URBAN INTERACTIONS REVISITED

BRIDGING DISCIPLINES FOR AN ACCESSIBLE AND INCLUSIVE ENVIRONMENT

FACULTY OF ARCHITECTURE CTU IN PRAGUE

Faculty of Environmental Sciences

AESOP YOUNG ACADEMICS NETWORK

Urban Interactions Revisited: Bridging Disciplines for an Accessible and Inclusive Environment

Book of Extended Abstracts

20th AESOP Young Academics PhD Conference

(Eds.)
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ISBN 978-80-01-07533-3 (on-line)
ISBN 978-80-01-07532-6 (print)

Published by Czech Technical University in Prague, Faculty of Architecture
Thákurova 9, 160 00 Praha 6, Czechia

Typeset in XeLaTeX, Language Science Press template (langscibook class)

1st electronic edition

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Preface

It is a great honour to welcome you to Prague for the 20th AESOP Young Academics PhD Conference 2026. Twenty years after the first YA conference, this milestone marks two decades of vibrant exchange, critical engagement, and lasting networks among young researchers.

This year's theme is Urban Interactions Revisited: Bridging disciplines for an accessible and inclusive environment. Urban and rural spaces facing challenges of the 21st century. invites exploration across four tracks: Proximity and Permeability Revisited, Flows and Connections Revisited, Governance and Tools Revisited, and Inclusion and Dynamics Revisited. It examines accessibility across spatial, social, economic, environmental, and institutional dimensions. The contributions in this volume showcase the richness of perspectives, methods, and contexts that young scholars bring to rethinking 21st-century urban and rural environments.

We are proud to bring together participants from various countries, institutions, and disciplines, including ten PhD researchers supported by AESOP Young Academics scholarships. We are honoured to welcome AESOP President Maria Håkansson and our keynote speakers Luca Bertolini, Tanu Priya Uteng, Jakub Vorel, and Veronika Šindlerová. Their insights bridge theory and practice, mobility and justice, and governance and spatial transformation.

This conference has been made possible through the dedication of the Local Organising Committee, who have guided every aspect of the programme and logistics, and through the close collaboration between the Czech University of Life Sciences Prague and the Czech Technical University in Prague.

On behalf of the LOC, welcome to the 20th AESOP YA PhD Conference; may it be intellectually stimulating, critically engaging, and inspiring for all.

Ludmila Kolouchová
Head of the Local Organising Committee

Acknowledgments

We warmly thank the following individuals and teams for their dedication, hard work, and support in making the 20th AESOP Young Academics PhD Conference in Prague a success.

Local Organising Committee
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Scholarship Sponsors and Supporting Programmes
AESOP Young Academics Scholarship Programme, Czech Technical University in Prague Mobility Programme

This book was supported by the FA Academic Competition 2025.

Track 1: Proximity and Permeability Revisited

This track will explore how the physical structuring of urban and non-urban environments influences accessibility and functionality. Focusing on proximity and permeability, it examines how spatial relationships, distances, and connectivity shape mobility, land use and infrastructure. Contributions are invited that consider both positive and negative consequences of spatial organization, including how the arrangement of spaces facilitates or restricts movement for people, goods, or services. The track will also investigate how these spatial qualities influence social interaction and structure, economic vitality, and environmental sustainability, and how spatial forms can either support or hinder broader urban and rural development trends.

Debating Distributional Justice and the 15-Minute City in Belfast: Assumptions, Opportunities and Limitations in a Contested Space

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1 Introduction

The idea of the 15-minute city is a concept that frames ongoing efforts by urban areas around the world to enhance accessibility to essential services within communities. This draws upon 'traditional' urban forms, where urban settlements are distributed on a compact, walkable basis with key services and activities being easily accessible in a short time frame (Da Silva et al. 2019, Pozoukidou & Chatziyiannaki 2021). As this concept becomes increasingly embedded within urban planning, the application of the concept has been applied within many different cultural, geographical and political contexts. This moves us towards the focus of this paper, in which we debate and examine the assumptions, feasibility and challenges of operationalising the 15-minute city concept in Belfast, Northern Ireland. The city represents a unique context to debate the concept, and how it aligns with contemporary planning policy and practice, given the spatial impacts of protracted socio-political unrest (known as 'The Troubles') on the location of services and mobility behaviours that continue to shape the relationship between people and place in the city today.

As the achievability of the concept will differ considerably across diverse population distributions, urban contexts, and development priorities, we present the first analysis of its kind within a contested space, addressing a particular gap in understanding the fine-grained application of the 15-minute concept.

There is an assumption that if there are safe and pleasant routes to walk or cycle across and between neighbourhoods, which connect homes to key services, then individuals will use such routes to meet their daily needs. However, this assumption does not take into account the effects of segregation, which exists to a differing extent in different urban areas, and its impact upon accessibility and permeability. Whilst the Good Friday peace agreement, signed into place in 1998, brought the conflict to an end and reduced the levels of violence, there remain strong tensions between communities in Northern Ireland. These tensions can continue to lead to harassment, intimidation and occasionally periods of violence (Brand 2009).

This context has restricted the movements of many on both sides of the community, with many living within highly segregated neighbourhoods. In such communities, rather than crossing sectarian boundaries, individuals may adjust their movement and use of services (Shirlow & Murtagh 2006, Davies et al. 2019). The street layout of Belfast, particularly within residential areas closer to the city centre, includes many 'dead-ends' and cul-de-sacs. Other physical barriers such as fences, major roads and large 'voids' alongside intentionally physical interventions such as 'Peace walls", intentionally constructed to segregate communities at the height of the conflict (Bryne, Heenan and Robinson, 2012).

Shared perceptions of which communities 'belong' are reinforced by different forms of boundary marking, including murals, flags, and painted curbs (Hughes et al. 2007). Importantly, for the consideration of the 15-minute city, this physical and emotional legacy of 'the troubles' also serves to reduce connectivity and permeability across the city. Recent work across segregated communities in North Belfast, making use of GPS tracking, suggests that communities remain largely disconnected from the 'other' community (Davies et al. 2019). Using the latest socioeconomic data and spatial analysis, the paper critically examines the opportunities and limitations around notions of proximity and accessibility for producing equitable access to various resources and services in a contested space. It does so as an exploratory study to understand, in theory, how accessible different areas of the city are. The paper then interrogates the outcomes of this analysis, which, beyond the physical street layout, is 'blind' to the segregation in Belfast.

2 Methods

This chapter implements an approach which attempts to assess differences in accessibility within the city of Belfast, United Kingdom. To do so, an accessibility score is obtained, which allows an approximation of the services which individuals within different areas can access, the key services which represent the '15-minute city'. To do so, the study relies upon three datasets, which together allowed the calculation of accessibility scores.

First, the street/path network within Belfast, this network was obtained from OpenStreetMap (2025). This allowed a graph of all roads, streets and paths which were navigable on foot to be created within 'R'. Second, the types of services which could be commonly thought to represent the '15-minute city' were defined (see Table 1 for details). The researchers reviewed a series of existing literature regarding the '15-minute city' and used this to define nine types of services/shops, which represent the categories of services for the 15-minute city. Third, the geographical area which is used to define different areas of Belfast is a Datazone. They are the smallest spatial area where data is provided in Northern Ireland, with an average population of 500 per Datazone (NISRA 2023). These form the origin points from our analysis.

POI Service Type	**Types of POI**
Food Shops	Supermarkets, Convenience Stores, Bakeries, Butchers, Confectioners, Delicatessens, Fishmongers, Tea and Coffee, Merchants, Herbs and Spices, Grocers.
Food & Drink (Eating out)	Restaurants, Café, Pub, Bar, Fast Food, Food Court
Transport	Bus Stop, Train station
Sport Facilities	Sports Centre, Stadium, Pitches, Gym, Swimming Pool.
Green Space	Parks, Recreation Grounds, Gardens, Commons, Playgrounds.
Education	Primary Schools, Secondary Schools, Colleges.
Health Facilities	Doctors, Clinics, Pharmacy, Hospitals, Dentist.
Places of Worship	Places of Worship.
Entertainment & Culture	Cinema, Nightclub, Social Club, Theatre, Arts Centre, Concert Hall, Museum, Art Gallery.

Table 1: List of services which represent the 15-minute city, and types of POI in OSM.

Using the Dodgr package in R (Padgham 2025), in conjunction with OSM street map data, an origin-destination matrix between all Datazone population-weighted centroids and POIs within Belfast was created. To capture which POIs were accessible within a 15-minute round trip, capturing the concept of the 15-minute city, a 'cut-off' out 589.5m was chosen, which represents 7.5 minutes walking at 1.31m per second, defined as an average healthy adult's walking pace. Then, for each Datazone a summary table was produced that calculated which POI categories were accessible within 7.5 minutes.

If at least one POI within a service category was present, a score of +1 was given to the Datazone. This provided each Datazone with a score of 0-9, with 0 indicating none of the nine service types were accessible within a 7.5-minute walk. This data was then plotted onto the map (Figure 1), providing a visual representation of the accessibility within Belfast.

3 Results

Figure 1 illustrates the accessibility to services within different Datazone in Belfast. The areas with the 'warmer' colours of yellow are areas with the greatest access to the suite of nine key services/shops that are used to represent the '15-minute city'. In contrast, Datazone with 'cooler' colours of blue are areas with worse accessibility.

The Datazones within the City Centre, and those adjacent to it, illustrate the highest level of accessibility, with areas with the highest scores of 9/8 being clustered within these areas. This reflects the higher concentration of services of all kinds within this area, the historic and current role of the city centre as the hub for retail and other services, as well as the high population density within these areas, allowing these services to be well used.

It is these areas which are either already, or nearly functioning as '15-minute neighbourhoods', with the high accessibility of services meaning that residents would not have to depend on private vehicles and/or public transport to access essential services. However, areas beyond the urban core, generally made up of suburban areas and/or semi-rural fringes of the city, exhibit much lower levels of accessibility, with almost all services requiring a walking time beyond 7.5 minutes.

Permeability Challenge 1: Physical Barriers

A further consideration within the context of Belfast is the presence of 'Peace Walls' – these are illustrated on Figure 1 in green. These create a physical barrier between certain communities within the city; these barriers often cross

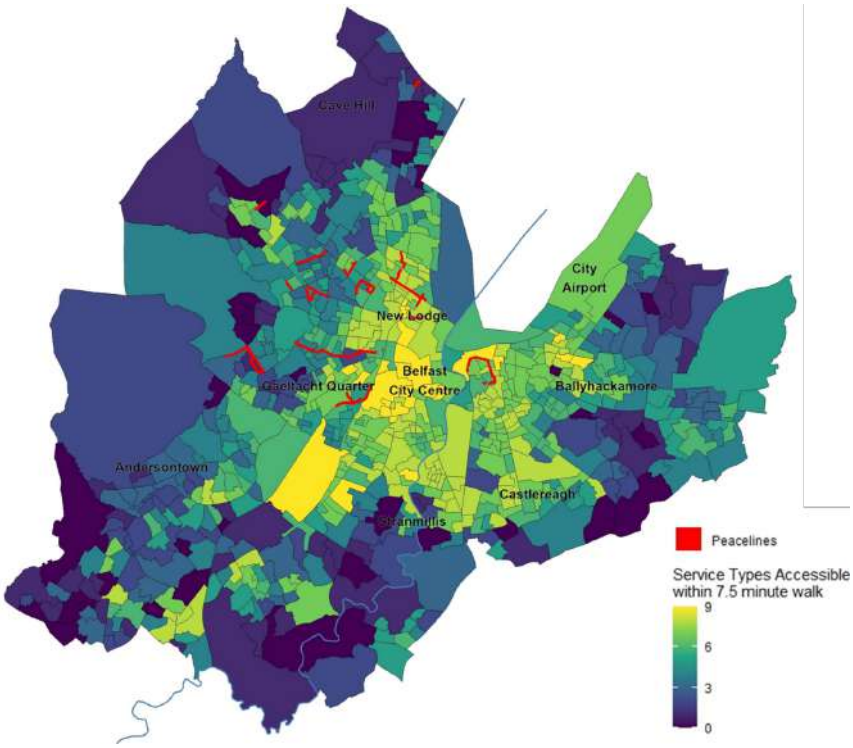

Figure 1: Accessibility of Datazones in Belfast to nine 'essential' service types

'interfaces' which have vehicle and/or pedestrian gates which are closed at certain times of the day, and in certain, more rare, circumstances at all times of the day. As a result, many of the communities may be less accessible than represented and have lower accessibility scores than is represented in the data.

Permeability Challenge 2: Street layouts and the legacy of 'The Troubles' The street layout within Belfast often contains cul-de-sacs, dead ends and a lack of 'alleyways', 'cut-throughs' or side roads which connect across different communities. This was intentional to segregate populations, for security purposes, as well as to enhance territorial concentration and community identity. This means that the distances taken across many areas are increased, again reducing accessibility scores.

Permeability Challenge 3: Psychological' barriers and the legacy of 'The Troubles' Beyond this, some individuals within different communities may see the interfaces, peacelines and other locations and areas of the city as 'psychological' barriers. This means that even if barriers in 'interface' locations are open,

or there are no 'peacewalls' in place, an individual would be very unlikely to take the 'fastest route' or even consider visiting one of the POIs pairs (i.e. from a datazone centroid to a service) used in this study.

This would then mean that the 'alternative' route (i.e. avoiding areas deemed as unsuitable) taken from an origin point to a destination (or an alternative destination away from areas deemed as unsuitable) would take the walking time beyond 7.5 minutes.

4 Discussion and Conclusion

The physical and psychological barriers resulting from decades of division present challenges for policy-makers in achieving distributional justice through the 15-minute concept in Belfast. The key challenge stems from the duplication of service provision. This service duplication not only drives up the cost of maintaining a good level of accessibility to both communities but also risks reinforcing segregation and division within the community.

As illustrated earlier, for those living on the edge of the community, particularly adjacent to 'peacelines', the current situation equates to having reduced accessibility. Even where physical permeability is possible across 'peacelines', the context can mean that the representation presented in Figure 1 does not accurately represent the lived experience in terms of accessibility.

The particular context of Belfast makes effective community relations difficult and shifts the focus onto merely accessing services versus achieving broader social outcomes. Ultimately, this contested nature potentially undermines the accessibility, permeability and liveability of the community as a whole.

The analysis presented in this paper has several limitations, one of which is centred around the compromises of an open-source approach. The reliance on crowd-sourced data on OpenStreetMap introduces uncertainty and may not represent a totally accurate and up-to-date representation of service availability. Another issue relates to the impact of 'peacelines' on route calculation, as these physical barriers disrupt standard mapping algorithms. Further compounding this is the difficulty in understanding and mapping 'non-physical' interfaces and social-psychological geographies, which would help to provide a more accurate representation of the lived experience of those living in Belfast.

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Therapeutic Proximity: Rethinking Accessibility Through Environmental Psychology and Daoist Urbanism

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1 Introduction

The concepts of proximity and permeability are central to spatial planning and urban theory. Traditionally, they have been understood through the lens of territorial morphology, transport networks, and the optimization of physical access to housing, services, and employment. From this perspective, permeability often refers to the ease with which bodies and flows of goods can traverse space, while proximity is measured in terms of distance and time. Such definitions have underpinned a significant body of planning practice, from the promotion of mixed-use neighborhoods and transit-oriented development to recent debates on the "15-minute city" (Carmona 2021, Gehl 2011).

Yet accessibility is not only a matter of physical configurations. Research in environmental psychology demonstrates that access is always mediated by perception, emotion, and cultural meaning (Appleyard et al. 1981, Bell 1996, Lynch 2008, Whyte 2010). A square may be technically "open," but if it is perceived as unsafe, hostile, or exclusive, its permeability is undermined. A park may be geographically close, yet remain psychologically distant if its design does not foster belonging or cultural resonance (Nassauer 1995). This dimension of perceived accessibility has received comparatively little attention in planning

discourse, despite its crucial role in shaping whether environments truly support inclusion (Biglieri et al. 2025).

In parallel, non-Western philosophical traditions such as Daoism provide alternative understandings of proximity and permeability. Daoist thought emphasizes harmony, fluidity, and relationality rather than rigid demarcations or linear flows. Permeability in this sense is not only about the absence of barriers but also about the presence of balance — the effortless interweaving of human and natural systems, yin and yang, built form and emptiness (Nelson 2021). Urban environments inspired by such principles might be better positioned to nurture wellbeing, accessibility, and social cohesion.

This paper proposes a reconceptualization of proximity and permeability through the combined lenses of environmental psychology and Daoist philosophy. It draws on a series of practice-based experiments in designing inclusive environments: (1) citywalks in Hangzhou, China, that explored happiness and accessibility through environmental psychology and cultural narratives, (2) work at Tianmei's World Academy (TMWA) as a decentralized "network of classrooms" cross-cultural and cross-disciplinary educational platform that models permeability in learning environments, and (3) reflections from research on night trains at the Research Institute for Sustainability (RIFS), which position long-distance rail travel as a regenerative infrastructure for proximity in motion. By situating these cases within ongoing academic debates, the paper seeks to expand planning's understanding of accessibility beyond physical nearness to include psychological, cultural, and therapeutic dimensions.

The central question guiding this contribution is: How can environmental psychology and Daoist notions of permeability expand planning's approach to proximity, so that accessibility is understood not only as a spatial condition but also as a lived and inclusive experience? Recent planning scholarship similarly argues that proximity and accessibility must be understood as lived, perceptual experiences rather than solely geometric or network properties (Fusi & Tiboni 2024, Sepe 2024).

2 Methods

The methodological approach is interdisciplinary and reflexive, combining environmental psychology, urban planning, and cultural philosophy. Rather than a single empirical study, the work draws on a series of practice-based interventions that serve as living laboratories for rethinking proximity and permeability.

The first case consists of citywalks in Hangzhou, China, organized as experiments in perceiving happiness and accessibility. Participants engaged in structured walks that combined environmental psychology talks, guided visits, group lunches, and mindfulness practices. The walks were designed to foreground not only spatial configurations but also narratives, perceptions, and affective responses, allowing participants to reflect on what "happiness" and "accessibility" mean in everyday environments (Relph, 2008; Seamon, 2018).

The second case is Tianmei's World Academy (TMWA), a decentralized cross-cultural, cross-disciplinary educational platform that functions as a "network of classrooms." Unlike conventional institutions tied to fixed locations, TMWA operates through distributed and flexible spaces, often embedded in everyday environments such as cafés, cultural centers, or online forums. This model was analyzed as a form of permeability that challenges centralized access to education and creates new proximities across disciplines, geographies, and social contexts.

The third case builds on ongoing research at RIFS exploring night trains as infrastructures of regeneration. As part of a broader project on redefining business as "an entity that solves social issues and creates social value in a financially sustainable way," night trains were studied not merely as transport technologies but as environments that foster rest, reflective practices, intercultural encounters, and slower temporalities. Here, permeability was conceptualized as both physical (crossing borders and regions) and psychological (opening spaces for dialogue, learning, and rest).

Across these cases, three conceptual frameworks developed through practice were used as methodological tools: • The Invisible Backpack, which refers to the personal and collective histories that shape how individuals perceive environments, influencing whether they feel included or excluded. • The Puzzle Mindset, which emphasizes complementary strengths and diversity, highlighting how collective dynamics can create inclusivity through mutual recognition rather than competition. • The Center of My Environment, a participatory design tool encouraging individuals to recognize their agency in shaping environments, thereby fostering permeability as empowerment.

The research is therefore reflexive and situated. Rather than separating researcher from subject, it positions the author as a practitioner-researcher whose lived experiments generate insights into how proximity and permeability can be rethought in planning practice. This aligns with emerging human-centred methods that explicitly measure cognition and emotion to inform spatial decisions (Sun Choi et al. 2024).

3 Results

The findings across the three cases converge on the need to expand proximity and permeability beyond spatial metrics to include psychological, cultural, and experiential dimensions.

Citywalks in Hangzhou revealed how narratives and cultural memory transform perceived accessibility. Participants reported that historical streets, which initially felt distant or opaque, became "closer" once their histories were narrated and collective reflection was facilitated. The walks also highlighted the role of environmental affordances in generating happiness: shaded alleys, flowing canals, and convivial cafés were perceived as nurturing wellbeing, not only because of their physical features but because of the emotions and meanings participants attached to them. Proximity, in this context, was redefined as the felt sense of connection to place, while permeability was redefined as the openness of environments to multiple interpretations and uses. These findings resonate with recent AESOP work linking perceived accessibility to design qualities at the micro-scale of urban settings (Fusi & Tiboni 2024, Sepe 2024).

Tianmei's World Academy demonstrated how educational access can be reimagined as permeability across disciplines, spaces, and cultures. The decentralized model enabled participants with diverse backgrounds to connect in environments ranging from city cafés to online platforms, creating new proximities that would not have been possible within centralized, institutional structures. Here, permeability was less about physical movement and more about dissolving epistemic and cultural boundaries. Accessibility was reframed not as the ability to enter a building but as the ability to bring one's "Invisible Backpack" into dialogue with others in a safe and inclusive setting. Framing accessibility as negotiated, experiential, and programmatic rather than merely locational echoes current debates in urban design practice (Sepe 2024).

Night trains emerged as infrastructures that generate therapeutic proximity. Unlike airplanes or high-speed trains, night trains provide time for slow reflection, reading, spontaneous intercultural encounters and rest. Participants described them as environments where strangers became co-travelers in dialogue, where landscapes unfolded gradually, and where rhythms of rest could support mental wellbeing. In this case, permeability referred to the capacity of the train to connect regions and cultures while maintaining an atmosphere conducive to inclusion and reflection. Proximity was less about reducing travel time and more about deepening relational and reflective time. Methodologically, this complements sensor- and cognition-aware approaches that seek to capture affective states in situ to inform human-centred spatial design (Sun Choi et al. 2024).

4 Discussion and Conclusion

This contribution extends planning debates on accessibility by foregrounding the psychological and cultural dimensions of proximity and permeability. While current discussions often focus on physical access — measured in meters, minutes, or transport links — the findings demonstrate that accessibility also depends on whether environments foster perceptions of safety, belonging, and meaning. Without this dimension, formal access may fail to translate into lived inclusion (Biglieri et al. 2025, Trojanowska 2021).

By integrating Daoist philosophy, the paper offers a conceptual framework for reimagining permeability as balance and harmony rather than simple openness. In Daoist thought, true permeability is not unlimited flow but the capacity of environments to sustain relational equilibrium (Nelson 2021). Applied to urban contexts, this suggests that inclusivity requires more than removing barriers: it requires cultivating environments that welcome diverse ways of being and knowing.

Methodologically, the paper demonstrates how environmental psychology frameworks such as the "Invisible Backpack," "Puzzle Mindset," and "Center of My Environment" can serve as participatory tools in planning. These frameworks make subjective experiences visible, allowing planners to integrate the affective and cultural dimensions of accessibility into design processes. The citywalks, decentralized learning networks, and night trains illustrate how such tools can be embedded in practice to create living laboratories of inclusive design.

For policy and planning practice, several implications emerge: • Urban design should not only maximize physical permeability but also enhance perceived accessibility by nurturing psychological safety, cultural resonance, and opportunities for belonging. • Participatory processes must account for diverse "Invisible Backpacks," recognizing that past experiences and cultural identities shape how environments are encountered. • Planning for inclusivity requires fostering therapeutic urbanism, where environments support healing and resilience alongside mobility and function (Seamon 2018). • Decentralized and distributed models (as exemplified by TMWA) can democratize access by making learning and participation more permeable across space and culture.

Finally, the paper situates itself within a broader research trajectory. As part of ongoing work at the Research Institute for Sustainability (RIFS) on redefining business for regenerative futures, and as a foundation for a forthcoming PhD on Daoism and therapeutic urbanism, this contribution proposes a reframing of planning concepts to better respond to the challenges of accessibility and inclusion. The conference theme of revisiting urban interactions is therefore engaged

not only at the theoretical level but also at the methodological and experiential level, offering a multidisciplinary bridge between psychology, philosophy, planning, and practice.

In conclusion, revisiting proximity and permeability through environmental psychology and Daoist philosophy underscores that accessibility is not merely a technical problem but a profoundly human one. True accessibility is achieved when environments not only allow entry but also actively nurture confidence, wellbeing, and belonging. For planners and policymakers, this calls for a shift from designing spaces for efficiency alone to cultivating environments of therapeutic proximity, where inclusivity is felt as much as it is measured.

