword 3: Development
Keyword 4: Land use

Keyword 5: Landscape analysis

P214

Identifying Rural Landscape Features and Public Perception Preferences in Jiangnan Canal Basin：Using PSPNet Deep Learning Model

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The Grand Canal is listed in World Heritage in 2014, as the world's longest, largest, and most extensive canal. The Jiangnan Canal has the longest continuous operation, the best natural conditions, and the most active navigation of the Grand Canal. As a "living canal," it possesses both practical value and cultural significance. Villages are developed with the canal, where the natural and artificial waterways interconnect with local settlements. This result to rural landscapes in the canal basin have both local features and typological research value. However, lying in the core of the Yangtze River Delta—China's most intensively urbanized and populous region—these areas now face growing tension between heritage protection and rapid urban development. As a result, landscapes features and their spatial carriers are facing marginalization and disappearance. Systematic clarification and quantitative analyses linking landscape features and public perception are urgently needed, supporting Grand Canal heritage's basin-wide guiding protection and active cultural transmission.

This study selected three representative villages in Zhenjiang , Huzhou and Hangzhou section along the Jiangnan Canal (Figure 1, Figure 2). Using the PSPNet deep-learning model, we reclassified ADE20K dataset to create a table of 85 landscape feature labels suitable canal villages. Data were obtained from the "Liangbulu" application, collecting nearly five years of KML data. After filtering effective image data for semantic segmentation, the results were overlaid with vector spatial data to obtain the landscape feature results. Moran's I was used to reveal the perception preferences (Figure 3).

The findings demonstrate that: (1)"Emerging from water, building along water, and thriving with water" is the main feature of rural landscapes in the Jiangnan canal basin. (2) Agricultural landscapes exhibit adaptive characteristics shaped by hydrological environment, forming polder fields and water-based fields as blue-green intertwined patterns. Composite agriculture like mulberry fishpond reflects human-water wisdom. (3) The prosperous canal commerce has accumulated abundant historical and cultural heritage upon Jiangnan Canal basin. The spatial structure of waterways and streets strengthens the water-land network that connects the village with outside world. Relying on ancient bridges, docks, and other spatial nodes, commercial and cultural activities exhibit both clustering and fluidity, guided by the canal's historical lineage. (4) The public tends to like landscape features that preserve the canal's authentic attributes, such as waterside shops and the visually iconic bridges and docks. However, due to shifts in modern agriculture and fading cultural meaning, agricultural landscapes are not easily discerned for their historical value from only a visual standpoint, gradually transforming into simplified tourist attractions. From a holistic basin landscape perspective of cultural heritage, this study innovatively constructs a tripartite analysis framework include feature interpretation, spatial mapping and public perception, while establishes an evaluation system for canal rural landscape value assessment using machine learning methodologies. Future applications to linear cultural heritage and surrounding villages may extend this methodological framework to comprehensive protection measures and regional development strategies, avoiding fragmented and symbolic conservation in cultural heritage management and achieving the transmission and revitalization of cultural heritage values.

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Keywords:
Keyword 1: Jiangnan canal

Keyword 2: canal village
Keyword 3: landscape feature
Keyword 4: perception preference
Keyword 5: deep learning

P215

Spatial Prioritization of At-Risk Agricultural Heritage: An Integrated Valuation and Risk Zoning Framework for Urbanization-Threatened Systems in China

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As living biocultural archives, agricultural heritage systems provide critical ecosystem services while maintaining agrarian and cultural traditions. China, a preeminent agricultural nation, has nurtured numerous distinct agricultural heritages. However, these invaluable heritages are vulnerable owing to being increasingly threatened by rapid urbanization process. The topic of urbanization is frequently studied, but rarely with the aim of preserving agricultural cultural heritage. Currently, existing value assessments are confined to a singular perspective, lacking comprehensive quantitative research across provincial or larger scales.

This study aims to bridge the gap by establishing an innovative spatial decision-support framework integrating multiscale heritage valuation with urbanization risk modeling, using 189 China National Important Agricultural Heritage System (China-NIAHS) sites as large sample. Our tripartite valuation model quantifies heritage significance through 12 indicators incorporating ecological resilience, cultural intactness, and socioeconomic viability. Concurrently, a machine learning-driven risk zoning model simulates urbanization encroachment patterns under SSP2-RCP4.5 scenarios through 2050, incorporating 6 spatial drivers from nighttime light gradients to high-speed rail accessibility.

Synthesis reveals three critical findings: First, 63 high-value heritages (aggregated value score >6/10) concentrate in Southern China. Second, 189 China's Nationally Important Agricultural Heritage Systems (China-NIAHS), though legally protected, demonstrate increasing vulnerability with 67% located within urban expansion buffer zones (30-km radius). The agricultural heritages threatened by urbanization are concentrated in the Yangtze River Delta, the Pearl River Delta and the Beijing-Tianjin-Hebei region. Third, spatial mismatch analysis through overlapping heritage value layer and urbanization risk layer identifies 15 "priority protection zones" where exceptional heritage value (top 15%) coincides with severe urbanization pressure (risk percentile >80%).

