DCE23 5th DOCTORAL CONGRESS IN ENGINEERING

Book of Abstracts

DCE23 - Symposium on Spatial Planning

U.PORTO
FEUP FACULDADE DE ENGENHARIA
UNIVERSIDADE DO PORTO

5th DOCTORAL CONGRESS IN ENGINEERING

Book of Abstracts

of the

Symposium on Spatial Planning

Editors:
Fernando Brandão Alves, Ana Rita Sousa, Carla Gonçalves, João Corgo, João Pedro Martins, Mariana Diniz

Porto
June 2023

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This volume contains the peer reviewed and accepted abstracts, presented at the Symposium on Spatial Planning, of the 5th Doctoral Congress in Engineering – DCE23, held at FEUP-U.Porto, Porto, Portugal, between June 15th and 16th, 2023.

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Welcome

The **Symposium on Spatial Planning** is part of the 5th Doctoral Congress Engineering (DCE23) held on the 15th and 16th of June 2023 at the Faculty of Engineering of the University of Porto (FEUP), Portugal.

This Symposium is the responsibility of the Doctoral Program in Spatial Planning, which are pleased to invite the PhD students, as well as all the MSc students assigned to the Department of Civil Engineering, to participate. Likewise, submissions from other doctoral and master programs from the University of Porto and from other universities (University of Minho, University of Aveiro, University of Lisbon, etc.), and from institutions and entities within the scope of the Symposium are welcome, as this is an opportunity to build bridges across disciplines and institutions advancing research on spatial planning. The two days consist of several panel sessions in which PhD, master's students and non-teaching research fellows can present and discuss their research abstracts or posters, establishing informal networks and initiating future collaborative research.

The Symposium of Spatial Planning is also an opportunity to celebrate the 50th anniversary of the creation of the specialization in Territorial Planning (1972-2022) in the Civil Engineering Department of the Faculty of Engineering, University of Porto, on which renowned invited keynote lectures will be presented.

Spatial planning is an interdisciplinary field that requires the collaboration of several areas of knowledge, such as geography, urban planning, architecture, economics, sociology, among others. Therefore, collaboration between scientific areas can enrich research and lead to more comprehensive and innovative results. Moreover, interaction between institutions can help share resources and knowledge, promote the exchange of experiences and eventually lead to more effective coordination in the implementation of public policies related to spatial planning.

Therefore, the opportunity to build bridges between research areas and institutions through this Symposium, especially addressed to students from the referred scientific areas, is a way forward in relation to spatial planning, as an aggregating and transversal area. At post-graduate level, students may thus achieve more integrated research. Later on, as professionals working in private companies, they can develop innovative and resilient solutions, while as technicians from local and central public administration bodies, they can contribute to an efficient implementation of public policies.

Porto, June 2023

Symposium of Spatial Planning-Organizing Committee

Fernando Brandão Alves (Chair)

Ana Rita Sousa | Carla Gonçalves | João Corgo | João Pedro Martins | Mariana Diniz

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General Programme

Please check the detailed general programme at: https://paginas.fe.up.pt/~dce/2023/

Begin	End	June 15th, Thursday
8:00	9:00	Welcoming **(reception)**
9:00	9:30	Opening Session **(auditorium)**
9:30	10:00	Industry Keynote lecture (auditorium)
10:00	11:00	Round table: 'Early Stage Research in Industry' **(auditorium)**
11:00	11:30	Coffee-break **(coffee lounge)**
11:30	12:30	Plenary Session: "Sustainable Engineering for an Intelligent World" **(auditorium)**
13:00	14:00	Lunch **(coffee lounge)** +
14:00	15:00	Poster Session + Workshops
15:00	16:30	Parallel Symposia **(check your Symposium room)**
16:30	17:00	Coffee-break **(coffee lounge)**
17:00	18:30	Parallel Symposia **(check your Symposium room)**

Begin	End	June 16th, Thursday
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10:30	11:00	Coffee-break
11:00	13:00	Parallel Symposia **(check your Symposium room)**
13:00	14:30	Lunch **(coffee lounge)** +
14:30	15:30	Poster Session Award Ceremony **(auditorium)**
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Symposium on Spatial Planning Programme – June 15th

Technical session I – Room B.011

Moderated by Vítor Oliveira[1] and Vinícius Netto[1]

[1]Principal researcher at the Research Centre for Territory, Transports and Environment, Faculty of Engineering, University of Porto.

15h00-15h30 | Invited Keynote Lecture I - "Doctoral Program in Spatial Planning 2012-2022: 10 years building multiple networks between institutions, research agendas and contexts"

Professor Isabel Breda Vázquez,
Associate Professor with Jubilation at the Faculty of Engineering, University of Porto

15h30-15h45| Q&A

15h45-18h30 | Ph.D. students/candidates presentations

Topic: Urban dynamics - exploring form, mobility and resilience.

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- Mariana Pizzo Diniz, and Miguel Serra. *Towards a quantitative approach to Morphological Regions: a methodology to classify the urban form.* [34];
- Nuno Gomes, Vítor Oliveira, and Álvaro Costa. *The Impact of an Urban Form Shaped by Topography on Mobility Patterns: measuring the competitiveness between car and pedestrian.* [320];
- José Soutinho. *Resilience of transport infrastructures - from antiquity to modern times.* [284];
- João Pedro Martins, Álvaro Costa, and Carlos Oliveira Cruz. *Relationship between Airports and Spatial Planning: A Comprehensive Analysis.* [280];
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Symposium on Spatial Planning Programme – June 16th

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Moderated by António Ferreira[1] and Catarina Cadima[2]

[1]Principal researcher at the Research Centre for Territory, Transports and Environment, Faculty of Engineering, University of Porto.

[2]Junior researcher at the Research Centre for Territory, Transports and Environment, Faculty of Engineering, University of Porto.

9h00- 9h25| Invited Keynote Lecture II - "Territory Management: from Sapiens to HomoDeus"

Landscape architect Alexandra Duborjal Cabral,

Director of the Territorial Management and Planning Department, The Norte Portugal Regional Coordination and Development Commission (CCDR-NORTE)

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Moderated by Sofia Valente[1] and Catarina Cadima[1]

[1]Junior researcher at the Research Centre for Territory, Transports and Environment, Faculty of Engineering, University of Porto.

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Engineer Filipe Araújo,

Porto's Vice-Mayor and City Councillor for Environment, Climate, Innovation and Digital Transition.

12h45-13h00| Q&A

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- Lívia Campos, Ana Maria Pacetti, Ana Claudia Proença, Roberto Costa Filho, and Jhonatan Ferreira. *Sharing my yard*. [317];
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Symposium Invited Keynote Lectures

Professor Isabel Breda Vázquez

Associate Professor with Jubilation at the Faculty of Engineering, University of Porto

Communication: **Doctoral Program in Spatial Planning 2012-2022: 10 years building multiple networks between institutions, research agendas and contexts.**

Isabel Breda-Vázquez is Associate Professor with Jubilation at the Faculty of Engineering of the University of Porto (FEUP), in Portugal, having been Director of several editions of the Doctoral Program in Spatial Planning. She is researcher at CITTA-Research Centre for Territory, Transports and Environment (FEUP). Her recent research focuses on urban change and the transformative potential of public policies, on urban governance, justice and social learning, on heritage strategic management, and on planning evaluation and knowledge sharing. She is the author (or co-author) of diverse scientific publications.

Landscape architect Alexandra Duborjal Cabral

Director of the Territorial Management and Planning Department, The Norte Portugal Regional Coordination and Development Commission (CCDR-NORTE)

Communication: **Territory Management: from Sapiens to HomoDeus**

I'm **Alexandra Cabral**, a woman in a family of four, mother of two young adults, a landscape architect, Portuguese, environment and territory trainer, and former university teacher.

I've started my career in the municipality of Porto, changed to the Regional Services for the Environment and Natural Resources of North Region, and then into North Region Coordination and Development Commission (CCDR-NORTE), where I've been the Chief of the Environment Systems and Society Division, and currently the Director of the Territorial Management and Planning Department (DSOT).

I have experience in monitoring the implementation of the Natura 2000 Network in the North Region and in its dissemination/environmental education; In Environmental Impact Assessment (EIA) and Strategic Environmental Assessment (SEA); I'm the Working Group Coordinator for the North Regional Circular Economy Agenda.

Currently, the tasks within the DSOT work reaches 2.1 million hectares and over than 3 500 000 inhabitants – CCDR-NORTE is a NUTSII entity, and I coordinate the developing of the studies, and the proposals and milestones of the North Regional Territory Program (PROT-NORTE).

Engineer Filipe Araújo

Porto's Vice-Mayor and and City Councillor for Environment, Climate, Innovation and Digital Transition

Communication: **Porto - a sustainable city going to carbon neutral.**

Filipe Araújo is Porto's Vice-Mayor and City Councillor for Environment, Climate, Innovation and Digital Transition; Chairman of Águas e Energia do Porto (municipal water and energy company of Porto); Chairman of Porto Ambiente (municipal waste collection company of Porto); Chairman of the Board of Directors of AdePorto (Porto's Energy Agency); Chairman of Porto Digital Association (supports the Porto City Council in the development of e-government projects and online services); board member of LIPOR- Intermunicipal Waste Management of Greater Porto; Chair of Eurocities Environment Forum; Vice-Chair of Eurocities Environment Forum (2016-2018); advisory board member of Portuguese Association for the Development of Communications, advisory board member of MIL (Media Innovation Labs) of Porto University, and member of the Innovation Advisory Board, of Porto University.

He has a degree in Electrical Engineering (Faculty of Engineering of the University of Porto) and holds a M.Sc. in Telecommunications (UMIST - University of Manchester Institute of Science and Technology, Manchester, UK).

He was a guest Professor at the Faculty of Science of University of Porto, between 2007 and 2011 and a Municipal Deputy of Porto between 2005 and 2009. Other relevant executive functions include Service Manager in a telecommunication company, and board member of the Youth Foundation.

Oral Communications – Extended Abstracts on Urban Dynamics: exploring Form, Mobility, and Resilience.

Redefining Urban Identity: Beyond Social Constructs and Static Perceptions.

Hasan Mansour[1], Fernando Brandão Alves[2], António Ricardo da Costa[3]

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Urban identity, traditionally explored within the realm of psychology, environmental psychology, and other social sciences, has often been understood as a predominantly socially constructed concept (Cheshmehzangi, 2020). This paper aims to challenge this widely accepted notion by arguing that the social dimensions of urban identity are only applicable on smaller scales, while on larger scales, alternative factors play a more significant role in shaping the urban environment. The study examines the various definitions of urban identity present in the literature, including "sense of place," "place identity," and "genius loci," and proposes that these terms may only represent the social aspects of urban identity in specific contexts. Additionally, the paper contends that previous research has treated urban identity as a static object, rather than acknowledging its dynamic nature as a process. By emphasizing the importance of change and its impact on urban identities, this study seeks to shed new light on the topic and reorient research focus.

Studies on identity began as philosophical and psychological debates and later expanded to include the urban environment (Cheshmehzangi, 2012). Multiple theories were developed to explore the relationship between people and their surroundings, focusing on the impact of place on one's self (Lalli 1988). Research in urbanism shifted the focus to the built environment and heritage, acknowledging the significance of historical value in shaping urban identities (Koolhaas 1995). The concept of the character of a place, or genius loci, gained prominence as a distinguishing factor for urban identity.

One of the earliest views is Lynch's theory of environmental image, which sees identity as a subjective element in forming a place's image. The concept of "sense of place" gained prominence during the 1970s, focusing on the connection between people and the place (Butina-Watson and Bentley 2007) (Rose 1995). However, more recent discussions link urban identity with "placeness" and "place identity," emphasizing a place's distinctive characteristics and materialities (Relph 1992). Despite the tendency to view urban identity as socially constructed, it is important to consider the urban environment, spatial scale, and the extent and direction of change over time. Urban identity should be approached as a dynamic, multifaceted, and contextualized phenomenon, shaped by both social and physical elements (Cheshmehzangi, 2020).

The first section of the paper presents a literature review that critically examines the prevailing theories and definitions of urban identity in social sciences (Proshansky et al., 1983; Relph, 1976; Tuan, 1974). Through a detailed analysis of these theories, the study highlights the limitations of understanding urban identity solely as a social construct, especially in the context of large-scale urban environments where social factors have diminished effects on the overall urban identity.

Next, the paper delves into the role of physical elements in the formation of urban identity (Lynch, 1960; Jacobs, 1961; Whyte, 1980). The study proposes that these aspects, in conjunction with social constructs, are essential for understanding the complete picture of urban identity. The paper demonstrates that factors such as built environment, layout, and infrastructure significantly contribute to the identity of urban areas on a larger scale, which is often overlooked in the existing literature.

Following this, the paper discusses the dynamic nature of urban identity, emphasizing its ever-changing qualities (Castells, 1983; Sassen, 1991; Zukin, 1995). The study critiques the tendency to treat urban identity as a static object and calls for a shift in research focus towards the processes of change that shape urban identities. The research illustrates the temporal and spatial evolution of urban identity, demonstrating the transformative impact of factors such as globalization, gentrification, and technological advancements on urban environments (Harvey, 1989; Smith, 1996; Hall, 1998).

The paper further explores the importance of incorporating these physical and design elements into urban planning and policy-making, with the goal of fostering a more inclusive, diverse, and resilient urban environment (Gehl, 2010; Montgomery, 2013). This inclusive approach acknowledges the coexistence of various social, economic, and cultural groups within urban spaces, and strives to create a harmonious blend of distinct identities, rather than prioritizing one over another (Landry, 2000; Florida, 2002).

Moreover, the paper underscores the need for interdisciplinary collaboration in the study of urban identity, bridging the gaps between social sciences, urban design, architecture, and planning. This integrated perspective can lead to a more comprehensive understanding of urban identity, contributing to the development of cities that respond to the diverse needs and aspirations of their inhabitants (Groat & Wang, 2002; Carmona et al., 2010).

In summary, this paper offers a critical examination of the concept of urban identity, challenging the prevailing notion of urban identity as solely a socially constructed phenomenon. By incorporating the role of urban design, architecture, and physical elements, and emphasizing the dynamic and ever-changing nature of urban identity, this study aims to provide a more nuanced and comprehensive understanding of the subject. The paper calls for a shift in research focus and interdisciplinary collaboration to further develop our knowledge of urban identity and its implications for urban planning, policy-making, and social well-being.

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Towards a quantitative approach to Morphological Regions: a methodology to classify the urban form

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The practice of urban planning is fundamentally connected to the sphere of designing and producing spaces. In order to understand, operate and propose changes within the built environment, one must grasp the physical characteristics and spatial dynamics of the cities (Oliveira, 2021; Whitehand and Gu, 2010). The historical perspective, of the city, or its long-term occupation, should be equally considered, as quite often planners are not operating in unoccupied spaces, but rather intervening in fully inhabited areas. Several approaches have been employed to investigate this intrinsic complexity of cities with the intent of providing an informative basis for a comprehensive and integrated planning. Measuring, analyzing, and assessing the spatial arrangements in urban space is the subject area of Urban Morphology, which is the scope of analysis presented in this work (Kropf, 2017; Oliveira, 2016). The core assumption underlying urban morphological studies is that the physical arrangements of urban form systems, namely the street network, the plot system, and buildings, are part of a spatial-temporal model which is the product of social, economic, and political processes. A consistent finding in urban morphological studies, is the capacity of cities to physically consolidate cyclical changes in urban space (Gauthiez, 2004; Whitehand, 2009). Such perspective acknowledges that urban settlements are, in fact, a mosaic of patterns or units, encoding unique spatial identities within its formative processes. Classic urban morphology, namely the historic-geographical approach, laid the foundation for the concept of Morphological Regions, which is based on the typomorphological classification of these unitary areas, delimited by their degree of internal morphological similarity (Barret, 1996; Gu, 2018; Oliveira and Yaygin, 2020; Wang and Gu, 2020; Whitehand, 2009; Whitehand et al., 2011). However, from a methodological point of view, the delimitation of these regions remains labor-intensive, grounded on qualitative visual analysis and on the personal expertise of the analyst. The subjectivity of this approach hinders the application of the method of morphological regionalization in a scalable, reproducible, and systematic way. Firstly, we address the underlying premises of the method of morphological regionalization, trying to produce an objective interpretation of such premises. Next, it is tested a method to derive regions of homogeneous urban types based on fundamental quantitative variables of urban form within objective parameters. This is fundamentally a descriptive exercise aiming at producing a rich characterization of urban space from minimal data input of four elements of urban form, namely the street network, street-blocks, plot system and buildings. We propose to move from the identification and classification of types of individual elements, to their combination into homogeneous areas within the city, that is, of typomorphological regions. We empirically test the algorithm in Birmingham-UK, combining patterns within the four morphological elements and structuring them as a graph system in order to represent the spatial relations among all four elements. We attempt to contribute to the construction of a more robust method of urban form classification stemming from the revision of a classic concept in urban morphology. Our approach supports the development of a systematic and quantitative approach, applicable to large-scale comparative

analysis of contemporary urban forms, which often elude previous historical typologies (Berghauser Pont et al., 2019; Berghauser Pont and Haupt, 2005; Gil et al., 2012; Serra et al., 2017). This work is a methodological step towards the definition of Morphological Regions. The relevance of the concept and its informative character to urban planning practice, urban design, and urban heritage conservation highlights the development of a planning tool within an integrated approach between these disciplines and Urban Morphology (Whitehand, 2015).

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The Impact of an Urban Form Shaped by Topography on Mobility Patterns: measuring the competitiveness between car and pedestrian

Nuno Gomes[1], Vitor Oliveira[2], Álvaro Costa[3]

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Research on the relationships between urban form and energy demand by transports, shows the impact of several attributes of the physical form of cities on modal split: density, mix of uses, connectivity, to name just a few (Ewing and Cervero 2010). However, the effect of an urban form adapted to topography is relatively unknown, because these three elements (urban form, topography, and mobility) are not properly considered together. Often misunderstanding it with slope, literature always presents topography as an obstacle to active modes (Macias 2016). This does not mean that topography and slope are being considered as the same thing, but that the only characteristic of urban form somehow affected by topography with energy relevance is slope (Faria et al. 2014).