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Topography of the Gargantuan Warehouses

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1 Introduction

This essay explores the spatiality of logistics centres through a postcolonial research lens and reflective practice in urban studies. The spatial form and scale of global supply-chain infrastructures are being reconfigured, accelerated by the rise of online shopping. While online consumption habits shape today's trade flows, this process is largely embodied in the massive warehouse structures located on the peripheries of cities. The following text aims to make visible the process in which the city is reproduced according to trade flows and warehouses enter the system as commodities. Its purpose is to initiate a discussion on the ethical dimensions of these invisible infrastructures outside the city – logistics centres – and their complicity in global systems.

Methodologically, the study works with essay films to inquire about logistics centres in cities. It adopts creative, practice-based methods – walking, filming, annotating – to attend to rhythms, scales, and frictions that escape conventional datasets. Within a postcolonial research framework, methods are not *neutral tools* but world-making practices; the researcher's positionality, modes of representation, and prevailing hierarchies of knowledge are therefore continuously questioned. This stance challenges modernity's claim to detached objectivity and insists on asking from where research speaks, on whose behalf, and with whom (Bhabha 2004, Morris 2010).

Donna Haraway's notion of situated knowledge is instructive here. In *Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective* (1988), Haraway questions scientific objectivity, which is identified with the myth of the "godlike gaze" that can see from everywhere. She argues that knowledge is always produced from a specific place, body, and network of relationships. Situatedness is not merely a limit but a ground for accountability: it compels us to take responsibility for *the things we learn to see* (Haraway 1988). In this context, the research presented here determines its own perspective rather than looking down from above; it places the researcher within the research itself.

This study combines essay film practice with postcolonial methodologies to situated and accountable knowledge, treating logistics centres not only as technical nodes but also as instruments of corporate accumulation. These centres are strategic spaces where companies commodify land, labour, and circulation to secure their profitability. In this sense, colonisation continues today not through states but through companies: this is the corporate form of colonisation in the present day.

2 Methods: Creative Methods in Postcolonial Spatial Research

Situated knowledge invites methodological plurality – discourse and text analysis, historical comparison, ethnography, and site-specific work – used together to reveal the spatial and institutional traces of power. The aim is not merely to collect data, but to reflect systematically on which knowledges are legitimized and which voices are silenced. This also calls for emergent research modes, such as decolonial research. Postcolonial research aims to disrupt knowledge systems that produce inequality at both theoretical and practical levels (Shakun et al. 2024). For these approaches to matter in practice, method itself must be handled critically and reflexively. Schön (1987) notion of *action-reflection* underscores this move: the act of making becomes the direct object of inquiry. In this framework, every representation produced in research is positioned not merely as an outcome, but as the research itself.

Within this framework, the essay film functions as a creative-reflective tool for research. It short-circuits institutional constraints of written theory and counters objectification by loosening rigid protocols of data collection and representation. As a form, it opens room for the subjective, the playful, even the amateur, the irrational, or the sublime (Almaç et al. 2025). Borrowing from Adorno's conception of the essay as a form of oddity and heresy, which enables

transgressive thought, resists the systematic, and operates as an in-between state defined by the critical position it provokes, the essay film makes visible the everyday and subjective experiences that methodological crises tend to obscure (Adorno et al. 1984, Almaç et al. 2025). In this sense, film is not merely an outcome but a postcolonial research method: methods are approached not as neutral instruments but as world-making practices in which positionality and regimes of representation are continuously interrogated.

Placed within this framework, the essay film structure of *Topography of the Gargantuan Warehouses* reveals the invisible logistics centre and the entanglements of online consumption, labor, and ecology through a poetic montage. The narrative is deliberately fragmented, mirroring the discontinuous experience of encountering these hidden spaces. Inspired by Lewis Carroll's *Alice's Adventures in Wonderland* (Carroll & Tenniel 1981), the film guides the viewer through a surreal landscape, where scale and perception continuously shift: as Alice struggles to orient herself in a world that distorts reality and measure, the viewer navigates vast, labyrinthine interiors and edge landscapes.

Here the warehouse is not merely infrastructure, but a spatial knot where the colonial past persists in the present through firm-led extraction and commodification. The essay film is thus both method and argument: it re-trains how we look and what we deem to be evidence, and it invites a stance on complicity, ethics, and spatial inequality.

3 Results: Topography of the Gargantuan Warehouses

For some time I have been thinking about the logistical landscapes behind the excitement of online shopping – warehouses, ramps, queues. The essay film opens on a simple text: I scroll, I click; three days later, the item I ordered online is at my door. A simple, persistent question follows: Where did it come from? Which bodies, which infrastructures, which notes and silences brought this package here?

The receipt becomes a trace. It leads toward a logistics centre in the Marmara region, somewhere between Istanbul and Kocaeli. I follow its path – down the rabbit hole. Along the periphery, faceless façades line up: corrugated metal, cast concrete. Dock doors gape; trucks inhale and exhale; barcodes crackle; hydraulic brakes leave a metallic breath.

Outside the warehouses a thin line of trees, a patch of water-birds, insects. The sound momentarily softens, then the engines return: the sigh of asphalt, a low mechanical tremor. Nature and industry touch; there is no clean edge. The ecology of the periphery keeps time with just-in-time delivery.

A bridge appears before me. Feet, decks, spans... The trucks shrink; they become toys. Near and far, human and nonhuman, center and periphery all shift their scales. Scale becomes the subject of the film: how does consumption reconfigure distance?

Figure 1: Topography of the Gargantuan Warehouses, Film Stills

This film is not a report; it is a research itself. An essay film that short-circuits the rigid expectations of written theory, opening space for subjective, playful, and speculative gestures. With Adorno's notion of the essay as an *in-between* mode of thought, it brings into the field the everyday and embodied experiences that conventional method overlooks, exposing the position of the camera-body. The warehouse is not merely infrastructure; it is the spatial crystallization of invisible labor and ecological burden behind the smooth surface of consumption.

The film retraces the receipt and asks the viewer to do so with me, to witness the costs folded into online shopping's excitement. Ultimately, *Topography of the Gargantuan Warehouses* confronts the hidden infrastructures that shape our world. The work asks uncomfortable questions about our complicity in this global system and invites reflection on the ethical and environmental consequences of our consumption habits. By making visible what is usually hidden, it invites a more accountable way of seeing and a deeper engagement with the spaces we inhabit and the systems we sustain.

4 Discussion and Conclusion

This study, as postcolonial research suggests, reads space not merely as a technical infrastructure or a neutral ground, but as the continuations of colonial pasts and global inequalities in the present. Within this framework, the warehouse is not merely a technical node organising the circulation of goods; it is a tool for capital accumulation that reconfigures the city's periphery for capital, renders labour invisible, and externalises environmental costs. The receipt we trace in the essay film makes the warehouses audible and visible.

This reading aligns with Haraway's understanding of situated knowledge: Research is carried out not with *a 'god-like gaze' from nowhere*, but with a partial and accountable perspective that discloses the camera's position and embodiment. Thus, what becomes visible and what remains invisible in the film is itself part of the argument; evidence is produced together with position and relationship. The essay film here is not a report, but the method itself: through decisions of montage, sound, and distance, it tests interpretations and opens the study's findings to the viewer's counter-interpretation.

The findings point to a shift from state-centered colonialism to a firm-centered regime of accumulation. Warehouses are not reducible to their use value (storage/distribution) but are large-scale investment assets shaped by exchange value; land, labor, and circulation capacity are commodified and profitability is secured. Thus, colonization today proceeds primarily through corporations, as the colonization of logistical capacity and environmental carrying power.

This picture is not ahistorical. As Mumford (1989) emphasizes, the storage of surplus is an ancient technique of power: controlling excess produces domination over others' lives, and scarcity is constituted from within abundance itself. *The person who managed to control the annual agricultural surplus also wielded power over the lives and deaths of their neighbours. The creation of artificial scarcity amidst increasing natural wealth was one of the characteristic triumphs of the new economy of civilised exploitation; this economy was diametrically opposed to the customs of the village* (Mumford 1989: p. 52). Today, however, this logic is updated through just-in-time regimes and financialized warehouse investments that render environmental and social costs invisible in the name of uninterrupted flow. The warehouse thus becomes the crystallized form of capitalism's process of commodifying space.

The study focuses on a specific logistics corridor on the Marmara route; labour regimes and ecological impacts may vary in different corridors. The essay film is a selective representation; the scope of the screening and feedback sessions is limited. Ultimately, *Topography of the Gargantuan Warehouses* aims for more than an aesthetic revelation of invisible infrastructures: it invites us to spatially trace the question of whose profit, whose cost. It proposes viewing the warehouse not merely as an 'infrastructure' but as a spatial node of corporate-centred colonisation; thus, the labour and ecological debt behind the smooth surface of consumption is opened up for debate in terms of both research and planning ethics.

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Transforming Public Space into Authority-Controlled Space: A Case Study on the Ministries Triangle in Ankara, Türkiye

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1 Introduction

Cities consist of multiple borders, geographical, social, and political, while human-made borders define spaces and territories for safety, shelter, and function. Building on the ideas of Foucault, Benjamin, Norberg-Schulz, and Diener and Hagen, borders can be understood not simply as neutral design elements but as instruments of restriction and control. Rather than enabling openness, they often reduce permeability, limit access, and create forms of alienation, as Colomina (1994) and Norberg-Schulz (2000) emphasise, between people and space, as well as between citizens and the state. Framed within the thematic focus on accessibility, permeability, spatial functionality and its effect on socio-cultural dynamics, this research addresses how these borders operate in practice through a case study of the Ministries Triangle in Ankara, Türkiye, examining how planning decisions and interventions have transformed the area into a landscape of borders and boundaries that restrict bodily movement and limit public accessibility.

This study traces the transformation of the Ministries Triangle from the Early Republican Era in 1924 to 2025 (Figure 1). While remnants of the original planning

Figure 1: On the left: One of the earliest diagrams of Lörcher Plan 1924-25 Ministries Triangle (Cengizkan 2004) On the right: The satellite photo of Ministries Triangle (the purple line was added by the authors) from 2025

framework remain visible in the re-use of ministry buildings, subsequent interventions and heightened security measures have redefined spatial organisation, turning urban borders into mechanisms that regulate movement, restrict bodily access, and control permeability. Once characterised by continuous walkable public spaces formed by the ministries, their plazas, and green areas, the district has gradually lost this openness with the intrusion of streets, subway lines, and a highway, which fragmented the site and reduced accessibility. These changes illustrate how spatial organisation can both enable and constrain mobility, social interaction, and public engagement, aligning with the thematic focus on how physical structures shape accessibility and functionality. Over time, collective space has eroded, and the area has shifted into a zone of restricted access and limited permeability, functioning as a self-contained closure in line with Ching's (2007, 2012) understanding of spatial boundaries. Today, the Ministries Triangle houses key state institutions, including Güvenpark, the Ministry of Justice, the Ministry of Education, the Ministry of Environment and Urbanisation, the Ministry of Internal Affairs (MIA), the General Directorate of Security Affairs, the General Commandership of Gendarmerie, and the Grand National Assembly of Türkiye (TBMM).

2 Methods

The research methodology combines a literature review on the Early Republican Era of Ankara, from 1924 to 1957, with an examination of the planning approaches of Lörcher, Jansen, and Holzmeister. These readings informed the identification

of major transformations at both the urban and architectural scales. A spatiotemporal perspective was adopted to trace development over time and to interpret changes at district and building scales.

The conceptual discourse of the norm 'borders' was analysed for determining the control mechanisms, spatial regulation, bodily movement, permeability, from the works of key figures like Michel Foucault, Walter Benjamin, Christian Norberg-Schulz, Alexander Diener, Joshua Hagen, Beatriz Colomina, Francis Ching, and Sigmund Freud.

The study applies a comparative analysis of development plans and archival photographs. Images were collected from institutional archives, online repositories, and community groups on social media platforms. Although many photographs lacked precise dates, cross-referencing with reliable archives enabled the construction of approximate intervals. To complement these, satellite images from Google Earth were used to document urban-scale transformations since the 2000s.

A site visit in late 2024 assessed the area using observational, ethnographic, and phenomenological approaches focused on pedestrian experience. Additional online images were limited, and privacy restrictions constrained on-site photography. Despite this, combining literature, archival sources, satellite imagery, and fieldwork offered a comprehensive understanding of the Ministries Triangle's transformations since the Early Republican period.

3 Results

Based on the literature review, the Ministries Triangle (MT from now on) has undergone a significant transformation on both the urban and architectural scales. While initial plans reflected a coherent design process, the current condition differs greatly due to major interventions like the alteration of Güvenpark and the construction of Eskişehir Highway, which separated the TBMM from MT and disrupted the continuous axis from park to parliament. Jansen's garden-city principles and emphasis on walkability were progressively lost, replaced by boundaries like fences that undermine permeability. To understand these changes, the planning history of Ankara is traced from the Lörcher Plan of 1924 to the present, 2025.

In 1924, the Lörcher Plan (Figure 2) was the first to define the New City, Çankaya, designed for a population of 200,000, integrated with green areas. It introduced infrastructure for roads, electricity, water, sewage, and gas, and emphasised a walkable main axis, Zafer Avenue, with interconnected courtyards,

Vilayetler Square, separating pedestrians from vehicles. It is interesting to see that the gas infrastructure plan, dated 1928 (Figure 3), reflects the symmetric and triangular development of Lörcher for New City, in which the MT area was preserved in the coming years.

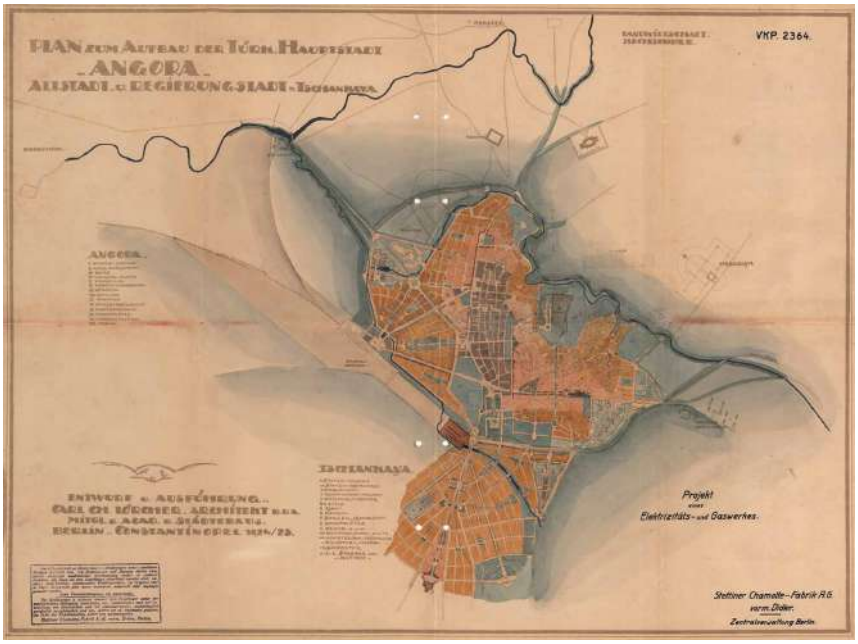

Figure 2: Lörcher Plan, 1928 (Cengizkan 2022)

Following rapid population growth after the proclamation of the Republic, based on Lörcher's framework, Jansen prepared a new plan preserving the triangular area in 1930, collaborating with Holzmeister, who constructed key ministry buildings. However, Jansen's widening of Atatürk Boulevard fragmented the symmetry of the site, shifting the triangular structure into a trapezoid, weakening its continuity. The new boulevard also enabled the creation of Kızılay Square, further altering the axis intended to connect the MT to TBMM (Figure 4).

Although Jansen and Holzmeister initially agreed on preserving Güvenpark, Zafer Avenue, and Vilayetler Square as pedestrian axes leading to the TBMM, later interventions disrupted this continuity. Holzmeister's construction of the MIA complex severed the direct pedestrian link, a move Jansen openly criticised. Instead of restoring the axis, further privatisation and the construction of the Eskişehir Highway further along, deepened the disconnection between MT and

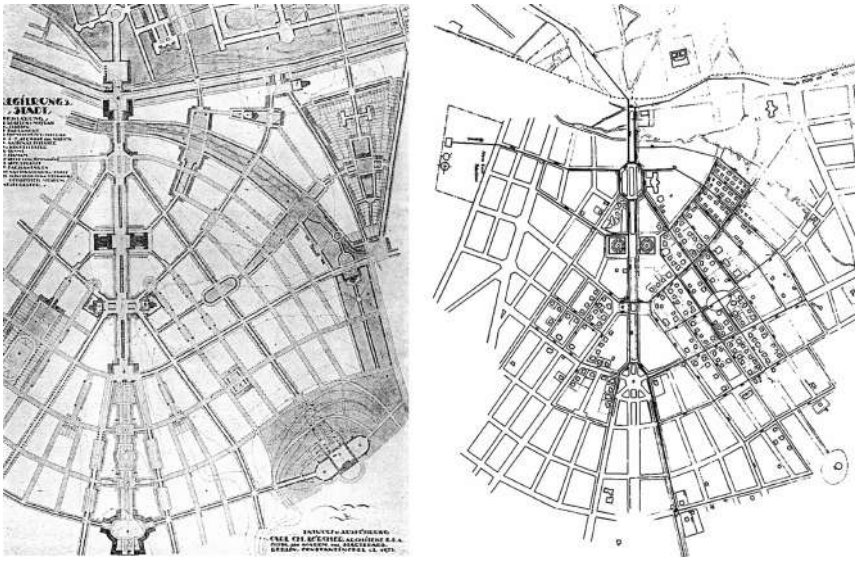

Figure 3: On the left: Lörcher Plan for the New City, 1924 (Vardar 1989). On the right: Gas infrastructure scheme, 1928 (Cengizkan 2022)

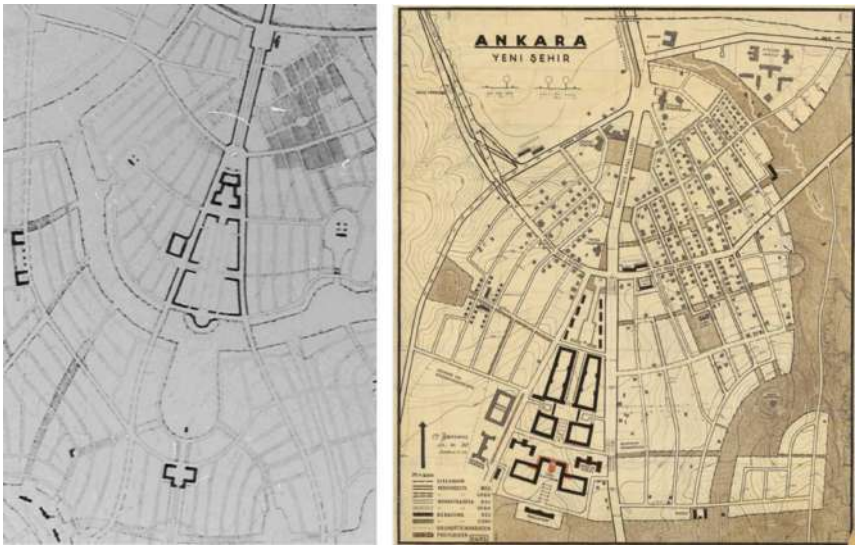

Figure 4: On the left: Jansen's competition project, 1928 (cropped by the authors to show details) (Vardar 1989) On the right: The shifted, trapezoid planning of the New City in 1930 (Baş 2018)

parliament. Later, the idea of Güvenpark was highlighted and supported by Holzmeister's idea of 'Tor Bau' (Tower Gate Building) (Figure 5), as a gateway from Güvenpark to the Ministry buildings. Jansen produced the final plan in 1935, and Güvenpark's design was finalised by French landscape architect Theo Leveau in the early 1940s (Figure 6).

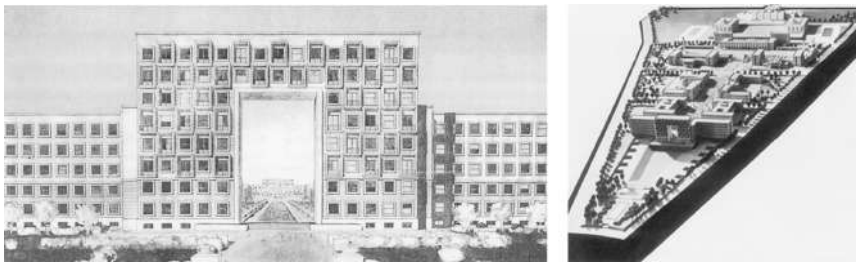

Figure 5: Holzmeister's façade proposal for Tor Bau, and drawn within the MT, both dated 1934 (Cengizkan 2010)

By the mid-twentieth century, the Yücel-Uybadin plan of 1957 (Figure 7) introduced the Eskişehir Highway directly through Vilayetler Square, eliminating the plaza and further isolating the MT. In subsequent decades, additional fences and boundaries were erected around ministries, creating internal separations that undermined the vision of continuous public space and limited pedestrian movement.

Changes in the 2000s are evident from satellite images (Figure 8), which document the transformation of small courtyards. Some were converted into green plazas, while others accommodated new construction. By 2020, several parking areas were redeveloped into landscaped zones, and restoration of ministry buildings continues into 2025.

Overall, the MT has shifted from an accessible, pedestrian-oriented public axis envisioned in the early plans into a fragmented and restricted zone shaped by highways, fences, and security measures. The progressive erosion of openness demonstrates how urban and architectural interventions can transform an area once designed as a civic core into a closed and controlled space.

4 Discussion and Conclusion

The chronological timeline shows the MT's significant transformation. Taking Lörcher's plan as the basis, the most critical interventions at the urban scale were the addition of Güvenpark, Eskişehir Highway, and the subway construction

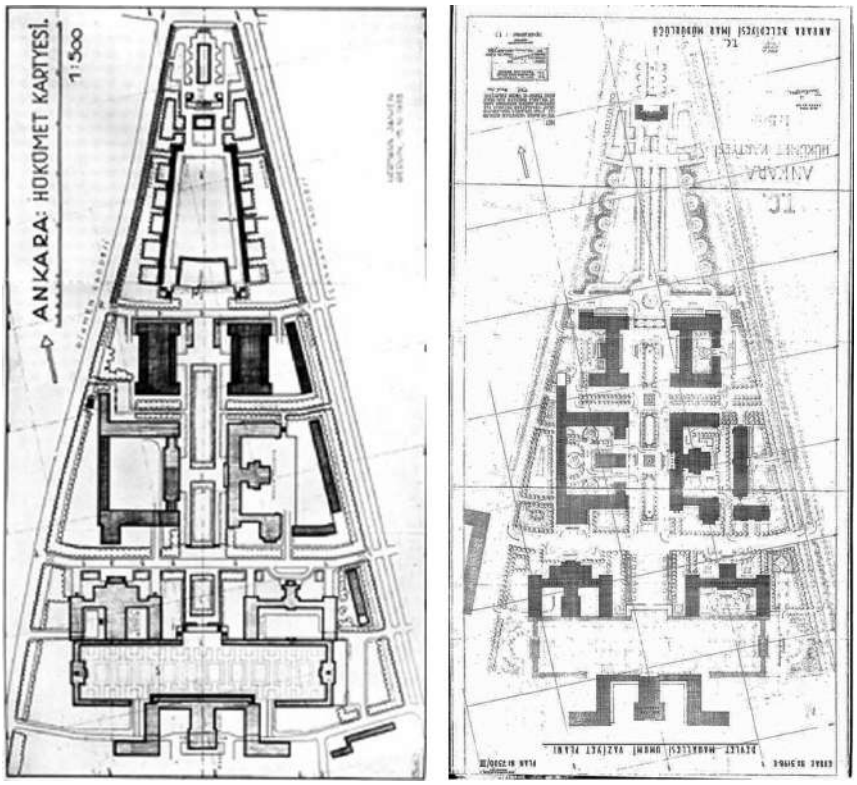

Figure 6: On the left: Jansen's 1935 plan, including Holzmeister's Güvenpark (Cengizkan 2010) On the right: Theo Leveau's 1937 plan with finalised landscape layout and Güvenpark (Cengizkan 2010)

(Figure 9). Spatial fragmentation turned pedestrian paths into closed fields, while large areas were converted into infrastructure. Added walls and checkpoints forced changes of direction; visible and invisible protocols created a hierarchical order of access. All of these reveal that the Ministries had become a mechanism of control, as Diener and Hagen (2012) emphasise, regulating the public sphere.