Through this study, we aim to provide directed guidance and decision support for the dynamic protection and sustainable development of the agricultural heritage in China under the threat of the urbanization. We propose a tiered conservation strategy: (1) *Red zones* (imminent risk) require legal reinforcement with 500-meter urbanization exclusion buffers; (2) *Amber zones* (medium risk) benefit from agro-ecotourism development with carrying capacity controls; (3) *Green zones* (low risk) establish cross-provincial biocultural corridors. This spatially-explicit approach redefines heritage conservation from site-specific protection to landscape-scale adaptive governance, providing a transferable model for Global South countries undergoing rapid urban transition.

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Keywords:
Keyword 1: heritage landscapes
Keyword 2: agricultural heritages
Keyword 3: urbanization risk
Keyword 4: heritage value
Keyword 5: rural sustainable development

P216

Beyond Scenic Aesthetics: The Hydro-Administrative Legacy of China's West Lakes as Adaptive Models

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The ancient "West Lake" model is a complex water conservancy-landscape spatial system in China formed by artificial intervention in the natural hydrological process. Its "water control-landscape creation" coupling mechanism and spatial gene are important scientific issues in the study of historical human settlements and also serve as significant bases for the holistic protection of historical spaces. This study investigates the historical wisdom embedded in the landscape construction of China's West Lakes (WLs) and its implications for modern urban lake management. Focusing on 81 WLs documented before 1911 AD, the research employs a landscape historiography approach, integrating GIS mapping, historical records, and qualitative analysis to explore their spatial typology, functional evolution, and cultural significance.

Key findings reveal that WLs were predominantly concentrated in the Jiangnan Water Town Cultural Zone (38 lakes), aligning with China's historical water conservancy development and the "harmony between humans and nature" philosophy. Their spatial distribution correlates with major river basins, particularly the Yangtze River Basin (34 lakes). Temporally, WLs emerged as early as the Han Dynasty, with their evolution influenced by socio-political stability, economic prosperity, and administrative priorities. Initial functions were categorized into three types: water conservancy (flood regulation, irrigation), urban defense (moats, soil excavation reservoirs), and Feng Shui or secular purposes (religious release ponds, leisure spaces).

Spatially, WLs exhibited four water-source relationships: foothill catchments, river confluences, spring-stream systems, and artificial diversions. Three city-lake spatial patterns were identified: separated, adjacent, and embedded, forming regional landscapes such as "Mountains/Hills–WL–Cities–River" or "WL–Cities–River." The scenic elements of WLs encompassed natural features (mountains, waterfalls), water infrastructure (dikes, sluices), human settlements, secular structures (temples, pavilions), and cultural activities, often immortalized in poetry and the "Eight Scenic Views" system.

The study highlights historical wisdom in WL construction: (1) a holistic approach integrating ecological, urban, and hydrological systems; (2) eco-techniques like silt reuse for stabilizing shorelines; (3) dynamic management through iterative dredging and adaptive reuse; and (4) landscape aesthetics blending nature with literati culture. These principles offer critical insights for modern challenges such as water pollution, ecological degradation, and cultural discontinuity in urban lakes. Recommendations emphasize interdisciplinary collaboration, systemic water management, and embedding local culture into contemporary designs to enhance ecological resilience and cultural identity.

By bridging historical TEK (Traditional Ecological Knowledge) with modern practices, this research underscores WLs as models of sustainable human-environment symbiosis, advocating their preservation as dynamic cultural landscapes rather than static relics. The findings contribute to global discourse on urban lake governance, heritage conservation, and ecological restoration.

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Keywords:
Keyword 1: West Lakes
Keyword 2: historical landscape
Keyword 3: spatial pattern
Keyword 4: ecological wisdom
Keyword 5: cultural heritage

P217

Quantitative Analysis of Public Perception of the Agricultural Heritage Systems in Jiangsu Using Multimodal Data and Machine Learning

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This study takes the **Global Important Agricultural Heritage Systems (GIAHS) in Jiangsu** as its research object. By integrating multimodal data (text and images) from online platforms with machine learning technologies, it systematically analyzes the characteristics of public perception of heritage landscapes. The research aims to address the limitations of traditional studies, such as homogeneous data types and insufficient technological application, while exploring quantitative methodologies that combine multimodal data fusion and machine learning model integration. Utilizing 80,292 valid data samples (text reviews and images) collected from 3 major platforms (Ctrip, Dazhong Dianping, and TripAdvisor), the study employs LDA topic clustering, OFA image description models, LSTM sentiment analysis, and social network analysis to investigate four dimensions: spatiotemporal evolution of heritage site popularity, landscape perception dimensions, perception network structures, and emotional tendencies.