The hypothesis of this research work is that there are other features with energy relevance (in addition to slope) that result from the relationship between urban form and topography. In cases where a good adaptation is verified, these other features can be, for example, the proportion of street sections and the whole intricate of an organic urban form with its numerous changes of direction and the consequent reduction of sight distance, as well as the interactions with buildings and urban activities. These morphological features can limit the speed or access of cars. On the one hand, this reduces the competitive advantage of cars when compared to other transport modes, considering the difference in costs. On the other hand, it acts as a structural traffic calming measure, contributing to the safety of pedestrians and cyclists, promoting these options, in contrast to a more 'artificial' street layout demanding for mechanical speeds.

To test this hypothesis, two complementary methods are proposed. The first is a new tool that considers seven structural variables of urban form, based on literature. These variables are weighted on a scale of 1 to 3 and classified on a scale of 1 to 5 through manual counting on a one kilometer route, to calculate a score using a weighted arithmetic mean. The tool thus allows to calculate speed and access penalties for car and pedestrian that can be applied to any route of any city. The second is a GIS-based simulation addressing large urban areas, but only with four variables encoded directly in networks of edges and nodes or considered in the calculation of routes through an origin-destin matrix based on those networks. The case studies where this is applied are two urban areas morphologically opposite with respect to topography - Salvador da Bahia, Brazil and San Francisco, USA.

The first results confirm the research hypothesis since the car gets a penalty of speed (in the tool) or of travel time (in the GIS simulation) that is higher in the organic urban tissues than in the opposite ones, compared to the pedestrian. It is thus possible to measure the competitiveness between car and pedestrian in

such distinct morphological situations, to conclude that topography may not be an obstacle, but rather a valuable natural resource in a paradigm of energy transition.

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Resilience of transport infrastructures - from antiquity to modern times

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Recent studies are unveiling the impact of the road network of antiquity in modern-day development. The main routes and nodes of this ancient network present a strong correlation with today's main corridors. In fact, when superimposing both networks over a map there's an almost absolute match between routes and nodes from antiquity and now. In this article the author reviews these studies and discuss the applicability of the theory in the actual Portuguese territory, namely by comparing main modern corridors with the ancient road network of Roman times. It will also introduce new arguments to explain the origins and resilience of this ancient network of roads that was operational up to the nineteenth century when the emergence of the motorized vehicles led to the creation of the modern road system.

The article discusses its origins and the supposed construction of these roads by the Romans by presenting sound evidence that this network was already operational well before their arrival at the Peninsula. Moreover, it presents some

evidence of its resilience over the ages, analyzing the possible factors for such durability by comparing this ancient network with modern-day transport infrastructure.

In 2021 researchers at the University of Copenhagen published an article about the "Persistence and Non-Persistence of Public Infrastructure" by comparing Roman roads infrastructure with modern-day development. The methodology adopted to assess modern development was based on the intensity of night light on satellite images, showing the main nodes and corridors highlighted over a generally dark background. By comparing this estimation with the ancient Roman road network, the authors found a substantial match between these maps, meaning that modern-day corridors and development centers are pretty much the same as in antiquity (Dalgaard et al., 2021).

The authors claim that the construction of the Roman road infrastructure led the way of the future prosperity of these routes but may this is not exactly true, since there's today sufficient evidence to at least raise some doubts on the supposed construction of these roads during the Roman Empire, employing some sort of plan to connect all these points to Rome. Country specific studies, as the recent published paper about Italy, shows evidence of a similar correlation (Benedictis et al., 2022).

Certainly, the Empire is responsible for the great improvements of the roads in antiquity, turning it into a much more effective, safe and resilient infrastructure. However, this is not a complete new network of roads but the reuse of the ancient pre-Roman infrastructure interconnecting pre-existent ports and populated places.

The article created some buzz in the media; here's two examples:

1) The Telegraph (UK): "All roads led to Rome but they also led to Europe's modern-day prosperity, study finds" - "a new study has shown a remarkable correlation between the network of stone roads built by the Romans 2,000 years ago and cities, transport hubs and economic development of today" (https://www.telegraph.co.uk/news/2018/08/10/roads-led-rome-also-led-europes-modern-day-prosperity-study/)

2) Washington Post (USA) - “How 2,000-year-old roads predict modern-day prosperity” (https://www.washingtonpost.com/business/2018/08/06/how-year-old-roads-predict-modern-day-prosperity/)

For their research, the authors used Harvard University’s “Digital Atlas of Roman and Medieval Civilizations” to map the Roman network (https://darmc.harvard.edu/) which provides a general representation of the main routes identified in ancient Roman itineraries, thus providing only a macro level analysis. But does this happen at the micro level? Do we have this correlation when restricting the analysis to a specific area of map? To try to answer these questions this article will compare modern-day transport corridors in the Portuguese territory with the ancient Roman road infrastructure, using the most recent version the “Map of Roman Roads” created by the web platform viasromanas.pt. Both maps are presented in Figure 1.

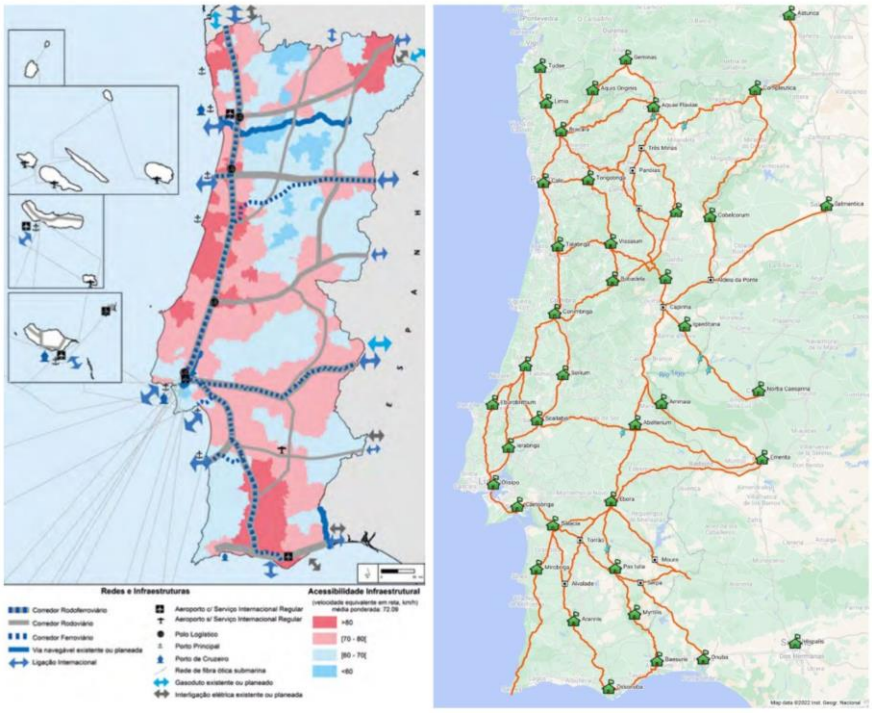

Figure 1: Map comparison, showing main transport corridors of the physical connectivity and infrastructural accessibility network (source: IP, PNPOT, 2017) and the Roman Roads Network (source: viasromanas.pt).

Comparing both maps it becomes clear that there is a strong correlation between them, following the current main corridors. The main trunk cuts the territory from north to south, approximately parallel to the coastline, from Tui down to

Faro in the Algarve. This route is mentioned in the ancient itineraries and still today the main corridor of the Portuguese territory, particularly between Porto and Lisbon.

This trunk is crossed by the transversal corridors connecting to Spain (and ultimately Europe), linking the main ports to the hinterland, forming a T-shape structure. The main corridors emulate the ancient roads linking the Lusitanian ports to the interior of the Peninsula, namely the connection from the port of Lisbon to Mérida, from the port of Aveiro to Vilar Formoso through Viseu and finally, from Porto to Bragança, in the most northeastern part of the country that

follows the ancient route from Cale (Porto) to Asturica Augusta (today Astorga). See complete map in Figure 2.

Figure 2: Screenshot of Map of Roman Roads (source: viasromanas.pt)

Many more examples could be pointed out, but the key aspect to retrieve from this comparison is the resilience of these routes over the centuries. In fact, we have strong evidence pointing to the use of these ancient routes up to the twenty

century. This is related to the specific geographical features of this territory that is also transversely crossed by the main rivers (with the notable exception of the Guadiana River that runs north-south after entering our territory, defining the southeastern border with Spain. These pre-conditions imposed by the landscape have a strong influence in the final layout of the network, creating this T-shape structure that is still in use today.

This high resilience of the network configuration suggests that geographical factors are still the main drivers influencing the evolution of the transport infrastructure. This also suggests that our current models for economic development are not so far away from those in antiquity, as trade and transportation are still key factors of any modern economy.

In fact, there's enough evidence showing that these roads were in use long before their arrival at the Peninsula, thus destroying the myth of a construction from scratch of the road network. Surely, their importance in the modernisation of the network is undeniable and prevailed for centuries, but they logically used the already existing routes to build their transport infrastructure.

In this sense, the network is not a result of planning and choices but the result of the evolution of these natural features of the landscape, such as harbors, natural corridors and main obstacles. Even the supposed construction of these roads by

the Romans is nothing but a myth of the Renaissance period that still persists today (e.g. Mouratidis & Kehagia, 2014 p. 4).

The article will also analyze these pre-conditions and will discuss the respective impact in modern planning of the transport infrastructure.

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Relationship between Airports and Spatial Planning: A Comprehensive Analysis

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1. Introduction

Airports are vital to the modern transportation system and are essential for the movement of people, goods, and services (Graham, 2023). Beyond their traditional air travel functions, airports have increasingly become key drivers of economic and regional development. This importance has been discussed in several studies within the scope of economic, environmental, social and territorial impacts (e.g., Brueckner, 2003; Freestone, 2009; Postorino, 2010; Freestone and Baker, 2011; Boloukian and Siegmann, 2012; Kasioumi, 2015; Berawi et al., 2017). Nevertheless, although there are many studies on the impacts of airports on territories, few address the influence of airports on spatial planning processes, despite the evidence that they play an important role in spatial planning and affect the spatial organisation of cities and regions. On the other hand, they also play a strategic role as an instrument for the development of the local and regional economy, stimulating the competitiveness of these territories at a continental and global level, contributing to greater territorial and social cohesion and promoting a greater diversity of land uses (Hakfoort et al., 2001; Garriga, 2003; Pujinda, 2006; Ashford et al., 2011; Freestone and Baker, 2011; Bowen, 2013; Fasone et al., 2014; Zietsman and Vanderschuren, 2014).

Due to the strategic nature of airports, policymakers usually try to work together with airport authorities to achieve common goals, also involving the different stakeholders, seeking to generate territorial development and attract more investment, enhancing economic development and infrastructure development. This close relationship between all stakeholders is important, as a good relationship between an airport and its local community is essential for the future of the airport and for outlining strategies for both the airport and the territory (Caves and Gosling, 1999; Perez, 2014). Thus, planners and decision-makers should seek to facilitate the coordination of infrastructure planning with the public interest, as well as take care to include airports on a broader territorial scale in order to balance territorial development, economic development and environmental protection (Ragàs et al., 2019).

The objective of the present paper is to conduct a comprehensive analysis of the influence of airports on planning processes and the relationship between airport and planning instruments.

2. Materials and Methods

To develop this research, we carried out a literature review of the main studies, as well as conducted a search on different strategic and planning instruments. The literature review was based on the following topics: (i) airports and spatial planning, (ii) airports and regional development, (iii) airport planning and airport-

centred urban development concepts, and finally, (iv) the challenges for the relationship between airports and spatial planning.

Also at this stage, we tried to get an overview of planning instruments and then tried to focus on airport infrastructure, where we specifically analysed spatial planning documents, legal instruments, public-led strategies, and other relevant planning documents related to airports, as these documents often play a significant role in spatial planning and overall spatial protection. For this selection we chose some countries with different planning traditions, different state organisations (Federal or Unitary) and different geographical realities to understand how different countries seek to integrate airports into their spatial planning (at different scales of intervention), as well as the variety of instruments that exist.

3. Discussion

Airports are seen as instruments to achieve regional development. However, they are also seen as a source of conflicts, and there is a need to mitigate negative externalities, especially issues associated with noise and pollutant gas emissions. As such, different countries have defined various instruments such as plans, legislative frameworks, regulations and strategies, covering different scales (from local to national scale). The proximity between political authorities (national, regional and local governments) and airport operators is something that contributes to safeguarding airport infrastructures, while investing in a spatial planning policy compatible with airport operations, especially when conflicts of interest may exist and there is a need for greater articulation between the two actors. In addition to the need for a close relationship between policymakers and airport operators, the existence of different instruments that condition each other also requires a close relationship between the different scales of intervention and the different political authorities. However, this relationship between the scales is not always seen as a positive factor since some higher guidelines may clash with the interests of local authorities.

Spatial planning is essential for airport strategy as it plays a decisive role in safeguarding operational safety and preserving the possibility of future developments in airport infrastructure. It also allows ensuring efficient use of resources, improving the passenger experience, while guaranteeing the amenity of the surrounding areas, especially by monitoring compliance with regulatory requirements. In addition, spatial planning can also be important in helping to identify the most suitable locations for airports, taking into account factors such as noise, air quality and transport access, while mitigating negative impacts through the implementation of compensatory measures.

For a better spatial planning, we must take into account that airports have different impacts on the territory, whose temporality also differs, that is, there are impacts whose effects are felt immediately and others that are only felt in the long term (Button et al., 2009; Postorino, 2010). Thus, we can divide the effects into four types: (1) primary effects that can be understood by the immediate benefits that the construction of an airport has; (2) secondary effects that can be understood as the economic benefits that an airport has in the region, through the creation of jobs to meet the primary needs of the airport, but also the indirect jobs that are created by the existence of the airport (logistics centres, tourism, businesses, etc.); (3) tertiary effects which are characterised by the stimulation of the regional economy, resulting from the need for companies and passengers to have air transport at their disposal; (4) perpetual effects which have to do with the capacity of influence that an airport has on the regional economy and as a driver for the development of the territory. Therefore, airports

have the capacity to stimulate urban growth, induce changes in land use, and foster real estate development. An example of this, are the airport-centred urban developments (ACUD), which are urban forms that revolve around the airport as a central node (Kasioumi, 2015). ACUD typically include a mix of commercial, industrial, residential and recreational land uses, creating new urban centres and transforming the urban landscape (Freestone, 2009). In the literature, there are different concepts of ACUD, such as Airport Region (Roeseler, 1971; Schlaack, 2010; Stevens et al., 2010; Freestone and Baker, 2011; van Wijk et al., 2014), Airport City (Conway, 1980; Güller and Güller, 2003; Poungias, 2009; Schlaack, 2010; Freestone and Baker, 2011; Peneda et al., 2011; Appold and Kasarda, 2013; Ràgas et al., 2019), Airport Corridor (van der Blonk et al., 2006; Schaafsma et al., 2008; Schaafsma, 2010; Peneda et al., 2011; Ràgas et al., 2019), Aerotropolis (Kasarda, 1991; Kasarda, 2008; Freestone and Baker, 2011; Kasarda and Lindsay, 2011; Peneda et al., 2011; Berawi et al., 2017), among others.

4. Conclusion

Airports are indeed a driver for economic and territorial development. For this reason, different countries see airport infrastructure as fundamental to their economic and territorial development and transport strategy. They, since the second half of the last century, have started to shape our cities, contributing to economic and territorial development. Thus, it becomes clear that modern cities have been influenced by airports, which assume themselves as important nodes for spatial planning and for the territorial strategies that each country, region and metropolitan area outlines for the territory. Airports are now an extremely important component in the dynamics of cities, so it is necessary to integrate them into spatial planning in order to defend the interests of all stakeholders, as well as to protect and improve infrastructure in the long term.

Nonetheless, the relationship between airports and territory also generates mutual pressures. Firstly, because there is a need to respond to the market (due to the growth in the number of passengers, flights and movements). Secondly, because there are conflicts between the different stakeholders (pollution, noise, legislative framework, lack of space, etc.). Thirdly, because airport privatisation represents a major challenge for territorial governance, since the interests of the airport operator may not coincide with those of the territory.

Therefore, the relationship between spatial planning and airports is important to ensure the efficient and sustainable development of regions and to minimise the negative impacts of airports on neighbouring communities, as well as to articulate strategies and policies, especially when airport operators are private.

We have also been able to conclude that countries and regions that have a close relationship with airports have been able to establish common strategies, managing to safeguard airport infrastructure, but also to promote sustainable and mobility policies, as well as territorial and economic development.

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Cycling plans from an equity perspective: a mixed-methods approach

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1. Introduction

Promoting cycling as a transportation mode for utilitarian trips is a widely recognised strategy to foster the development of resilient, accessible, inclusive, and low-carbon cities (Banister, 2011; Sagaris, 2021). However, regardless of the importance of the social dimension within the sustainable development approach (Lucas et al., 2013; Manaugh et al., 2015), empirical evidence suggests that the equity dimension has been overlooked within bicycle planning and decision-making processes (Doran et al., 2021; Lee et al., 2017; Sagaris et al., 2020). Furthermore, scholars argue that bicycle-related benefits, such as health gains, accessibility levels, and network coverage, are unevenly distributed in cities in the global North and South (Cunha and Silva, 2022).

During the last decades, researchers have advanced distributive frameworks, including accessibility measures and composite socioeconomic indicators for assessing the equity impacts of cycling over different city zones and population groups (Duran-Rodas et al., 2020; Kent and Karner, 2019; Teixeira and Cunha, 2022; Tiznado-Aitken et al., 2022). Nevertheless, it remains unclear whether equity is addressed and prioritised in European Bicycle Master Plans.

Although the COVID-19 outbreak has spurred the uptake of alternative modes of transportation through the implementation of pop-up bike lanes in several European cities (Nikitas et al., 2021), the present study argues that cities with distinct cycling cultures face specific planning challenges to develop a set of holistic strategies to tackle equity issues in such a period of uncertainty.

2. Methods

Therefore, this research proposes a mixed-method approach to examine the equity impact of Bicycle Master Plans in the European context. Firstly, a GIS-based planning support tool which assesses the Relative Equity Impacts of Bicycle Planning (TIRE) is introduced (Cunha and Silva, 2023). The proposed tool incorporates a vertical equity analysis with great spatial detail, combining socioeconomic data accessibility indicators with the descriptive analysis of the cycling plan that contextualises the empirical evidence. The application of the tool entails three steps. Firstly, it measures the relative bicycle accessibility level towards seven key essential activities or opportunities across the municipality. Then, the tool assesses the relative distribution and concentration of socioeconomically advantaged and disadvantaged groups over the territory. Lastly, the tool intersects both spatial and social perspectives into a bivariate analysis revealing four distributive clusters, ranging from the most equitable to the most inequitable distribution of bicycle accessibility.