Güvenpark, once a key recreational space, gradually lost its function with the addition of bus stops and subway infrastructure. Today, it is used mainly by older people and families with children around the Güven Anıtı. Its relation to the ministries also shifted, as fences interrupted continuity and turned the adjacent street into a service and vending area (Figure 10). The MT embodies a spatial order where the body encounters power. Following Foucault (1977), the body is not merely biological but a carrier of power relations shaped by spatial arrangements. High walls and barriers protect authority while restricting access,

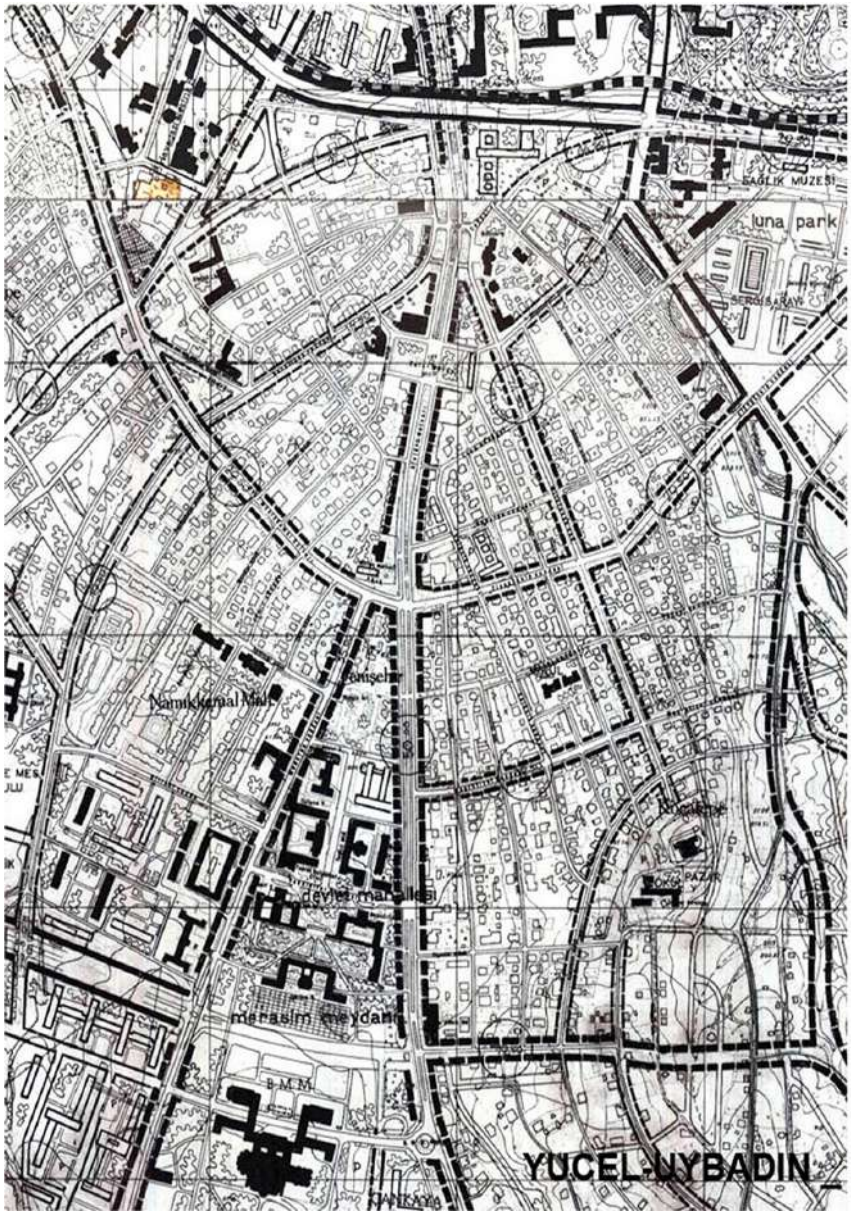

Figure 7: New City in Yücel-Uybadin 1957 Plan (Baş 2018)

Figure 8: Aerial photos of the MT (2005–2025, at five-year intervals) were highlighted by the authors to illustrate transformations

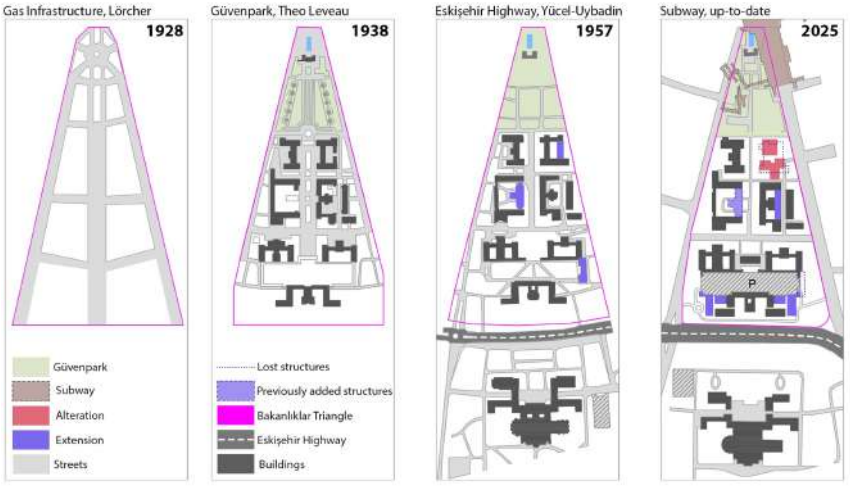

Figure 9: The first author reproduced the plans from Lörcher, Leveau, and Yücel-Uybadin, adding highlights to show transformations from 1928 to 2025. The TBMM complex was excluded from the comparative diagram as it is absent in the original Lörcher and Leveau plans.

echoing fortifications and gated communities. Framed as safety, these boundaries raise the question: safety from whom, intruders or the public itself? As Benjamin (2002), Colomina (1994), and Norberg-Schulz (2000) highlight, designated spaces can alienate, and in the MT, a space meant for the public instead enforces strict limits, distancing citizens from the state it represents.

Figure 10: The street between Güvenpark and Ministries, 2024 – all photos are from the first authors' archive, except for the bottom left, dated 2018 (Çiçek Bahçesi 2018)

State spaces regulate movement through predetermined standards, and in the Ministries Triangle, public access is now almost entirely restricted, contradicting the initial design intent. The pedestrian axis had already been disrupted in earlier phases, and subsequent expansions of the MIA complex from 1957 to 2025 further intensified this fragmentation, with its courtyard alternating between parking and landscaped space, reinforcing enclosure and limiting permeability.

The former Prime Ministry, extended in the 1970s, now belongs to the Ministry of Justice, while the old Supreme Court was repurposed for public use. The Ministry of Education, added in the 1960s, is more publicly accessible but architecturally inconsistent with Holzmeister's ensemble. In contrast, the Ministry of Justice, built in the 1930s, is surrounded by fences and guards, creating an atmosphere of exclusion. Here, walls function not only as spatial dividers but

also as mechanisms of social separation. Turnstiles and entrance checks delay, scrutinise, or deny access, while excessive security transforms the MT into what Norberg-Schulz (1965) terms a closed organism, unsettling even passers-by. This aligns with Freud's (1919) notion of the 'uncanny,' where familiar spaces become strange under extreme control. Ultimately, the so-called entrances operate less as spatial thresholds than as political mechanisms of recognition.

Permeability in the MT is now tightly controlled. Closed streets, redirected pedestrian paths, and restricted entrances confine movement to predetermined routes, preventing full access. While the area was originally designed in the Early Republican period, 1920s-50s, to facilitate public engagement with the state, it now, in 2025, distances citizens from authority. Approaching the buildings is possible, yet walls and invisible protocols keep bodies at the boundary. This encounter is both physical and psychological, as waiting at checkpoints and constant monitoring turn the body into a participant in a choreography of power.

While borders are typically established to define spaces, ensure safety, and organise functions, shifts in authority and political dynamics can repurpose these mechanisms to restrict access and regulate movement, shaping both social interaction and the urban experience. The MT exemplifies how planning decisions and interventions transformed originally functional boundaries into instruments that limit bodily mobility, reduce permeability, and alter connectivity. These changes demonstrate how spatial structuring influences accessibility, functionality, and the broader dynamics of land use and public engagement.

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Walking the City as a Multisensory Experience: Microclimate and Soundscape Effects in Béjaïa

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Cities today face multiple challenges related to unsustainable transport and the excessive reliance on motorized travel. These issues have led to problems at different levels, including air pollution, roadway congestion, and health concerns linked to physical inactivity such as obesity. Walking offers a key solution to address these challenges and is fundamental to creating livable and healthy cities (Mansouri & Attar 2022). However, most walkability studies still focus primarily on physical attributes, such as sidewalk width, permeability, and street connectivity; while often overlooking the importance of pedestrians' sensory perception. Two dimensions are particularly important: microclimate and soundscape (Mansouri & Stefàno 2024, Mansouri et al. 2025a,b).

This research presents two investigations conducted in Béjaïa, Algeria. The first explores the impact of microclimatic conditions on pedestrian perception and comfort; the second examines the influence of the soundscape on the walking experience in the city. Two contrasting study areas were selected: the old town of Béjaïa (the Medina), built before Algerian independence and characterized by historic urban fabric, and the lower city composed of modern and contemporary fabrics. This contribution therefore addresses limitations of studies focused on isolated spaces by explicitly considering transitions between places and the multisensory nature of the walking experience (Mansouri et al. 2025a,b).

Two complementary methodologies were implemented, one for each study, across five zones selected in each urban fabric (two in the old town and three in the lower city). Zones were chosen after a morphological analysis. Within each zone, walking itineraries were defined and focal points established to support subsequent thermal walks and soundwalks, combined with in-situ measurements (microclimatic and acoustic).

Microclimate component (July 2022). At focal points, we measured air temperature (Ta), surface temperature (Ts), wind speed (Va), relative humidity (RH), and sky view factor (SVF), synchronized with accompanied walks, questionnaires (thermal sensation vote ASV, differential dASV, wind sensation vote WSV, and Willingness to Continue - WTC), and mental maps. Measurements followed ISO 7726 and WMO recommendations; sensor height was 1.75 m. SVF was calculated from fisheye images (Canon EOS 2000D) processed in RayMan Pro. Seventy participants were involved (Mansouri et al. 2025a, ISO 1998). Soundscape component (March 2023). The protocol followed ISO 12913 recommendations, combining soundwalks (3-minute listening per point with a perceptual-attribute questionnaire), 7-day sound diaries, mental maps, and LAeq measurements using a type-2 sound level meter. Fifty-eight participants completed the soundwalks and fifty completed the diaries, distributed over the same zones/itineraries. Standard ISO attributes (e.g., pleasant, calm, vibrant) were aggregated into pleasantness and eventfulness for visualization and statistical analysis (Mansouri et al. 2025b, ISO 2014, 2018). Analysis. Data analysis used R for statistics, regressions, and correlations (e.g., Ta/Ts SVF; ASV ↔ WTC; soundscape – visual- walking associations) and NVivo for qualitative analysis of mental maps (Mansouri et al. 2025a,b).

Microclimate and thermal perception. At 14:00, SVF and Ts showed a clear positive relationship (slopes of approximately 8–9 °C per unit SVF depending on space type). Streets and squares exhibited the highest Ts, whereas gardens recorded the lowest. The SVF–Ta link was weaker but remained generally positive. ASV values peaked along certain sections of lower-city itineraries (LCI1, LCI3), and WTC closely tracked ASV (Kendall's $\tau\beta \approx 0.79$). Vegetation and "breathing spaces" (gardens, vegetated stairways) reduced Ts/Ta and also moderated perception: places with high Ta could still be felt as "neither warm nor cool" in densely vegetated settings. Wind (> 1 m/s) improved WTC, with a plateauing effect under hot/humid conditions (Mansouri et al. 2025a).

Transitions and thermal memory. SVF jumps between consecutive points (sheltered → open) were frequently accompanied by an increase in dASV ("warmer" to "much warmer"), highlighting the importance of sequencing itineraries with shade and alternations. Old-town itineraries (OCI1–OCI2)

showed the richest dASV variations, driven by morphological diversity (narrow lanes, stairs, gardens, occasional openings) (Mansouri et al. 2025a).

Perceptual factors beyond physics. A logistic model indicated that vegetation (OR ≈ 1.50), maintenance (OR ≈ 1.40), and views (OR ≈ 1.30) increase the likelihood of a higher WTC, whereas fatigue (OR ≈ 0.70) and insecurity (OR ≈ 0.80) reduce it evidence of interaction between physical and cognitive-affective factors (Mansouri et al. 2025a).

Soundscape and walking. Natural and social sounds increased perceived comfort and the sense of safety, while mechanical noise (traffic, construction) was associated with discomfort and avoidance behaviors. In the morning, there were moderate-to-strong correlations between acoustic comfort and visual ambiance ($\rho = 0.58$, $p = .001$), and between acoustic comfort and walking pleasantness ($\rho = 0.40$, $p = .033$). Coastal itineraries (e.g., the Leonardo-Fibonacci promenade) encouraged more leisure walking, illustrating the combined effect of landscape and valued sound sources (sea, calm human activities) (Mansouri et al. 2025b).

These findings confirm that urban walking is a multisensory experience in which microclimate and soundscape interact. On the thermal side, targeting useful wind (≥ 1 m/s), lowering Ts through shade and higher-albedo materials, and orchestrating breathing spaces along routes are decisive. On the acoustic side, enhancing natural and social sounds and buffering mechanical sources through design (vegetation screens, traffic setback, surface treatments, microtopographies) improves comfort and perceived safety (Mansouri et al. 2025a,b).

Beyond physical magnitudes, affective and cognitive dimensions (views, order, cleanliness, safety, fatigue) strongly modulate the perceptual translation of stimuli. Correlations between acoustic comfort, visual ambiance, and walking—together with the WTC model's odds ratios—underscore the need to integrate engineering and ambience design in pedestrian-route planning. Finally, the role of transitions (dASV) justifies sequencing strategies: regularly inserting "regeneration stations" (canopies, gardens, fountains, seating) to limit the accumulation of thermal and acoustic stress and to foster recovery (Mansouri et al. 2025a,b).

In Béjaïa, the pedestrian experience emerges from the interlocking of morpho-microclimatic and acoustic factors. Three operational takeaways are: (i) design shaded, varied itineraries (controlled SVF, higher-albedo materials, continuous vegetation) to smooth ASV/WTC and sustain the willingness to walk; (ii) curate sound quality (valorize nature and sociability, reduce mechanical noise) to enhance safety and richness of experience; and (iii) sequence routes with regularly spaced breathing spaces. These recommendations can inform heritage protection and upgrading (PPSMVSS) and be transferred to other North-African cities fac-

ing similar climatic and acoustic constraints (Mansouri & Stefàno 2024, Mansouri et al. 2025a,b).

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Proximity and Permeability in Informal Settlements: Learning from Dharavi

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1 Introduction

Informal settlements, slums, favelas, gecekondus, barrios, townships or bastis have become a global phenomenon, offering shelter and support to people seeking housing, employment, and other basic human requirements (Boanada-Fuchs et al. 2024, Celhay & Gil 2020, Mueller-Wolfertshofer 2025a, Paul 2025, Sohane & Bhan 2023). One out of eight people in the world is estimated to live in 'slum-like conditions', and the number of informal dwellers has risen from an estimated 689 million to 880 million people between 1990 and 2014 (UN-Habitat 2016b, 2018). Urbanisation is expected to rise drastically and affect every aspect of human life in the coming years, according to UN-Habitat (2018), including health, socioeconomic opportunities and environmental factors. The provision of adequate housing to all citizens through strategies for sustainable urban development therefore remains a fundamental aspect for dealing with the polycrisis of the 21st century (Mueller-Wolfertshofer 2025a).

Governments worldwide are implementing 'slum redevelopment' projects to provide 'adequate' housing to their citizens (Agayi & Serdaroğlu Sağ 2020, Bhan 2024, Bhide 2023, Mueller-Wolfertshofer 2025a, UN-Habitat 2016a). These projects are often implemented by private investors within cities' neoliberal reforms on policy and governance (Indorewala 2018, Korkmaz & Balaban 2020, Mukhija 2017, Nainan 2008, Nuijten et al. 2012). Based on speculative markets

in a modernist mindset, such urban development projects are highly unsustainable, as demonstrated by researchers (Bhide 2023, Indorewala 2018, Mueller-Wolfertshofer 2025a, Patel 1996, Sanyal & Mukhija 2001). New approaches focused on inclusivity and sustainability must be explored to integrate the intrinsic requirements of inhabitants in such settlements into (re)development processes as well as to account for the growing scarcity of resources in the current climate emergency (Korkmaz & Balaban 2020, Mueller-Wolfertshofer 2025a, Schirnding de Almeida & Boucsein 2025).

This research addresses the gap between ethnographic approaches and urban spatial design in the context of Mumbai's informal settlements, where Dharavi is presented as a case study to understand its socioeconomic functioning. The research aims at identifying the spaces required by inhabitants for sustaining their livelihoods and how these can be integrated in (re)development initiatives (Mueller-Wolfertshofer 2025a). The architectural theory of hybridity (Fenton, 1985; Fernández Per et al., 2014) is used as a framework to accomplish this, by examining spaces in relation to use, proximity and permeability for facilitating sustainable urban transformations (Mueller-Wolfertshofer 2025a)).

2 Methods

The research followed a qualitative and explorative design, as illustrated in Figure 1. An empirical case study analysis of Dharavi in Mumbai, India, was used for data collection, which included photo documentation, spatial mapping, on-site observation, as well as interviews with inhabitants and NGOs active on-site. Design was also used as a research method, with graphical representations used to document hybridity in the settlement and formulate new ideas for (re)development with this architectural framework. Hybridity was studied in Dharavi at three scales: at the scale of a single unit, at the scale of a complex, and at the scale of the entire settlement. Each of these scales was also examined with a corresponding perspective of collaboration, identity and sustainability. Field research took place in Dharavi between January 2020 and January 2023.

Due to widespread mistrust of persons associated with redevelopment initiatives, considerable time was required for data collection. Interviews could only be conducted after getting acquainted and forming a basis of trust with the inhabitants. Collecting data as a female researcher led to unexpected advantages, however, as contact could be established with women and children, in addition to men living in Dharavi. This enabled data from exceptionally vulnerable groups – women and children in informal settlements – to be incorporated into the research. The data has been anonymised for the inhabitants' safety.

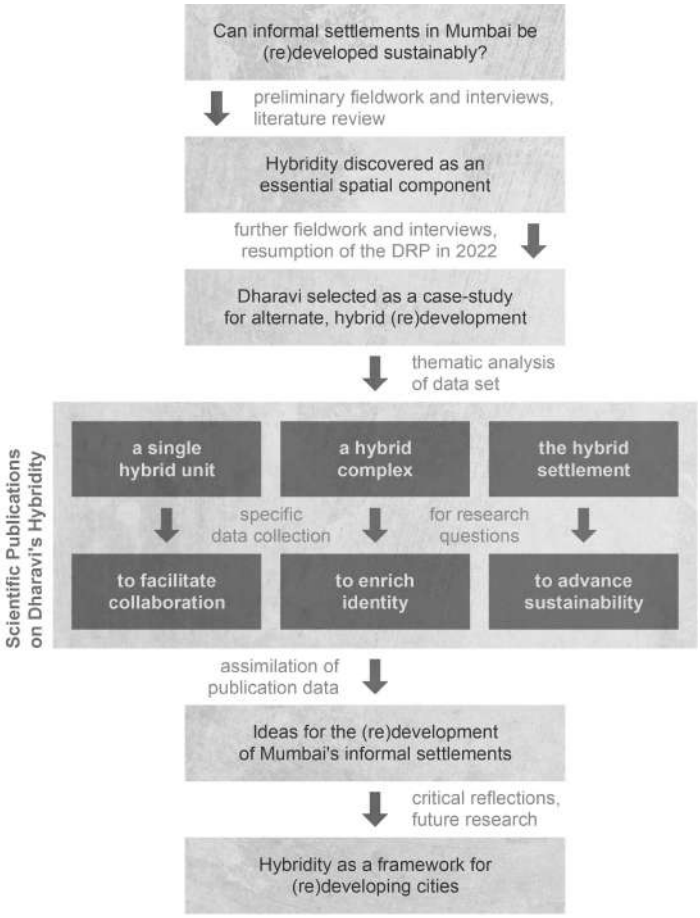

Figure 1: The qualitative and explorative research design (Mueller-Wolfertshofer 2025a)

3 Results

The results display the complexity of hybridity in Dharavi at three scales. The first was a hybrid unit consisting of a pottery production-cum-household to understand processes of collaboration. The second was a hybrid leather manufacturing complex to understand the implications of identity, especially within the informal urban context. The third was the entire hybrid settlement of Dharavi, where a variety of socioeconomic systems, or microecologies (Mueller-Wolfertshofer & Boucsein 2023), were analysed on the basis of sustainability.

The pottery unit, covering around 60 sq m of ground area and consisting of two floors, encompassed the potter family's economic as well as domestic activities, as illustrated in Figure 2. Six people lived in this unit: the grandmother, her two sons, her daughter-in-law, her grandchild and a worker who mixed clay for the family (Mueller-Wolfertshofer & Boucsein 2023). The daughter-in-law assisted her husband and his brother in their economic processes, as well as the grandmother with domestic chores. The daughter-in-law also cared for her son when he came home from school. The proximity of uses within this hybrid unit enabled the family to maintain their socioeconomic stability by enabling domestic and care-work to be carried out flexibly, while simultaneously upholding production cycles for income. The daughter-in-law also had a central role in the family's functioning, as she collaborated with members on various tasks in the hybrid unit.

Collaboration was also an important aspect in the neighbourhood, as the household was part of a community of predominantly Hindu potters in Dharavi called 'Kumbharwada'. Production processes in this community were carried out in staggered rotations, enabling cost-effective systems of production (Mueller-Wolfertshofer & Boucsein 2023). The worker who lived with the family, for example, also worked for other families in the neighbourhood when his services were not required by the family he lived with, enabling continuous employment and income. The family's kiln was also rented by other families in the neighbourhood when it was not in use. One of the family members additionally worked for a larger pottery unit in the vicinity for additional income. Furthermore, the processes of transporting raw materials to the potters' community and finished artefacts for sale are also more cost-effective and sustainable when used collectively. These collaborative processes, facilitated by hybridity and permeability in the built environment, also imply that calamities like flooding severely affect the economic stability of all the businesses in the community or microecology (Mueller-Wolfertshofer & Boucsein 2023).

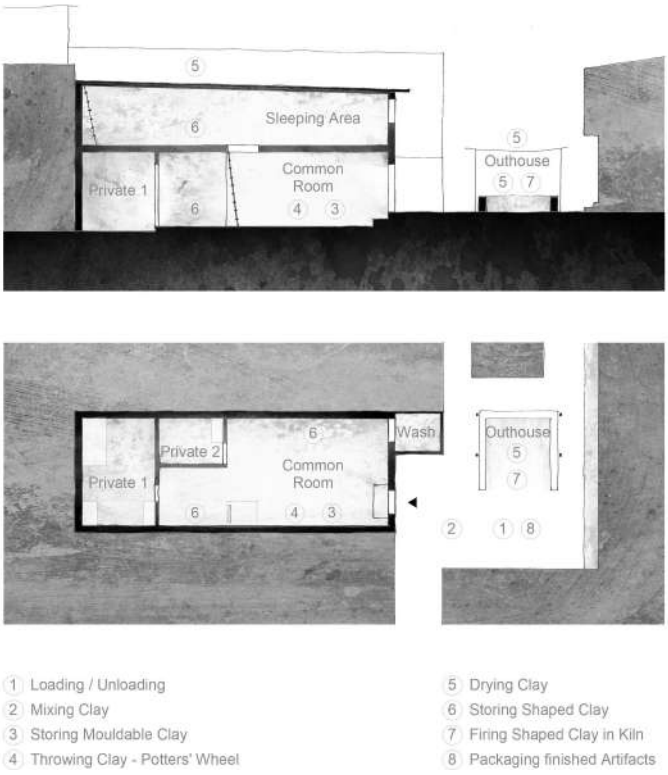

Figure 2: Hybridity in the potters' unit (Mueller-Wolfertshofer & Boucsein 2023)

The next scale of hybridity studied was that of the manufacturing complex, which accommodated multiple economic, domestic, and religious uses. It encompassed three buildings with a ground coverage of approximately 150 sq m, with three floors as seen in Figure 3. The complex consisted of zones for production, a warehouse for storing finished products and a shop for sale. The spaces for production were also used for domestic activities by the workers who lived there, pulling out their mats to sleep at night or using kerosene stoves for cooking. All the employees observed on site were Muslim men from northern India, who shared the same ethnicity as the owner. They conducted daily prayers together on the upper floors and bathed outside the building with buckets of water. According to Saglio-Yatzimirsky (2013: p. 182), business owners often employ members of the same caste or community because it has advantages in the same spoken language, shared practices and fixing holidays for religious events. Once

again, the proximity of uses in the hybrid complex and the buildings' permeability enable cost-effective systems of production and employment.