Methods and Data

The research first applies an LDA topic clustering model to perform unsupervised topic mining on textual reviews, identifying tourists' perceptual dimensions. The OFA model translates images into natural language descriptions, which are then analyzed through word frequency statistics and PMI-based semantic network analysis to construct landscape perception networks. An LSTM model is used for sentiment analysis of both text and image descriptions to explore emotional distribution patterns. During data preprocessing, raw data was collected via Octoparse, cleaned to retain valid samples, and processed through manual correction and machine translation for image descriptions.

Key Findings

1. **Spatiotemporal Evolution of Popularity:** Heritage site popularity is strongly influenced by policies and events. Post-2016, annual review volume surged, driven by events such as **GIAHS designation** and the **"Ecocultural Jiangsu" initiative**. Popularity gradients shifted from a "high-low" dichotomy to a "high-medium-low" hierarchy. Core sites like **Xinghua Duotian Agrosystem** and **Qinhu Wetland** maintained high popularity, while remote sites like **Li Xia Ancient Rice Terraces** lagged.
2. **Perception Dimensions and Networks:** LDA clustering identified four perceptual dimensions: **agricultural cultural value** (highest prominence), **ecological experiences**, **traditional farming activities**, and **material elements**, covering seven sub-dimensions. Text reviews emphasized cultural value, while image descriptions focused on material elements (e.g., terraces, wetlands) and ecological features (e.g., biodiversity). Semantic networks exhibited a "core-periphery" structure: homogeneous core themes (e.g., sustainability, biodiversity) and divergent periphery themes (e.g., cultural practices, rural tourism), aligning closely with LDA results.
3. **Sentiment Characteristics:** Overall sentiment leaned neutral-positive. Text reviews showed significantly higher positivity than image descriptions. Sentiment indices correlated with accessibility and spatial agglomeration: core areas scored higher, while remote sites scored lower due to inadequate facilities and cultural promotion. Image descriptions exhibited higher sentiment dispersion due to model limitations in recognizing agricultural cultural value.

Conclusions and Contributions

This study innovatively integrates multimodal data and machine learning to establish a quantitative framework for analyzing heritage landscape perception. Results reveal that public perception of Jiangsu's **Agricultural Heritage System** centers on cultural value, yet exhibits spatial heterogeneity and emotional biases. The research offers new approaches to overcoming the subjectivity and inefficiency of traditional methods, while proposing management strategies: optimizing transportation and facilities for remote sites, enhancing agricultural heritage education, and coordinating heritage planning to improve holistic experiences.

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Keywords:
Keyword 1: machine learning
Keyword 2: heritage landscape perception
Keyword 3: multimodal data
Keyword 4: gricultural Heritage
Keyword 5: sentiment analysis

P218

Optimization of Historical Urban Mountainous Landscape View Corridors: A Case Study of Jinan, China

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The management of historic urban landscapes has become increasingly important for urban governance (Keleş et al., 2018), particularly in optimizing landscape view corridors to preserve spatial integrity. However, rapid urbanization introduced modern structures such as high-rise buildings and elevated roads, disrupting historical view corridors and compromising cultural heritage continuity. Existing research on visual corridor analysis and landscape control lacks comprehensive technical indicators and spatial optimization strategies, limiting management effectiveness.
As a National Famous Historical and Cultural City, Jinan is characterized by a unique "mountain-urban visual communication" pattern (Zhang et al., 2017), where Thousand Buddha Mountain and Mingfu City form a crucial visual axis. However, uncontrolled urban development has disrupted this pattern, fragmenting key view corridors. Despite landscape protection plans since 2002, height control standards remain undefined, and coordinated strategies are absent. This study proposes a bidirectional optimization framework integrating GIS-based analysis for "city viewing the mountain" and "mountain viewing the city" perspectives to establish a systematic management approach.
In the "city viewing the mountain" analysis, ArcGIS viewshed tools identified key viewpoints and visual corridors in the historical urban area (Danese et al., 2009). The study extracted the highest point of Thousand Buddha Mountain and overlaid it with building height data to simulate the ideal viewshed. Considering a 3 km visual perception range and field surveys, three core viewpoints and three street view corridors, including Luoyuan Street and JingShi Road, were selected. The ArcGIS skyline tool was used to simulate ideal sightline boundaries, defining hierarchical building height restrictions at three levels (0–12m, 12–24m, and 24–50m). A composite control map ensured unobstructed mountain silhouettes, thereby preserving the integrity of the historical view corridors.
For the "mountain viewing the city" analysis, the highest point of Thousand Buddha Mountain served as the observation point, which scenic view corridors identified based on pedestrian flow paths. A weighted viewshed analysis integrating building height, color, and roof form generated a "landscape sensitivity" classification map, identifying key control areas such as the southern bank of Daming Lake. The study examined coherence between the urban skyline and the historical city silhouette. using skyline simulation tool to compare existing and ideal urban profile. A raster difference analysis delineated dynamic height restriction zones, with compensatory design strategies such as sloped roofs and color coordination, were proposed to maintain historical continuity.
Findings reveal significant variations in how different urban areas impact historical view corridors due to differences in planning functions. Among them, commercial buildings along Luoyuan Street had the most pronounced disruptive effect. Based on this, the study proposes a zoning and tiered height control strategy, defining three levels of building height control. In alignment with Jinan's Urban Landscape Protection Guidelines, targeted interventions are recommended based on the degree of visual disruption. The bidirectional interaction assessment of "city viewing the mountain" and "mountain viewing the city" provides a more comprehensive approach than single-perspective methods. This framework offers quantitative support for refining Jinan's historical landscape corridors and serves as a governance model for other mountainous historical cities.