This study assesses a starter cycling city with a residual bicycle modal split and a car-oriented social-environment to capture the distributive discrepancies within the local cycling plan. Accordingly, the Bicycle Master Plan from Lisbon, Portugal, served as a testbed for calibrating and applying the tool TIRE to a real-case scenario.

The qualitative approach of this study encompasses a workshop and a questionnaire with the planning practitioners directly involved in the evaluated Bicycle Master Plan. Throughout these activities, the participants were introduced to the TIRE tool and the generated results for each city. Afterwards, the local planning practitioners had the opportunity to evaluate the tool's user-friendliness and usefulness for planning practice, reflecting on possible planning pathways and challenges encompassing an equity-oriented agenda for cycling.

3. Results

Drawing on the quantitative analysis, the tool TIRE revealed significant social-spatial asymmetries and fragmented hotspots in the assessed city. Results revealed that more than half of the distribution of bicycle accessibility conditions primarily benefits socioeconomically advantaged segments. Furthermore, most disadvantaged representatives inhabit the outskirts and peripherical zones, which have levels of accessibility below the municipality average. In the starter cycling city Lisbon, the cycling network is mainly located in the city's central zone, which depicts higher population density and land-use diversity. Therefore, Lisbon presents an extensive zone lacking accessibility conditions for cycling to be addressed in future equity-oriented interventions, especially in the outskirts of the municipality (Cunha and Silva, 2023).

This study suggests that the assessed cycling strategic roadmap targets the whole municipality, with no disaggregation of demographic and socioeconomic groups. There is a tendency towards infrastructure-based measures (i.e., cycle paths, bicycle parking, safe intersections, traffic calming), management and services (i.e., bicycle sharing systems, repair services), and soft strategies to change mobility behaviour and attitudes towards cycling (i.e., education programs, public awareness campaigns, mobility management). During the focus groups, the participants were confronted with the results generated by the tool, reflecting on new measures and strategies to improve the equity impact of the plan. Among several equity-oriented strategies, the planners highlighted the importance of densifying the cycling network at peripherical zones, integrating cycling into public transportation, and allowing financial assistance to broaden bicycle access.

The qualitative analysis revealed that the local planning practitioners positively perceived the usefulness of the tool TIRE, acknowledging its potential applicability for planning practice. Most of the planning practitioners agreed that the tool supported the creation of ideas, fostering insights into a novel planning problem. Additionally, half of the participants agreed that the fool supported the evaluation of planning alternatives as well as the definition of strategies and solutions towards an equity-oriented approach in cycling planning (Cunha and Silva, 2023).

4. Discussion and Conclusion

This study combines quantitative and qualitative dimensions of analysis to explore the equity impact of cycling planning in a European city. The quantitative assessment measured the equity gap within the allocation of the cycling network in the case of Lisbon, revealing that the assessed plan tends to benefit central, highly dense, and socioeconomically advantaged zones. On the other hand, the starter cycling city has a broader equity gap, as the network tends to concentrate on the central zone, perceived with greater potential to attract new bicycle users. The qualitative analysis indicates that equity is perceived as an intangible outcome; therefore, this impact is not addressed in planning practice. Nevertheless, based on the perceived user-friendliness and usefulness of the tool

TIRE, this study demonstrated that this tool has the potential to encourage and support the development of equity-oriented cycling plans.

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Bike Sharing Systems during Disruptive Public Health Crises: The Case of Lisbon's *GIRA*

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Introduction

The coronavirus pandemic has exacerbated the overdependency on car usage by particularly affecting one of the best sustainable alternatives to the private car: Public Transport (PT). Infection fears and risks associated with having large numbers of passengers inside enclosed and often overcrowded vehicles have provoked historical ridership drops in PT systems across the globe, which have yet to recover to pre-pandemic levels.

With the ever more likely scenario that COVID-19 will continue to impact the world for years to come, there is a risk of a permanent PT ridership loss. Even more worrisome, recent epidemiological research points that the intensity and frequency of new epidemics is increasing as a result of globalization, climate change, biodiversity loss and increased human-animal contact, putting additional constraints in transport systems. Thus, in addition to make the transport sector more sustainable, improving the resilience of transport systems, i.e., ensuring their ability to move people and goods during disruptions, has increased in importance in the political agenda.

Consequently, with more and more cities looking at bike sharing as a possible path to improve the sustainability and resilience of their transport systems, is it increasingly important to clarify the role that BSS can play in achieving this goal.

Materials and Methods

In this study, we looked at the performance of Lisbon's BSS, entitled GIRA, during the coronavirus pandemic by resorting to an explanatory sequential mixed methods design. The quantitative phase consisted of a cross-sectional travel survey, aimed at assessing the main impacts of COVID-19 in the travel behaviour and motivations of BSS users. The qualitative phase consisted of employing semi-structured interviews to explore in more depth the most significant COVID-19 impacts identified in the travel survey. Statistical analyses were applied to the results of the travel survey, while the data obtained from the semi-structured interviews was analysed through the use of thematic analysis.

Additionally, the results from the travel survey and semi-structured interviews were complemented by a literature review synthesizing the available research published during the first two years of the coronavirus pandemic regarding its impacts on bike sharing.

Discussion

This study found that bike sharing can increase the resilience of transport systems during disruptive events like COVID-19 by providing a transport alternative to the most affected modes (such as PT). Several findings support this. Firstly, the literature review on COVID-19 and bike sharing found that BSS

sustained lower ridership drops and registered faster recoveries comparatively to other modes, particularly PT. Secondly, both in the travel survey and semi-structured interviews, users considered GIRA to be safer to use during COVID-19 than PT, with similar results observed in other case-studies. Thirdly, the importance of motivations connected to using BSS to avoid PT and for maintaining a social distance have significantly increased in importance, with some users specifically joining GIRA to avoid having to use PT during the pandemic. Additionally, both the empirical studies as well as the literature review point to a possible modal shift from PT to BSS during COVID-19, with findings also suggesting that BSS have minimized a surge in car use by preventing some PT users from shifting to the private car.

Conclusions

This research provides evidence on the importance of BSS as a viable transport alternative during COVID-19, not only providing the population with an affordable and sustainable mode of transport where social distancing can be maintained but also mitigating a modal shift from PT to the private car. As such, policymakers should take advantage of the bike sharing's capability to act as an alternative mode, particularly to PT.

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Exploring Pedestrian Wayfinding Systems through Spatial Cognitive Approaches

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1. Introduction

This paper aims to understand how people use their cognitive abilities to perceive and transform information from the urban environment into representations of space, allowing them to navigate the city through mental maps. In this context, exploring the human mind and behavior to define wayfinding strategies that encourage walking is fundamental to improving pedestrian mobility in the built environment and consequently benefit public spaces. Furthermore, the analysis of the material and subjective dimensions that influence people's spatial behavior is imperative in perceiving how the urban form is translated into cognitive maps during the orientation task.

This work derives from a master's thesis developed in collaboration with Porto's City Council (Bomfim, 2022) to review and propose enhancements for the new Integrated Signage and Information Project (ISIP), adapting the local orientation system to international parameters recognized as good practices in terms of active mobility. That said, this research aims to explore ideas and techniques that might help the ISIP turn into an efficient and end-user-focused Pedestrian Wayfinding System (PWS).

In addition to the extensive literature review regarding spatial cognition concepts and reference cases of PWS in different cities, this study builds on the importance of community and stakeholder engagement for co-designing a PWS through participatory processes. Finally, the results of the mental mapping workshop and the internship experience at the Public Space Requalification Division of Porto's Municipality (Portugal) are expressed as recommendations for the improvement of urban wayfinding performance, supporting policymakers, designers, and city-planners to develop more suitable navigation tools for pedestrians in the future.

2. Literature Overview

2.1. Spatial Cognition

People gain spatial knowledge by perceiving the world and using their mental capacity to transform personal and collective experiences into the raw material of subjectivity through the cognitive system (Oxford Dictionary of English, 2010). That said, the navigation task involves a set of human cognitive abilities to acquire and process environmental information. Basically, cognitive, motor, and sensory systems (Montello et al., 1999) are used to generate, store, and retrieve mental images and maps.

In this sense, factors related to spatial cognition, such as environmental familiarity, cultural and individual differences, sensory experience, urban complexity, and sociodemographic variables, influence how each person interacts with their surroundings, including responsive behaviors such as searching, planning, and following routes (Crucitti, Latora, & Porta, 2006;

Hölscher et al., 2011; Mohamad & Said, 2014; Peponis et al., 1998). Moreover, physical aspects of space shape human behavior at the cognitive level. Thus, people's decisions and actions are also related to the emotions and meanings they attribute to the elements of the built environment.

2.2. Pedestrian Wayfinding Systems

The term "wayfinding" was first cited in the book Image of the City of Kevin Lynch (1960) and can be defined as the generic activity of navigating between two distinct points in space (Golledge, 2000; Iftikhar et al., 2020; Ruddle & Lessels, 2006), involving stages of information processing, decision-making, and behavioral action (Hunter et al., 2016; Passini, 1984). In short, wayfinding is the interrelationship between "seeing" and "going" (Hillier 2003).

Traveling around the city is a planned movement toward a desirable destination (Chersi & Burgess, 2015; Epstein et al., 2017), and it is not an easy task (Montello, 2005). Therefore, pedestrian wayfinding systems have emerged as a worldwide phenomenon to encourage walking, improving people's quality of life and bringing benefits to the built environment. It is a set of similarly designed and strategically located elements in the urban environment to guide traffic on foot.

3. Methodology

The methods used for the composition of this work were the following: (1) investigation of spatial cognition literature; (2) systematic analysis of reference cases of PWS recognized as good practices in different urban contexts. This step was fundamental for the identification of the main characteristics that turn these orientation systems into successful projects; (3) evaluation of the ISIP and the detailed review of the tender specifications, comparing the proposal for Porto’s city with key aspects of the previously studied Pedestrian Wayfinding Systems; (4) application of cognitive approaches through a mental mapping workshop as an participative process to promoting community and stakeholder engagement for co-designing of the new program.

4. Results

This research resulted in practical recommendations to support the technical decisions of Porto’s City Council concerning the signage system plan. The criteria and principles proposed in this work to improve the ISIP are based on existing PWS, exploring their relationship with spatial cognition aspects. This specific literature revealed that mental mapping studies are indispensable to understanding how people use their cognitive abilities to navigate the city. This knowledge is essential to create and implementing intuitive, consistent, and connected Pedestrian Wayfinding Systems and providing a seamless and comfortable experience for the user.

Additionally, the workshop had a positive response from the participants. It allowed testing interactions between the actors involved, reinforcing the importance of participatory methods for the ISIP development. This experiment demonstrates that collaborative approaches through community meetings and public hearings, for example, can provide insights into people's needs and preferences, helping decision-makers define features of the new signage and information system. However, the event represents an initial exercise that needs continuity to effectively engage the population in the project and have a cohesive application in Porto's case.

5. Conclusion

The topics presented in this article support the argument that spatial cognition shapes wayfinding behavior. Material aspects (such as the environmental layout)

and intangible dimensions (such as the affective value individuals attribute to places) influence how people interact with their surroundings. The subject navigates the spaces and explores the city using physical and cognitive abilities. That said, to design a user-friendly PWS and encourage walking as a preferred mode of transportation is necessary to understand how people's minds work, that is, how they perceive and assimilate the urban realm.

The literature covered in this paper, the internship in Porto's City Council, and the mental mapping workshop reinforced the need to further investigate spatial cognition in the development of navigation tools to improve the overall performance of the PWS. This article also concluded that alternative processes that engage active public participation in city design and planning matters raise interest and awareness regarding urban interventions. Collaborative action through community and stakeholder involvement is an opportunity to reveal local knowledge, strengthen affective connections with places, and adapt projects such as orientation systems to people's needs and desires.

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Going beyond environmental analysis: watershed modelling as an opportunity to represent the cultural divergences between landscape, territory and meaning

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1. Introduction

In the environmental sciences, watersheds are constantly used as an influence area of forestry, soil, and water flow studies. Also, historically the same topographical and hydrological conditions were crucial for the choice and creation of settlements and cities.

More than that, from a sociocultural standpoint the phenomenological perceptions of individuals towards geographical landmarks have always been determinant for establishing a sense of belonging, location, and direction, giving new meanings to the relationship between men and landscape – whether related to the sense of shelter and protection, subsistence, and in some cultures, a sense of divine. From mountain ranges to water bodies, normally watershed boundaries are easily perceived: three-dimensionally, in first person, along the horizon line.

Intrigued by the disparities of information and content between the historical Cartesian representation and the in situ experience of the landscape, this paper relies on the following challenge: the search for design strategies that are capable of embracing and highlighting the peculiarities of the place in its territorial graphic representations, while focusing on the development of a critical landscape project that is able to reinterpret a natural landscape in transformation through infrastructures, interventions and spatial demarcations.

Thus, despite the well-known environmental benefits of watershed planning, this article suggests a brief reflection on the differences between landscape, territory and meaning, while seeking to develop sociocultural representations in urban and landscape planning through the use of watershed boundaries.

2. Research questions

During both my Master Thesis and Graduation Thesis, more specifically in the phases of site survey and territorial analysis, I started to encounter a significant

divergence between the cartographic representation of the study area and the experience of the place itself.

Along waterfront sites, symbolic and extremely important places for local identity often went unnoticed in the current systematic and Cartesian representation that normally serves as basis for territorial, urban, and architectural projects. However, these unnoticed places are striking components of the landscape experience and were structural elements for the conception of my practices. From a design standpoint, the perceptions of spatial identity and the experiences of the individual for such occupations also is an opportunity to give new meanings to the landscape.

In this sense, some relevant questions arise, such as:

- How territorial planners can lead more participatory projects, cultivating both ecosystems and local cultures, rather than threaten them?
- If both mapping and the perceptions of individuals towards landmarks are perceptible in watershed modelling, why we don't explore that in territorial planning?
- Could traditional settlements respond more directly to the demands of political, geographical and territorial transformations and the ever-increasing pressure from urban centers?

2.1. Divergences between landscape, territory and meaning.

In the referred essay "Between Geography and Landscape, Phenomenology," from Besse's book "See the Earth" (BESSE,2014), the French philosopher raises a series of distinctions and oppositions between geographic space and landscape by highlighting the difference between feeling and observing. One of the central points of Besse's argument is that distinction occurs because the landscape is associated with a local perception, and it is distinguished when the individual moves and guides himself along the horizon line.

Inversely, geographic space has no horizon; it defines states, positions and situations perceived by general and objective coordinates and references. According to the author, the determination of a Cartesian center (i.e., a map under the coordinate system), instead of the ordinary idea of a center determined by individual's perspective, it causes decentralization. Therefore, with this new perception of the individual the landscape is experienced differently.

In a complementary manner, approaching the relationship between constructed environment and landscape, the Norwegian theorist Christian Norberg-Schulz in the renowned work "The Phenomenon of Place" (1979), perceives the phenomenological potential of architecture as the ability to give meaning to the environment, defending the activity of building as a revelation of meanings and human identities that are sensitive to a certain environment. According to Schulz, the act of building is a cultural positioning, a decision making process, that reflects a man's position within the reality that surrounds him.

Historically, the experience that a certain territory provides, combined with the ability it has to offer supply and shelter was responsible for determining the settlement sites and especially the different ways of living. In spatial terms, these answers of men to its surroundings are noticeable in the material and immaterial heritage, such as constructions, utensils, and artifacts of human interaction with the territory and the availability of natural resources.

From a sociocultural point of view, the phenomenological perceptions of individuals towards both natural or constructed landmarks have always been

decisive for the relationships of belonging, location and direction giving to these landmarks a new meaning.

3. Watershed planning as an opportunity to represent these divergences: applicability and discussion in 'The Caiçaras Territories' at the Juatinga's Peninsula, Paraty – Brazil.

This case deals with the system of the Caiçaras Traditional Villages of the Juatinga`s Peninsula, a difficult access area located 20 km south of Paraty city, state of Rio de Janeiro.

In the Peninsula 12 traditional villages inhabited by 1,500 people are nowadays on the edge of legality, occupying a current Ecological Reserve Land, where they organize fishing and farming activities, ensuring their own survival. Admitting the recent changes of territorial zoning and the urban culture expansion across the traditional villages, 'Caiçaras Territories' proposes a set of design strategies to act as mediators of these cultural conflicts and specially to express these transformations.

In a geographical diversity environment, the site presents a huge possibility of cultural development: each territory variation results in a different anthropic answer. Norberg Schulz (1979) reveals the importance of anthropocentric activities to assign the value of "place" to a specific "environment" by defending construction activities as a revelation of meaning and human identities sensitive to a particular environment, it suggests that the reality that affects us as men, is what we express through the building.

For his abrupt topography, wedged between the open ocean and closed bay, the Juatinga's Peninsula shows a wide range of microclimatic complexities: there, ocean current, wind, rain, soil, hydrology, and vegetation vary according to each coastal landforms, valley, mountain face and cardinal orientation.

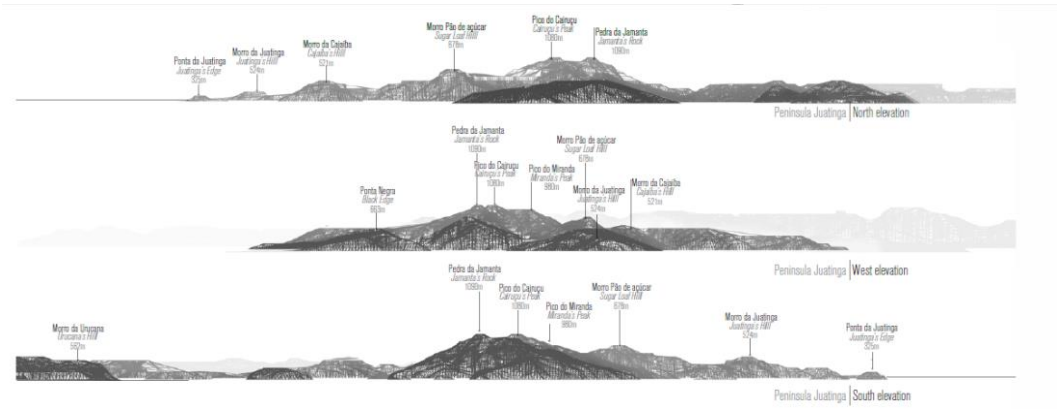


Figure 01: Landmarks of Juatinga's Peninsula are essential for orientation and location, as well as a guide for clouds and wind: due to the abrupt topography, most of the Caiçara's activities were developed along the sea, and because of traditional navigation the territorial landmarks are part of their culture. Source: the author.