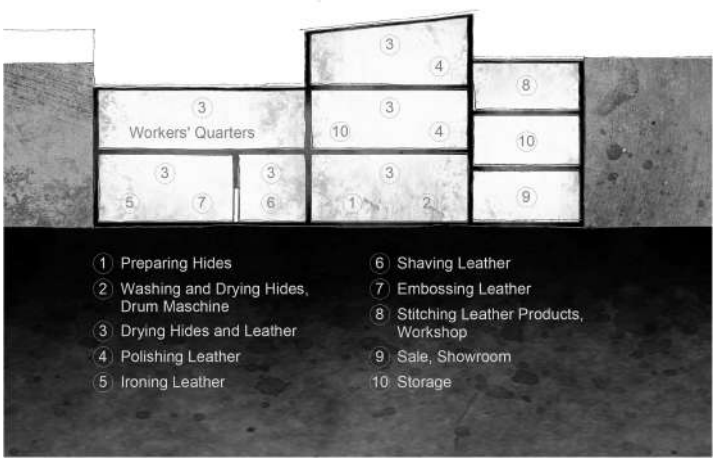

Figure 3: Hybridity in the leather manufacturing complex (Mueller-Wolfertshofer 2025)

Leather production plays an important role as a source of income and identity in the Indian context, as confirmed by the manufacturing complex studied in this research. It is only carried out by the lowest Hindu casts and Muslims because the work involves animal carcasses (Mueller-Wolfertshofer 2025, Saglio-Yatzimirsky 2013, Weinstein 2014). Hindus of higher casts are predominantly vegetarian and do not condone the slaughter of animals in their neighbourhoods. This is an important aspect in understanding the functioning of informal settlements like Dharavi, as the settlement consists of separate communities, each with its own identity based on aspects like religion, caste, occupation, language, ethnicity and corresponding hybrid spatial configuration.

Sustainability also plays an important role in Dharavi at the settlement scale, whether explicitly or implicitly (Mueller-Wolfertshofer 2025b). This hybrid settlement covers about 2,4 sq km in area and accommodates over 10,000 small-scale industries ranging from pottery to recycling to the production of food and medical supplies, which are sold in the country and abroad (Mueller-Wolfertshofer 2025b, Patel & Paul 2010, Sharma 2000). Of these, the recycling industry is internationally reputed for its circular processes and is the largest in India, as it employs about 5000 people (Patel & Paul 2010, Weinstein 2014). The proximity and permeability of domestic, economic, religious, educational and

other uses in the hybrid settlement enable sustainability in terms of mobility. In comparison with most of Mumbai, where people often commute for five or six hours on a daily basis, residents of Dharavi rely on micro-mobility, as their daily needs can be met within walking distance. The use of private cars is an exception, as inhabitants use public transportation to travel to other parts of the city (Mueller-Wolfertshofer 2025b). Other aspects of sustainability in Dharavi include economic stability, sociability, adaptability and a low carbon footprint in the steelement (Mueller-Wolfertshofer 2025b).

Despite the inherently sustainable hybrid layout of Dharavi, data also reveal that inhabitants are vulnerable to pollution, precarious working or living conditions, and the environmental impacts of climate change. The greatest risk posed to them, however, is that of the investor-led redevelopment projects, which threaten to eliminate the complex socioeconomic systems they have built over the decades. The loss of socioeconomic spaces within settlements like Dharavi (Saglio-Yatzimirsky 2013: pp. 261–263) would reduce the proximity and permeability of current hybrid configurations, requiring inhabitants to use additional resources to commute and resulting in the loss of their livelihoods and socioeconomic flexibility. The badly designed and poorly constructed structures that replace these settlements would waste resources and enhance existing inequalities by worsening the conditions of inhabitants on-site through new constructions instead of improving them (Bhide 2023, Indorewala 2018, Sharma 2000: p. 185). Inhabitants' requirements must be integrated into (re)development processes, and the data in this research lay a foundation for future work by documenting the complex socioeconomic systems, or microecologies (Mueller-Wolfertshofer & Boucsein 2023), that exist and must be promoted in informal settlements.

4 Discussion and Conclusion

Hybridity is fundamental to the socioeconomic functioning of informal settlements like Dharavi, through the proximity of uses and permeability of the built environment. An alternate process of (re)development, which implements hybridity as a mode of architectural practice through perspectives of collaboration, identity and sustainability should be attempted. Communities must be empowered to lead (re)development processes, as they can transform the built environment around them based on intrinsic requirements through collaboration with architects and planners (Mueller-Wolfertshofer & Boucsein 2023). The study of non-speculative collaborative housing projects is an avenue for future research in this regard, as these projects are led by communities and demonstrate traits

of hybridity within them (Mueller-Wolfertshofer 2025a, Mueller-Wolfertshofer & Glogar 2025).

This research goes beyond the redevelopment of informal settlements like Dharavi, however, as the hybrid mode of architecture can be used to (re)develop urban space irrespective of labels like 'formal' or 'informal'. Facilitating proximity and permeability of vital uses in the urban fabric is essential for inclusive and sustainable urban transformation. Such inclusive approaches can help counter spatial segregation and mitigate socioeconomic inequalities in cities. Settlements like Dharavi, which are currently perceived as pejorative, already embody these hybrid principles and should become international beacons of sustainable urban (re)development.

5 Acknowledgements

This contribution is based on the results of my unpublished doctoral dissertation under the supervision of Prof. Dr. Benedikt Boucsein, under the mentorship of Dr. Setafnie Ruf and completed with a scholarship from the Hanns Seidel Foundation.

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Configurational Accessibility in Practice: Integration, Choice, and the Clustering of Activity Spaces in Beşiktaş, Istanbul

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1 Introduction

The pursuit of sustainable urban environments is an ongoing challenge for urban planners and designers globally. Modern planning increasingly prioritizes pedestrian mobility and reduced car dependency. To this end, a variety of methodologies including GIS, statistical analysis, and space syntax, have been traditionally employed to understand and predict pedestrian movement and urban dynamics (Hillier & Hanson 1984, Hillier 2007). However, as urban landscapes continue to evolve, a more holistic understanding of socio-spatial dynamics necessitates integrating diverse data sources. This research extends previous explorations by integrating location-based social network (LBSN) data, specifically Foursquare venue data, with Space Syntax measures to gain a deeper, more nuanced understanding of urban socio-spatial dynamics in Beşiktaş, Istanbul, Türkiye. The primary objective is to investigate the intricate relationship between the distribution of activity spaces and the characteristic features of the street network, exploring the potential of social network data in conjunction with Space Syntax as a comprehensive analytical framework (Iranmanesh & Atun 2020, Üsküplü et al. 2020). This study seeks to address how social media reflects socio-spatial dynamics, the impact of the urban physical network on these dynamics, and the complex

interplay between LBSN data and syntactic measures. Ultimately, this research aims to contribute valuable insights for creating more pedestrian-friendly and livable urban spaces, emphasizing the critical importance of integrating spatial configuration analysis with real-time social activity data to better align urban environments with residents' needs and preferences (Yamu et al. 2021). This approach offers a fresh perspective on how the physical layout of a city shapes its social and economic life.

2 Methods

The methodology for this research involved four sequential phases. Firstly, data collection encompassed two main sources: Foursquare venue data and Open Street Map (OSM) road network data. Foursquare venue data for Beşiktaş district was collected via the Foursquare API database, ensuring comprehensive coverage by dividing the case area into square cells and conducting multiple searches for various venue categories. This yielded a dataset of 1320 venues, categorized into Recreation and Entertainment, Dining and Drinking, and Retail, after an initial categorization and subsequent merging based on functional similarity and numerical representation. The raw JSON data was converted to CSV and then mapped in ArcGIS Pro (Bernabeu-Bautista et al. 2021). Secondly, for the Space Syntax analyses, street network data (road center lines) were extracted from OSM. To mitigate the "edge effect" problem in syntactic analyses, a frame larger than the specific case area was defined (Peponis et al. 1997). Pedestrian pathways not visible in the initial road center lines map were identified using satellite imagery and incorporated into the map in ArcGIS Pro. An axial map (N=1640) was then prepared and subsequently broken into a segment map using DepthmapX software for spatial element analysis (Turner 2004).

In the third phase, Kernel Density Estimation (KDE) was applied to the Foursquare venue data to visualize the spatial distribution and clustering of activity spaces. KDE, a non-parametric algorithm, was used to generate continuous density surfaces for all venues as well as for the individual categories of Dining and Drinking, Recreation and Entertainment, and Retail (Wilson & Gerard 2019). This allowed for the identification of significant activity hotspots within the district. Concurrently, Space Syntax analyses were performed using DepthmapX to derive syntactic measures specifically "to-movement" (integration) and "through-movement" (choice) values. These analyses were conducted at both global (r=n) and local (r=50m, 250m, 500m) scales with a focus on global analyses for their superior capture of the area's distinctive features (Hillier & Iida 2005). Integration

values quantify the connectivity of each street segment to the overall system, indicating its potential as a "target point" (Klarqvist 1993). Choice values, on the other hand, evaluate the potential for a street to be used as a shortcut, reflecting through-movement (Turner 2007).

The fourth and final phase involved the superimposition of the Kernel Density Analysis results with the Space Syntax measures. This crucial step allowed for a comparative evaluation of the spatial distribution of venues against the integration and choice values of the street network. By visually overlaying these two layers of data, the research aimed to reveal correlations and discrepancies between physical accessibility and social activity patterns, providing a holistic perspective on the socio-spatial dynamics of Beşiktaş.

3 Results

The Kernel Density Analysis revealed significant clustering of venues around Sinan Paşa Mosque, particularly at the intersection of Beşiktaş Street and OrtaBahçe Street, with high densities also observed in Cihannüma, Akaretler, and Vişnezade districts. Dining and drinking venues showed the most significant density around Beşiktaş Square, a central hub of the Beşiktaş Çarşı district, as well as in the areas between Barbaros Boulevard and Akmazçeşme Street, near Sinan Paşa Mosque, and in Akaretler. Recreation venues formed notable densities in Beşiktaş Pier, Maçka Square, and Akaretler. In contrast, retail venues exhibited a distinct characteristic, clustering primarily in the inner parts of Beşiktaş Street following Ortabahçe Street, with very low densities elsewhere. This suggests a more concentrated pattern for retail compared to the dispersed distribution of dining and drinking venues.

The Space Syntax integration analysis indicated that Beşiktaş Street, Barbaros Boulevard, and Dolmabahçe Street possessed the highest global integration values within the study area. These highly integrated axes, particularly Barbaros Boulevard and Dolmabahçe Street, frame the Çarşı district, reinforcing its interconnectedness and overall accessibility (Hillier & Hanson 1984). Within the Çarşı district itself, Ortabahçe Street, Şair Nedim Street, and Süleyman Seba Street also showed relatively high integration, attributed to the dense street network. Variations in integration levels across Barbaros Boulevard were noted, with the denser road network on the Çarşı district side contributing to higher connectivity, while the eastern side, characterized by hilly terrain and larger land parcels, exhibited lower integration due to disconnected visual representation and dead-end streets.

The choice analysis highlighted Barbaros Boulevard, Çırağan Street, Hasfırın Street, OrtaBahçe Street, Ihlamurdere Street, Hattat Tahsin Street, and Şht. Asım Street as having the highest choice values, suggesting their strong potential as preferred routes for through-movement (Hillier 2008). A key finding was the predominantly north-south alignment of higher choice values across Beşiktaş. The Beşiktaş Çarşı district generally showed low choice values, with the highest concentrations near Ortabahçe Street, Ihlamurdere Street, and Barbaros Boulevard. Has Fırın Street stood out as the main axis within the district with a distinctly higher choice value, despite the overall low choice values in high pedestrian traffic areas.

The superimposition of venue density with integration values revealed a strong positive relationship for streets such as Barbaros Boulevard, Beşiktaş Street, Ortabahçe Street, and Şair Nedim Street (Figure 1). These thoroughfares, characterized by high integration, align with the natural movement theory, attracting a high concentration of venues and pedestrian traffic due to their accessibility (Hillier et al. 1992). Süleyman Seba Street showed a moderate positive relationship, suggesting its role as a local connector supporting a balanced urban mix. However, some areas like Şht. Asım Street and the vicinity of Beşiktaş pier, exhibited high venue densities despite lower integration values. This suggests the presence of strong local character or constraints on through-movement in these areas.

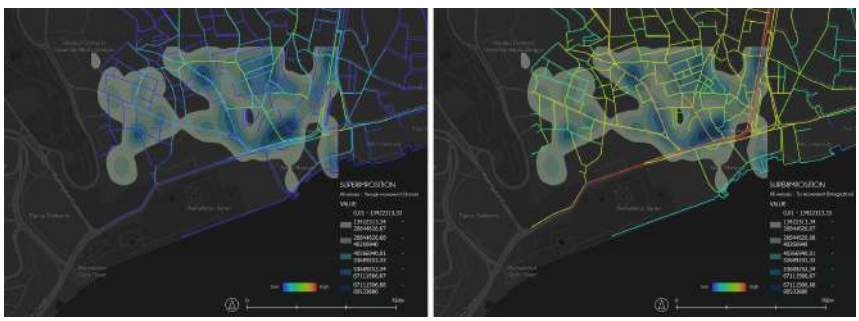

Figure 1

When superimposing venue density with choice values, Barbaros Boulevard, Hasfırın Street, Ortabahçe Street, Ihlamurdere Street, and Hattat Tahsin Street showed high choice values, indicating their preference as routes and potential as vibrant commercial areas. Çırağan Street also demonstrated high choice values, but with lower venue density, potentially pointing to underutilization for commercial purposes compared to the Çarşı district. Interestingly, areas

with high venue density, such as the Vişnezade district and Süleyman Seba Street, showed lower choice values, suggesting local activity hubs that serve the immediate community rather than attracting significant through-movement. This indicated that while physical accessibility (integration) often correlates with activity, other factors influence venue distribution and usage.

4 Discussion and Conclusion

This research offers a critical perspective on understanding urban socio-spatial dynamics by integrating location-based social network data with syntactic measures in Beşiktaş, Istanbul. The findings reveal significant correlations between the syntactic properties of street networks and the distribution of activities and venues. Streets with high integration values, such as Barbaros Boulevard and Beşiktaş Street, tend to host popular venues and attract high pedestrian traffic, supporting the hypothesis that well-integrated streets are more likely to foster commercial activities. This directly addresses how the built form of urban areas shapes accessibility and performance, showing that spatial patterns can support or undermine broader development trends. The relationship between these elements underscores the importance of permeability and proximity in shaping urban vitality.

However, the study also uncovered instances where high venue densities did not consistently correspond with high integration or choice values. This discrepancy, observed in areas like Şht. Asım Street and parts of the Çarşı district, suggests that factors beyond mere spatial configuration, such as cultural or historical significance, local community needs, or even virtual connections that draw people to less accessible physical spaces, also play a crucial role in shaping activity distribution (Iranmanesh & Alpar Atun 2017). This highlights that while proximity and permeability are fundamental, they are not the sole determinants of urban vibrancy and inclusion. It prompts a re-evaluation of how spatial relationships really shape mobility and land use, acknowledging the complexity introduced by social and cultural layers.

The integration of Foursquare data provides a valuable, real-time, and cost-effective lens into user behavior and preferences, complementing the structural insights from Space Syntax (Kitchin 2014, Martí et al. 2019). This multi-layered approach enriches our understanding of how spatial organization facilitates or restricts movement and interaction. For urban planners and designers, these findings emphasize the necessity of considering both the inherent physical characteristics of the street network and the dynamic social behaviors captured by LBSN

data when designing pedestrian-friendly and livable spaces. It suggests that interventions aimed at enhancing urban permeability and proximity should be informed by a comprehensive understanding of where people actually congregate and why, moving beyond purely geometric considerations.

One limitation of this research is its reliance solely on Foursquare data, which may not fully represent all socio-spatial activities and could be subject to demographic biases. Future studies could incorporate data from multiple social media platforms (Shelton et al. 2015) as well as qualitative methods like surveys and interviews, to provide deeper insights into the socio-spatial patterns and the human dimension behind them. Expanding the study to other districts or cities in Istanbul and beyond could also validate the generalizability of these findings. Additionally, incorporating other socio-spatial, economic, and natural factors, such as topography and land-use data, could provide a more holistic understanding of urban dynamics. Nevertheless, this study underscores that a combined approach, integrating crowdsourced data with established spatial analysis techniques, is vital for a comprehensive understanding of how physical environments shape and are shaped by urban interactions, making significant contributions to the discourse on proximity, permeability, and accessible urban design.

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”In Swimsuits, We’re All Equals”: Building High-Rise Cohesion Through Social Infrastructure – The Case of Alt-Erlaa’s Rooftop Pools

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1 Introduction

In light of intersecting global crises such as the climate catastrophe and a crisis of affordable living in urban centres around the world, increasing academic and public interest has been given to urbanist concepts focusing on proximity and density, such as the 15-minute-city (Lima & Costa 2023). Among these ideas, highly concentrated dwelling in high-rise or comparable mass housing contexts might constitute one way to provide affordable habitation to urbanizing populations. Through the efficient use of space and by utilizing economies of scale, such buildings may enable the provision of otherwise luxurious amenities like rooftop pools, the focus of this study.

Mass housing contexts can, however, pose challenges for the connectedness of residents: Monumental buildings may appear as separate, alien islands in the city, dislodged from the broader urban fabric (Reinprecht & Dlabaja 2014). Especially in the case of post-war social housing estates, stigmatization along ethnic and class distinctions can be another driver of separation between residents and their environment (Kabisch & Pössneck 2022). Within mass housing, social life has

been shown to suffer: feelings of overwhelm and anonymity may prevail (Barros et al. 2019, Gibson et al. 2011, Gifford 2007), and measures of social cohesion (SC) – a characteristic describing a group's interconnectedness and defined by Schiefer & van der Noll (2017) through "close social relations, pronounced emotional connectedness to the social entity, and a strong orientation towards the common good" (p. 592) – are often lower under conditions of high residential density (Dwijendra et al. 2021, Kalantari & Shepley 2021, Nzimande & Morris-Kolawole 2024).

One counterexample to this tendency might be found in Wohnpark Alt-Erlaa in Vienna, Austria (Figure 1). Housing almost 10.000 residents (Wien MA23 2025) in three buildings with up to 27 floors, the limited-profit housing estate has been publicly lauded as a best-practice example of social housing (e.g. Nonument 2018): Residential satisfaction and, in particular, the local sense of community have been reported to be substantially higher than in comparable estates (Wien MA18 2004).

Figure 1: Outside Views (author's own) and Map of Alt-Erlaa (adapted from OSM and QGIS)

This success is often attributed to the site's manifold amenities, among them shops, schools, indoor playgrounds, dozens of resident-managed rooms for clubs

Figure 2: Rooftop Pool Area (author's own)

and association, as well as – particularly uniquely – seven resident-only rooftop pools (Figure 2). Such spaces can be considered social infrastructure (SI), a term coined by Klinenberg (2019) and defined by Latham & Layton (2019) as "the networks of spaces, facilities, institutions, and groups that create affordances for social connection" (p. 3). While recent literature has stressed the role of SI to facilitate interconnections and build community resilience (e.g. Enneking et al. 2025, Renner et al. 2024), studies of the presence, use and design of communal spaces in mass housing remain rare (Nguyen et al. 2024, Wu & Xin 2020).

Given these considerations, this study set out to answer one main research questions and two subquestions:

- R1) In what ways can semi-public swimming pools in high-rise housing serve as social infrastructure that contributes to neighborhood social cohesion?
- R1.1) What are the measures, drivers and consequences of social cohesion in Wohnpark Alt-Erlaa?
- R1.2) To what extent does Wohnpark Alt-Erlaa constitute a closed or open urban system through socio-spatial boundaries and borders?

2 Methods

To answer these questions, a place-based single case study with interviews and observations was employed at the site of Wohnpark Alt-Erlaa, with particular focus on its semi-public rooftop pools. As a qualitative study, the inquiry aimed to elaborate on the lived realities and experiences (Peake et al. 2024) of relevant stakeholders, with the place-based approach (Paddock et al. 2021) meaning that the site was foregrounded while research questions were gradually refined and narrowed. Although examining only a single case limits the study's explanatory power and comparability, this focus was deemed necessary in order to allow for immersion and the build up of trust over time; ascertaining Alt-Erlaa as an "unusual [and] revelatory" (Yin 2018: p. 288) case to generate knowledge.

Access to the site was achieved by numerous visits between April 2024 and June 2025. This included the participation in various resident-organized social events, where most respondents were later recruited. Furthermore, respondents were acquired through chance encounters in the estate, through social media, and as snowball references through earlier interviewees.

Semi-structured interviews with residents of the estate, as well as one visitor and one employee of local facility management, constitute the primary data material. Eleven such interviews were conducted between January and June 2025, recorded and transcribed in German. Furthermore, four participant observations at rooftop pool sites were carried out together with hosts in June 2025; utilizing observation guides that focussed both on visible interactions and on spatial qualities following the twelve quality criteria of public space by Jan Gehl (2010: p. 239). Data gathered was coded with MaxQDA through a framework of qualitative content analysis (Mayring 2014) comprising both inductive and deductive coding (Peake et al. 2024).

3 Results

While different results pertain to the theme of track 1, Proximity and Permeability Revisited, findings regarding questions R1 and R1.2 are of particular relevance and will be elaborated on in greater detail.

Regarding research question R1, the estate's rooftop pools were found to constitute important sites of SI, contributing to local SC through seven dynamics. First, they constitute a worthwhile meeting spot to visit with neighbors and an arena for various acts of care, such as keeping an eye on children or sharing food and drink, which helps maintain existing local friendships. Second, the

shared activity in a casual setting, as well as a reduced social distinction through clothing – "In Swimsuits, We're All Equals" being a quote by the estate's architect, Harry Glück – enable new connections between residents. Third, even beyond verbal interactions, repeated encounters of the same faces at the pool and during the journey establish comfort and public familiarity. Fourth, the indispensable navigation of frequent irritations such as children's noises or other swimmers obstructing the lane requires visitors to keep an eye out for another, thus building mutual tolerance and permissiveness. Fifth, evocative rooftop views and feelings of luxury increase local identification and pride, as residents see their pools as a unique and remarkable feature of their estate. Sixth, threats of closure in the past have inspired neighborhood solidarity, leading neighbors to band together against perceived threats to their cherished amenity. Seventh and perhaps most interestingly, unauthorized outsiders occasionally gain access to the pools, which leads some residents to police and enforce the rules at the otherwise unsupervised areas – confronting those visitors (allegedly) recognized as outsiders through clothing or unfamiliarity. While such practices on one hand safekeep poolside order and consolidate in-group identities, they do so by ostracizing outsiders and shutting off the estate from its environment. At times, even newer residents are accused of foreignness, which can create an unwelcoming atmosphere that causes some neighbours to abstain from using the pools.

To enable the social dynamics outlined above, the pools' proximity is paramount: With seven rooftop pools throughout the complex, residents are never more than a few minutes of a weather-protected stroll and elevator ride away; thus, usage patterns are coined by spontaneity and brevity, and most residents even traverse the hallways in swimwear after changing clothes in their apartment. Moreover, several architectural choices affect social functions. The limited surface area combined with a low water depth of 140cm at most, invite playful uses more than 'serious' swimming, and similarly, inlets that line the sides of four of the seven pools create explicit space for conviviality at the pools' edges. Around the pools, residents usually position themselves right by the water, allowing for frequent interactions with bathers. A lack of pre-installed seating is met with residents bringing their own sun loungers; thus appropriating the space for their own needs.