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Keywords:
Keyword 1: Mountain-urban visual communication
Keyword 2: Viewshed analysis
Keyword 3: Historic urban landscapes

Keyword 4: Arcgis

P219

Research on the Influence Mechanism of “Scenery-Relics” Landscape on Public Spatio-Temporal Behavior and Perception Preference in Industrial Wasteland

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[Objective] During the de-industrialization period, large areas of urban industrial wastelands have slowed the process of urbanization and economic development. These sites, associated with environmental pollution, loss of biodiversity, and urban spatial fragmentation, have negatively influenced residents’ quality of life and well-being, eventually turning into abandoned spaces. The reclamation of industrial wastelands can effectively promote the development of these accounting components. Moreover, the “Scenery-Relics” concept, as a novel form of green space, has demonstrated significant potential for transformation, offering new directions for enhancing ecosystem cultural services.
[Methods] The spatio-temporal behavioral trajectory technique provides an accurate and efficient method for the research on public behavioral preferences in post-industrial landscapes. Based on the aforesaid technique, to quantify the naturalness of sample spaces, spatial metrics are employed to measure their natural degree. By examining the trajectory patterns of tourists in post-industrial landscapes with varying degrees of naturalness, the number and density of trajectory points are used to investigate the behavioral patterns of tourists.
[Results] The results indicate a significant association mechanism between the spatio-temporal behavior trajectories of tourists and the “ Scenery-Relics” of industrial land renewal. Various spatial elements and subjective emotional indicators within the naturalness of industrial landscapes exert certain influence on tourists’ spatio-temporal behavior. Overall, the proportion of buildings is inversely related to tourists’ stay time; the higher the proportion of buildings among all landscape elements, the shorter tourists’ stay. In terms of spatial indicators regarding the naturalness of industrial landscape, there is no significant correlation between behavior distribution and the proportions of paved areas, pedestrian pathways, vehicular roadways, or green spaces. However, the proportion of buildings shows a significant negative correlation with stay behavior distribution, while the proportion of water bodies exhibits a significant negative correlation with traffic behavior. The number of patches is not significantly related to behavior distribution, but the landscape shape index shows a significant positive correlation with strolling behavior. Shannon's Diversity Index and Simpson's Diversity Index demonstrate significant positive correlations with rapid traffic behavior. While naturalness and artificial elements are not significantly correlated with behavior distribution, natural elements show a significant positive correlation with stay behavior, and the number of plant layers is positively correlated with stay behavior. However, the data on subjective emotional indicator do not follow a normal distribution ($p < 0.05$). Additionally, relevant research on the San Gaolu Xiuchi and Qunming Lake areas further confirms that within the natural elements of landscape spaces, the area of water bodies and the richness of plant spatial diversity are positively correlated with tourists’ stay time. Larger water body areas and more diverse plant landscapes can effectively attract tourists to stay.
[Conclusion] Examining the behavior patterns of tourists in post-industrial landscapes from the perspective of spatio-temporal trajectory can help elucidate the spatio-temporal relationships between post-industrial landscapes and tourist behaviors. This approach provides a theoretical reference for the design and transformation of post-industrial landscapes, the optimization of urban green space structure, and the organic renewal of industrial wastelands.