Such variations have resulted in cultural developments to its surroundings, a man's response to the peculiarities of a rugged and insular geomorphology and their enclaves: cultivation and fishing areas, villages of different shapes, specialties, and activities, but in complementary relation to each other.

Comprehending the villages as "phenomenological details" of the landscape, becomes a key strategy to understand the regional identity, because at the same

time it refers to the physical composition of a territory, it is also a generator of a cultural image an anthropological and architectural responses to its surroundings.

Thus, the landscape establishes two different and complementary relationships with the Caiçaras Villages: first, as a structuring element, as it defines parameters for occupation and survival along the centuries; and secondly as a "frame" as it "sharpens the difference" of values between the environment and architecture.

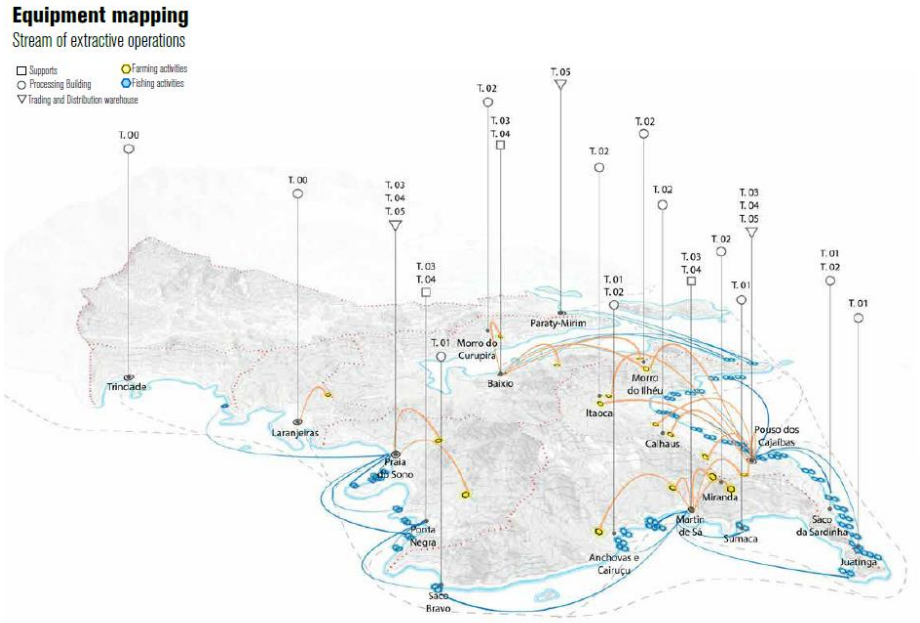
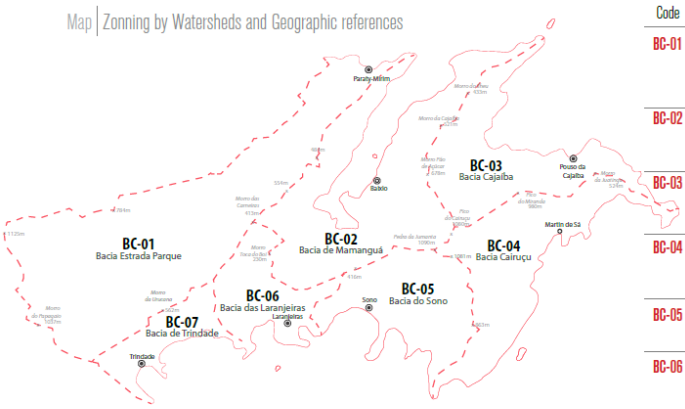


Figure 02: Traditionally, the Caiçaras recognize themselves thought the landscape readability: the intersection of landmark surveying, geographical interest's points and hiking trails resulted in crossing points for allocation of infrastructural landmarks of the multi-use park. Source: the author.

In thiscase study, specifically investigating inhabited areas by traditional waterfront populations such as fishermen from Juatinga's Peninsula, the perception of land and territory is closely linked with livelihood activities. Moreover, the current environmental zoning proposed by the Government forced the delimitation of historically occupied areas, introducing laws and land uses rules delimited by straight-line borders that are very difficult to be recognized on site.

This became evident during field visits, as it was clear that the communication with residents was facilitated by the use of a terrain model and georeferenced photographs instead of using two-dimensional maps. Therefore, during the diagnostic stage I used terrain modeling not only to environmental analysis, but also to identify cultural relevant places with representatives of the traditional populations. Consequently, at the design stage I was convinced that if I did not related land use boundaries with geographical landmarks in the project, my proposal would not have an appropriate meaning or practical value for traditional communities.



Code	Watershed	Main characteristics	principal village
BC-01	Bacia Estrada Parque *Park Road basin*	*Inland access, landscape reading, transition between park-city, presence of urban facilities.* Economy: tourism and commerce. Infrastructure: water, electricity, sewage and mobile phone.	Paraty-Mirim
BC-02	Bacia de Mamanguá *Mamangua's basin*	*Inland and maritime access, nautical tourism, holiday houses with luxury tourism in some places.* Economy: Tourism and fishing. Infra: solar energy and mobile phone.	Baixio
BC-03	Bacia Cajaíba *Cajaíba's basin*	*Predominantly maritime access, Caiçara centrality, port connector with foreign cities, fishing areas, calm waters of the bay.* Economy: Fishing and seasonal tourism. Infra: solar energy and mobile phone.	Pouso dos Cajaíbas
BC-04	Bacia Calruçu *Cairuçu's basin*	*Predominantly maritime access, difficult to access, more protected, less occupied, best fishing spots, fish nesting sites.* Economy: fishing and adventure tourism. Infra: solar plates only in the main house, no cell phone signal.	Martins de Sá
BC-05	Bacia do Sono *Sono's basin*	*Predominantly terrestrial access, adventure tourism.* Economy: seasonal fishing and tourism. Infra: solar panels, cell phone at some points.	Praia do Sono
BC-06	Bacia das Laranjeiras *Laranjeiras basin*	*Road access, with a luxury condominium, less traditional occupations, urban facilities, school, health post.* Economy: support to the condominium. Heliport and private Marina. Infrastructure: water, energy and mobile telephony.	Laranjeiras caiçara
BC-07	Bacia da Trindade *Trindade's basin*	*Road access, popular "balneary", urban facilities. A disorganized occupation initially, now is monitored.* Economy: tourism, trade and fishing. Infrastructure: water, energy and mobile telephony.	Trindade

Figure 03: Watersheds and Geographic references as guidelines for the Zoning Plan: if the environmental analysis served as a base for the definition of permanent preservation and extractive areas, the crossing of phenomenological theories with the mapping of geographical landmarks demonstrated the relation of the Caiçara population with the landscape, directly determining their patterns of behavior, occupation, displacement, and orientation. Source: the author.

4. Conclusions

From architectural topology to landscape phenomenology, normally these social characteristics are seen as abstract and fluid, not having an appropriate weight in the territorial planning debate due to the lack of metrics. Since watersheds have a clear demarcation within geographical landmarks on the horizon line, water basins modelling has the potential to graphically represent both environmental and sociocultural landscape peculiarities, in a very detailed manner.

In comparison to the traditional Cartesian plans, using them as an influence area of urban and landscape scale projects is a technical opportunity to highlight cultural perceptions and experiences of the place during the design planning, while admitting key components such as infrastructures, interventions, and spatial demarcations in the perception of spatial identity and in the experience of individuals within the landscape.

That said, among other design initiatives, one of the goals of using watershed modelling for territorial planning is the opportunity to develop new cartographies diagrams, and to take measures of phenomenological elements as key components of spatial identity, bringing the values of symbolic spaces to the territorial planning with the same level of argumentation and data as traditional disciplines.

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Assessing land-use change impacts on landscape pattern and character: Alto Douro Wine Region case study

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1. Introduction

Agricultural cultural landscapes are strongly driven by human management, but landscapes now face rapid and irreversible changes in Land Use and Land Cover (LULC), which can pose several challenges, especially if these landscapes are classified or have special legal protection in place (van der Zanden et al. 2017). LULC changes frequently challenge the preservation of landscape pattern and character. Landscape pattern is widely studied (Botequilha Leitão et al. 2006), but studies evaluating impacts on landscape character are still relatively scarce (Abrantes et al. 2016).

Landscape character is “a distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another” (Allen and Patton 2013) and is thus greatly influenced by the composition and configuration of patches. Previous studies relating to landscape pattern change and landscape character have been conducted, for example, in Belgium (Van Eetvelde and Antrop 2009) and the UK (Warnock and Griffiths 2015).

This study applies a diagnostic framework for practitioners and policy-makers by considering the current state of landscapes, their characterisation, evolution, and the degree of compatibility between observed change with the “ideal” trends defined at the planning level set to maintain landscape character (Fairclough & Herring (Fairclough and Herring 2016; Swanwick 2002). There are three main research questions:(i) What are the main changes in landscape composition and configuration since 2012 (ii) How does LULC change impact landscape character? (iii) What solutions should we propose for landscape planning?

2. Methods

The study focuses on the Alto Douro Wine Region (ADV) in the northeast of Portugal, classified since 2001 as World Heritage by UNESCO. The ADV develops in a narrow strip of 24 600 ha along the Douro River and represents the best-preserved continuum of the Douro Demarcated Region (RDD), but the socio-economic and LULC changes observed in the last 50 years put its preservation and distinction at risk. Three visual basins with an area of approximately 500 ha, representative of Douro sub-regions (Lower Corgo, Upper Corgo and Upper Douro) and used in monitoring programs, were selected: Corgo Valley, Torto Valley and Figueira Valley.

The diagnostic framework involves two main phases. The first phase is the quantitative analysis of spatiotemporal change, which involves three steps: i) harmonisation of 2012 land-use data, ii) update of land-use data for 2021, and iii) landscape pattern analysis in Fragstats.

The 2012 land-use data was produced in the context of Andresen and Rebelo (2013) publication. The first step was a data harmonisation performed in ArcGIS according to 14 classes (Figure 1).

The second step was the creation of the 2021 dataset, produced by comparing the cartography from 2012 with Google Earth satellite imagery from February and March 2021, coupled with occasional in situ verification. Finally, the last step was the landscape pattern analysis performed in Fragstats 3.3 software (McGarigal and Marks 1995). Based on Schindler et al. (2008), four characteristics were selected: Area & Edge, Shape, and Aggregation and Diversity. For each of these characteristics, one metric was used based on the low redundancy in describing the Douro Region pattern (Medeiros et al. 2022): i) edge density index (ED), ii) Coefficient of variation of the Related Circumscribing Circle (CIRCLE_CV), iii) Proximity Index (PROX_MN) and ii) Shannon's Diversity Index (SHDI).

The second phase consists of a qualitative analysis, which evaluates the impact of land-use change on landscape character. The land-use transitions were assessed based on the Alto Douro Wine Region Monitoring Program and the decision matrix by the Countryside Quality Counts (CQC)(Swanwick 2002). Land-use transition matrices were reclassified in ArcGIS according to four trends of character change: maintained, neglected, enhancing or diverging (see Figure 2 for definitions).

3. Results

3.1. Landscape composition

The three landscapes show different landscape compositions. The Corgo Valley is predominantly composed of Vineyards with post-phylloxera walls (27%), but from 2012 to 2021, this area decreased 6%. On the contrary, some land-use classes underwent an area expansion, for e.g., Vineyards with contour terracing (+6.1%).

The Torto Valley is mainly composed of Vineyards with post-phylloxera walls (27%), Vineyards with contour terracing (24%) and Olive grove (14%). The major trend between 2012 and 2021 was the expansion of Vineyards with contour terracing (5.3%).

Finally, the Figueira Valley is primarily composed of Native forest and shrubland, representing 30% of the landscape, followed by Olive grove and Vineyards with contour terracing, representing 18 and 17%, respectively. The major change trends in Figueira Valley are the increase in Vineyards with contour terracing by 4.4% and the decrease in Native forest and shrubland by 3.8%.

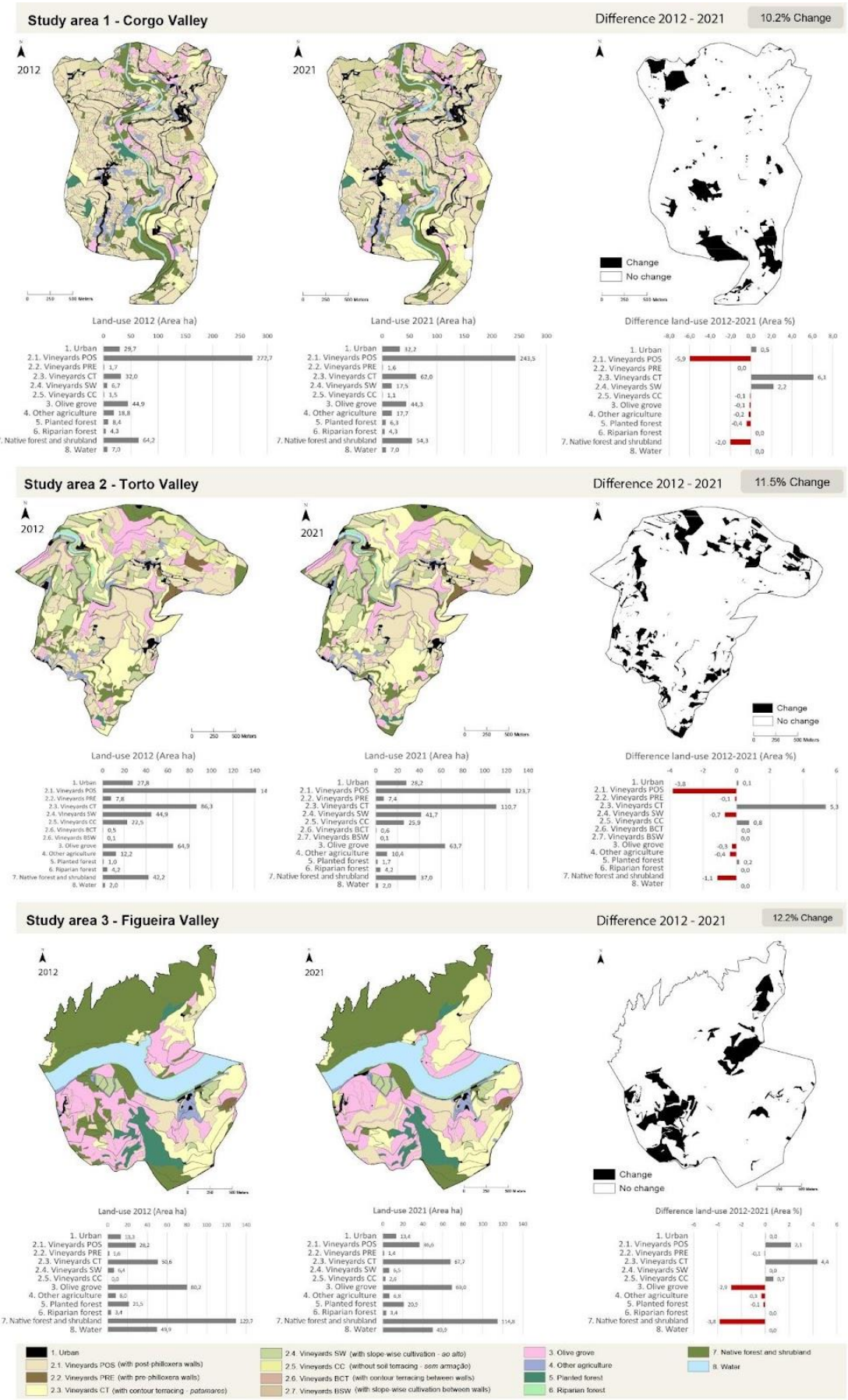


Figure 1: Maps of landscape composition and land-use change.

3.2. Landscape configuration

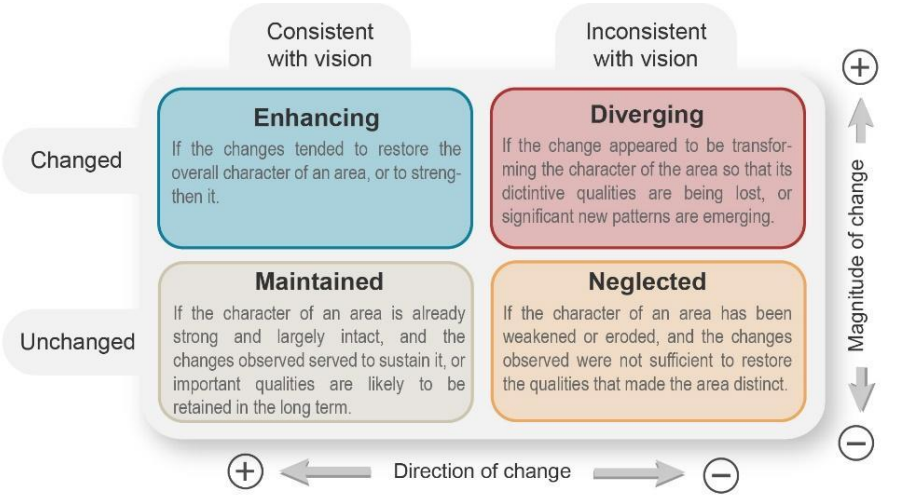
The edge density of patches has decreased in all landscapes between 2012 and 2021, potentially indicating a decrease in the number or simplification of patches. The decrease in edge density also impacts the edge effects, meaning that a decrease in edge habitat may leave less habitat for edge species in favour of core habitat species. Variation among patches of the same class increased (CIRCLE_CV index), ranging from 5% to 14%, meaning there is a higher patch heterogeneity. The proximity index has shown contrasting results. The Torto Valley patches became closer and more contiguous in 2021, while the Corgo and Figueira Valley class types are more fragmented. The Shanon Diversity Index showed a slight tendency to increase, which can be explained by new classes in 2021, namely vineyards with modern plantation systems.