Regarding research question R1.2, the study finds that strong local SC leads to some degree of self-sufficiency, in turn pointing towards a certain level of alienation of the complex from the city. This presents itself in spatialised conflicts between insiders and outsiders such as by the pools as elaborated above, as well as in mobility and social patterns of some residents who rarely

ever leave the estate. Additionally, some physical design elements constitute boundaries, for example massive, separating streets and a lack of practical accessways from or to the outside (Figure 3). Together, mental and tangible factors lead some respondents to believe that the estate appears almost as a gated community, surrounded by a 'virtual fence'. Furthermore, alienation presents itself in diverging perceptions of life in the complex between residents and outsiders, and in a lack of presence of non-residents in the estate's social clubs.

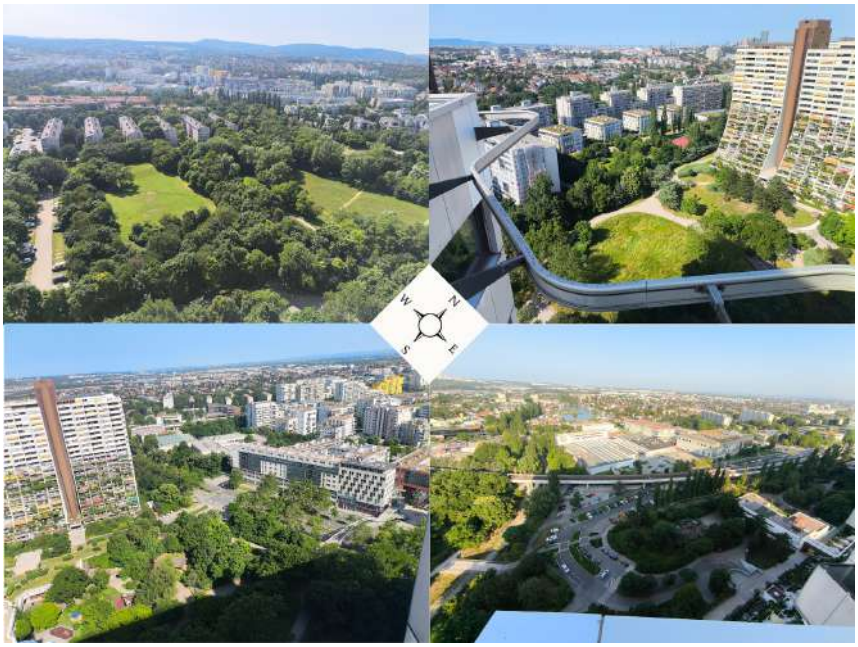

Figure 3: Rooftop Perspectives from Alt-Erlaa (author's own)

Simultaneously, Alt-Erlaa's physical and intangible edges have porous elements, with the estate integrated in its environment in multiple ways: social networks of many residents extend beyond Alt-Erlaa, and the extensive offer of services, shops and hospitality attracts outside visitors, just as greenspace, schools, church and sport halls can be and are used by non-residents – constituting a gradient of varying levels of publicness (Figure 4). Similarly, associations extend outwards both through events and membership structures, as they do accept non-residents who thus can also establish a sense of belonging to the estate. Lastly, recent media and academic fascination with the estate can be interpreted as an element of reconciliation of the (Viennese) public and Alt-Erlaa after initial scepticism. Concludingly, fieldwork painted a nuanced picture of Alt-Erlaa as an

estate with elements of both a closed system with impermeable boundaries and an open system coined by interactive borders.

Figure 4: Alt-Erlaa's Relational Settings from Private to Public (author's own)

4 Discussion and Conclusion

This study accentuates the conceptualisation of swimming pools as SI by adding to the emerging field of literature through the description of various dynamics and social functions, some of which are highly specific to the pool setting. In the context of mass housing, it corroborates research that stresses the relevance of communal spaces that are accessible, well-designed, and taken care of (Nguyen et al. 2024, 2025). Furthermore, the study expands on SI literature by foregrounding understudied aspects of design and architecture, which were found to play a crucial role in some of the identified dynamics. Second, Alt-Erlaa's pools are a well-suited illustration of the "tension between the accessibility and intimacy" (Enneking et al. 2025: p. 10) of SI: On one hand of the spectrum, their semi-public character was said to explicitly foster intimacy and trust among the residents, who benefit from the unmatched proximity and accessibility of their pools. On the other hand, outsiders who are attracted by the unique amenity and try to gain unauthorized access, for example by tailgating residents, can be seen as contesting the restrictions in place (Horton & Penny 2023), which raises questions regarding the fairness and justifiability of access restrictions. This is

especially true in a context where municipal swimming pools in many cities of the Global North have been impacted by renovation needs, rising ticket costs, or outright privatization or closure (Ana 2022, DIE ZEIT 2025, Lewi & Nichols 2014, McShane 2009).

Alt-Erlaa's high SC can be considered a form of privilege (Méndez et al. 2021), with multiple elements of the complex manifesting edge effects that, in Sennett's (2020, 2023) terms, work as impervious boundaries, prohibiting interaction with its environment. Hence, the study also underlines critical contributions that challenge the conditions, contents, and consequences of social cohesion.

In sum, the study raises varying questions that are relevant for recent urbanist discourses: how are access and exclusivity negotiated in urban contexts, whose responsibility it is to provide leisure and relaxation, and how can proximity-centered concepts like 15-minute cities be implemented in ways that alleviate instead of deepen socio-spatial injustices? In any case, it might be true that in swimsuits, we may indeed all be equals. It ought to be considered, however, what that implies for those still in their everyday wear.

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Track 2: Flows and Connections Revisited

This track will examine the various tangible and intangible flows that shape urban and rural environments. Physical flows such as transportation systems, the movement of people, goods, and resources, will be considered alongside intangible flows, including the exchange of information, ideas, data, and migration. Contributions are invited that explore the interaction between these flows and their influence on spatial organization, infrastructure, and social dynamics. How do these flows contribute to or hinder connectivity, resilience, and adaptability in cities and landscapes? The track will also investigate how these flows impact economic networks, social integration, and innovation, considering both the positive roles they can play and the challenges they introduce.

The Spatial DNA of Distributed Work: Behaviors and Processes Planners and Policymakers Need to Know to Sustainably and Equitably Transform Local and Regional Built Environments for Digitalized Work and Living

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1 Introduction

Digital transformation and sustainable development are two interconnected concerns that contemporary planners and policymakers in the United States and worldwide face. In recent years, there has been a seismic shift in how economic, social, and cultural activities are organized in the United States and worldwide. We now seamlessly move from in-person to online modalities of engagement to fulfil our day-to-day tasks and obligations while working, relaxing, shopping, or accessing critical health and civic services. We commonly encounter people engaged in phone or video calls on their smartphones while walking on the streets, riding a bus, or dropping off their child at school, and people working at their laptops in coffee shops, parks, and at airports. This seamless and synergistic integration of the digital and the physical into the "phygital" (Sui & Shaw 2022), has altered the spatial and temporal structure of office-based work.

Office-based work is no longer restricted to centrally located office complexes and designated '9 to 5' work hours. Instead, it is spatially and temporally distributed, with employees working from multiple locations, such as their homes, offices, and third places, at any time of day or night. In hybrid work, a commonly encountered type of distributed work, employees spend some of their workdays at the office and others working from home or elsewhere. Another type of distributed work, remote work, is conducted fully away from the office at any location chosen by the worker. In offices, employees increasingly work at unassigned or non-territorial workspaces, such as hotdesks, which are available on a session-by-session basis and cleared of all possessions at the end of each work session.

Digital technological advances are one of many forces driving the widespread adoption of distributed work arrangements. Companies are embracing distributed work, including multi-local and non-territorial work, to optimize resources and minimize operational costs. Businesses that adopted remote and hybrid work to ensure service continuity during the COVID-19 pandemic are recalibrating their work practices for enduring post-COVID shifts to distributed work (Barrero et al. 2023).

The spatial and temporal restructuring of office-based work—the predominant economic activity of post-industrial United States and comparable Global North contexts—has wide-ranging consequences for the built environment. Distributed work, performed from anywhere and at any time, unsettles conventional land-use and transportation planning practices predicated on fixed times and places for work, regular journey-to-work patterns, and the segregation of activities into land-use zones. Spatiotemporally dispersed, nonterritorial, and phygital practices of distributed workers further reshape the urban and rural built environment. This calls for spatial plans and policies to sustainably and equitably transform local and regional built environments for distributed work and living (Hurtado et al. 2023, Zenkteler et al. 2022).

A conceptual understanding of how distributed work arrangements reshape the built environment is necessary for sustainably transforming neighborhoods, cities, and regions for digitalized work and living. But such a conceptual framework is not readily available. This paper, grounded in the research question, "how are distributed work arrangements reshaping the built environment?", contributes a much-needed conceptual framework that identifies and explains the key distributed work behaviors and processes driving the transformation of urban neighborhoods, cities, and regions in the Global North. In doing so, it empowers planners and policymakers to facilitate sustainable local and regional transformations for digitalized work and living.

2 Methods

The research workflow contains four stages. The first stage entailed a keyword search of research databases such as the Web of Science, ProQuest, and Scopus, and academic search engines such as Google Scholar and Semantic Scholar for traditional academic literature such as journal articles, books, doctoral dissertations, conference proceedings, master's theses, and archived documents, videos, audios, images, data, and newspapers (Table 1). Then, keyword searches were conducted on internet search engines such as Google and Bing to locate gray literature, including white papers, reports, preprints, podcasts, and blog posts. The time period ranged from 1990, when widespread networked communication became possible due to the invention of the World Wide Web and the Internet browser, through 2024, which is witnessing post-COVID intensification of remote and hybrid operations. The collected academic and gray literature (N = 271) spanned multiple spatial scales (workstations, offices, office complexes, commercial business districts, residential neighborhoods, cities, and metropolitan regions), social scales (individual workers, households, organizations, organizational fields, and society), and disciplines (urban planning, economic geography, corporate real estate, facilities management, organizational studies, urban anthropology, interior design, and work environmental psychology) pertinent to the built environment outcomes of distributed work in the US and comparable Global North contexts. The third stage involved a thematic analysis (Braun & Clarke 2006, 2022) of the literature database. The database was read and coded, and the codes were subsequently sorted into themes. Finally, the themes were structured into narratives, which were refined with expert interviews (N = 8). The narratives are presented in the Results section under the titles, "The Spatial DNA of Distributed Work" and "Built Environmental Outcomes of Distributed Work". In the fourth stage, the Spatial DNA of Distributed Work framework and the built environment outcomes serve as a lens for comparatively analyzing the comprehensive plans of three US cities experiencing varying levels of distributed work: Austin, TX, Boston, MA, and St. Louis, MO.

3 Results

3.1 The Spatial DNA of Distributed Work

Remote and hybrid employees work at variable times of day and night from diverse locations, including offices, homes, co-working spaces, third places, and

Keyword	n	Keyword	n
distributed working	8	polyfunctional spaces	3
telework, remote work	10	third places	3
telecommuting	9	office design	5
online communication	5	future of work	6
virtual work	4	distributed work	4
urban communication	6	mobilities	5
mobile communication technologies	3	fragmentation of activity	10
knowledge work	8	smart cities	2
ICT and urban form	6	urban innovation	4
ICT and travel	14	economic development	5
spatial behavior of firms	3	form-based planning	3
urban agglomeration	7	sustainable development	5
phygital	4	mixed-use, live-work-play	8
urban spatial structure,		15-minute neighborhood	5
post-industrial urban form	3	place attachment	2
multi-local working	4	Austin	13
nonterritorial working	8	Boston	14
post-pandemic real estate	12	St. Louis	15
co-working	7	Kendall Square	4
hotdesking	3	innovation districts	6
space-as-a-service	3	urban entrepreneurialism	3
organizational ecology	4	workspace psychology	5
new ways of working	6		

Table 1: Keywords and corresponding literature sample size

while commuting or traveling, either by choice, opportunity, or obligation (Felstead et al. 2005). Mobile ICT also provides employees with the mobility to move from one workstation to another within the office. Following the dot-com bust of 2000 and the collapse of Lehman Brothers in 2008, enterprises have adopted neoliberal, lean, agile, or just-in-time practices to optimize labor and facility costs in volatile economic conditions. For example, employees are increasingly recruited on a contingent and contractual basis, and no longer have assigned workspaces; instead, they have non-territorial or temporary workspaces available on a session-by-session or day-to-day basis. These technological, economic, and spatial shifts are changing office-based work along four dimensions:

1. **Dispersed** – workspaces are no longer centralized in an office, but are multi-local, dispersed within a distributed workspace ecosystem comprised of work and non-work-centric settings (Figure 1),

2. **Intensified** – nonterritorial workspaces such as hotdesking, where workers are allocated temporary workspaces on a "first come first served basis" and hoteling, where workers are allocated temporary workspaces upon prior reservation, intensify workspace usage by increasing the average number of users,
3. **Improvised** – real-time messaging and on-demand information about the built environment (e.g., road traffic, public transit, public health closures) facilitate improvised, 'on-the-fly' shifts in work schedules and arrangements according to emerging conditions, and
4. **Phygital** - Contemporary offices are neither solely physical nor digital but "phygital" (Sui & Shaw 2022: pp. 11:1–11:2), featuring a combination of physical and digital elements to maximize and optimize worker performance and connectivity. Phygital offices reflect the reliance of workers and organizations on both physical and virtual elements to conduct work.

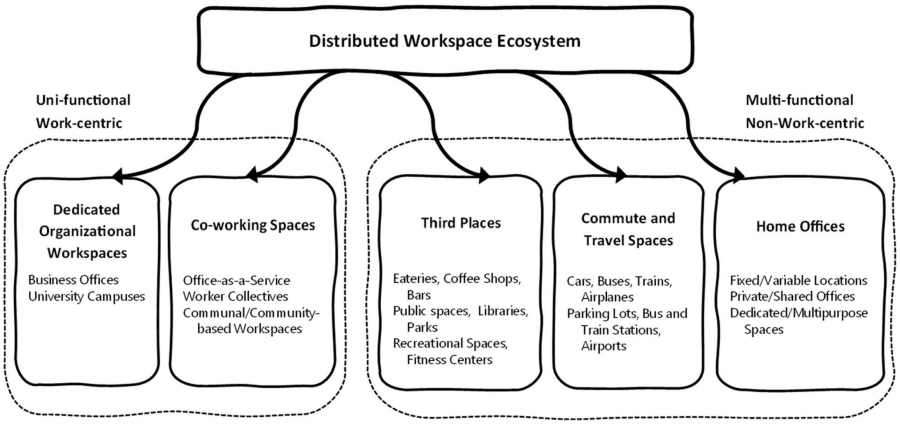

Figure 1: Distributed workspace ecosystem

The four attributes of distributed work—workspace dispersal, intensification, improvisation, and phygitality—together comprise the Spatial DNA of distributed work. Working in tandem, they reshape the built environment resulting in the outcomes discussed below.

3.2 The Built Environment Outcomes

The office is now spatially and temporally dispersed, intensified, improvised, and phygital. As a result, the spatial footprint of firms has shrunk by 30%. Workspaces

within buildings have been replaced by workscapes with a distributed workspace ecosystem, where land uses fluidly and contingently mingle as workers adopt any setting for office work. Consequently, workers have replaced regular work commutes with spatially and temporally fragmented work patterns (Alexander et al. 2010, Couclelis 2004). Technology entrepreneurs and designers are actively shaping phygital work environments, perhaps wielding even more influence than architects, planners, and civil engineers.

3.3 Comparative Analysis of Comprehensive Plans of Austin, TX, Boston, MA, and St. Louis, MO

Austin, Boston, and St. Louis are investing in distributed workscapes to support technology and innovation-driven economic growth and development in their respective regions. The comprehensive plans of the three cities aim to foster transit-oriented growth and increase the proportion of walkable neighborhoods within city limits. The planning agencies are also implementing equity-oriented place-based initiatives to facilitate access to high-paying tech jobs and urban amenities, and to offset historic inequities and underinvestment in communities of low-income individuals and people of color. These cases illustrate that planning for distributed work is relevant for all cities. Importantly, planners should shape and manage workscapes to minimize inequitable and exclusionary innovation and technology-driven growth and development. The enduring impact of historic development decisions on the demographic and socio-economic profile of the cities and their residents underscores the need to tailor spatial policies and plans to the local context, specifically the spatial, social, economic, and cultural dynamics embedded in people and places.

4 Discussion and Conclusion

Planning responses for the emerging geography of distributed work will entail multi-pronged and coordinated changes in planning education, research, and practice. This paper focuses on planning responses for sustainably and equitably transforming neighborhoods, cities, and regions for digitalized work and living. It reflects on the post-pandemic futures of polycentric regions, where hybrid workers divide their time between working from home and occasional visits to the office in an office park, innovation district, or a redeveloped mixed-use commercial district in the metropolitan or suburban city center. It offers visions of localized living in walkable or bikeable 15- or 20-min neighborhoods connected

by decentralized 24-hr public transit networks, and outlines key intersections between distributed work and smart cities, urban entrepreneurialism, walkable urbanism, and form-based planning. It identifies the need for equitable and inclusive versions of contemporary workscapes such as live-work-play neighborhoods, transit-oriented mixed-use developments, and innovation districts, and makes a case for moving beyond developing technological foresight and discernment to actively collaborating with technology entrepreneurs and designers to shape an increasingly phygital world. Finally, the paper discusses findings in the context of three US cities experiencing varying levels of tech-driven growth and development. The paper concludes by observing that although distributed work is experienced by a portion of the US workforce with the socioeconomic capacity to access amenity-rich built environments, its ripple effects on vulnerable and low-income communities make it worthy of planners' attention. Secondly, planning for distributed work is a precursor of planning for the digitalization of everything. The dimensions of change in the domain of work discussed in this article apply to learning, healthcare, and civic and retail services, as well. Planning for distributed work is thus a prelude to planning for the future of working and living in a phygital world.

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From Knowledge to Attention: Planning in an Information-Rich World

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This study investigates how debates on epistemology in planning theory can be enriched by integrating emerging discussions and conceptual frameworks related to attention. The methodology adopted is a literature review focusing on epistemological debates in planning, epistemic authority and the politics of knowledge. Building on this foundation, several recent contributions on attention are integrated in order to identify overlapping and intersecting conceptual sets, thereby situating attentional debates within the broader epistemological concerns of planning theory.

In contemporary planning theory, epistemology and knowledge remain central, yet contested terrains, shaping how scholars conceptualize the production, validation, and use of knowledge in planning practice. Across different theoretical traditions, the epistemological debate has sought to address not only what constitutes valid knowledge but also how planners mobilize it in contexts of uncertainty, conflict, and power. Such important contributions as "planning as a practice of knowing", "feminist-informed naturalized epistemology", and "hermeneutic perspectives of understanding" illustrate the diverse and evolving ways in which epistemology is rethought in contemporary planning theory.

One perspective challenges the dominant technical–rational view that has long framed planning knowledge as evidence to be collected, stored, and applied. Instead, knowledge is reframed as a practice of knowing, which is recursive, provisional, and contextually situated. By distinguishing interrelated dimensions such as knowing what, knowing how, knowing to what end, and doing, this view highlights that knowledge in planning is not an external resource to be

inserted into plans but something enacted and embodied through practice. This reframing emphasizes the ethical and political dimensions of knowing, showing that planners engage not merely with facts but with situated judgments and collective action. In this way, it contests evidence-based models that privilege quantitative data and instead proposes a dynamic, inclusive, and contested understanding of knowledge.

The emphasis on multiplicity and the epistemic value of marginalized perspectives resonates with calls for epistemic justice in planning. By recognizing that "voices from the borderlands" often reveal blind spots of dominant discourses, this perspective advocates for a plural epistemology that validates not only technical and abstract reasoning but also experiential, embodied, and emotional forms of knowing. This broadening of epistemic legitimacy directly addresses the politics of knowledge in planning processes, showing that inclusion and deliberation require more than procedural fairness; they demand a rethinking of what counts as knowledge in the first place.

A third contribution adds a hermeneutic dimension by arguing that planning should be conceptualized not as an act of explaining but as an act of understanding. Explanation seeks causal, verifiable accounts of the past or present, whereas understanding is dialogical, interpretive, and oriented toward an uncertain future. Planning practice cannot be reduced to the application of abstract explanatory models, since it constantly operates in contingent, situated contexts where meanings must be negotiated. By distinguishing between cognitive, practical, and linguistic dimensions of understanding, this hermeneutic approach demonstrates how planners interpret situations, navigate processes, and engage in dialogue to construct shared futures. Concepts such as the planning constellation and planning situation further capture the evolving contexts in which understanding unfolds, showing how meaning is always co-constructed.

This account also addresses the persistent theory–practice gap in planning. The gap does not arise simply because theory is poorly applied in practice, but because theory and practice embody different epistemic orientations: theory often privileges explanation, while practice operates through understanding. To rebalance planning theory, it is proposed to shift from research about planning, which risks abstraction, to research into planning, which centers the lived epistemic work of planners. In this way, planning can be seen as the co-construction of futures through interpretive practices, dialogical encounters, and the fusion of horizons with other actors.

Taken together, these contributions illustrate complementary but distinct epistemological perspectives in planning theory. While they operate from different

theoretical traditions as practice theory, feminist epistemology, and hermeneutics, they converge in rejecting the technocratic assumption that planning knowledge is neutral, universal, or purely evidence- based. Instead, they foreground multiplicity, situatedness, and interpretation as central to epistemology in planning. Their combined insights demonstrate that epistemology in planning is not merely a background philosophical concern but a practical, political, and methodological issue that directly shapes how planners act, deliberate, and construct futures.

Moving from these epistemological debates, "attention" emerges as an increasingly relevant lens that both complements and complicates existing concerns with knowledge. Attention has gradually become a critical concern across philosophy, organizational theory, and planning, reflecting broader transformations in how societies handle information and visibility. In an 'information-rich world,' it is no longer information but attention that emerges as the truly scarce resource, shifting the epistemic challenge from scarcity of information to abundance, where the difficulty lies in filtering, prioritizing, and organizing what is noticed. The emergence of debates on attention, articulated through notions such as the attention economy, attentional capitalism, ecologies of attention, and the politics of attention, signals not only a philosophical shift in how human perception and cognition are theorized, but also offers fertile ground for generating new openings in planning theory. These conceptual developments carry the potential to reframe how planners consider the distribution of cognitive resources in shaping urban futures.

This perspective points to mechanisms necessary to address the imbalance between information flows and limited attentional resources. Planning and management systems should function as attention-conserving devices, condensing and restructuring inputs rather than overwhelming decision-makers with unfiltered data. The critique of a universal "need to know" foreshadowed later debates on selectivity and relevance, anticipating the role of search engines, personalized filters, and algorithmic curation in managing information environments. Attention is therefore not only a cognitive but also an institutional problem, inseparable from the design of organizations and practices.

Building on this insight, attention has also been situated within broader cultural and political contexts. The proliferation of cultural goods, such as texts, images, and digital content, has reconfigured the dynamics of cultural value, with attention becoming the scarce commodity. Economic framings have emphasized efficiency and profit, yet critiques of attentional capitalism reveal how corporate infrastructures systematically capture and monetize attention, reducing human capacities to objects of exploitation. An alternative is found in the notion of

an ecology of attention, which highlights attention as relational and collective, embedded within cultural and technological infrastructures. This ecological framing emphasizes how attentional practices can either degrade or sustain the quality of shared life-worlds, extending the politics of attention beyond efficiency to care, sustainability, and democratic life.

Within planning, attention functions as a contested resource that structures inclusion and exclusion. It is not a neutral background but actively shapes which issues are highlighted, whose voices are amplified, and which concerns are marginalized. Through communicative tools such as reports, maps, and deliberative processes, planners organize visibility, framing problems in ways that privilege certain perspectives while silencing others. This indicates that planning is fundamentally political, as choices about what to attend to already shape agendas and outcomes. The monopolization of attention by dominant actors excludes marginalized groups, not because their knowledge is irrelevant but because it fails to capture institutional visibility. Reflexive planning therefore requires expanding attentional horizons and redistributing visibility, aligning with broader concerns of epistemic and spatial justice.