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Keywords:
Keyword 1: landscape architecture
Keyword 2: post-industrial landscape
Keyword 3: spatio-temporal behavior trajectory
Keyword 4: perception preference
Keyword 5: Scenery-Relics

P220

Research on the Planning and Practice of Natural and Cultural Heritage Corridors in River Basin

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River basins, as cradles of civilization, harbor rich natural and cultural resources, yet their conservation and development often involve inherent conflicts (Oriaghe,2023). This study focuses on the Bortala River Basin, which serves as the primary water source for Ebinur Lake, the largest saline-alkali lake in Xinjiang, and functions as a critical ecological barrier within the Tianshan Mountain ecological zone, playing a vital role in China's ecological security. Simultaneously, as a vital conduit of the ancient Silk Road, the Borotala River Basin has accumulated profound cultural heritage over the course of history, with its natural landscapes and cultural relics collectively constituting a unique legacy value. However, under the dual pressures of global climate change and human activities, the basin's natural ecosystems and cultural heritage are now confronting unprecedented challenges.
The acceleration of global climate change, compounded by the synergistic effects of regional infrastructure development, has inflicted systemic degradation on natural ecosystems, precipitating a cascade of ecological issues such as soil erosion, vegetation degradation, biodiversity loss, and increased frequency of flooding. Concurrently, the inadequate preservation and presentation of invaluable local cultural heritage, coupled with relatively stagnant rural development, insufficient transportation infrastructure, and underdeveloped tourism resources, have further impeded the high-quality economic advancement of the region. Climate change exacerbates the complexity of defining landscape values, posing scientific challenges to ecological resilience, cultural adaptability, and the sustained functionality of social roles within landscapes.
To address these intertwined natural and cultural challenges, this study establishes a planning framework for watershed ecological and cultural integration tailored to local practices. On the natural front, GIS-based multi-source data are used to assess ecological sensitivity and the importance of ecosystem service Functions, identifying ecological source areas for corridor protection. By employing the Minimum Cumulative Resistance (MCR) model and circuit theory, key ecological corridors and those requiring optimization are identified, constructing an ecological security pattern for the basin. Scenario simulations further validate the effectiveness of the proposed ecological network planning (Yang et al., 2021). On the cultural front, tourism and village resources are evaluated to identify high-potential nodes for planning. The MCR model is applied to simulate scenic route alignments, creating a cultural corridor network for the basin. By integrating the blue-green ecological network with the cultural scenic route network, a dual heritage corridor that synergizes natural and cultural resources is developed (Xu et al., 2019).
This study proposes five optimization strategies for the Bortala River Basin: soil and water conservation, carbon sequestration and oxygen release, biodiversity enhancement, stormwater management, and scenic path system (Yu et al., 2021). Furthermore, a flexible, customizable, and highly adaptive node design toolbox is established, encompassing ecological, cultural, and exhibition components.
By constructing an innovative planning framework centered on rivers while balancing natural and cultural functions, this research provides significant value for guiding local planning and implementation. It explores pathways to realize landscape values in ecological conservation and cultural heritage, providing climate-adaptive insights for local and global river basin planning.

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Yang，K.，Cao，Y.G.，Feng，Z.，Geng，B.J.，Feng，Y.，& Wang，S.F.（2021）.*基于最小累积阻力模型的生态安全格局构建研究进展*.中国南京： 中国环境科学学会.*生态与农村环境杂志*，37（5），555-565。
Yu，H.，Wang，Y.，Eme，C.，Fan，X.，Rong，Y.，Zhang，Q.，& Liang，Z.（2021）.*基于多尺度转换和嵌套的生态网络构建*。瑞士巴塞尔：MDPI。*水*，13（9），1278.

Keywords:
Keyword 1: river basin

Keyword 2: ecological corridor
Keyword 3: cultural corridor
Keyword 4: scenic path system
Keyword 5: planning framework

P221

Research on Digital Interpretation and Exhibition of Archaeological Site Parks Based on Semantic Communication Theory

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[Background] Interpretation and presentation are important means for activating heritage resources and promoting heritage protection. Their essence is information transmission, which is essentially a communication issue. With the assistance of digital technology, the interpretation and presentation of archaeological heritage parks have been continuously developing, but they still face challenges such as insufficient depth of audience participation and deviations in understanding.
[Objective] Based on this, this study conducts research from the perspective of semantic communication theory, which is dedicated to enhancing the comprehensibility of information. It constructs a new path for the digital interpretation and presentation of archaeological heritage parks to contribute to the protection and innovative revitalization of these parks.
[Method] By leveraging semantic communication theory, this study clarifies the technical, semantic, and utility issues faced in the information transmission process of interpretation and presentation in archaeological heritage parks, namely, information grammar, semantics, and pragmatics. It identifies that semantic communication is the key to achieving the pragmatics of interpretation and presentation, and that the selection of grammar should be the core for reconfiguring the communication path to achieve accurate identification and transmission of information meanings. Based on this, relevant cases are sorted out, and the general model of semantic communication is combined to consider information semantic identification and the sharing of knowledge bases at both sending and receiving ends. A new path for the digital interpretation and presentation of archaeological heritage parks is reconstructed; and further, the digital technology selection strategies of "attracting audience attention, evoking audience empathy, and promoting knowledge base updates" are proposed. Through the analysis of existing practices, effective digital technologies and application scenarios in each link are summarized, an information grammar library is built, and theoretical references and practical ideas for enhancing public understanding and promoting the development of different types of archaeological heritage park practices are provided.
[Conclusion] The study finds that accurately identifying multiple pieces of information of archaeological heritage parks is the foundation of semantic communication; the comprehensive application of technologies such as AR, VR, and MR in scenarios such as serious games, mini-program services, and cloud platforms has significant effects on enhancing the comprehensibility of heritage information; combining technologies such as artificial intelligence and big data analysis to analyze public feedback is the key to maintaining the effectiveness and updateability of knowledge bases at both sending and receiving ends and testing the effectiveness of semantic communication.