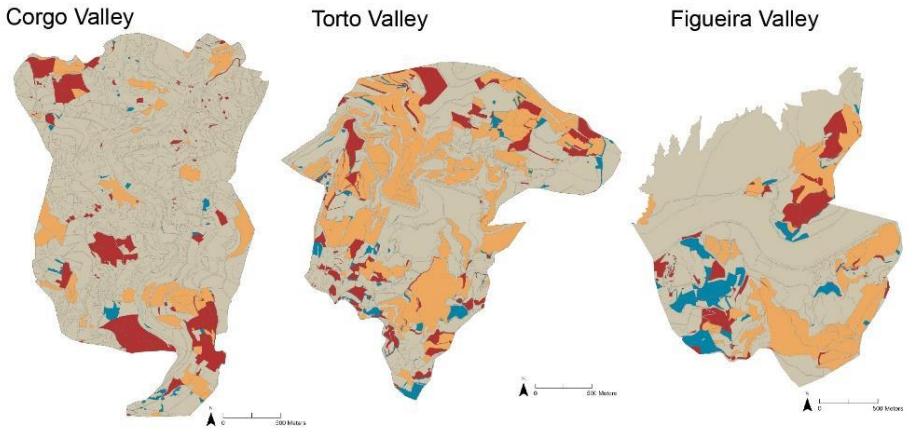
Table 1: Landscape metrics results for the four indices selected between 2012 and 2021, including the total change value and the total change in percentage.

		Landscape metrics			
		Area & Edge	Shape	Aggregation	Diversity
Study area		Edge density (ED)	Related Circumscribing Circle (CIRCLE_CV)	Proximity index (PROX_MN) 250 m	Shanon Diversity Index (SHDI)
Corgo Valley	2012	492.9	65.7	1712.4	1.6
	2021	478.6	69.3	1636.9	1.7
	Total change	-14.3	3.5	-75.5	0.1
	Total change (%)	-2.9	5.4	-4.4	8.1
Torto Valley	2012	493.4	61.6	733.3	2.0
	2021	469.1	70.4	961.5	2.0
	Total change	-24.3	8.8	228.2	0.0
	Total change (%)	-4.9	14.2	31.1	0.2
Figueira Valley	2012	279.6	76.4	2805.2	1.9
	2021	256.0	83.5	2596.2	2.0
	Total change	-23.6	7.1	-208.9	0.1
	Total change (%)	-8.4	9.3	-7.4	3.6

3.3. Landscape character

Landscapes retained their landscape character overall. The Corgo Valley is the landscape with the best-maintained character (80%). The Torto Valley distinguishes itself by having 33% of its landscape classified as neglected. Finally, the Figueira Valley obtained a higher percentage of Enhancing classification (+5.3%), a very positive trend. The areas classified as diverging usually showcase the destruction of traditional vineayards with walls or Mediterranean forest and shrubland in favour of modern vineyards, typically Vineyards with contour terracing (patamares) or slope-wise cultivation (ao alto).





Study area	Enhancing (%)	Maintained (%)	Diverging (%)	Neglected (%)
Corgo Valley	1.0	80.4	9.2	9.4
Torto Valley	2.8	55.9	8.7	32.6
Figueira Valley	5.3	68.5	6.9	19.3

Figure 2: Classification method based on the CQC decision matrix and change evaluation in the study areas and results per classification type: maintained, neglected, enhancing, and diverging.

4. Discussion

The destruction of traditional terraces with schist walls is one of the changes with a higher impact, as it is one of the cultural values justifying ADV's outstanding universal value. Another cultural value is the complex landscape mosaic: vineyards bordered by Mediterranean cultures and the presence of Mediterranean forest and shrubland. Landscape metrics show that the mosaic's intricate design is reducing. Landscapes' territorial character is currently a crucial asset for the region, especially for tourism; thus, the region's development should enhance its nature and culture while promoting harmonious solutions.

The Intermunicipal Plan for Territory Planning of Alto Douro Wine Region – PIOT ADV (Resolução do Conselho de Ministros n.o 150/2003) mentions that landscape interventions must comply with the requirement of not destroying vernacular values such as stone walls and patches of native vegetation, but it is not prohibited. Mitigation measures mentioned in PIOT ADV and Andresen and Rebelo (2013) should be more common, namely:

i) promote landscape compartmentalisation projects for already existing areas of modern vineyards systems;

ii) creation of continuous green corridors (e.g., alignment of olive or almond trees along the paths and property limits);

iii) encourage the maintenance of all stone walls and the construction of new walls in vineyard expansion zones or in areas of landslides.

5. Conclusion

The main trend of spatiotemporal LULC change overall in three study areas from 2012 to 2021 is the increase of vineyards with modern plantation systems at the expense of traditional vineyards with wall terracing and native forest and shrubland. The quantification of the landscape pattern revealed that the mosaic's intricate design is slightly reducing.

Most study areas maintained their character (55 to 80%), but the percentages of neglected and diverging classifications are worrisome. The destruction of walls needs to be prevented, and mitigation measures contained in the regulatory framework must be more common.

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Coastal landscape governance: historical evolution and emerging paradigms since 1950s

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1. Introduction

The challenges for coastal landscape governance are colossal. Humankind has severely affected most coastal landscapes, resulting in high transformation rates, with rare intact coastal regions worldwide (Williams et al., 2022). Various policy instruments regulate coastal landscapes, focusing on competing and/or conflicting interests and land uses at several intersecting political-administrative scales. Additionally, the impacts associated with climate change include sea-level rise, increased frequency and severity of storm surges, and intensified coastal erosion (Flood & Schechtman, 2014). Moreover, the global demand for climate justice stresses the need for redesigned or evolved governance systems to address societal challenges and transform and inspire pathways forward (Schlüter et al., 2020). Despite all the pressures and challenges that affect many coastal landscapes worldwide, there is limited empirical research on coastal landscape governance (Gonçalves & Pinho, 2022). Coastal governance and landscape governance debates have increased during the last twenty years. However, its interrelationships have not been substantially explored yet. Our extended abstract addresses this research gap, providing an overview of the historical evolution of coastal and landscape debates and practice in the international and European contexts, exploring its co-evolution since the 1950s.

2. Methods

A comprehensive literature review was carried out to investigate the evolution of coastal and landscape policies in the international and European contexts, focusing on peer-reviewed articles authored by experts who have examined coastal and landscape research or practice. The selected papers were obtained from the SCOPUS database in November 2022 and included works by Chatzimentor et al. (2020), Oliveira et al. (2020), Pinho (2020), Pérez-Cayeiro et al. (2016), Antrop (2013), Marcucci et al. (2012), Kay and Alder (2005), Fábos (2004), and others, which provide insights into the development of coastal and landscape policies in these contexts.

3. Results

We have identified four discernible stages in the international and European discourses on coastal and landscape debates, which will now be briefly described.

Phase 1 - The conservation awareness phase (1950-1970):

In phase 1, fragmented approaches are dominated by hard-engineering solutions, limited ecological considerations, and little public participation in coastal planning and management (Kay & Alder, 2005). Landscape practice focused on nature and landscape conservation, with the emergence of protected areas in Europe. Landscape research was mainly descriptive, emphasising

landscape classification and regional identity (Antrop, 2013). The environmental awareness movement in the United States, led by Ian McHarg's book "Design with Nature," set a new vision for regional planning using ecological principles and influenced global planning debates (Fábos, 2004). In Europe, the creation of the European Economic Community and the Common Agriculture Policy had significant effects on coastal agricultural landscapes. The Council of Europe's "European Conservation Year" campaign raised awareness about environmental protection (Pinto-Correia et al., 2006).

Phase 2 - The environmental movement and the demand for pollution control (1970-1990)

During the 1970s to 1990s, coastal planning faced challenges in integrating ecology and quantitative methods with the aid of computers. International treaties like the Ramsar and UNESCO conventions emphasise conservation (Fábos, 2004). Laws like the National Environmental Policy Act (1969) and Coastal Zone Management Act (1972) were established in the US (Kay & Alder, 2005). In Europe, the Council of Europe recognised the critical condition of coastlines and launched Environment Action Programmes. The European Coastal Charter (1981) and European Charter for Spatial Planning (1983) were adopted (Oliveira et al., 2020). Environmental Impact Assessment Directive (1985) was introduced, and the concept of sustainable development gained attention. Landscape ecology (Forman & Gordon, 1986) gained renewed interest, advocating for holistic approaches and environmental justice. The American Greenways movement gained relevance and influenced Europe (Fábos, 2004).

Phase 3 - The emergence of the sustainability paradigm (1990-2000)

Phase 3 witnessed the rise of the sustainability paradigm in coastal planning, focusing on integrated management at the International and European levels (Marcucci et al., 2012; Pérez-Cayeiro et al., 2016). The Maastricht Treaty in 1992 laid the foundation for the European Union. Agenda 21 at the Rio 92 Conference emphasised capacity-building, integrated coastal management, and public participation. The Habitats Directive (92/43/EEC) and Birds Directive established Natura 2000 for conservation (Chatzimentor et al., 2020). The European Commission's Demonstration Programme on integrated coastal zone management led to the adoption of relevant documents in 2000. The Kyoto Protocol in 1997 addressed global warming. Landscape gained attention in European policies, with the Council of Europe recognising every landscape as a common value. Different perspectives on landscape evolved, culminating in the definition of landscape as "*an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors*" by the European Landscape Convention in 2000 (Council of Europe, 2000).

Phase 4 - The climate and the landscape crisis and the search for future alternatives (2000-present)

Since 2000, coastal governance has evolved, focusing on adaptive coastal management, climate change mitigation and adaptation, and ecosystem management (Marcucci et al., 2012). In 2007, the landscape governance concept emerged in the scientific debate (Görg, 2007). Also, landscape approaches have arisen as the next generation of integrated approaches for addressing contemporary societal challenges (Gonçalves & Pinho, 2022). European initiatives such as the Water Framework Directive (2000), Strategic Environmental Assessment Directive (2001), and the European Biodiversity Strategy (2011) have influenced the planning and management of coastal areas. The Rio+20 conference in 2012 emphasised sustainable development and the

adoption of Sustainable Development Goals (SDGs) by the United Nations General Assembly in 2015. The European Green Deal and Biodiversity Strategy 2030 are also driving climate change mitigation efforts. Due to the Marine Strategy Framework Directive (2008), the sea became an object of planning and management, and research and policy focus has moved to maritime spatial planning. The climate crisis (Reckien et al., 2017) and the landscape crisis (Antrop, 2017) dominated discourses (Gonçalves & Pinho, 202X).

4. Discussion

The discourse on coastal and landscape policies in international and European contexts can be identified in four distinct phases. The first phase, "The conservation awareness (1950-1970)", was characterised by sectoral approaches favouring hard-engineering solutions with limited ecological considerations. The primary focus of interventions was local (Pinho, 2007), with the main goal of "holding the line" in coastal areas with a reactive approach. During this phase, protected areas emerged in several European countries as a reaction to implementing the "Wilderness model" in the United States of America, and landscape policy aimed at protecting outstanding landscapes or natural areas.

The second phase, "The environmental movement and the demand for pollution control" (1970-1990), reflected global environmental meta-discourses. There was a growing movement to integrate ecology into planning, resulting in greater integration of environmental concerns in coastal policies, although the sectoral approach still dominated. The focus also shifted towards a proactive perspective, recognising the need for regional-scale coastal policies in the international and European contexts (Pinho, 2007). Landscape policies continued to focus on protecting outstanding landscapes or natural areas. The concept of sustainability emerged in 1987 as a reaction to growing concerns over environmental degradation, resource depletion, and social inequality.

The third phase, "The emergence of the sustainability paradigm (1990 to 2000)", was characterised by the emergence of the sustainability paradigm, which brought significant changes to the coastal model. Integrated coastal management became the dominant approach, emphasising the need for environmental restoration and adopting a proactive perspective. The national scale was recognised as the most appropriate for integrated interventions in the coastal zone (Pinho, 2007). During this phase, two significant milestones were the inclusion of the cultural landscape category in the UNESCO Convention in 1992 and the European Landscape Convention adoption by the Council of Europe in 2000, which recognised the relevance of every landscape. The dominance of the climate change crisis also marked the beginning of the fourth phase.

The fourth phase ("The climate and the landscape crisis and the search for future alternatives", 2000-today) is characterised by recognising the coastal socio-ecological system boundaries as an alternative perspective, acknowledging the global scale of intervention required to address the climate crisis (Pinho, 2020). An evolved governance system is essential to tackling coastal countries' societal challenges. The discourse has shifted towards an ecosystem approach, and more recently, marine spatial planning has gained focus due to international and European agendas. Soft engineering and nature-based solutions have become dominant in coastal interventions, and the planning and management of all coastal landscapes are emphasised.

5. Conclusion

The evolution of coastal and landscape governance in international and European contexts has gone through distinct phases, reflecting changing paradigms and societal concerns. From a sectoral approach focused on local interventions to a

proactive regional-scale approach integrating environmental concerns, and finally, to the recognition of global-scale interventions required to address the climate crisis, the discourse has shifted towards an ecosystem approach emphasising marine spatiality planning and nature-based solutions.

Including cultural landscapes and adopting the European Landscape Convention have also highlighted the relevance of every landscape in landscape governance. However, despite the progress made, there is still a need for an evolved governance system that can effectively tackle the complex challenges coastal landscapes faces, such as sea-level rise, storm surges, and erosion, along with competing interests and land uses.

The findings from this review highlight the need for further empirical research on coastal landscape governance, considering the institutions and actors involved in planning and management decisions. It is crucial to continue advancing coastal landscape governance to address the climate and landscape crisis.

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Oral Communications – Extended Abstracts on Reimagining Urban Dynamics: Governance, Planning and Sustainable Transformations

The role of the Governance Dimension in *Sustainable Urban Regeneration*

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1. Introduction

The effects of rapid global urbanisation have been the subject of extensive research and debate for decades (Randolph & Storper, 2022). As a result, there is a large body of scientific literature that addresses this issue from a wide range of disciplines and theoretical approaches. This process, particularly in the context of developing countries, has resulted in uncontrolled urban sprawl, degradation of their ecosystems and pressure on their green spaces (Siddique & Uddin, 2022). These are essential for, among other things, adapting to and mitigating the effects of climate change (Sharifi, 2020). The loss of these ecological assets is therefore receiving increasing attention in contemporary urban studies (Lak et al. 2021). In turn, concepts such as sustainable urban development and its values for maintaining urban environmental quality are increasingly recognised. While these principles are not uncontroversial (Parnell, 2016), they have been widely accepted and incorporated into public policy agendas driven by international bodies and government agencies for urban development at sub-national and local levels (UN-DP, 2021).

Therefore, it is possible to recognise in the literature the existence of a broad consensus that the degradation and fragmentation of natural ecosystems could cause serious problems for urban dwellers, such as the degradation of natural habitats, the alteration of the hydrological system, the loss of biodiversity, and the disruption of energy flows and natural nutrient cycles (Assadpour & Melles, 2018). Urban regeneration is understood as "a comprehensive integration of vision and action aimed at solving the multifaceted problems of deprived urban areas to improve their economic, physical, social and environmental conditions" (Ercan, 2011 in Zhen et al.2014, p.272).On the one hand, it is considered a sound approach to improve environmental quality, address the problem of urban decay and achieve socio-economic objectives. On the other hand, since sustainable development corresponds to urban regeneration in terms of social, economic and environmental sustainability, it has been recognised that urban regeneration and the principle of sustainability must act in combination (Zhen et al.2014).

From this perspective, different approaches to urban regeneration have been proposed to incorporate elements and components that also allow the restoration of urban environmental assets at different scales. Among them, Sustainable Urban Regeneration (SUR) stands out, which is defined based on the combination of elements of the built and natural environment for the creation of sustainable environments (Manganelli et al.,2020; Zhen et al.2014).

This paper then proposes to examine the concept of sustainable urban regeneration, its main dimensions and critical factors. In particular, it analyses the role of the governance dimension in SUR processes, which, on the one hand,

is recognised as an essential component (Nicula et al., 2020) and a prerequisite for any initiative (Meyer & Auriacombe, 2019), but which has hardly been addressed in research in this field. To this end, a review of the literature focusing on the concept of 'sustainable urban regeneration' will be conducted. After presenting the main definitions, processes and some of its key components, its main dimensions are analysed, in particular the governance dimension. Finally, its role in SUR processes is discussed in the light of the literature and the wider debate on environmental sustainability.

2. Key components of Sustainable Urban Regeneration

An important line of research has addressed the conceptualisation of sustainability in urban regeneration in different contexts (Lorr, 2012; Lombardi et al. 2011). They argue that urban regeneration processes and sustainable development share, among other multiple aspects, temporal and spatial perspectives (Zheng et al. 2014). In other words, they are concerned with future scenarios that seek to promote land values and improve environmental quality. However, until a few decades ago, 'most urban regeneration policies tended to focus on economic regeneration rather than environmental or social regeneration' (Sofa & Dennemann, 2000 in Zheng et al. 2014, p273).

Sustainable Urban Regeneration thus emerges as a response to the need to place greater emphasis on these variables through the sustainability paradigm, which has gradually been incorporated into the global vision of how we should approach development (UN, 2015). SUR is thus described as:

Regeneration of plans, policies, and programs in a city to deal with interconnected socio-economic, intuitional, and spatial issues, thereby, reducing detrimental impacts on the environment, mitigating risks, and enhancing urban environmental quality and quality of life (Lak et al., 2021, p.111).

In turn, these authors highlight some of the key issues to which SUR relates, such as its link to green spaces, economic feasibility, efficiency and stakeholder participation (Manganelli et al., 2020). In this sense, SUR uses built and natural elements to create sustainable environments (Ryan et al.2006). The latter include elements such as greenways, park systems, ecological networks and green infrastructure. This approach has driven the development of Green Infrastructure (GI) for mainstreaming SUR (Lak et al. 2021; Majekodunmi et al. 2020).

The GI approach is increasingly being adopted in land policy and management as a way to ensure the provision of ecosystem services to guarantee the quality of life and human well-being (Garcia et al., 2020). In this direction, Snäll et al. (2016) argue that since GI is an inherently spatial concept, spatial planning methodologies should be applied in the design of green infrastructure networks.