Taken together, these perspectives provide a multilayered framework for understanding attention in planning. Attention can be seen as a scarce cognitive and organizational resource, a cultural and ecological phenomenon tied to capitalist logics, and a political practice that mediates whose knowledge enters public agendas. Integrating attention into epistemological debates highlights that the production and validation of knowledge cannot be separated from the dynamics of visibility, selection, and recognition. This opens up a twofold inquiry: on the one hand, how planners themselves allocate and conserve attention in the face of unlimited information; and on the other, how shifting attentional dynamics transform shared life-worlds in ways that reconfigure planning practices and possibilities.

In conclusion, this study argues that epistemology studies, as an ongoing and central debate in planning theory, can be further expanded through the emerging lens of attention- related concepts. By analyzing how epistemic concerns intersect with attentional dynamics, it becomes possible to explore new openings as well as limitations for planning theory and practice. The contribution of this literature review is to highlight the potential of bridging epistemology with attention, thereby expanding debates on knowledge, justice and theories in planning while pointing to new trajectories for future research.

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Cinematic Narratives of Cairo's Urban–Rural Interactions Across Political Ruptures: From the Monarchy to the Republic

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1 Introduction

Urban and rural interactions are a crucial but often overlooked dimension in the study of cities undergoing profound political and social transformations. Cairo offers a rich tapestry in this case, as historical ruptures have repeatedly reshaped its relationship with the countryside, producing dynamic new urban realities and cultural narratives. The fall of the monarchy in 1952 stands as a pivotal moment that redefined governance, social hierarchies, and patterns of migration, profoundly altering how the Egyptian capital positioned itself in relation to rural Egypt (Abu-Lughod 1969). In the mid-20th century, Cairo stood as the Arab world's cinematic hub, and its films provide a unique and powerful lens to trace these transformations.

Egyptian cinema, as one of the most pervasive cultural forms of the period, captures the dramatic contrasts between the cosmopolitan urban life under the monarchy and the later, shifting identities of the republican city; it also actively shapes public perceptions of these changes (Shafik 2007). Films dramatize the tensions of migration, class mobility, and moral values as the countryside

increasingly entered the city through waves of newcomers, transforming Cairo's social and physical fabric. In this way, cinema functions as both an archive and an active agent in shaping perceptions of Cairo's urban–rural interactions and the complex identity struggles they produced.

This research explores how Egyptian films from the late monarchy, early and later republican periods reflect and contest the changing relationship between the city and the countryside. It argues that cinema inscribes Cairo as a palimpsest of interactions, where political ruptures layered new meanings over older urban identities (Huyssen 2003, Andreas 2018). The study demonstrates how films became crucial in understanding the complex flows of people and ideas that redefined Cairo's urban identity across a monumental political rupture. The urban-rural binary is not merely a geographic distinction but a political and cultural battleground that cinema both documented and participated in creating.

2 Methods

This research employs a qualitative methodology rooted in the field of cinematic urbanism, treating films not merely as entertainment but as cultural texts that both represent and actively construct urban realities (Armbrust 2000). The analysis is structured in three key steps to provide a comprehensive exploration of the subject matter.

First, the selected films are situated within the broader historical context of Egypt before and after the monarchy's fall. The pre-1952 period was characterized by a distinct aristocratic cosmopolitanism, a thriving elite culture, and significant urban-rural disparities that were often reflected in a sharp cinematic binary between the city and the countryside. The post-1952 period, particularly under Nasser's socialist government, saw a profound shift. The introduction of mass rural migration, socialist land reforms, and new narratives of national identity fundamentally changed the relationship between the capital and the rest of the country (El Khachab 2021). The cinema of this era began to mirror these changes, reflecting the anxieties and aspirations of a new urban population.

Second, the study is guided by key theoretical frameworks that facilitate the reading of cinema as urban evidence. Henri Lefebvre's concept of the production of space is central, framing the films as articulations of perceived, conceived, and lived space (Lefebvre 1991). Pierre Bourdieu's notions of habitus and capital provide the necessary tools for interpreting the class and identity struggles depicted onscreen (Bourdieu 1986). The cinema's portrayal of migrants and city dwellers can be read as a struggle over symbolic and cultural capital within the

new social order. Furthermore, Andreas Huyssen's metaphor of the city as a palimpsest offers a conceptual bridge for understanding how films layer new urban-rural meanings over older, often aristocratic, traces, creating a complex and layered urban identity (Huyssen 2003).

Third, the analysis focuses on selected case studies that span the political rupture and its aftermath. The pre-monarchy film Al Azima (1939) is used as a foundational text to establish the cinematic representation of Cairo as a cosmopolitan city. This is contrasted with a series of films from the post-republic era: Al Naddaha (The Caller, 1975), Khareg Wa Lam Ya'oud (Missing Person, 1984), Hona Al-Qahira (Here is Cairo, 1985), and The Yacoubian Building (2006). This selection provides a representative arc of cinematic narratives, highlighting the evolving portrayal of urban-rural dynamics over several decades of political and social change. A close reading of these films, focusing on spatial settings, character archetypes, and narrative conflicts, allows for a comparative analysis that reveals key shifts in the cinematic representation of Cairo's identity.

3 Results

The analysis reveals a profound and distinct shift in cinematic representations of Cairo's urban–rural relations across the monarchy–republic rupture. In the pre-1952 period, films like Al Azima often depicted Cairo as the pinnacle of modern aspiration, a vibrant and cosmopolitan city whose downtown was a symbol of elite culture and a stark contrast to the distant, often implicitly backward, countryside (Shafik 2007).

Following the 1952 revolution, the cinematic binary began to dissolve as the city's permeability increased. Films moved from portraying a distant countryside to a countryside that was actively entering the city, transforming its social fabric. Al Naddaha (The Caller, 1975) is a pivotal film in this shift. It illustrates the powerful, almost mythical, allure of Cairo, depicting a rural woman's journey into the city. The film captures the initial disorientation and the subsequent navigation of its complexities, revealing the vulnerability and challenges that rural migrants face (Abu-Lughod 1969).

By the 1980s, the cinematic gaze had shifted from the journey of migration to the consequences of it. Khareg Wa Lam Ya'oud (Missing Person, 1984) explores a different but related trajectory: the psychological and social alienation of a man who returns to his rural village after a spell in the city. He finds himself a stranger, an outsider in his own home, highlighting the irreversible impact of urban life on personal identity and the fact that migration can lead to a sense of being perpetually "out of place".

This theme is further developed in Hona Al-Qahira (Here is Cairo, 1985), which uses the city itself as a central character. The film showcases a Cairo that is no longer a monolithic entity but a fragmented and dynamic space. It provides a raw, observational look at how the city's social fabric has been reshaped by the influx of migrants from different social classes and backgrounds. The narrative portrays Cairo as a crucible where various urban-rural trajectories collide, creating a complex and conflicted space.

These narratives culminate in contemporary works like The Yacoubian Building (2006). This film demonstrates the long-term consequences of these decades-long interactions. The once-aristocratic downtown is depicted as a dense palimpsest, a space layered with history, where the descendants of rural migrants and the former urban elite are forced into close, and often contentious, proximity. The building serves as a microcosm of Cairo, showing how the city's identity has been continuously rewritten by competing classes, ideologies, and identities.

4 Discussion and Conclusion

The study confirms that Egyptian cinema is far more than entertainment; it is a vital historical record of Cairo's continuous transformation. Before the 1952 political rupture, films generally reinforced the image of Cairo as a modern, elite capital, keeping the countryside at a safe distance. Following the revolution, the cinema reconfigured the city entirely. It became a crucible, a contested space where vast numbers of rural people migrated, fundamentally reshaping the city's physical and social identity.

From a theoretical standpoint, this shift demonstrates how urban space itself is constantly being defined and redefined by social forces, not just builders and planners (Lefebvre 1991). The films show how economic and political changes—like those under Nasser and the subsequent open-door policies—translated into real-world struggles over identity and status (Bourdieu 1986). The central finding is that Cairo's identity isn't static; it's a layered narrative, or a "palimpsest," where the traces of aristocratic grandeur, socialist dreams, and modern-day chaos exist side-by-side (Huyssen 2003). Ultimately, by analyzing these cinematic narratives, we gain a deeper understanding of how political upheavals shape urban life, particularly in the Global South. Cinema allows us to grasp Cairo not just as a physical place, but as an ongoing story where the rural and the urban are locked in a perpetual and defining negotiation. This provides valuable insight into the complex connections that bind, strain, and rebuild the identity of a global metropolis.

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Exploring Push-Pull Drivers of Migration Flows from South Korean Small and Medium-Sized Cities

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1 Introduction

Small and medium-sized cities (SMCs) play a crucial yet frequently overlooked role in regional economic systems (Mayer & Lazzeroni 2022). Traditional regional planning and economic development theories have long emphasized large metropolitan areas or export-oriented industries, leaving SMCs' contributions underexplored (Bell & Jayne 2009). In South Korea, SMCs are experiencing profound demographic shifts: continuing depopulation and net out-migration, particularly among young people who disproportionately leave smaller regions for the capital area (OECD 2022). One of the primary ways to understand city relations and city networks is through population migration (Gao et al. 2025). Understanding flows of migrants and the relationships between cities of origin and destination, as well as their driving factors, is essential for developing policies that promote balanced regional development, equitable access to opportunity, and sustainable inter-city relationships.

This study addresses two core research questions. First, what are the primary migration flows from SMCs in South Korea, in terms of destination city size and interprovincial movement? Second, how do city characteristics including economic opportunities, service accessibility, industrial specialization and diversity function as push or pull factors influencing migration? The objectives are to

map and rank migration flows using an origin-destination (OD) migration matrix, quantify the relative influence of multiple city attributes on migration decisions, and synthesize findings within urban network theory.

2 Methods

This study examines migration flows between forty-five SMCs in South Korea—defined here as cities outside the Seoul Capital Region with population under 500,000—and their thirty primary destination cities based on migrant inflows. The destination destinations span the full urban hierarchy: small cities (less than 200,000 people), medium-sized cities (200,000-500,000 population), large cities (500,000-1.5 million people), metropolitan areas such as Busan, Incheon, and Daegu (1.5-5 million people), and Seoul (around nine million people). The [$picture_1$] illustrates the study area: light green denotes the SMC origins, dark green highlights the major large and metropolitan destinations including Seoul, Busan, Incheon, Daegu, Daejeon, Gwangju, and Ulsan, while the gray represents other large cities and rural areas within each province.

To analyze migration flows, this study applies the Multiplicative Competitive Interaction (MCI) model, originally developed by Nakanishi and Cooper (1974). The MCI model, widely used in market-share and spatial-interaction analysis, is well-suited for migration study because it estimates the probability that migrants leaving a given origin select among multiple competing destinations, accounting for relative attractiveness.

Attractiveness is operationalized as a multiplicative composite of city attributes, such as economic opportunities, service accessibility, and industrial specialization and diversity, each raised to a parameter that reflects its importance in migration decisions. The basic form of the MCI model is nonlinear but can be estimated using ordinary least squares after a log-centering transformation of the data. This allows the derivation of elasticity-like parameters that indicate how sensitive migration flows are to changes in specific city attributes. By modeling destination competition, the MCI approach captures how economic, service, and industrial factors jointly structure migration patterns.

3 Results

This section first summarizes cross-tabulation results of industry characteristics and service accessibility to describe the patterns of industry characteristics and service accessibility patterns, then explains the results of spatial analysis related

to migration patterns from SMCs to their primary destination cities and finally presents the results of the MCI model.

Cross-tabulation of industry characteristics (table 1) reveals distinctive profiles by city size. Manufacturing is more specialized in large, metropolitan, and medium-sized cities, whereas its presence is notably lower in Seoul. By contrast, wholesale and retail activities are most concentrated in Seoul, reflecting the dominance of central retail function. Accommodation and food services are more specialized in small and medium-sized cities, likely linked to tourism and the provision of local services. Seoul stands out for its concentration of higher-order service industries, including finance, insurance, real estate, and information and communication. Industrial diversity, as measured by the Herfindahl-Hirschman Index (HHI), is higher in larger cities, with Seoul demonstrating the most diverse industrial base, while the medium-sized cities tend to have a more concentrated industrial base.

	Total	Seoul	Large and Metropol. Cities	Medium-sized Cities	Small Cities
	Mean (Std. Dev) $N = 85$	Mean (Std. Dev) $N = 1$	Mean (Std. Dev) $N = 22$	Mean (Std. Dev) $N = 29$	Mean (Std. Dev) $N = 33$
Manufacturing	1.1702 (0.6923)	0.2553	1.2640 (0.6876)	1.2885 (0.7274)	1.0316 (0.6261)
Wholesale and Retail	0.9467 (0.2202)	1.1662	0.9977 (0.1917)	0.9424 (0.2725)	0.9100 (0.1749)
Accommodation and Food Service	1.0860 (0.3386)	0.8833	0.9777 (0.1193)	1.1034 (0.2578)	1.1491 (0.4627)
Information and Communication	0.4713 (0.6597)	2.5481	0.6844 (1.0089)	0.3636 (0.2185)	0.3610 (0.4661)
Finance and Insurance	0.7475 (0.3501)	1.7565	0.8013 (0.3466)	0.7167 (0.3815)	0.7081 (0.2696)
Real Estate	0.8551 (0.2962)	1.2589	1.0478 (0.1912)	0.9251 (0.2618)	0.6531 (0.2580)
HHI index	0.1182 (0.0349)	0.0866	0.1203 (0.0376)	0.1245 (0.0388)	0.1123 (0.0279)

Table 1

Service opportunities demonstrate sharp disparities (table 2). On a per capita basis, medium-sized cities have relatively more universities, small cities perform

strongly in basic healthcare provision, while specialized physicians (such as obstetrics and gynecology) are concentrated in Seoul. Nationwide, the availability of ob-gyn specialists averages 8 per 100,000 people, but Seoul nearly doubles this (15 per 100,000), whereas small cities provide only 6. A similar gradient holds for pediatric services, where Seoul's supply is highest and small cities lag with just 6 specialists per 100,000, well below the national average of 9. Cultural and welfare facilities per capita, however, are relatively stronger in small cities.

Measuring facilities per square kilometer captures spatial density patterns. Seoul exhibits the highest density in all categories (e.g., 2.049 pediatric specialists per km² compared to a national average of 0.222) while small cities have extremely low densities (0.058 per km²). This underscores how spatial inequality compounds access disadvantages. In short, small cities provide better per capita access in some services but suffer from sparse spatial coverage, while Seoul combines extreme density with weaker per capita ratios given its population scale.

Ranking the top 30 destination cities for each SMC, the primary destination was identified to illustrate where migration from SMCs was concentrated (table 3). The analysis reveals that Seoul is the most frequent first-choice destination, attracting migrants from 13 SMCs, notably in Gangwon, North Chungcheong, South Chungcheong, North Gyeongsang, and Jeju provinces [$picture_2$]. Gangwon and Jeju provinces lack large cities within their provincial boundaries, which are likely to contribute to the prominence of Seoul as their main destination. The second most common destination is Daegu, selected mainly by SMCs in North Gyeongsang Province [$picture_3$], followed by Busan for SMCs in South Gyeongsang [$picture_4$]. Daejeon also attracts migrants from South Chungcheong and Sejong, underscoring the power of proximity [$picture_5$]. Ulsan and Gwangju function as major destinations for Gyeongju (North Gyeongsang) and Naju (South Jeolla), respectively [$picture_6$].

	Total Mean (Std. Dev) $N = 85$	Seoul Mean (Std. Dev)	Metro Mean (Std. Dev) $N = 3$	Large Mean (Std. Dev) $N = 20$	Medium Mean (Std. Dev) $N = 28$	Small Mean (Std. Dev) $N = 33$
University*	0.7962 (0.6997)	0.4915	0.4410 (0.2012)	0.6099 (0.3082)	0.9436 (0.7925)	0.8257 (0.7999)
Healthcare*	1459.598 (770.7539)	886.1288	1546.498 (437.1453)	1344.087 (585.8134)	1300.885 (627.4985)	1673.749 (960.6337)
Cultural*	7.1561 (5.3461)	4.0858	3.2929 (0.2087)	3.9928 (1.3077)	5.6381 (2.8325)	10.8054 (6.5985)
Welfare*	116.1403 (110.7754)	53.7088	82.8906 (1.6477)	80.7057 (35.6487)	103.9278 (75.8799)	152.8924 (155.1303)
Sports*	184.4723 (79.3337)	145.2135	134.9678 (8.8395)	145.0950 (21.6737)	177.7431 (63.7111)	219.7369 (101.2105)
University**	0.0102 (0.0164)	0.0792	0.0156 (0.0112)	0.0202 (0.0205)	0.0093 (0.0135)	0.0022 (0.0037)
Healthcare**	24.0571 (38.2675)	142.8567	53.4299 (30.4425)	47.8052 (52.3767)	19.2882 (29.8850)	7.4404 (14.9891)
Cultural**	0.0798 (0.1101)	0.6587	0.1072 (0.0254)	0.1264 (0.1191)	0.0671 (0.0847)	0.0423 (0.0616)
Welfare**	1.4821 (1.9386)	8.6586	2.7339 (0.8449)	2.5330 (2.4052)	1.3258 (1.6079)	0.6466 (1.0083)
Sports**	2.7706 (4.1988)	23.4105	4.4082 (1.1429)	5.1706 (5.2367)	2.3397 (2.9135)	0.9074 (1.3583)
Obgyn specialist*	8.6610 (3.3360)	15.6260	11.5090 (2.0310)	10.7540 (3.2750)	8.8870 (2.7860)	6.7310 (2.6730)
Obgyn specialist**	0.2080 (0.4070)	2.5190	0.3860 (0.1620)	0.4390 (0.4950)	0.1390 (0.2070)	0.0410 (0.1200)
Pediatrics specialist*	9.4460 (3.3150)	12.7080	11.9300 (1.8040)	11.4310 (2.2090)	10.6440 (2.8720)	6.9020 (2.7360)
Pediatrics specialist**	0.2220 (0.3770)	2.0490	0.3940 (0.1310)	0.4290 (0.4450)	0.1830 (0.2650)	0.0580 (0.1810)

* (per 100,000 people), ** (per square km)

Table 2

Table 3

Destination			Origin		
Province Name	**City Name**	**City Size**	**Province Name**	**City Name**	**City Size**
Seoul Metropolitan City	Seoul Metropolitan City	Seoul	Gangwon	Gangneung	Medium
			Gangwon	Wonju	Medium
			Gangwon	Chuncheon	Medium
			Gangwon	Donghae	Small
			Gangwon	Samcheok	Small
			Gangwon	Sokcho	Small
			North Chungcheong	Chungju	Medium
			South Chungcheong	Dangjin	Small
			South Chungcheong	Boryeong	Small
			South Chungcheong	Seosan	Small
			South Chungcheong	Jecheon	Small
			North Gyeongsang	Yeongju	Small
			Jeju	Jeju City	Medium
Daegu Metropolitan City	Daegu Metropolitan City	Metropolitan	North Gyeongsang	Mungyeong	Small
			North Gyeongsang	Sangju	Small
			North Gyeongsang	Andong	Small
			North Gyeongsang	Yeongcheon	Small
			North Gyeongsang	Gyeongsan	Medium
			North Gyeongsang	Gumi	Medium
			North Gyeongsang	Pohang	Medium
Busan Metropolitan City	Busan Metropolitan City	Metropolitan	South Gyeongsang	Miryang	Small
			South Gyeongsang	Tongyeong	Small
			South Gyeongsang	Geoje	Medium
			South Gyeongsang	Yangsan	Medium
			South Gyeongsang	Jinju	Medium
Daejeon Metropolitan City	Daejeon Metropolitan City	Large	North Chungcheong	Gyeryong	Small
			North Chungcheong	Gongju	Small
			North Chungcheong	Nonsan	Small

Continued on next page

Destination			Origin		
Province Name	**City Name**	**City Size**	**Province Name**	**City Name**	**City Size**
			Sejong City	Sejong City	Medium
Ulsan Metropolitan City	Ulsan Metropolitan City	Large	North Gyeongsang	Gyeongju	Medium
Gwangju Metropolitan City	Gwangju Metropolitan City	Large	South Jeolla	Naju	Small
North Jeolla	Jeonju	Large	North Jeolla North Jeolla North Jeolla North Jeolla North Jeolla	Iksan Gunsan Gimje Jeong-eub Namwon	Medium Medium Small Small Small
South Chungcheong	Cheonan	Large	South Chungcheong	Asan	Medium
South Jeolla	Suncheon	Medium	South Jeolla South Jeolla	Gwangyang Yeosu	Small Medium
North Gyeongsang	Gumi	Medium	North Gyeongsang	Gimcheon	Small
South Gyeongsang	Jinju	Medium	South Gyeongsang	Sacheon	Small
Gangwon	Wonju	Medium	Gangwon	Taebaek	Small
Jeju	Jeju City	Medium	Jeju	Seogwipo	Small
South Jeolla	Muan City	Small	South Jeolla	Mokpo	Medium
South Jeolla	Gwangyang	Small	South Jeolla	Suncheon	Medium

Beyond inter-provincial migration toward metropolitan centers, some SMCs exhibited a preference for larger intra-provincial cities [$picture_7$]. For instance, Iksan, Gunsan, Gimje, Jeongeup, and Namwon showed migration flows toward Jeonju in North Jeolla Province, while Asan exhibited migration toward Cheonan in South Chungcheong Province. Overall, the findings suggest that the dominant migration pattern from SMCs is oriented toward nearby or adjacent large or metropolitan cities. Where such cities are absent from the provinces, as in the cases of Jeju and Gangwon, Seoul tends to become the main destination. A secondary pattern of intra-provincial migration between small and medium-sized cities was also observed, typically involving geographically proximate pairs. For example, residents of Seogwipo (a small city) predominantly migrated to Jeju City (a medium-sized city) within Jeju Province, while Suncheon (a medium-sized city) demonstrated a migration preference for Gwangyang (a small city) within the South Jeolla Province.

The results of the MCI model [$table_4$] underscore the three consistent determinants of migration from SMCs, including proximity, economic opportunity, and industrial diversity. First, distance is negative and highly significant, confirming that closer destinations dominate flows. In both the general model and the youth-specific model, distance exerts a strong negative and highly significant effect, proving that proximity remains a fundamental determinant of destination choice. Economic opportunities, as reflected in job opportunities ($\beta = 0.366$, $p < 0.05$ for all migrants; $\beta = 0.436$, $p < 0.05$ for youth) and GDP per capita ($\beta = 0.173$; $\beta = 0.212$), strongly drive migration, with youth showing higher responsiveness.

In terms of service accessibility, high school availability ($\beta \approx 0.5$) and cultural facilities ($\beta \approx 0.5$) emerge as the two most influential service factors, especially among youth, highlighting the centrality of education and culture in migration decisions. By contrast, the presence of higher education institutions in origin cities has a negative effect, indicating that local universities mitigate out-migration.

As for industry specialization, wholesale and retail concentration is strongly positive, while accommodation and food specialization is negative, suggesting low-wage service economies deter migrants. Real estate specialization positively contributes, especially for youth, likely as a proxy for urban development and perceived dynamism. Regarding industry diversity, the HHI index is consistently negative, confirming that diverse and resilient economies attract migrants, with particular appeal for younger cohorts.

In terms of urban scale, migrants overwhelmingly prefer larger cities shown by the city-size dummy which is strongly negative for SMC destinations relative to larger urban areas. Interestingly, the Seoul Capital Region dummy variable

	Model 1		Model 2	
	all migration	P>t	year_20s_-30s	P>t
Economic opportunity				
Job opportunity	0.366	**	0.4355715	**
GRDP per capita	0.173	**	0.2121445	**
Locational characteristics				
Distance	-0.581	***	-0.5219077	***
Dummy – Seoul capital region	0.093		0.0139865	
Dummy – city size (ref: large cities)	-0.970	***	-1.03022	***
Service Accessibility (Facilities per 100,000 people)				
Healthcare	0.065		0.0701052	
Higher education	-0.261	***	-0.2370905	***
High school	0.511	***	0.4468282	***
Welfare facilities	-0.022		-0.0222572	
Cultural facilities	0.503	***	0.5392811	***
Sports facilities	0.020		0.0458783	
Industry specialization and diversity				
Manufacturing	-0.054		-0.0645953	
Wholesale and retail	0.694	***	0.7728467	***
Accommodation and food	-0.874	***	-0.9094014	***
Information and communication	-0.085		-0.0938864	
Finance and insurance	0.079		0.0960554	
Real estate	0.243	***	0.3419036	***
HHI index	-0.428	***	-0.4063967	***
constant	11.381	***	10.28851	***
Adj R-Squared	0.3045		0.2752	
Root MSE	0.89213		0.94964	
N	1,362		1,362	

**: $P < 0.05$, ***: $P < 0.01$

Table 4

is statistically insignificant, implying Seoul's draw is more structural (jobs, education, culture) than simply geographic. Comparing models, youth migration is more strongly influenced by economic prospects and cultural amenities, while the broader population balances a wider set of considerations.