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Keywords:
Keyword 1: Semantic Communication Theory
Keyword 2: Archaeological Ruins Park
Keyword 3: Interpretation and Exhibition
Keyword 4: Digital Technology

P222

How Can Digital Footprint Be Used in Studying Multi-level Perception of Historic Urban Landscape?

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The formation of the concept of historic urban landscape (HUL) has shifted the research focus on heritage values towards a diverse interpretation of dynamic social and cultural layering values. It emphasizes that the core of heritage research lies in the perception processes generated by the interaction between humans and the built environment. However, traditional research on heritage perception mainly focuses on a single scale, overlooking the uniqueness and correlations of perception at different levels of landscapes. As a result, it is difficult to accurately capture the spatial conditions and scale variations in which perception occurs. In the context of new data environments, converting unstructured digital footprints into structured data suitable for quantitative analysis helps in the layered interpretation of complex information anchored in HUL. Based on this, this study utilizes digital footprints to systematically explore the multilevel perception mechanisms of HUL in Nanjing, China at three levels: macro, meso, and micro.

1) Macro level: Taking the Walled City of Nanjing (the historic urban area of Nanjing) as the research area, this level focuses on the spatial attributes of recreational behavior. By using text-based digital footprints to fit the flow characteristics of temporal and spatial behavior of recreationist, the spatial structure features of HUL in Nanjing can be deduced.
2) Meso level: Taking the Qinhuai River Urban Linear Cultural Landscape (ULCL) within the Walled City of Nanjing as the research object, this level focuses on the visual characteristics of landscape perception. By introducing the image content recognition algorithm, the hierarchical clustering analysis of landscape imagery and visual preference can be analyzed.
3) Micro level: Taking Nanjing Old City South (the historical and cultural districts in the southern part of Nanjing) as the research object, this level focuses on the perception evaluation of landscape values. By integrating expert judgment and public perspectives, an organized evaluation system on visual landscape perception can be constructed.

This study innovatively couples the multilevel analysis of HUL with the spatio-temporal information and interactive characteristics of various types of digital footprints. It establishes a research paradigm that uses digital footprints to study the multilevel perception features of HUL. It confirms that research on landscape perception supported by digital footprints helps in accurately identifying the recreational needs and aesthetic preferences of HUL from a human-centric perspective.

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Keyword 1: Digital footprints
Keyword 2: Historic urban landscape
Keyword 3: Spatial behaviour
Keyword 4: Landscape perception
Keyword 5: Multi-level perception

P223

Revisiting Apocalypse: 20 years past "Landscape Architecture: An Apocalyptic Manifesto"

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In 2004, Hohmann and Langhorst presented us with the "Landscape Architecture: An Apocalyptic Manifesto", which presented several challenges for the future of the profession. In the meanwhile, other perspectives, such as "The New Landscape Declaration" have underlined both the potential role for positive change and the adversities that impend upon Landscape Architecture. 20 years after the Apocalyptic Manifesto, in a world where change is fast-paced and heavily driven underground, through the cables and wires of the digital realm, where almost everything is politicized and sometimes even weaponized, what part can contemporary Landscape Architecture have? Is it a fading "Jedi Order" amidst a rising Empire that surpasses it, or is it still a privileged tool for the understanding and dialogue of different areas of knowledge (including digital, through the Internet of Things, for instance), bridging gaps under the synthesis concept of Landscape, bringing together biophysucal, economic and socio-cultural aspects? Amidst growing orwellian traits, can Landscape Architecture be an Esperanto for this Babel?

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Keywords:
Keyword 1: Landscape Architecture
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P223
Green Pulse——Broken Hill Mine Ecological Restoration Project

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In the mid-19th century, when European colonists entered Broken Hill, Australia, the involvement of a large number of workers and investors changed the way the Aboriginal Wiljari people lived and produced；the small town of Broken Hill prospered while the culture and ecology were severely affected.

As the core force of Australia's mining development, the Broken Hill Mine has led to the construction of surrounding infrastructure for a century, and is also an important birthplace of the Australian labor movement, which has promoted social change to a certain extent with the rights and interests of indigenous people.