A more recent approach is presented by White et al. (2020), who offers a model of how access to aquatic environments or 'blue spaces' such as rivers, lakes and the coastline have considerable value in terms of their 'ecosystem services', provisioning (food resources) and regulating services (water quality, climate regulation, etc.). The development of green (and blue) infrastructure can therefore contribute to the achievement of multifunctional spaces that can enhance ecological capacity and provide multiple ecosystem services (ES) in urban areas (Artmann et al., 2017), adding elements of innovation to urban regeneration policies and strategies developed in recent decades at different scales and in different territorial contexts (Tuset, 2017; Nesticò et al., 2020; Tarsitano et al., 2020; Lak et al., 2021).

3. Main dimensions and role of governance in Sustainable Urban Regeneration.

Although the literature shows a wide range, dimensions related to those provided by the theoretical framework of sustainability (Godard, 2003) are often mentioned. To guide the development and implementation of SUR, the following dimensions are therefore recognised:

Table: N°1 Main dimensions and sub-dimensions of the SUR

Dimension	Sub-dimensions
Social domain	Social development
	Heritage and cultural identity
	Human and urban resource management
	Encouraging residents' participation
Economic domain	Urban economy revival
	Balanced development
	Value management
Environmental domain	Security, Safety and disaster preservation improvement
	Sustainable Planning and Design
	Sustainable land use
	Sustainable resource and energy use
	Sustainable transport and ubiquitous system
	Sustainable and healthy urban environment restoration
Governmental domain	Policymaking
	Policy diffusion
	Smart urban technologies

Source: Own elaboration based on Lak et al. (2021).

Although the concept of urban governance cannot be easily defined due to its multiple interpretations (Obeng-Odoon, 2012), from a broad perspective it can be seen as a city-wide approach to enhance the contribution of urban areas to economic growth, social development, poverty reduction and environmental protection (Van der Waldt & Auriacombe, 2019).

In this context, Nicula et al. (2020) argue that good governance is recognised as a core component of SURl. Meyer & Auriacombe (2019) argue that SUR projects should consider this dimension as a prerequisite. In turn, Lak et al. (2021) argue that the role of good governance, determined based on 'active citizenship' and 'mosaic governance', plays a crucial role in the conceptual framework linking SUR to ES. Active citizenship is conceptually seen as a form of social innovation in which citizens act as producers and co-producers of urban sustainability (Mehmood & Parra, 2013). Mosaic governance, on the other hand, is proposed as a concept for developing mechanisms and interventions that link active citizenship with spatially connected networks of urban green spaces (Buijs et al., (2016).

Discussion and conclusions

SUR provides an opportunity to link spatially interconnected urban regeneration plans, policies and programmes to reduce impacts on natural ecosystems, mitigate risks and improve the quality of the urban environment and the quality

of life of its communities in the current context of profound socio-environmental changes at the global level.

The role of green and blue infrastructure is becoming increasingly relevant, particularly in light of new conceptual frameworks that link green and blue infrastructure to ecosystem thinking. Although still at an embryonic stage, these conceptual frameworks shed light on a possible paradigm shift that will steer urban regeneration strategies in different contexts towards an approach that prioritises ecological regeneration goals over socio-economic development goals.

Regarding the role of the governance dimension in SUR, the literature shows not only the complexity of the concept, given its multiple interpretations, but also that it reflects broader social transformations whose evolution is as rapid and diverse as the cities themselves (Cars et al., 2017; Castán Broto et al., 2019). However, there is a broad consensus that governance plays a dominant and essential role in SUR processes (Nicula et al., 2020). It is also a prerequisite for improving the quality of life of residents in urban regeneration projects (Meyer & Auriacombe, 2019).

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Neoliberal planning: from theories to contemporary urban spatial consequences

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1. Introduction

Planning is a social product and oriented according to each historical moment (Lefebvre 2000). The importance of understanding the social, political, and economic influences, which planning has undergone over the years, is fundamental to understand where we stand in the current spatial production. The neoliberal ideas had an influence on planning and their influences are in force to the present day (Allmendinger 2017). According to, Sager (2011, p. 149) "the concept of neoliberalism is useful for planning theory because it is an essential descriptor of the political trends and bureaucratic transformations that form the conditions under which planners work.". From the 1970s onwards, neoliberalism refined its relations with the State. The facilitated circulation of capital "was promoted by deregulations and liberalisations of the financial system" in complex manner (Dametto 2017, p. 56). Planning has come to serve as an ally to actors commanding the financial market for the disposal of surplus production in urban space (Sager 2011; Campbell, Tait, and Watkins 2013; Pinson and Morel Journel 2016; Rolnik 2019; Alster and Avni 2021; Liu, Clegg, and Pollack 2022). Dametto (2017) complements that it was in the 21st century that the articulation between financial capital and the States was fortified. The author emphasises the importance of investigations focusing on these interaction dynamics, since it is from this that space is transformed formally and socially.

It also highlights the relevance in mapping the effects of the relations between different actors (financial capital and state) in urban economic development, infrastructure provision, management of commercial areas, housing, and neighbourhood renewal (Sager 2011, Baptista 2013). Therefore, the main objective of this article is to recognize the historical process of the influences of neoliberalism on urban planning and what are the current forms of operation of this ideology in contemporary urban spatial dynamics. In this perspective, the second objective is to expose the articulations between financial capital and the State in the current historical moment, having as analytical focus the articulation between financial capital and the political instruments that legitimize it in the production of contemporary space. This proposition is objectified through the analysis of the Porto Maravilha Consortiated Urban Operation, a Public-Private Partnership, which are part of the neoliberal package of revitalization of the port region of the city of Rio de Janeiro.

2. Methods

The research objectives, the article is based on an exploratory-descriptive study. The approach, it based in quantitative research. The procedures for data collection, it based on: (1) literature review and (2) case study. The systematic literature review was conducted through platforms such as Web of Science and Scopus, identifying the relevance/index of the journals, number of citations and number of publications of the authors. Within this method proposition, a total of 57 articles, books, documents, and news were read, of which 47 were cited in the paper. In research platforms the aim was to identify studies that suggested a

reading of urban planning through the neoliberal perspective, and its contemporary consequences. The grey literature was used only as a basis to identify keywords related to some dynamics and current issues of the Porto Maravilha Consortiated Urban Operation. With this, we turned to the Web of Science and Scopus to systematize the literature concerning the case study in question.

3. Discussion

Historically, Consortiated Urban Operations have generated significant dislocation for residents, especially those from the lower economic class, as they are more vulnerable and sensitive to the impositions brought in by the government. In the case of Porto Maravilha, three quarters of the development area is composed of public land (Rolnik 2019). It's possible to perceive that there is one hundred per cent protagonism of the State in the process of outsourcing the public space and the handing over of the land to the business consortium generating the expulsion and gentrification of the spaces. With the increase in value of the region, the most economically sensitive end up being forced out of their homes. This happens in different ways: through the gentrification process, or a symbolic gentrification, and by the government's own action, which, when implementing the necessary infrastructure works in the locality, needs to expropriate some areas, and ends up offering derisory compensation to the residents. As a result, the original population is unable to buy real estate in the location, where prices rise because of the urbanization operation, and end up migrating to areas with less infrastructure (Janoschka and Sequera 2016). In the case of the PPP OUC Porto Maravilha it was through the capture of places, symbolic dispossession, and expulsion, that other actors dominated the city scene making it impossible for different groups to coexist in the same space. What happened in OUC Porto Maravilha was the entrenchment of a planning model that operates from regimes of permanent transitoriness and the denial of full citizenship, the so-called financialised digital neoliberal era (Rolnik 2019). The popular territory starts to operate under a new logic. The remodelling of public spaces was an attempt to make the space available for another type of population. The types of services and commerce have changed, and the local population cannot access some establishments. Many criticisms arise, mainly concerning the regulations and instruments created to enable such developments disconnected from the reality and conflicts existing there (Vainer 2011; Rolnik 2019). Rolnik (2019) explain that these projects "remove" part of the municipalities' regulatory responsibility through urban and environmental laws, and the dynamics are submitted to political processes based on the logic of the real estate businesses involved in the established Public-Private Partnerships. It can be perceived that the government has handed over part of the territory to private initiative, with almost absolute control of the spaces. The instruments created changed previously established laws and took the focus away from the residents, thus primarily privileging the construction and maintenance companies of the project. The Porto Maravilha Social Interest Housing Plan, for example, was not followed, evidencing the concept of the Spectacle City (Vainer, Maricato, and Arantes 2013), prevailing the logic of urbanisation guided by the market logic (Rolnik 2019). Another recurring criticism of the OUC Porto Maravilha is the long extension area it covers. As the revitalisation took place with the clear aim of reaching the major sporting events hosted in Brazil, the World Cup in 2014 and the Olympic Games in 2016, most of the proposed interventions were made at this stage. After the investment process the real estate prices stayed the same, the space had no variety in its uses, therefore the interest to act in the region faded out (Rolnik 2019). However, in July 2018, the concessionaire Porto Novo suspended its activities due to the unavailability of financial resources, which should be passed on by the public authorities. The OUC

Porto Maravilha has not made any progress or concluded many projects. Some residential properties are empty. Because of the failure of the development, demand has reduced inducing a decrease in the square meter (Abascal and Bilbao 2021). Finally, the project, or the specialised fragments of the plan, were established in a disconnected way from its pre-existences and the other areas of the city.

4. Conclusions

Over the years neoliberal principles and methods have reinvented themselves to promote the free movement of capital in urban space. There have been significant changes in the role of the state from the introduction of neoliberal ideals into urban planning. The forms of power in the city were redefined, where instruments and policies were set up in a logic of exception, without mediations and in favour of the democracy of capital. Public power eliminates mediations in the political sphere and puts itself at the service of the interest of different groups of private actors. Cities can no longer avoid the articulations between financial capital and the property market. The contemporary production of space is completely linked to this dynamic. The reproduction of capital, by actors, takes place through speculative processes via large developments, transforming the city into a factory to produce new spaces. As the interest is the fluidity of the financial capital, the spaces resulting from the renovation works, from the PPPs, is, most of the time, disconnected from the local reality and the other spaces of the city, becoming the gentrifying agent of some cities areas. PPPs are a perfect example of the dynamics between State and capital. PPPs are policies used for the expansion of private power networks and are often linked to corruption and gains by a small and dominant group of actors. It is a practical way in which private interests and the State reconfigure themselves and protagonise new ways of maintaining their hegemony to the detriment of more vulnerable populations. The materialisation of urban operations aims to intensify the position of cities in the capitalist world and attract more investments at the local level. In other words, to globalise the city and highlight it as a means of fluidity of capital surpluses. This is a common practice of neoliberal ideology in the governance of cities. Consequently, there is a growth in inequality and a change in the lifestyle of populations that are the result of the dispossession of spaces. The case study of OUC Porto Maravilha indicates the materialization spatially expressed under the model of neoliberal practices. The OUC Porto Maravilha involved public resources and land, a fact that shows one hundred percent of state support in favor of capital and eliminating the risks of the few private actors, a fact evidenced by the delivery of OUC to a business consortium. The mega-events, 2014 World Cup and 2016 Olympics, are used as a justification to transform the city into a plan of exception to the rules of the Master Plans through complementary laws. Neoliberal planning has turned cities into cities of spatial exemptions and authorisations. It is necessary to rethink the consequences of the fruits of the relationship between States and private actors now and to understand what the new means will be used in the future for the flow of capital. The benefits for the position of the global city in the investment ranking, in tourism, in the promotion of the city as a cultural and quality of life city are clear to some actors, but the benefits for the populations marginal to these processes are not perceived.

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Walking the tight rope| How the planner mediates between community and technology

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1. Introduction

Planning appears to be between two, seemingly, opposing trends. On one side there is technological development, with planning support systems providing increasing support to planning procedures but inciting growing questions regarding the nature of scientific information and its apparent reduction of the city to out-of-context, and consequently, incomplete data. On the other side there is a push for collaborative planning, namely more comprehensive and representative inclusion of the multitude of perspectives which constitute the city, both in its planning procedures and decisions. In the middle of both dynamics there is the discipline of planning, and the planner as its representative in practice. As procedures change, so do the responsibilities and needs of planners. In their hands is the obligation to balance scientific and community knowledge with government interests, while all of them go through a process of densification and complexification of data to analyse. This article contributes to the debate of these evolving dynamics by contemplating the role of planning and the planner in mediating these apparent extremes in the planning spectrum.

2. Methods

To do so, it undergoes a literature review based on the snowball approach. This methodology is applied to three areas of knowledge: 1) the development of technological planning support systems; 2) the evolution of the collaborative planning theory; and 3) the combination of both, namely trough the planner. Each of these points is then developed and compared in three different sections. The first section addresses the technological side of the spectrum, by clarifying different concepts within information technologies (culminating in planning support systems), identifying their advantages and drawbacks, and finalizing with their impacts for the theory of collaborative planning. The second section focusses on the collaborative planning theory, namely its goals and contributions to planning practice. This section also introduces the planner as an active agent in the mediation between planning procedures and, thus, as an important element in achieving balance between practical and scientific knowledge. A third section will reflect on the convergence of these different points, and what are the major difficulties and potentialities of said convergence.

3. Discussion

The existing literature revealed a growing complexity in planning in the mediation between different interests, namely the scientific, the social and the political. In this, three main issues emerge: 1) the weight of the planner as a mediator between these interests, a role whose increasing responsibilities demand a closer attention of their needs in order to provide better technological support (Hunter et al., 2022; Kahila-Tani et al., 2019; Lin & Benneker, 2022; Schindler et al., 2020); 2) the importance of associating the applied technological support systems to the needs of the territory, recognizing their limitations and inherently subjective origins (Staffans et al., 2020; van Buuren, 2009); and 3) the need to consider the

influence of the political context in the entire planning process, as nothing happens in an objective void (Geertman & Stillwell, 2020; Milz, 2019).

4. Conclusions

Technology does not need to be on opposing sides to the community knowledge acquired through collaborative planning processes. Both scientific and community knowledge can, and should, co-exist to form a comprehensive planning strategy. In this endeavour, technology can provide a powerful tool to attain and analyse information in a facilitated manner. However, it is not a panacea. It is always necessary to comprehend both the territory in analysis and the technology available and its restriction in order to apply the most appropriate methods of analysis.

In this instance, the role of the planner is highlighted for its importance in conjugating the different types of knowledge with the needs of the territory, evaluating the adequacy of the methods employed to provide an efficient planning strategy. Consequently, understanding the work of a planner becomes paramount, as it is the most efficient way to provide technological support with actual impact to planning practice.

Planning theory emerges here as a control of these emerging dynamics. Theory must continue to question, analyse and critique the technological contributions to practice, their ability to properly support planning and their restrictions. Likewise, it is necessary to build a strong connection between theory and practice, so planning theory can provide practice with the necessary analysis and support systems, be them technological or not.

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Rationales connecting food system and spatial planning | A literature review

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1. Introduction

The prospects of global population growth, extreme weather conditions, degradation of agricultural and natural landscapes, and scarcity of resources represent some of the many challenges in providing enough food for society (Brand et al., 2019). Hence, the international debate has been discussing the role of local and national representatives in securing sustainable food consumption, especially given the shortcomings of the conventional — commodified — global food supply chains (Morgan & Sonnino, 2010; Soninno, 2023). Considering this complex food landscape, international organisations and researchers call for solutions embedding a food system thinking, which means a multidimensional perspective that simultaneously addresses sustainability issues in food production, distribution and consumption (vans Bers et al., 2019). For instance, FAO (2018:23) defines *food systems* as "the entire range of activities involved in the production, processing, marketing, consumption and disposal of goods that originate from agriculture, forestry or fisheries, including the inputs needed and the outputs generated at each of these steps." The approach also comprises the network of actors in the different food activities, which provides an inclusive framework of their multiple concerns and often conflicting points of view (Blay-Palmer et al., 2018).

Furthermore, the perspective provides an analytical framework for the synergies and barriers between food and other complex systems, such as transportation, housing, and ecosystems (Ingram et al., 2011). In this sense, food system thinking can be a tool for developing integrated, multisectoral sustainable policies (Kassis et al., 2019). Nevertheless, academic and policy debates on achieving sustainable food systems noticeably lack empirical evidence, and even so, discussions mostly lead to strategies at a national level, which often do not provide clear means to implement and integrate food policies at lower scales (Soninno, 2023). Moreover, a growing literature supports that food relocalisation, i.e. strategies bringing the places of food production and consumption close to each other, can function as a lever for sustainable food systems transition (Lever, Blake, Newton, & Downing, 2022; Sonnino & Coulson, 2021). By valuing the spatial dimension of food systems, advocates expect that the reconnection of local producers and consumers and the reliance on more endogenous inputs offer means to a more balanced, sustainable development of the territory (Zasada et al., 2019). The appearance of new forms of food system coordination on local-regional scales, i.e. Alternative Food Networks and Food Quality Networks, comprises the desire of stakeholders to close the urban-rural divide (Lamine et al., 2019; Fèche et al., 2020). As food systems embody elements from both urban and rural domains, researchers argue that the perspective allows for an urban-rural reconnection, effectively tackling socioeconomic and environmental dimensions within the territory (Fanfani et al., 2022). However, agricultural land management, especially in the peri-urban interfaces, is still detached from food system planning (Perrin et al., 2020a). In this sense, food relocalisation and food system thinking call for new spatial planning processes capable of resolving the problem

regarding food through an integrated approach (Jansma et al., 2022; Kassis et al., 2021).

2. Objectives

This work aims at analysing, through academic and policy literature review, sustainable food provisioning through three intersecting pillars. The first one, food systems thinking, represents a holistic perspective that integrates the activities, agents, resources, and policies responsible for providing food to society. Second, food relocalisation advocates the reconnection between cities and their hinterlands to promote even territorial development. Moreover, at last, the role of spatial planning and their legal procedures in providing sustainable food. The discussion of those topics will attempt to explain the principal rationales rooted in food systems advocacy according to the international debate and what are the main gaps and opportunities for further investigations while addressing both subjects.