4 Conclusion

Migration flows from South Korea's SMCs are decisively shaped by proximity, economic diversity, and city scale. A consistent two-tiered pattern emerges: inter-provincial migration oriented toward metropolitan centers, and intra-provincial flows directed at nearby large or medium-sized cities. Seoul dominates as a destination primarily where provinces lack comparable urban centers. The MCI model further reveals that job opportunities, GRDP per capita, educational and cultural facilities, and industrial diversity are key pull factors, especially for young people.

These findings underscore the challenges of regional imbalance. While young people are drawn to cities offering strong labor markets and vibrant cultural environments, SMCs often struggle with out-migration due to limited diversity and specialist services. Policy interventions could thus focus on strengthening educational and cultural infrastructure, diversifying local economies, and building intra-provincial urban networks so that SMCs can retain youth and sustain balanced regional development.

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Public Transport in Low-Density Territories: A Preliminary Study of the Taxibus Service in the Basso Ferrarese Inner Area

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1 Introduction

Within contemporary urban planning debates, the publicness of urban and territorial spaces—understood as the coexistence of diverse social groups in the same environment, enabling practices of interaction, exchange, and care—emerges as a key element in the construction of inclusive cities and regions (Donolo 2014). In this perspective, accessibility, more than mobility, becomes a crucial interpretive lens through which to address territorial inequalities, as public transport services may be reconfigured from mere technical supports into moving social spaces. While the mobility paradigm has historically focused on speed and congestion reduction, the accessibility paradigm emphasizes the equitable distribution of territorial opportunities, accounting for spatial, economic, and social factors (Martens 2017, Sheller 2018), and is regarded as a necessary, though not sufficient, condition for achieving fairer transport policies and redistributive opportunities that improve quality of life (Wachs & Kumagai 1973). Although most studies, policies, and resources focus on large cities and metropolitan areas, the most complex challenge arises in peripheral and fragmented territories, particularly in inner

areas (Bosworth et al. 2020, Camarero & Oliva 2019), where the issue is not limited to the technological efficiency of future mobility systems but extends to their broader social, economic, and environmental sustainability (Vitale Brovarone et al. 2022). Here, ensuring equitable access to territorial opportunities becomes essential to fostering more inclusive growth and preventing marginalization in an increasingly polarized Europe, caught between competitiveness and regional cohesion.

In such contexts, limited accessibility—understood as a multidimensional condition shaped by the spatial distribution of activities, individual capacities, and available resources (Moseley 1979, Levine 2020) — often results in hyper-mobility, induced by car dependency (Bosworth et al. 2020), with critical environmental and social consequences, especially for vulnerable groups such as the elderly, youth, women, and migrants (Vitale Brovarone et al. 2022). Promoting public transport in low-density areas, despite the challenges, should remain a priority of territorial agendas and be closely linked to the transition towards a genuinely sustainable mobility paradigm (Sheller 2018, Martens 2017). In these contexts, where a significant share of the European and Italian population still resides, the tension between accessibility and marginality is particularly acute (Camarero & Oliva 2019): demographic fragility, scarce services, and dependence on private cars heighten risks of isolation and exclusion, undermining social cohesion and well-being. Italian inner areas, such as the Basso Ferrarese—comprising seven municipalities with 54,000 inhabitants—represent this tension between accessibility and marginality. Despite the National Strategy for Inner Areas (SNAI) highlighting the need for integrated policies to counter demographic decline and improve access to essential services (Barca et al. 2014), the progressive concentration of resources according to demographic density has generated exclusionary effects, particularly for those without private vehicles, restricting freedom of movement and exacerbating risks of social isolation (Clark et al. 2020, Ferdman 2021).

The decisive challenge lies in combining technological innovation with broader social and economic sustainability, ensuring equitable access to opportunities and fostering inclusive forms of public transport (Sheller 2018, Kotef 2015). At the same time, it is necessary to reflect on the strategic role of local public transport as an infrastructure that guarantees the right to mobility (Martens 2017, Harvey 1973). Transport agencies, for their supra-local mandate, can act as key actors in coordinating vast and complex territories, linking local needs with wider-area visions, and experimenting with innovative models that go beyond traditional solutions. The experience of AMI Ferrara, operating in the Basso Ferrarese Inner Area, illustrates this potential: alongside managing

services, the agency promotes monitoring, research, and experimentation in collaboration with the university, paving the way for flexible and adaptive models of transport. These efforts demonstrate how public transport can evolve into an infrastructure of inclusion, where accessibility is affirmed as a public good and a necessary condition for more equitable and sustainable territorial futures.

2 Methods

Within this perspective, experimental and innovative territorial surveys can play a crucial role in revealing mobility needs and the challenges faced by communities relying on public transport services, while also capturing latent demands and shedding light on the complex social and cultural fabric of daily mobility. Within the framework of a research agreement between the University of Ferrara and AMI Ferrara (Agenzia Mobilità e Impianti), a monitoring program was launched on the demand-responsive Taxibus service operating in the Basso Ferrarese, with the aim of analysing demand dynamics and usage levels to assess system effectiveness and identify improvement strategies. Established in the early 2000s to ensure connectivity with the new hospital of Lagosanto, the Taxibus can be classified as a form of Demand Responsive Transport (DRT) and still today constitutes an intermediate solution between traditional public transport and private mobility, adjusting supply to actual demand. Currently, it operates across fourteen lines covering a broad territorial area, running on a reservation basis during weekdays (Figure 1).

To outline the methodological framework of the research on the Taxibus demand-responsive service, undertaken to assess its effectiveness in the pilot area of the Basso Ferrarese, comparable national cases in low-demand contexts were first identified and examined. These experiences helped shift the focus from purely infrastructural and quantitative approaches towards methodologies capable of capturing the socio-demographic and cultural complexity of the areas under investigation, highlighting the need to move beyond supply-oriented models in favor of more integrated tools for monitoring and evaluation, sensitive to local specificities. The research methodology combined quantitative and qualitative techniques, including passenger flow data collection (boarding and descending disaggregated by age and gender) and a voluntary on-board survey capturing travel habits and user satisfaction (Figure 2). While the sample is not fully representative of the broader mobility dynamics of the province (also considering the seasonal nature of some coastal activities), it constitutes a first attempt at testing real-time, georeferenced survey methods and offers valuable insights into

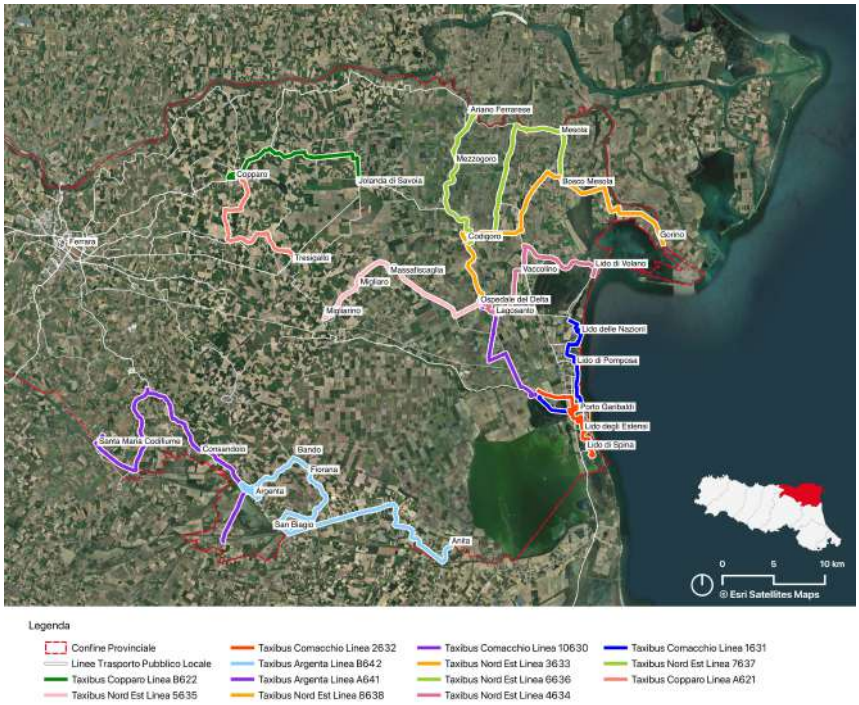

Figure 1

user needs and perceptions. The questionnaire also gathered socio-demographic data (age, gender, nationality, residence), destinations and purposes of travel, service use frequency, and perceptions regarding accessibility, comfort, scheduling compatibility, and booking processes. It further inquired about driver's license possession and the role of environmental sustainability in mobility choices.

3 Results

The first part of the study has been focused on four lines with distinct characteristics: lines Argenta 641 and 642, which, though formally demand-responsive, run with regular services, and lines Codigoro 621 and 622, which operate exclusively on request. Over ten survey days, around 230 users were recorded (over 270 boarding and descending events mapped), with a questionnaire response rate exceeding 25% (Figure 3). Preliminary findings point to noteworthy insights: habitual users constitute a significant share, suggesting that the service functions as essential infrastructure for certain resident groups. Gender distribution shows

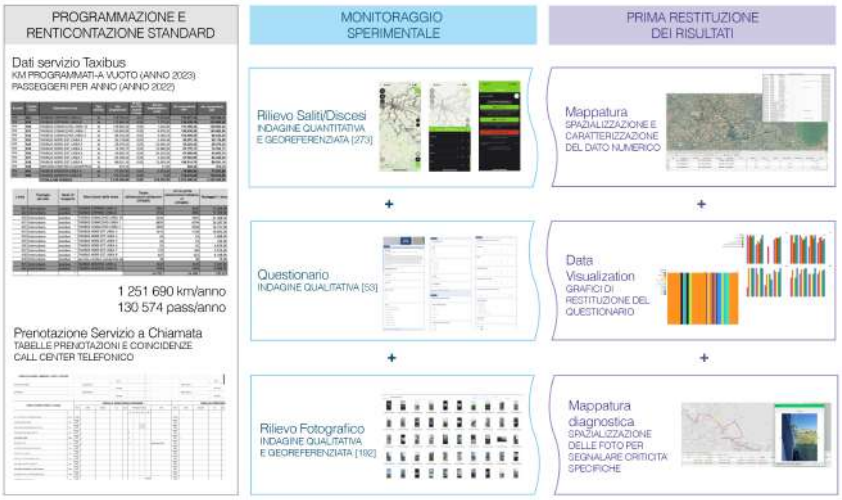

Figure 2

a slight predominance of male users (57–63%, depending on the line), but interestingly, 73% of surveys were completed by women, indicating a greater willingness to share mobility experiences. Travel purposes are varied: work (34%), leisure (28%), education (14%), and health (10%), with gendered patterns showing men traveling primarily for work, while women report higher shares of trips for health and family care. Some respondents, especially women, emphasized specific needs, such as market access or reliance on the service due to lack of a private car. Over 65% of respondents reported not holding a driver's license—linked partly to age (23% under 18, 64% adults, 13% over 65) and partly to nationality (with more than 85% of foreign respondents reporting no license)—which increases their dependence on the service, often using it daily or weekly, while licensed users engage more occasionally (Figure 4). The survey shows that most respondents use the Taxibus service regularly (42.1% daily, 36.8% weekly), confirming its role as an essential option for mobility. Users rated it highly for accessibility (78.5%), schedule compatibility (67.3%), and comfort (64.3%) (Figure 5). Ease of booking was also judged positively, with no significant differences by age or nationality, though data remain partial as they refer mainly to the lines still requiring reservations. Ticketing preferences remain traditional, with paper tickets (41.1%) and annual passes (30.4%) prevailing over digital options (10.7%). A notable 62.7% of respondents valued sustainable mobility, with sensitivity varying by demographic factors. Critical observations pointed to service limitations: reduced operating hours, especially in the afternoon, delays, rigid booking, and

occasional cancellations. Suggestions included relocating stops closer to commercial hubs, providing a waiting area at Codigoro station, and more flexible booking systems. A complementary photographic survey highlighted further issues: isolated stops on busy roads without lay-bys or lighting, and urban stops lacking shelters or seating. These shortcomings affect perceptions of quality and risk discouraging public transport use in favor of private mobility.

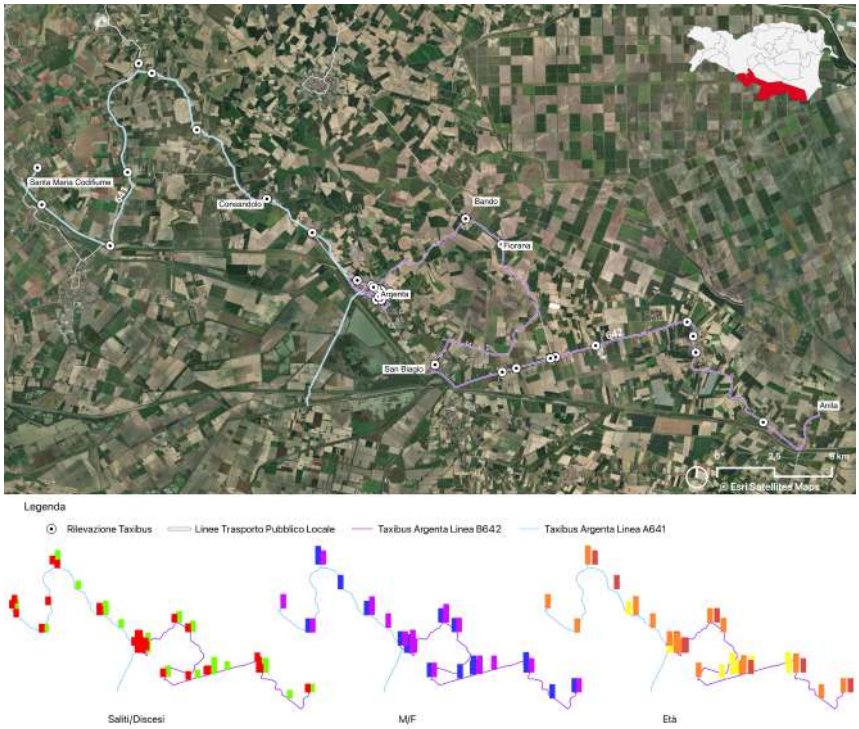

Figure 3

4 Discussion and Conclusion

These preliminary findings provide a foundation for further investigation across the entire service area and underscore the need to explore accessibility in low-density territories. They highlight the role of public transport not merely as a mobility service but as an integrated socio-technical infrastructure (Gray et al. 2006), serving as a tool for social inclusion and cohesion based on local community needs (Manzini 2021). Building on this pilot phase, the study will

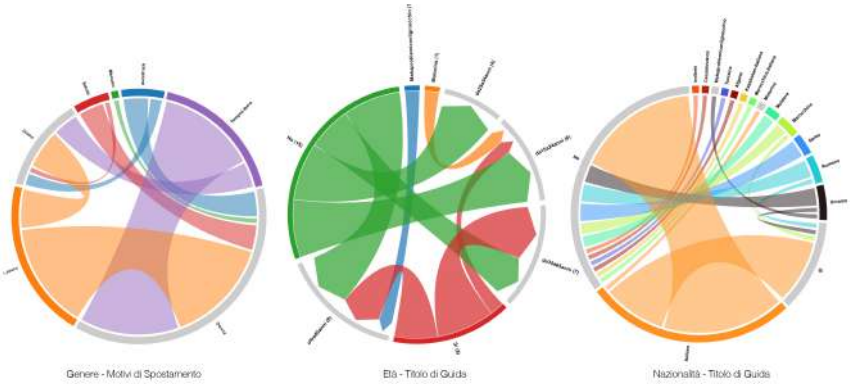

Figure 4

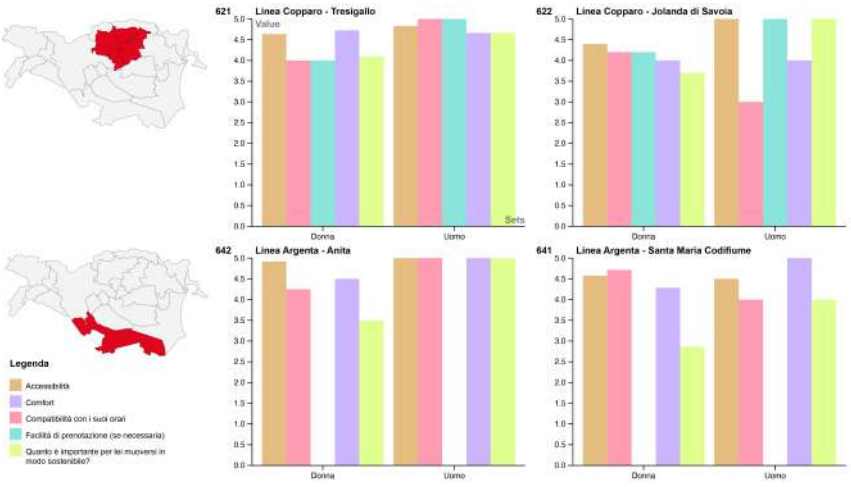

Figure 5

be expanded to the full provincial Taxibus network to verify existing data and identify unmet needs, thereby improving understanding of the actual user base (Hay 1995, Harvey 1973). Assessing accessibility justice not only in terms of service provision but also in its capacity to address diverse user needs may help prevent the perpetuation of existing inequalities. In this context, research on adaptive public transport systems offers opportunities to support policies that combine efficiency and inclusion, guaranteeing the right to mobility, territorial accessibility, and enhanced quality of life in low-density areas (Vitale Brovarone et al. 2022).

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Tracing the (In)visibility of Waste Flows towards Adana

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1 Introduction

Discussions about environmental crises have produced visualizations centered on energy and climate issues. However, the waste crisis has not been discussed and visualized simultaneously on the same scale, mainly because it is a relatively recent concern. Indeed, a waste crisis exists, but it has not been depicted as comprehensively as the energy crisis. I believe this calls for a more precise and detailed viewpoint.

The issue of waste became visible with the conceptualization of issues such as e-waste, toxic waste, and plastic waste, beginning in the 1980s. (Gille & Lepawsky 2022) Therefore, visualizations initially focused on energy and climate, while waste became part of the global conversation more recently. Today, waste is a crucial aspect of the climate and environmental crisis, yet it has not fully integrated into the visual language of planetary discussions. I argue that this is directly related to the nature and circulation of waste. Issues such as energy, carbon, or temperature increases are explained by processes that spread across the entire planet in a more homogeneous way. Waste, on the other hand, is generated in more limited geographical areas and sent to specific locations. Therefore, rather than being the subject of a homogeneous imagination, it has a spatial distribution that is concentrated in specific areas. In urban areas, waste is concentrated in the center and then moved to the peripheries. This situation can

be explained as the reason why waste remains in the background in planetary narratives.

Unlike the direct effects of carbon emissions on the planetary scale, the impact of waste is concentrated on more localized territories. Although waste circulation occurs globally, it follows specific routes. For example, e-waste being sent to Africa has a determined direction and boundaries. (Lepawsky 2018) Therefore, waste is perceived not as an abstract problem spreading across the entire planet, but as a more concrete, bounded, and spatially focused issue. My argument is that this limited, directional, and spatially concentrated nature of waste results in its failure to integrate into the language of visual discourse as strongly as energy or climate. It requires an interscalar visualization in conjunction with concepts such as material flows and local/global entanglements, where the question of how to visualize them becomes crucial.

2 Methods

Waste can provide valuable insights into complex relationships that have accelerated in the Anthropocene, emerging in conjunction with environmental and urban crises. It is seen as the defining characteristic of the Anthropocene, reflecting humanity's capacity to impact the environment to such an extent that it turns into massive debris. Based on the dominance of this characteristic, the term "wasteocene" distinguishes the relationships caused by waste in the Anthropocene narrative. (Armiero 2021) It is not about waste as an object; however, it emphasizes "socio-ecological relations creating wasted people and wasted places". (Armiero 2021: p. 9) Waste is not an object but a space of relationality. In other words, waste is a formation intertwined with structures such as economy, colonialism, invisible labor, and slow violence. Jane Bennet defines this status with the concept of "thing power", by stating, "[it] gestures toward the strange ability of ordinary, man-made items to exceed their status as objects and to manifest traces of independence or aliveness, constituting the outside of our own experience". (Bennett 2016: p. 12) The concept suggests that every day and man-made objects are not merely passive, but sometimes carry a kind of activity or vitality that goes beyond human experience. This approach enables the reevaluation of substances that are often overlooked or categorized as waste, on the social, political, and sensory levels. Accordingly, in a consumer's mind, waste can be defined as an object that becomes invisible after being discarded for disposal following the consumption of a produced substance. However, this piece of garbage, considered invisible, takes up space because of its volume, and as more pieces are assembled, they form more visible and defined spaces.

Representing more than just an object, waste develops a specific set of infrastructures and systems of meaning, with garbage collection systems and perceptions of recycling unique to the culture in which they originate. Lily Baum Pollans (2021: p. 10) uses "the term "wasteways" in the tradition of foodways or lifeways: a means of understanding how a particular place creates its own coherent system of infrastructure and meaning for garbage within the context of a waste regime." According to this conceptualization developed by Pollans, each city, society, and place may have a different relationship with waste. For example, countries that systematically manage individual recycling create a wasteway that demonstrates the development of collective consciousness and a sense of responsibility. In Türkiye, garbage collectors roaming the streets demonstrate the existence of a system in which garbage has economic value. Conversely, countries with large landfills create a wasteway where waste is collected, managed, and disposed of. In short, the concept of wasteways illustrates the origin and destination of waste, how it is collected, who transports it, where it is stored, and how these processes are culturally and socially interpreted. Building on Pollans's definition of "wasteways", this study defines the immaterial flow of waste as wasteflows. Due to its fluid and flexible nature, waste requires approaches of visualization that move beyond conventional data visualizations and towards more imaginative approaches. To understand and project this unique interscalar situation onto the ground, different methodologies need to be explored. By conceptualizing the crisis through interscalarity, we can reveal how it connects across various spatial and temporal layers.

In recent years, Türkiye's role in the global waste supply chain has expanded, especially with the export of plastic waste from the UK and European Union. In 2023, European Union countries and the United Kingdom shipped 456,507 tons of plastic waste to Turkey, equivalent to the load of about 125 garbage trucks, daily. (URL-1) (Figure 1) Especially, plastic waste exports from the UK to Türkiye increased from 12.000 tons in 2016 to 210.00 tons in 2020. This significant growth has raised many questions. The most important question we can address from an architectural and urban perspective is, how does such a large volume of waste create a spatial crisis and a regime of visibility/invisibility?

This question enables us to discuss wasteflows that have been hidden, along with their social and political contexts. Methodologically, through multi-scalar mapping, waste production in daily life at the local scale is made visible. Then, at the urban scale, the spatial distribution of waste flows and recycling facilities is mapped. At the planetary scale, waste import and export routes are revealed. Using these methods creates a conceptual framework throughout the research based on the rhizomatic thinking developed through the multi-scalar

Figure 1: The garbage truck circulation diagram shows that the amount of waste sent from the UK and EU was equivalent to 125 garbage trucks per day in 2023 – image produced by the author

and multi-layered approaches Deleuze and Guattari employ in their discussions of assemblage. (Deleuze & Guattari 1987) The combination of these diverse, multi-layered, and multi-scalar tools creates new wholes, preparing the ground for an interscalar reading of the crisis.

3 Results

The UK is among the countries that export the most plastic waste in the global waste chain and Türkiye is one of the main destinations for this waste. (Gündoğdu & Walker 2021) While statistical data confirms that, Bloomberg journalist Kit Chellel placed a GPS in a UK supermarket bag to track its destination and reveal the invisibility of waste in 2021. After a long journey, including stops in Germany and Poland, the final signal from the GPS device was received in Adana. The absence of a waste treatment facility near the last satellite signal suggests that this waste and similar ones are being dumped in vacant lots. This narrative makes it newsworthy and creates a hot topic on the agenda. "A Plastic Bag's 2000-mile journey shows the messy truth about recycling," say journalist Kit Chellel and Wojciech Moskwa. (URL-2) Examining the waste sent from England to Adana reveals that the crises it has caused and will continue to cause for the city have grown to a scale that necessitates spatial visualization.