In recent years, despite the decline in mining activities, the value of the pit as an industrial heritage has been gradually recognized. The pit site and surrounding area are listed on the Australian National Heritage List and are important cultural and historical landmarks. The local government and community have begun to explore the ecological restoration and cultural regeneration of the mine, transforming it into a tourism and educational destination to promote the sustainable development of the regional economy.

The purpose of this study was to explore the feasibility of organic microclimate creation and to the ecological restoration and spatial sustainable transformation of the pit through digital ecological design and a variety of sustainable design tools. The social attributes of the site are used to realize the reuse of space such as public participation, sightseeing education and local cultural publicity.

Part 1: Background Research and Site Analysis
Through the literature review and social platform data, the local historical development context with the Broken Hill pit as the core was sorted out, and the site problems were traced by the overlap and impact of the important nodes of the social and ecological environment. At the same time, the "cradle of the labor movement" in history is used as the starting point, and the site is included in the Australian miners' movement memorial site.

Part 2: Ecological Restoration and Microclimate Symbiosis Park
Based on remote sensing technology, geographic information system (GIS) and life cycle assessment (GIS) and other digital data collection and analysis and sustainable restoration technologies, a site geological and ecological spatial model was created. Including forest cover, soil conditions, spatial distribution and change trend of ecosystems, rainwater regulation system and other information bases, to build a "microclimate community symbiosis park", creating an adaptive pit ecological environment, and form a unique regional ecological restoration node.

Part 3: Site Space Reuse and Social Integration
Building on the existing underground tunnels and monuments in the Broken Hill Mine, the emphasis is on multi-functional public space generation and community participation, including a bridge system that bridges the historical and the modern, underground and outdoor landscapes that integrate the mine's topography, and exhibitions and memorial spaces that incorporate local culture, fostering interdisciplinary collaboration among ecologists, designers, engineers, and policymakers.

Study explores digital ecological design for Broken Hill mine's restoration, microclimate park creation, and sustainable spatial reuse.

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Keyword 1: Industrial heritage
Keyword 2: Ecological restoration
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Keyword 4: Microclimate symbiosis
Keyword 5: sustainable development

P224

Agroforestry as a Catalyst for Agricultural Landscape Sustainability: Empirical Evidence from China's National Agricultural Heritage Systems

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Agricultural heritage landscapes, appreciated worldwide as being rich in interrelated natural and cultural values, are prominent examples of the results of traditional human–nature interactions that continue to be used today. However, the current affection for modern agricultural intensification has been threatening the sustainability of many agricultural heritage landscapes. In the context of global agricultural intensification, agroforestry systems have emerged as a promising approach for reconciling productivity with ecological stewardship. While existing research has documented agroforestry's local environmental benefits, its comprehensive impacts on agricultural landscape sustainability remain underexplored. This study empirically examines 118 China-Nationally Important Agricultural Heritage Systems (China-NIAHS) to quantify agroforestry's role in sustaining multifunctional landscapes. Through a novel evaluation framework integrating 7 sustainability indicators across ecological, economic, and socio-cultural dimensions, we assessed agroforestry's systemic importance and its statistical associations with landscape sustainability outcomes. Agroforestry can be found at a 91.5% of China-NIAHS (109 of 118). Our analysis reveals that 58.5% of China-NIAHS demonstrate significant agroforestry integration (Importance Index >3). Strong positive correlations (Pearson's r = 0.63-0.83, $p<0.01$) emerge between agroforestry implementation and key sustainability metrics including resource utilization (r=0.83), hydrogeological protection and water regulation (r=0.82), biodiversity (r=0.79) and Income diversity (r=0.78). Notably, systems with multilayer agroforestry configurations show 23-41% higher overall sustainability scores compared to monoculture alternatives. These findings substantiate agroforestry's dual role as both ecological infrastructure and socioeconomic stabilizer in traditional farming systems. These findings provide suggestions for policymaking for agricultural landscapes on a national scale and empirical support for scaling agroforestry solutions in national sustainable agriculture strategies while preserving biocultural heritage.

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Keyword 1: heritage landscapes
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P225

Mapping the Sacred: A PPGIS Approach of Value Hotspots and Coldspots in Qinghai Lake.