3. Methods

The present work conducted a semi-systematic review, gathering peer-reviewed studies between 2000 and 2023, throughout the following online databases containing scientific publications: Science Direct, SAGE Journals, Springer, Taylor & Francis, and Web of Science. The research uses two different categories of inputs. The first category contained keywords related to 'food system' or similar terms that also evoke the territorial dimension of the theme, such as 'alternative food', local/regional food systems, 'local food supply chain', 'peri-urban/urban agriculture', 'local/regional food production', and others. Furthermore, the second category of inputs presented relevant expressions linked to 'spatial planning', some of which highlight the idea of integration and sustainability, as in 'sustainable development', 'integrated spatial planning', 'territorial cohesion', 'territorial planning', 'land use' and other expressions. As a complementary step, Google Research identified potential correlations between spatial planning and food systems in international organisations and governmental texts (limiting the scope for European countries). Similar methodologies have been used with slightly different analytical focuses, such as in Delgado's (2023) recent work, where the author investigated the correlations between land and national food policies in Portugal. Oliveira et al. (2019) and Benek et al. (2020) also presented literature reviews — the former used semi-systematic methods, the latter a systematic approach — addressing sustainable local developments and agricultural land preservation. The resulting documentation was analysed qualitatively, identifying the main rationales supporting the use of a food system perspective and its integration into spatial planning in policies and practical initiatives.

4. Findings and conclusions

According to the findings, sustainable food planning is inherently a multisectoral process given the synergies and trade-offs between the many resources and activities within the food system, those which depend on other complex socio-ecological systems (Artioli et al., 2017; Sonnino, 2023). Hence, system thinking can frame the network of relationships between the multiple socioeconomic segments in food provisioning. Literature also highlights that the perspective

offers a holistic vision of the urban and rural domains, which traditionally present their development plans and instruments separately. Therefore, food systems could work as a lever for overcoming the urban-rural divide by supporting a more integrated approach towards the region or territory. Authors also point to spatial plans and procedures' capacity to preserve local-regional food production areas (Brown & Brush, 2018; Cabannes et al., 2017), which could indirectly support local-regional food systems. In most cases, however, agricultural land protection is one of the few objectives of spatial planning policies and procedures needing a clear recognition of a systemic perspective surrounding (sustainable) food (Kassis et al., 2021; Jasnma et al., 2019). In this sense, literature recognises the need for a new multi-level governance that can develop and implement policies applied evenly throughout a territory while also being tailored-made for the socioeconomic and environmental context.

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Food Productive Green Infrastructure: an opportunity to create new urban morphologies based on agriculture

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Introduction

Climate changes, the Covid-19 pandemic and the recent war in Ukraine fostered the need to rethink the planning of cities, making them more resilient to future challenges (FAO, 2020; Pulighe & Lupia, 2020; Gesto, 2020). The preservation and revitalization of agricultural activities in urban areas is crucial since it can improve their resilience. Initiatives to foster urban agriculture demonstrate that productive green spaces, such as allotment and community urban gardens, have always enabled inhabitants to produce food on urban green spaces when needed, achieving food security in periods of severe humanitarian crises, and continuing to do so today (Bell et. al, 2016; Lal, 2020). Furthermore, it promotes well-being and social cohesion for communities (Marsh et al. 2021, Fletcher & Collins 2020). When practiced with an economic approach, urban agriculture can foster small-scale and part-time activities (Ferrario, 2009), increasing job opportunities that align with UN sustainability goals.

Agricultural lands on the fringes of cities play an important role in shortening the food supply chain and increasing sustainability. These areas also contribute to mitigate climate changes, as their permeability can help manage heavy rainfall, and with appropriate design, they can serve as emergency flooding areas (Ferrario, 2009). Furthermore, these landscapes can be designed as Agricultural Parks to offer many other benefits and ecosystem services, which allows them to be classified as Nature-Based Solutions (NBS) (Artmann & Sartison, 2018).

The widespread expansion of many urban centres has sparked intense debate about the challenges of planning and land use to ensure the sustainability and resilience of cities. Meeting the population basic needs in terms of food supply and quality of life is paramount, as is preparing the territory to mitigate the climate change impacts (Ferrario, 2009). Urbanized areas did not necessarily create the conditions for abandoning farming activities, and it is important to focus on how to transform cities rather than to plan new ones (Nasr & Potteiger, 2023).

The preservation of fertile lands and existing cultural heritage should be key elements in design and territorial planning strategies, aiming for an integrative approach to all elements related to the urban food system, and the promotion of territorial cohesion between urban and rural areas. Seen in this way, the sprawled landscape could not be an enemy to fight, but rather, a territory in need of (re)design, starting from its bulding elements (Ferrario, 2009).

Discussion

The Agropolitan concept (Ferrario, 2009) emerged to explain the urban expansion (città difusa) in the Veneto region, Italy, during the process of creating a regional urban plan. The concept proposes an integrative view of rural and urban heritage, arguing that this region can be defined not as an urbanized field, but rather as a metropolis with many agricultural areas. The landscape is marked by its multifunctionality, being classified as a contemporary cultural landscape, in which the agricultural territory is used both for production (food, energy, and ecological network) and for leisure, a park for people living nearby. Ferrario argues that these fertile lands, where a typical and profitable agriculture is practiced, should be valued and preserved, considering its real and potential contributions to biodiversity, its relationships with urban areas, landscape conservation, and services to people and the environment, as a guarantee for a sustainable future.

Figure 1 and 2: Images from the region of Veneto, Italy (Ferrario, 2009).

Other planning concepts focusing on the design and integration of productive green areas into the urban fabric also emphasize the importance of agriculture to urban resilience.

The concept of Continuous Productive Urban Landscape (CPUL) was created in 2004 (Bohn & Viljoen, 2014) and is considered innovative because it proposes a network of open urban areas as multifunctional spaces that include agriculture. This is significant because food production is not yet recognized as a function of urban green infrastructure. Fruit and vegetable production, which provides the highest yields per square meter of urban ground, is the focus of CPUL's. Its key features include shared outdoor spaces for food growing, leisure, mobility, and trade, used both by people and natural habitats. Non-vehicular circulation routes and ecological corridors are essential components of the concept. The CPUL network links together existing open urban spaces, preserving their current uses while modifying them in some cases, even temporarily. According to Bohn and Chu (2021), CPUL’s allow a sustainable use of urban land that meets the population food needs.

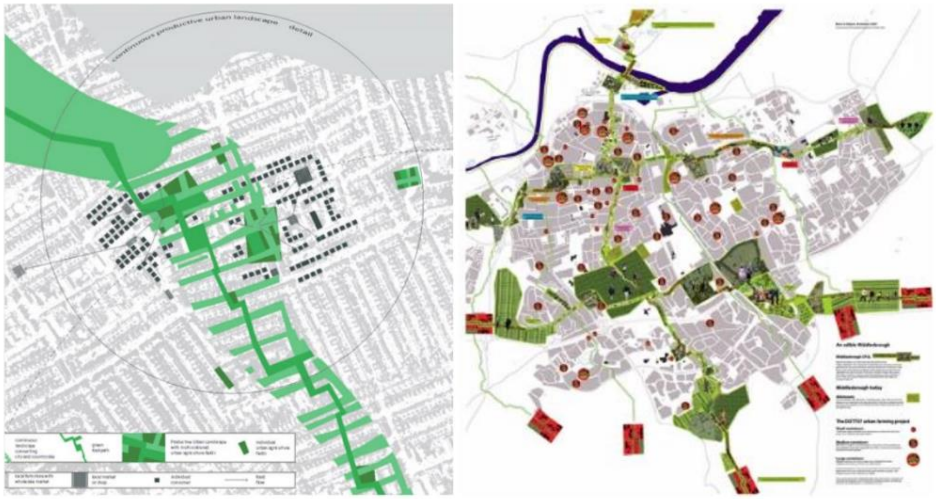

Figure 3 and 4: Two proposals of CPUL City concept in London (Bohn & Viljoen, 2012) and Middlesbrough (Bohn&Viljoen Architects website).

The Dutch city of Almere integrated CPUL's into its 2009 Municipal Development Plan through the Agromere project, which planned and designed, with the active participation of stakeholders, a network of green spaces for food production and recreation (Jansma & Visser 2011). Similar projects were developed in Rhineland, Munich, and Berlin (Germany), London and Middlesbrough (UK) (Bohn & Viljoen, 2014).

The great innovation of the CPUL City concept is also its greatest challenge, as the urban landscape must not only integrate productive areas, but they also need to be connected to form a continuous network. Considering dense and well-established cities, it is already a great challenge to integrate productive areas, making it even more difficult to create a patchwork of open spaces into a continuously connected one based on productive uses (Nasr & Potteiger, 2023).

Given the older and more densely populated urban centres, which have many vacant areas and brownfields, such as Detroit and St. Louis in the USA, as well as old coal towns in the English Midlands and the French-Belgian border, other planning approaches see an opportunity to create new urban morphologies, with urban agriculture as a common and strategic central component (Nasr & Potteiger, 2023).

Using GIS analysis, shrinking cities in USA like Cleveland, Ohio, Flint, Michigan, and others are exploring how planning policies can repurpose abandoned and vacant areas to restore ecological patterns and create productive agricultural land uses. The recent framework plan for Detroit, developed by Stoss, also identifies productive landscapes as a primary system in the city's reimagining. Furthermore, the incorporation of urban agriculture into the city's design is essential for promoting sustainability and presents an opportunity for design interventions (Nasr & Potteiger, 2023).

Using Switzerland as a case study, the Food Urbanism Initiative proposed the creation of new architectural and landscape strategies that integrate all components of the food system (production, processing, distribution, and consumption) as the central focus of urban design. The existing urban fabric

was scrutinized to create design strategies at multiple scales (building, neighbourhood, and city), resulting in a Tool Kit with diverse typologies that allow multiple solutions to incorporate food system functions in existing urban components. Policy strategies were also suggested to integrate food production cycles more harmoniously into urban life (Nasr & Potteiger, 2023).

The demand for urban cultivation spaces has increased in Portugal (Martinho da Silva, et al. 2016), following a European trend (Dobson, et al. 2020; Fletcher & Collins, 2020). This demand was followed by the creation of many urban gardens throughout the country, with little or no integration in the urban or municipal planning strategies, due to its novelty and the scarcity of information on possible typologies, scenarios, and approaches (Coles & Costa, 2018).

One can argue that some Portuguese cities, like Lisbon and Porto, have already developed Municipal Ecological Structures plans aimed at preserving and connecting existing urban green areas. However, these plans often overlook the potential to incorporate food production areas. This opens an opportunity to explore planning and design strategies to incorporate food production in Portuguese urban green infrastructures, enhancing its multifunctionality, and preserving and promoting the cultural and agricultural heritage that still exists at the fringe and within the urban fabric. This strategy meets the population demand for new cultivation spaces, and the municipal planners demand for new urban models increasing urban resilience, allied to the growing relevance of urban agriculture in the current European and world scenario.

Figure 5: An aerial image of the northern zone of the city of Porto and Matosinhos, where several agricultural areas can be identified in the middle of urbanization (Google Earth Pro).

Conclusion

A proposal for an urban intervention model addressing both the planning and design of a food productive green infrastructure is the main goal of my research. This proposal aims to inspire new urban resilience policies meeting

the Biodiversity Strategies for 2030, such as the plan "Bring nature back to our lives" and "Farm to Fork Strategy", considered at the heart of the European Green Deal. It also addresses the subject of territorial cohesion, aiming to contribute to the development of policies that fit the RURBAN (Partnership for Sustainable Urban-Rural Development), a preparatory action agreed by the European Parliament in 2010 and managed by the European Commission.

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Exploring carrying, adaptive, and transformative capacities through an evolutionary tale of environmental policies

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1. Introduction

Over the last century, several environmental problems have been identified and handled with different types of policies. Thus, four generations of environmental policies that evolved according to existing perspectives on environmental systems at each period have been identified. In this context, the carrying, adaptive and transformative capacities are some of the capabilities that have emerged to equip the systems with the ability to overcome the identified challenges with the aim of building resilient systems. Even though these capacities are widely acknowledged, their correlation with the various generations of environmental policies is not clear. To fulfil this gap, this paper aims at exploring these capacities through the evolution of environmental policies. To this end, a literature review on the carrying, adaptive and transformative capacities is provided alongside the evolutionary process of environmental policies.

2. Understanding Carrying, Adaptive, and Transformative Capacities

Whilst the concept of carrying capacity (CC) has emerged in the context of international shipping to calculate tariffs for steam-powered vessels (Sayre, 2012), it has been employed in several other disciplines, as is the case of engineering or natural sciences (Taiwo & Feyisara, 2017). However, it is the conceptualization of CC in the ecological sciences – the maximum number of individuals that an area could support without causing degradation or negative effects on the environment (Rees & Wackernagel, 1996; Wei et al., 2016) – that served as a basis for the definition adopted in social sciences. In this field, the concept of CC includes anthropic factors such as society, economy, and culture, resulting in two main conceptualisations. The first was the human CC, which assessed the size of a human population that could be sustained without destroying the social, natural, or cultural environments (George & Kini, 2016; Santoso et al., 2014; Wei et al., 2016). The second was motivated by the increasing urbanisation processes and their complex challenges (de Alencar et al., 2020), triggering the mutation of the CC concept into urban CC (Feng et al., 2020), i.e., the ability of the natural and built environment to sustain demand for its uses, including the limit of population growth, activities, and spatial development that an urban area can accommodate without disrupting its environmental goals or causing irreversible damage (Godschalk & Parker, 1975; Oh et al., 2005; Tsou et al., 2017).

The concept of adaptive capacity (AC) was first introduced in Sen's capabilities theory (Mortreux & Barnett, 2017) as a set of capitals or resources that can be used to assess the ability to adapt to change (Flórez Bossio et al., 2019). However, it was the recognition of AC as a crucial component of vulnerability by the

International Panel on Climate Change, in 2001, that has led to exponential growth in research on this concept across various disciplines and re-emphasized the importance of adaptation in climate policy (Flórez Bossio et al., 2019). In this context, AC appears closely related to resilience and vulnerability frameworks, as it plays a central role in defining a system's vulnerability and enables actors to enhance resilience or facilitate transitions or transformations (Engle, 2011; Flórez Bossio et al., 2019). In both frameworks, AC is considered a positive and desirable property, as it enables systems to manage climate change impacts and modify approaches and strategies as needed (Engle, 2011; Hu & He, 2018; Marzi et al., 2018). However, there are criticisms that the resilience framework lacks perspective on social aspects, while the vulnerability framework does not adequately consider ecological features (Engle, 2011). Essentially, AC is a concept used to assess a system's ability to adapt or take adaptive actions (Engle, 2011; Marzi et al., 2018) whilst considering social and biophysical factors that trigger and translate AC into actions (Erdiaw-Kwasie et al., 2019; Flórez Bossio et al., 2019). Over time, the understanding of AC has evolved from a focus on capital assets to the mobilization of capabilities (Erdiaw-Kwasie et al., 2019), highlighting the importance of agency in initiating and achieving adaptation outcomes such as resilience and transformation (Bettini et al., 2015).

Regarding the transformative capacity (TC) concept, it can be found in two main fields of knowledge: resilience studies and transformative research. In resilience studies, TC has been understood as a resilience capacity (Fallon et al., 2022; Mehryar et al., 2022; Mochizuki et al., 2018; Zeng et al., 2022), emerging as a critical ability when persistence and adaptation are not viable or desirable, and when a system has surpassed its critical threshold for self-organization towards a new state (Manyena et al., 2019), being particularly relevant in the context of climate change (Mehryar et al., 2022). Thus, TC has the potential to challenge existing systems and bring about fundamental changes or even dismantle them, ranging from incremental to drastic or even violent methods, depending on the triggers (Manyena et al., 2019; Mehryar et al., 2022). Unlike other resilience capacities, TC targets the fundamental, structural, and root causes of these issues, enabling proactive and systemic changes (Mochizuki et al., 2018; Zeng et al., 2022), which are facilitated by efficient risk management, well-functioning institutions, and proactive self-organization (Zeng et al., 2022).

In transformative research, the two wide-acknowledged conceptualisations of TC bring together different fields of action, ranging from climate change adaptation, social-ecological systems, sustainability, and resilience. According to Ziervogel et al. (2016), TC involves not only the ability of individuals, organizations, and societies to transform systems and themselves intentionally but also the capacity of systems to continuously transform and promote collective learning (Hestad et al., 2021). TC facilitates a shift from top-down to bottom-up approaches in urban governance, enabling inclusive and participatory decision-making involving multiple stakeholders for driving transformative change (Ziervogel et al., 2016). Wolfram (2016) defines urban TC (UTC) as the collective ability of stakeholders in urban development to conceive, prepare, initiate, and perform path-deviant change towards sustainability, reflecting attributes of stakeholders, their interactions, and the context they are embedded in.

3. The Four Generations of Environmental Policies

According to Pinho (2020), the first and second generations of environmental policies were concerned with two different dimensions of environmental systems. While the first generation addressed the biophysical dimension, centring the attention on nature conservation at a local scale of intervention, the second generation was focused on the socioeconomic dimension and aimed at pollution control at regional scales. In the case of the third generation of

environmental policies, Pinho (2020) claimed they have tried to embrace both the aforementioned dimensions through the sustainable development concept, aiming at ensuring the provision of natural resources to future generations, without compromising the present development. The fourth and latest generation of environmental policies tackles the challenge of climate change from a global perspective, bouncing back to a focus on the biogeophysical dimension of environmental systems (Pinho, 2020).

4. Discussion and Conclusion

Bringing together the backgrounds and definitions of the three capacities and the different generations of environmental policies it is possible to establish a direct link between CC and the third generation, whilst AC and TC relate to the fourth generation of environmental policies. As previously seen, researchers started by raising awareness of the limitation of resources considering exponential population growth and urbanisation. In this context, CC emerged as a measure of sustainability, primarily focused on safeguarding (social, natural, and cultural) resources in face of development. With climate change impacts being increasingly experienced (especially in urban areas), the focus shifted to climate change and how it (negatively) influences the existing resources. AC came forward as a crucial ability to foster resilience and reduce vulnerability. However, research has shown that this might not be enough to address the complex challenges of climate change and urbanisation, since the adaptation required can go beyond the CC limits of a system, demanding an ability to break lock-in features and existing path-dependencies whilst taking proactive approaches. Against this background, TC surfaces as the ability to create needed novel and path-deviant solutions towards sustainability, reflecting on attributes of actors (individuals, organisations, institutions) and their role while leaders potentiate positive transformations towards sustainability.