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Sacred natural sites (SNS) hold significant value in biodiversity conservation and cultural heritage preservation, where sacredness serves as a critical motivator for their protection. Before the establishment of the current system of nature reserves, local communities relied on informal norms to spontaneously guard sacred natural areas, forming a low-cost, highly recognized on-site protection mechanism to maintain the balance between nature and culture. However, contemporary protected area planning often ignores the spiritual value of sacred sites, replacing it with technical management approaches that sever cultural-spiritual ties and undermine Indigenous cultural sovereignty. Current research on sacred sites mostly focuses on ecological values, lacking robust methodologies for quantifying sacred value. Qinghai Lake, one of the four sacred lakes of Tibetan Buddhism and a nationally significant SNS in China, is revered by Tibetan, Mongolian, and other ethnic groups as the abode of deities. Traditional practices such as pilgrimage circumambulation and sea worship rituals, alongside religious taboos (e.g., fishing and grazing bans), sustain ecological balance, reflecting a profound spiritual and practical bond between humans and nature. In this study, we take Qinghai Lake as an object, employing a Public Participation Geographic Information System (PPGIS) approach to investigate the spatial patterns and formation mechanisms of its sacred values through quantitative spatial analysis and qualitative surveys. The research methodology contains three steps. First, participants were recruited through stratified sampling, and spatial markers combined with participatory photography were used to collect multi-stakeholder spatial coordinates and evaluations of sacred perceptions. Second, questionnaires and in-depth interviews were conducted to examine the cultural narratives of sacred values and spatial cognition differences. Third, ArcGIS was employed for kernel density estimation and hotspot detection to identify sacred value hotspots and coldspots, and we use natural language processing techniques and semantic segmentation to analyze unstructured text and image metadata, extracting influencing factors of sacred perception. Based on the analytical results, this study will propose a zonal protection strategy comprising core conservation areas and potential enhancement zones, emphasizing the integration of sacred values into policy-making to facilitate sustainable management of sacred natural sites. Theoretically, this research will enrich quantitative methodologies for assessing sacred values of natural sacred sites and expand the application of crowdsourced data in landscape perception studies. Practically, it will provide scientific decision-making support for the conservation planning of Qinghai Lake.

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Sustainable Pathways for the Heritage Continuity of Salt-Reclamation Landscapes in Subei：A study on Systemic Coupling Relationship and Socio-Political Drivers

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During the Ming and Qing dynasties, the coastline of Jiangsu Province in China rapidly prograded eastward due to sediment deposition, forming the vast Northern Jiangsu Coastal Plain (also known as *the Subei Coastal Plain*). With the abundant ecological resources generated from this geomorphological evolution, the region' s development proceeded through three main phases: 1) state-regulated salt production under the Lianghuai system (an imperial governance framework), 2) capital-driven reclamation projects by salt-reclamation corporations (a modern industrial planning paradigm), and 3) government-led collective farm construction (socialist collectivization in the 1950s – 1980s).Under the co-evolution of natural and socio-economic changes, inhabitants of the coastal plain unintentionally created diversified salt-production and reclamation landscapes, and accumulated a wealth of experience in constructing water-adaptive settlements. Against the backdrop of China's Rural Revitalization Strategy, this study aims to explore sustainable pathways for the historical continuity of the region by integrating adaptive intelligence with contemporary governance.
By synthesizing landscape methodologies and interdisciplinary research findings that integrate historical geography, archaeology and other related disciplines, this study aims to construct "*Salt-Reclamation Landscape System in the Subei Coastal Plain*"*(SRLS-SCP)*, which comprises four interdependent subsystems: *Salt Fields*, *Civilian Reclamation Areas*, *Corporate Reclamation Zones*, and *State Farms*. Building upon this model, the study further analyzes the spatial morphology and functional evolution of salt-reclamation landscapes at the macro (entire region), meso (regional), and micro (basic production unit) scales, through deductive reasoning and GIS-based data computation, thereby illustrating the internal interaction mechanisms of the system in terms of formation, continuity, development, and adaptation.
The study reveals that *SRLS-SCP* is characterized by zonal distribution with multi-layered superposition. In the horizontal dimension, its landscape subsystems exhibit transitional and overlapping distribution from the west inland to the east coast. In the vertical dimension, superimposed on a marine-terrestrial base, it manifests as a three-tiered spatial stratification — the water conservancy, agricultural, and settlement systems. The coupling relationships among landscape subsystems can be categorized into two types: 1) a unidirectional chain-type coupling, shown as "Salt-to-Reclamation Transition: Salt Fields → Civilian Reclamation → Corporate Reclamation Zones"; and 2) a multidirectional network-type coupling, reflected in "Reclamation Mutual Interactions: Civilian Reclamation ↔ Corporate Reclamation Zones ↔ State Farms". In the first relationship, Salt Fields serve as the origin of the landscape system, undergoing a unidirectional and irreversible transition toward two reclamations. In particular, the transition from Salt Fields to Corporate Reclamation Zones can be both direct and indirect—the latter mediated by Civilian Reclamation. In the second, Corporate Reclamation Zones act as the central reference point for subsystem interactions, guiding the adaptive development of both Civilian Reclamation and State Farms. At certain levels, the three types gradually exhibit similar developmental trends.
Under the consensus emphasizing the dynamic adaptability in conservation, *SRLS-SCP* represents a typical case of landscape heritage that has dynamically evolved in response to environmental changes. Given the critical role of socio-political forces in its evolution, landscape researchers should act as a bridge between key driving forces and heritage value objectives. This study may also offer useful insights for other regions.

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