Additionally, it is noteworthy that these capacities form a feedback cycle between them, as Figure 1 shows.

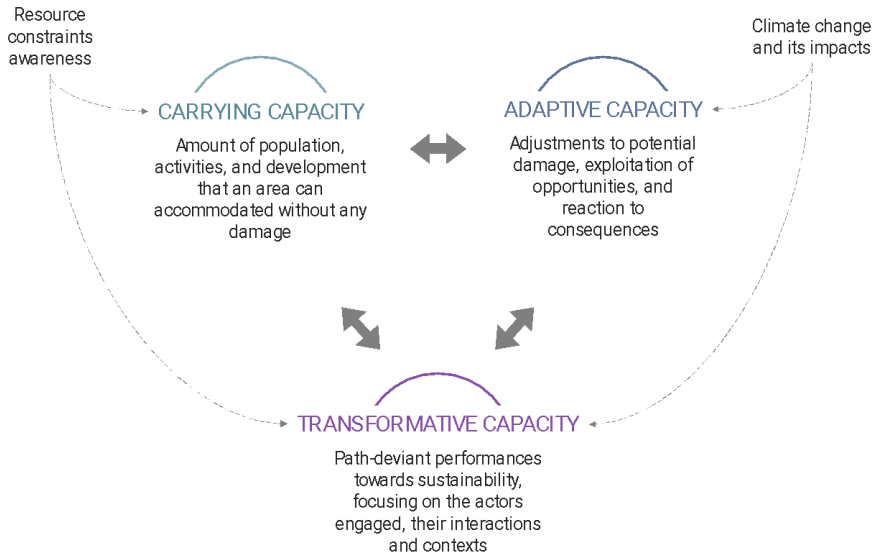

Figure 1: Feedback cycle between CC, AC, and TC, and their main features.

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Author Keywords: carrying capacity; adaptative capacity; transformative capacity; environmental policies

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Nature-based solutions in spatial planning and policies for climate change adaptation: a literature review

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1. Introduction

The world is changing, and nature´s capacity to provide benefits, address social, economic, and environmental challenges and thus provide human well-being and biodiversity are at risk. This global crisis requires solutions to bring more natural and diverse features and processes into urban areas. Acknowledging this challenge, the research academy, spatial planning, and policy making have recognised the role of Nature-based Solutions (NbS) in addressing different societal challenges.

To highlight current NbS knowledge, its implementation and operationalisation in spatial planning practice and policy for Climate Change Adaptation (CCA), it was conducted a semi-systematic literature review according to the “Preferred Reporting Items for Systematic reviews and Meta-Analyses” (PRISMA) 2020 methodology.

The results provide information regarding the principles, criteria, guidelines, and steps to uptake NbS implementation and operationalisation in spatial planning practice. It also allowed an understanding of how NbS and CCA have been mainstreamed across multiple international, European Union and Portuguese policy frameworks.

2. Methodology

To highlight current Nature-based Solutions knowledge, its implementation and operationalisation in planning practice and policy for climate change adaptation, a literature search was conducted in Clarivate Web of Science (Wos) and Scopus. Following Page et al. (2021), a semi-systematic literature review was developed partially according to the “Preferred Reporting Items for Systematic reviews and Meta-Analyses” (PRISMA) 2020 methodology. This semi-systematic review was guided through a selection of different keywords followed by the analyses of the obtained literature aiming to understand NbS in spatial planning and policies for climate change adaptation. This study uses a semi-systematic review approach since it is designed for topics being conceptualised differently and studied by different groups of researchers from multiple disciplines, making it challenging to perform a full systematic review process (Wong et al., 2013). From the semi-systematic review methodology used, it was possible to know how research within the chosen topics has progressed over time and how they have been developed across different research areas. The semi-systematic literature review checked several of the twenty-seven items (e.g., title, abstract, introduction, methods, results, discussion, and other information) from the PRISMA 2020 statement to guide the literature review. The literature search was also organised according to the PRISMA 2020 flow diagram used to resume the identification of

studies via databases and registers. It was established in three steps: identification of records from databases, records screening, and studies included in the review. The first step (identification) started with selecting keywords for inquiry identifying records from the WoS and Scopus databases and the number of documents obtained. Care was taken regarding the chosen keywords, which are common across different discipline areas, and to include all relevant studies in the review. In the second step (screening), the literature review was limited to a list of "articles" and "reviews" published in "English" between "2017" and "2022" to collect the most recent publications about NbS in spatial planning practice and policy for CCA. The third and last step (included) of the PRISMA 2020 flow diagram to identify new studies via WoS and Scopes databases was performed regarding a list of criteria for selecting the final records to review. The selection criteria were developed according to the topics settled to study in this research study as a list of yes/no questions, by application order, to retain only evidence-based articles concerning nature-based solutions, especially green infrastructures, in the context of climate change mitigation and/or adaptation and related to spatial planning and/or urban policies at the municipal or urban scale. A total of 40 papers were compiled with the selection criteria and were thoroughly reviewed to assemble information about the topics of the research study. Regardless of all the information collected from the analysed 40 articles, the literature review also assembled information from the H2020 projects regarding NbS research (European Commission, 2020) and other institutional and official documents from the European Commission (2021), IUCN (2020a) and (IUCN, 2020b).

3. Results

Due to its overarching goal to address societal challenges, produce multiple benefits and support sustainable development and resilience, the authors from the literature review have presented some principles, frameworks, criteria and guidelines that helped clarify the nature-based solutions framework and enabled its implementation and operationalisation in planning practice (Albert et al., 2021; Cohen-Shacham et al., 2019; IUCN, 2020a, 2020b; Kabisch et al., 2022).

The developed principles aim to facilitate NbS implementation and upscale (Cohen-Shacham et al., 2019), to include place-specificity, evidence base, equity, integration and transdisciplinary into NbS development at the landscape scale (Albert et al., 2021), and to provide a spatial translation and operationalisation of the existing knowledge on participatory planning and good governance of NbS to the urban scale (Kabisch et al., 2022).

The increased use of the NbS concept made it necessary to ensure that it is well understood, communicated, and implemented. Hence, IUCN developed a "Global Standard" to help integrate NbS design and implementation in planning practice, promoting NbS benefits to address societal challenges (IUCN, 2020a).

When it comes to the review of policy instruments, it was possible to understand that global, European Union (EU), and national policies have progressively embedded nature-based solutions for climate change adaptation over their objectives, actions, and instruments (Davis et al., 2018; Knoblauch et al., 2019; PNPOT, 2019). In the last decades, these policies have recognised the role of NbS and the ecosystem services it provides to address CCA.

4. Discussion

Despite all principles, frameworks, criteria and guidelines aiming to clarify the NbS framework and enable its implementation and operationalisation in

planning practice, the performed literature review recognised the need to continue applying and adapting them to different case studies to fully understand their outcomes (Albert et al., 2021; Cohen-Shacham et al., 2019; IUCN, 2020a, 2020b; Kabisch et al., 2022).

The policies reviewed showed that NbS, its related concepts and approaches, and CCA had been increasingly integrated into global, EU and national policies. However, there is still a need to widespread the use of NbS to address CCA across EU policies (Calliari et al., 2022).

Including NbS for CCA in policies has been mandatory or voluntary, so there is still work to do regarding the effective mainstream, implementation, and operationalisation of NbS in planning practice. It was also possible to identify through the literature review that there is a knowledge gap regarding the monitoring and evaluating NbS effectiveness in addressing CCA (Albert et al., 2021; Calliari et al., 2022; PNPOT, 2019).

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Author Keywords: Nature-based solutions; spatial planning; policy; climate change adaptation

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Posters - Group 1 | Enhancing Urban Sustainability: Innovations and Strategies for Addressing Climate Change

Blue-green infrastructures as a tool to mitigate urbanization negative Impacts: the case of Ribeira da Granja in Porto

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Abstract

In the last decades, the process of urbanization led to a degradation of watercourses in cities, increasing floods, lack of adequate sources for supply and the disqualification of river landscapes. With this concern, cities started proposing strategies for reintroducing nature to cities, such as blue-green infrastructures (and their conciliation with grey infrastructure), nature-based solutions, and adaptation to climate change, to recover biodiversity, and promote sustainability and quality of life. This study focuses on the analysis of the benefits of the requalification of the watershed of Ribeira da Granja, in Porto. With the theoretical background and study of reference cases, there were made visits to the place with a photographic register and observations of how the space is being used by the population. Finally, it was possible to propose some solutions related to the improvement of climate adaptation and the increase of the quality of the public space around the stream.

Author Keywords: Environmental sustainability, climate transition, blue-green infrastructure, nature-based solutions, urbanization, watercourses, Ribeira da Granja, Porto.

Type: Research Article

Open Access Peer Reviewed

Ephemeral Interventions in Porto

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Abstract
As a living and impermanent organism, the rapidly changing dynamics of the contemporary city highly stimulate experiences and sensibilities. To foment a creative atmosphere for new uses and initiatives, the authors propose guidelines for ephemeral interventions in five areas of Porto, from squares to mobility infrastructures, to make used or underused public spaces more inviting and practical. The methodology is based on three main aspects: theoretical research on aspects of ephemerality, diversity, and narratives; field research using a customized analytical framework to identify existing potentials and vulnerabilities; and interviews aimed at engaging the community in a co-design process. As a result, flexible and short-term interventions are proposed within a mutable and cohesive system that is integrated into the urban landscape. Because ephemeral urbanism is an ongoing process, the initiative explores the "urban laboratory" concept, where users are involved in all phases, from planning to execution, monitoring, evaluation, and redirection.

Author Keywords: Urban planning and morphology, ephemeral, diversity, urban narratives, co-design.

Type: Research Article

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Green roofs: how the implementation of this system can be beneficial in Antas, in the city of Porto

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Abstract

Thermal comfort is a determining factor for the functioning of activities that are carried out in public spaces, as well as the intensity with which they will be used. Due to thermodynamic properties, humidity, radioactive exchanges and other factors, the creation of a peculiar microclimate by concentrating more heat in the urban area is inevitable. Therefore, the present work presents and analyzes green roofs as a Nature-Based Solution, as it has significant potential to address the climate crisis and various urban challenges such as biodiversity loss, water management and air quality. The area of Antas in the city of Porto, in Portugal, presents a scenario of growth of buildings that may impact the microclimate. Therefore, it is possible to indicate potential buildings in the area that could receive and take advantage of this structure to improve the quality of the area and the building for the benefit of the population.

Author Keywords: Environmental sustainability. Green roofs. Nature-Based Solutions. Thermal Comfort.

Type: Research Article

Open Access Peer Reviewed

Nature-based solutions in the transformation of urban spaces. Case Study: Bananeira's Community Garden

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Abstract

Urban agriculture produces many environmental, economic, and social benefits. However, urban planning is not adapted to think of cities as social-ecological systems. In this context, urban gardens are a good way to integrate food policies and urban planning. Thus, this work aims to: assess the values created in the community garden "Bananeira" in Porto's city; characterize it; understand if it fits as NbS and how it contributes as an Ecosystem Service. Through literature review, support in the Barcelona Garden's case study, and local evaluation, it is concluded that the Bananeira Gardens can fit in a case of urban requalification through a cultural Ecosystem Service. The values identified were biophilia, place-making, and political achievement and the challenges were maintaining the space and engaging people. This demonstrates the need for better articulation among the agents of that space, the importance of network integration, and the urgency of integrated public policies for urban agriculture.

Author Keywords: Urban agriculture, Community gardens, Nature-based solutions, Environmental sustainability, Porto.

Type: Research Article

Open Access Peer Reviewed

Waterborders

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Abstract

We aim to describe the unique relationship between the city of Porto and the water, which has past roots and passes also through minor inner rivers and city's history. Over time these small waterways have developed a close relationship with both the river Douro and Porto, becoming a connection and a boundary at the same time between the city and the natural environment of the river. Furthermore, they could be a connection through neighbours of the city as well. We propose the implementation of the relationship between the city and the watercourse Rio Tinto in Oriental Park of Porto through the creation of green corridors designed not only to maintain and implement biodiversity, but also to create social spaces that can interact with and benefit from the watercourse and the citizens. Reconnecting people with blue-green infrastructure not only increases the overall comfort in the city, it is also an important condition for counteracting the effect of climate change and improve the wellbeing of citizens.

Type: Research Article

Open Access Peer Reviewed

Sharing my yard

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Abstract
Sharing my yard. Referring to the affection attached to the act of eating and relating in community, this is the union of urban agriculture policies and the creation of social value. The current food model has a direct detrimental effect on health, as we reach a tipping point where industrially processed foods are less expensive and more easily accessible than healthy, natural food, resulting in overweight over fifty percent of adults in Europe. Through the concept of creating a network, which can be expanded through a catalyzer activity hub, the establishment of networks of communitary and individual cultivation of food of high nutritional value having the proposal of shared backyards as a positive and spontaneous expansion shaping a more resilient urban food system where the urban area seen as a green metabolism in food production, for food and nutritional security policies with stimulation of the creative economy.

Author Keywords: Urban agriculture, community, creative economy, catalyzer activity hub.

Type: Research Article

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Case study of the municipal strategy for adaptation to climate change of Porto – Portugal

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Abstract

From the ratification of the Paris agreement by the European Union, plans for mitigation and adaptation have been suggested, among them the Municipal Strategy for Adaptation to Climate Change (EMAAC-Porto), this work used bibliographic research to obtain information about the aforementioned strategy. It was concluded that due to the joint efforts between international cooperation institutions, the Portuguese Environmental Protection Agency, the ClimAdaPT.local project, the Municipality of Porto, and several local research institutes, the EMAAC-Porto follows a pattern applied in Portuguese and European municipal strategies, but with some points customizable according to the local reality and needs. However, the implementation of projects and local aggravating factors such as the advance of the sea to the west, the seasonal rise of the Douro River to the south, and the presence of several houses in poor conservation conditions raise the risk of the population to suffer from changes resulting from climate change.

Author Keywords: Climate Adaptation; EMAAC; Paris agreement.

Type: Research Article

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Urban elevations: road overlaping solution and its controversial dialogue to urban mobility

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Abstract

Urban mobility is a major challenge for the development of cities, and constitutes one of the important elements for evaluating the quality of life in society. Under the optics of New Urbanism and as some thinkers generate the discussion about the sustainability of cities and promotion of road collectivism, that this essay aims to perform a comparative study of the respective temporal theories on urban infrastructure works between reference cities, being them: Portland, New York and São Paulo. For each of the cities studied, it is known that the conducts of the great constructions of viaducts and elevations were momentary alternatives to the adaptive needs, although they must be rethought to direct to a new urban development of the built spaces. At the end, the relational conceptions of the current scenarios of the Brazilian city Uberlândia - Minas Gerais are added. The urban actuality discusses the pillars of sustainability, social equity, prioritization of pedestrians and collective modals. Would this be the future conduct for the city of Uberlandia?

Author Keywords: Viaducts, urban mobility and urban planning.

Type: Research Article
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Deterritorialization: a critical chronology of the cultural urban landscape of the patrimônio district

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Abstract
Within the urban centers, the landscape is (re)made in its temporal trajectory resulting from spatial transformations and urban successions that are intrinsically related to the evolutionary process of the human being. Of the most varied types of space appropriation, urbanization stands out for centralizing conducts that represent functional, ideological, and cultural conceptions. To understand the dynamism of space is to have it as a plural, multidimensional element, and above all in a temporal context. The dynamic reading is necessary to know what kind of results are obtained on cultural landscapes, which are affected by the urbanization process and stratified by the gentrification of the site. The work presents a reflexive analysis about the Patrimônio neighborhood in the city of Uberlândia-Brazil, in its important challenges for the construction of the urban landscape as a lived phenomenon.

Author Keywords: Gentrification, urban landscape, cultural landscape, urbanization e deterritorialization

Type: Research Article
Open Access Peer Reviewed

The Role of Urban Planning and Architecture in Promoting Healthier Urban Environments. The Case of Porto city's Housing Market

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Abstract

In the development of healthy and livable cities, urban planning and architectural design are crucial. The relationship between urban design and public health has long been recognized, with various diseases that have influenced the evolution of architectural design concepts. More recently, the Covid-19 pandemic has renewed attention to the relationship between the urban environment and public health. As such, it is essential to continue exploring the ways in which urban planning and architectural design can promote public health and well-being in cities.

Despite the rising acknowledgment of the need of constructing healthy and sustainable housing, persistent tension exists between economic considerations and public health results. This research investigates the relationship between economic factors in urban planning and architectural design and their impact on tenants' health in housing buildings. Using Porto as a case study, we analyze how economic factors have influenced the design and construction of housing buildings and establish some fundamental principles for creating healthy and sustainable housing.

Author Keywords: City and health, Covid-19, Urban Design, Healthy Buildings.

Type: Poster submission

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Urban Dam

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Abstract
A project that has been developed through synthesis of acquired abilities and knowledge in the years of studies on the Faculty of Architecture in the University of Belgrade, Serbia. With a given theme “Urban Barrier” and a location in the semi- industrial area in the city of Belgrade, the developed form for this final work project should represent at the same time a connection as well as a barrier of the two different urban zones: commercial and residential. With multiple industrial buildings in the surrounding, the urban tissue is very various in this area. With a conceptual approach towards the task, a playful organic form of this complex of units is supposed to break the cubic uniform of the tissue and implement a playful character into the surrounding.

Author Keywords: Conceptual Project, Contrast, Organic Forms, Connection, 3D Modeling.

Type: Poster submission

Kintsugi

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Abstract
Kintsugi. A traditional Japanese restoration tecnnique that uses precious metals to weld pieces of broquen pottery emphasizing the cracks rather than hiding them, with the end result of creating a unique object that was once commonplace.
Faced with the absence of literature that addresses the theme “Kintsugi” directly to urban intervention, we propose to anchor the theme on tangential concepts like “adaptive reuse”, “circular economy” and “cultural heritage”.
On the city scale, the Kintsugi concept can be transcribed into the analysis of buildings and road infrastructure that have been left to decay due to neglect, disinvestment or changes in economic and structural conditions. These constructions can be aesthetically displeasing and sometimes dangerous, but can also be opportunities for creative repurposing. With this concept in mind, we see the imperfections of rundown buildings as opportunities to create something new, without denying its origins or the essence for which they were created.

Author Keywords. Kintsugi, adaptative reuse, circular economy, cultural heritage, restoration

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