Adana is a port city located in southern Türkiye, on the Mediterranean coast. As Türkiye's seventh-largest metropolitan city, it owns land that is highly suitable for agriculture. However, the accumulation of garbage on these lands reveals distinct spatial and daily life practices. Mapping these garbage collection areas identified and documented by Greenpeace provides insights into the city's periphery. (Greenpeace UK 2021) (Figure 2)

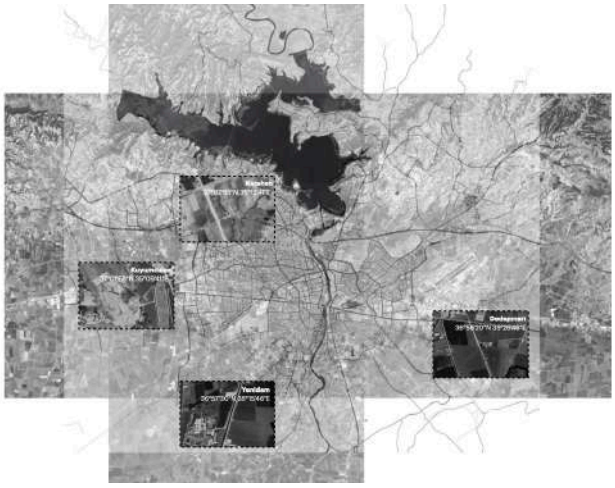

Figure 2: The waste sites at the periphery of Adana – images retrieved from Google Earth and edited by the author

The location of landfills and their associated recycling facilities away from the city center is shaped and managed by the urban political economy. From the perspective of critical urban theory, garbage is not just waste generated by consumption but also an outcome of political and economic forces. (Pollans 2021) These areas where waste accumulates are often invisible zones on the periphery of the city, where low-income communities reside. The visible center-periphery relationship created by garbage directly relates to discussions of spatial justice. (Harvey 2010) The territories of waste sites are connected to how capital reproduces urban space. (Lefebvre 1991) These sites are invisible but function as spatial tools that support capital.

The assemblage of waste hills in Adana, typically found in agricultural hinterlands, transition zones, or on the outskirts of the city, exemplifies this center-periphery dynamic. (Figure 3) On a larger scale, the accumulation of plastic waste from the UK in Adana reinforces Türkiye's function as a periphery in the global capitalist waste economy. Therefore, it can be argued that the spatiality of waste exists both on planetary and urban scales. On an urban scale,

the transformation in Karahan, Kuyumcular, Yenidam, and Dedepınarı, the four major garbage collection areas identified by Greenpeace, is examined both before and after the areas in question were reported. The Kuyumcular area was once a streambed. The area in Karahan and Yenidam also lies on the course of a river. It is also noteworthy that Karahan was developed into high-rise residential buildings after its cleanup. This demonstrates that even peripheral areas are gradually being integrated into the city.

Figure 3: Google Earth and Greenpeace images edited by the author

4 Discussion and Conclusion

Considering waste more than an object and its accumulation as physical assemblages, materials from different resource geographies and supply chains provide information regarding their multi-temporal and multi-scalar qualities. Macdonald (2022: p. 17) defines the "current waste predicament" as "the mounting piles of garbage and expanding landfills." Especially with the increasing mass consumption after the Second World War, the scale of waste accumulation has become an ecological and political problem on a global scale. (Lindner & Meissner 2015) Thus, a complex relationship has emerged between urbanization and waste that serve as evidence of production and consumption patterns and work as a visible sign of the environmental and urban crisis. While waste primarily constitutes a material flow, it also encompasses immaterial dimensions, including cultural

perceptions, economic value, and political discourse. They appear in specific geographies, like the relation between UK and Adana, as evidence of such relationships, making the imperceptible scale of wasteflows more comprehensible. Based on these relationships, it can be argued that the waste crisis is a situation at the intersection of urban and environmental crises. (Figure 4) As the scale increases, uncovering the (in)visibility of waste becomes more difficult.

Figure 4: The convergence of urban and environmental crises drawn by the author

The visualization of waste provides a new way of thinking and representing while raising questions about the environmental and urban crises in the Anthropocene. The unsettling image of the Anthropocene, marked by waste, emphasizes the potentially catastrophic effects of human activity on Earth. These forces humans to deal with the ecological consequences of their actions in an ethical way while at the same time questioning their perceptions of nature and human influences. The reflections on how waste visualized play an essential role in shaping thoughts about environmental responsibility. This analysis demonstrates that tracing and visualizing waste are both productive and critical tools for addressing environmental and urban issues. They aim to construct a projection that calls for a rethinking of waste. This intervention has the potential to transform not only the visibility but also the way the audience thinks, feels, and takes a stance. These visualizations established through projections enable us to conceptualize that waste is not just an object, but a multi-layered structure.

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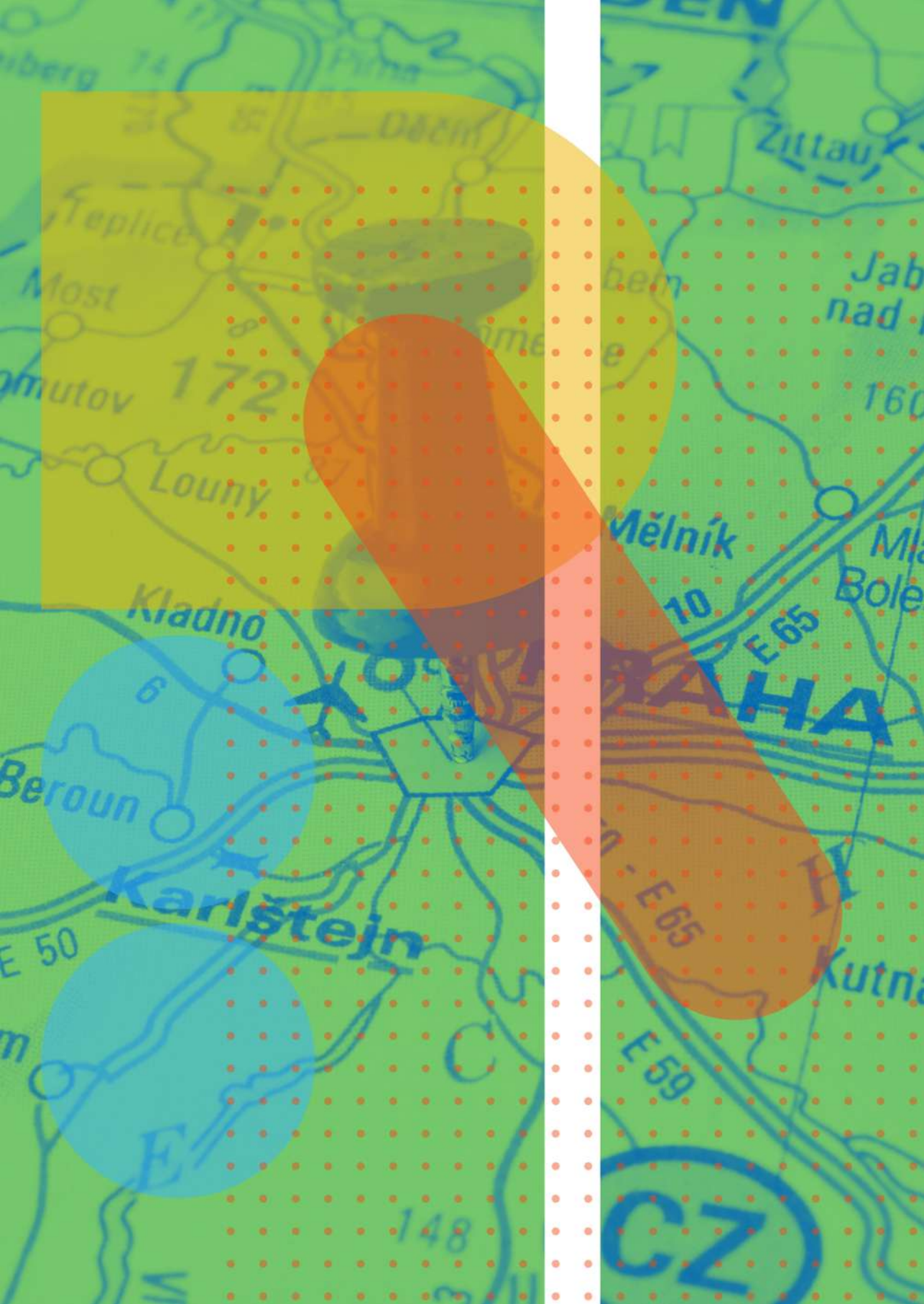
Most
Louny
Kladno
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Beroun
Karlštejn
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Track 3: Governance and Tools Revisited

This track will explore the intersection of governance and urban planning in shaping inclusive and adaptive environments. It will address how new, innovative tools, data-driven solutions, and emerging trends are transforming the management of space, mobility, and services, while also confronting the broader governance challenges such as policymaking, community participation, and institutional frameworks. Contributions are invited that reflect on both the opportunities and challenges posed by the application of governance practices, and how these innovations influence social and economic accessibility. This track will also invite discussions on the governance strategies necessary to address complex, dynamic challenges, exploring the potential benefits and risks of data-driven decision-making, and how technology can either support or disrupt public engagement and the democratic processes that are central to inclusive governance.

Post-COVID Metropolitan Planning and Governance Trajectories in Greater Paris and Casablanca

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In a globalized world, the coronavirus pandemic initially spread across major metropolitan areas before extending into the urban-rural continuum (UN-Habitat 2021). Nearly 90% of reported cases occurred in urban zones, which thus became the epicenter of the crisis (Nations Unies 2020). The large size of their populations and their high degree of global and local interconnectedness rendered metropolises particularly vulnerable to the spread of the virus. As complex socio-territorial entities, metropolitan regions are structured around networks and infrastructures that are simultaneously resilient and fragile, amplifying their exposure to health shocks (Reghezza-Zitt 2022). Connectivity, both internal and external, played a decisive role in the pandemic's diffusion (Teller 2021).

Metropolises experienced severe disruptions of vital functions, resulting in human losses, aggravated socio-spatial inequalities, and the urgent need to relaunch economic activity to support global recovery (Callenberg et al. 2024). The coronavirus became a protean crisis with multidimensional and simultaneous impacts - sanitary, socio-economic, and political - affecting equity, finance, security, employment, public services, infrastructure, and mobility. These impacts disproportionately burdened the most vulnerable populations, deepening pre-existing inequalities and challenging urban resilience (Nations Unies 2020).

Faced with the pandemic, metropolitan areas were compelled to strengthen resilience by developing systems able to preserve essential functions while adapting to ongoing socio-environmental transformations (Chelleri 2012). Resilience

refers not only to resistance but also to continuous adaptation and evolution over time (Ahern 2011). In this sense, COVID-19 became a turning point for rethinking both metropolitan governance (McGuirk et al. 2020, Hunter 2021) and planning practices (Zhu & Xu 2023, Callenberg et al. 2024).

The crisis exposed structural vulnerabilities within metropolitan governance systems (Faytre & Le Goff 2022). In response, many cities sought to reconfigure institutional frameworks to address weaknesses in multilevel governance and intersectoral coordination (Hunter 2021). At the same time, the pandemic triggered diverse innovations, ranging from pilot projects to participatory initiatives. These strategies questioned conventional decision-making modes and initiated institutional reforms whose effects extend beyond the immediate crisis (McGuirk et al. 2020).

COVID-19 also disrupted planning processes at multiple temporal scales. Short-term emergency responses included the suspension of numerous planning documents that relied on pre-pandemic data and assumptions (Zhu & Xu 2023). At the same time, planners were called upon to introduce structural modifications, such as zoning adjustments, measures to improve quality of life, and revised approaches to mobility and accessibility (Wahba 2022). Globally, the planning horizon shifted from long-term strategic visions toward short- and medium-term interventions aimed at immediate recovery. Since then, planning systems have sought to reintegrate concerns for public health, resilience, sustainability, and proximity, thus reorienting the search for more inclusive and adaptive territories (UN-Habitat 2021, Zhu & Xu 2023, Callenberg et al. 2024, OECD 2024).

This paper focuses on the metropolises of Greater Paris and Casablanca, both characterized by demographic and functional primacy within their respective national systems (Mieg 2010). Greater Paris concentrates over 10% of the French population and 16% of national employment (APUR 2020), while Casablanca hosts 15% of Morocco's population and contributes 29% of GDP (OECD 2018). Both metropolises were heavily affected by COVID-19, with significant repercussions across productive, residential, and tourism sectors. These impacts reverberated nationally (APUR 2020, Sciences Urbaines & Développement 2021). Therefore, the guiding research question is: To what extent did COVID-19 generate concrete changes in metropolitan planning practices in Greater Paris and Casablanca?

This research combines three sources of evidence. First, a review of scientific literature in urban planning, governance, resilience, and health establishes the conceptual framework. Second, a systematic documentary and press analysis traces the evolution of planning debates during and after the pandemic. Third, a series of semi-structured interviews with institutional actors, planners, elected

officials, governance stakeholders, and representatives of civil society in both metropolises provides empirical insights.

The analytical approach focuses specifically on the regulatory and institutional responses of metropolitan systems. Although the paper examines two cases, the intent is not to produce a comparison but rather an indicative cross-analysis. The goal is to highlight commonalities and divergences in order to capture how metropolitan planning systems integrated, or failed to integrate, the lessons of the pandemic. The framework guiding this analysis considers planning practices across three dimensions: the evolution of regulatory instruments, the institutional reconfigurations of metropolitan governance, and the emergence of innovative practices such as temporary interventions and participatory experiments.

In Casablanca, the pandemic was used to justify revisions to several land development plans. Alternative regulations were introduced around environmental performance and urban quality, and the environmental orientations of the Urban Development Master Plan gained renewed legitimacy, particularly in relation to green and open spaces. Two initiatives illustrate this shift. The first was the creation of a regional logistics platform designed to secure supply chains for essential goods. The second was the relocation of polluting activities outside the city center in order to improve quality of life. The pandemic also fostered greater collaboration between planners and local authorities, particularly regarding flexible zoning and regulatory adjustments. Yet the integration of crisis-related issues into planning documents has remained partial and spatially fragmented, producing changes that are significant locally but insufficient at the metropolitan scale.

In Greater Paris, the crisis contributed to the integration of health and resilience concerns into several major planning instruments, including the SDRIF-E, the SDREII, and the SCoT of the Métropole du Grand Paris. The temporary bike lanes created during the pandemic - the coronapistes - were made permanent through the metropolis' Cycling Plan. The crisis also provided a moment of institutional affirmation for the Métropole du Grand Paris, particularly with the elaboration of a health-resilience plan. Nevertheless, the pandemic produced only limited institutional change. Responsibilities and dominant planning modes persisted largely unchanged, and overall the crisis reinforced pre-existing planning initiatives rather than generating new approaches (Pisano 2020).

The findings suggest that COVID-19 functioned more as a catalyst than as a rupture. Rather than creating new directions, the pandemic gave additional legitimacy to orientations already underway (Dumont & Paponnaud 2021). Public health emerged as a powerful discursive framework, allowing planning institutions to reframe and reinforce existing priorities such as sustainable mobility, en-

vironmental quality, and resilience. Yet the institutional structures of metropolitan planning remained stable, illustrating the difficulty of reconfiguring governance even in the face of a major global crisis (Faytre & Le Goff 2022).

The limited transformative effect of the pandemic can be explained by three interrelated dynamics. The first concerns path dependency: long-standing policy trajectories and institutional routines constrained the options available to planners, making it more likely that crisis responses would reinforce existing approaches rather than generate new ones (Nieweler 2024, Scalas 2024). The second relates to sectoral fragmentation. Health considerations were generally addressed implicitly rather than as transversal priorities, and although they appeared in planning documents, they rarely functioned as explicit, cross-cutting objectives (L'Institut Paris Region 2021). The third dynamic lies in the rapid reorientation of political agendas toward mega-events. In both metropolises, attention quickly shifted back to major international events - the 2024 Olympic Games in Paris and the 2030 World Cup in Casablanca - diminishing the momentum for integrating health-related reforms into long-term planning strategies.

Nevertheless, the crisis brought to light critical blind spots that remain unresolved. The transversal integration of health into planning practices is still limited, socio-spatial inequalities persist, and metropolitan systems remain fragile in the face of overlapping crises (Faytre & Le Goff 2022). Therefore, a key question for future research is how planning systems can evolve to incorporate health, resilience, and inclusion as genuine cross-cutting principles rather than sectoral add-ons.

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Spaces for All: A Historical Assessment of Placemaking and Participatory Practices in the V4 Nations

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1 Introduction

As urban areas experience rapid growth, climate change, and increasing socio-economic inequality, innovative urban planning strategies are essential to address these challenges. In the early 21st century, placemaking and participatory practices emerged to enhance the connection between people and their shared spaces, fostering the creation of welcoming and friendly public areas. The 2000s also mark a significant period of transformation: the European Union has experienced the most significant enlargement in its history. At the same time, the global emphasis on sustainable development has been amplified with the Millennium Development Goals (MDGs) succeeded by the Sustainable Development Goals (SDGs). Building on this transformative period, this research explores how placemaking practices in the Visegrad Group (V4) countries (Czech Republic, Hungary, Poland, and Slovakia) have evolved in the two decades since their accession to the European Union. Furthermore, it analyzed how different age groups participated in these processes and how they could be linked to the SDG sub-targets, underlining sustainable urbanisation, participatory structures, and public spaces that are inclusive and accessible for people of all ages.

While the Visegrad countries share a common historical and cultural background, including the transition from socialist states to democracy and market economy, each country has unique socio-political and economic dynamics for comparison. The research analyzed case studies of major urban centers, focusing on participatory planning processes. The study also considers the concept of planning for all ages, looking at how different age groups (children, adults, and the older generation) experience and influence placemaking processes, while taking into account the goals of sustainable urban growth. This approach provides a more nuanced picture of socio-spatial dynamics and highlights the importance of tailored strategies that take into account the needs of all age groups.

2 Methods

For this research, a comprehensive historical literature review was conducted, which allowed for exploring the evolution of participatory planning in the Visegrad countries, with the primary research focus on understanding the main drivers of these changes and the impacts, obstacles, and opportunities for contemporary urban planning. The second focus of this study was how different age groups shaped and influenced these processes in urban spaces. To ensure clarity, this study adopted a three-cohort schema that aligns with the majority of literature: from children and youth, aged 5 to 24, the young participants engaged; to adults, aged 25 to 64, the prime working-age group who led the adoption of participatory models; to seniors, aged 65 and above, who also play an crucial role in planning. Lastly, the research investigates how these participatory practices could be aligned with SDG targets 11.3.2 and 11.7.1, which support participatory structures and inclusive public spaces for all ages.

The study was carried out by using the five-step literature review technique: creation of a text database and research panorama, building on the primary authors' findings and conclusions, location of origins and conceptual framework, and defining the research subject. First, the necessary keywords were identified ("participatory planning", "placemaking", "public space" with variations of "Visegrad Group" and its member states for geographical narrowing). For this research, the keywords were searched for both individually and combined in the Scopus, EBSCO, and Web of Science databases. Several filters were used to narrow down the results, such as scientific, peer-reviewed journals, years of publishing (2000–2024), type of content (academic journals, books, and e-books), and English-language.

The text database is composed of 77 sources. All of the sources are scientific, peer-reviewed works, ranging from conference papers to book chapters. The

years of publishing range from 2004 to 2024, with a remarkable increase from the late 2010s, which highlights the gradual spread of participatory practices in the region, and the peak number of studies published in 2024 supports the actuality of the topic. The disciplines of the sources vary, with most being related fields of planning, while works from civil engineering, geography, and sustainable development are also relevant. This underscores the interdisciplinary nature of the topic and the need for a comprehensive approach.

3 Results

Early post-accession studies document the initial state of Visegrad cities, identifying inflexible, top-down planning frameworks and pronounced environmental decline in public areas across Poland and the Czech Republic. In contrast, grassroots visioning workshops in Budapest and mapping exercises in Bratislava showed how stronger civil society infrastructures enabled local actors to reclaim mass-housing estates and historic squares. Analyses of communication processes demonstrated how these early dialogues laid the groundwork for later redevelopment projects. The contrast suggests that early participatory practices depended on non-governmental capacity and supportive legal contexts, while audit-driven studies left community perceptions unexplored, signalling a need for mixed-methods approaches that capture everyday experiences.

The EU structural and cohesion funds have played a critical role in shaping participatory and placemaking practices across the V4. Post-2004, regeneration schemes financed by these funds often carried grant requirements for public consultation. Based on such conditions, cities in the V4 integrated citizen involvement methods into municipal redevelopment plans. Other EU-supported research on digital participatory tools accelerated city halls' adoption of online tools. Therefore, these funding streams not only provided essential resources but also created institutional incentives for stakeholder engagement, speeding the region's shift from top-down practices to collaborative placemaking.

During the mid-2010s "bottom-up turn," participatory methods moved from marginal experiments into more mainstream regeneration projects, with notable variations by country. Poland led in scaling participatory budgeting and creating cultural-institution partnerships. The Czech Republic pioneered tactical urbanism and urban mentoring schemes to create pop-up plazas and pocket parks, while Bratislava experimented with youth involvement and digital workshops. Hungary's green space and public safety design experiments were locally impactful, yet remained fragmented and complex to scale. Poland's ability to institutionalize budgeting at scale reveals how fiscal autonomy and governance

frameworks can transform pilot tactics into system-wide practices. In contrast, Czech and Slovak experiments mostly remained episodic and vulnerable to tokenism. Scholars warned that these efforts risked reproducing existing inequalities without skilled facilitation and sustainable funding. This era exposed a persistent tension between ambitious participatory ideals and the pragmatic limits imposed by municipal expertise and funding cycles.

From the late 2010s onward, online and digital tools marked a new hybrid phase in the V4. The Czech Republic led early adoption by enabling real-time data collection, Poland expanded these methods to capture citizens' emotional responses, while Hungary's Smart City initiatives integrated ICT to support universal design of spaces. At the same time, Slovakia's smaller municipalities highlighted the need for analogue outreach to bridge digital divides. Overreliance on digital tools risks excluding low-tech or low-literacy participants. Technological innovation amplifies participation only when paired with inclusive outreach models; otherwise, digital tools risk deepening the social divide.

A closer examination of age-group dynamics reveals distinct contributions and challenges across the V4. Adults were inducing reform in all states to integrate citizen knowledge into planning. Children from the late 2010s gradually transitioned from passive users to co-designers in the V4 with targeted workshops and digital engagement. Seniors played an important role in prototyping inclusive and accessible urban design in Wroclaw and Prague. However, smaller-town initiatives in Slovakia and Hungary often struggled to recruit different demographic cohorts without expert facilitation. Differential methods for children, adults, and seniors reveal that participatory design must be calibrated to each group's cognitive, social, and technical capacities, as the one-size-fits-all approach risks superficial outcomes. Persistent difficulties sustaining balanced cohorts indicate the need for institutionalized support structures rather than ad hoc efforts.

In terms of alignment SDG 11.3.2., Poland and the Czech Republic have the most institutionalized multi-stakeholder governance, for example, through transparent participatory budget planning, joint creative workshops, and mentoring programs, while in Slovakia and Hungary, participatory methods are still in the early stages of development. Formal alignment with SDG targets often overlooks how fleeting political support can be, so sustainability indicators must also consider long-term financing and capacity-building prospects. Short political cycles, limited budgets, and volunteer fatigue often cut participatory processes short before they can lead to lasting improvements. Concerning SDG 11.7.1, innovative experimental approaches have enriched urban placemaking by combining temporary interventions with long-term spatial transformation. Poland's and the Czech

Republic's creative placemaking festivals and interactive media-arts interventions have animated underused squares, while Hungary has codified disability-inclusive design standards for accessibility. Slovakia's green-corridor initiatives in Bratislava and Košice offered nature-based solutions for inclusive recreation. However, persistent safety concerns, such as poor lighting and harassment, continue to deter women, children, and seniors from using public spaces entirely. Nevertheless, short political cycles, limited budgets, and volunteer fatigue frequently cut short participatory processes before yielding lasting improvements.

4 Discussion and Conclusion

According to the analysis, the participatory practices of the Visegrad countries have shifted from top-down, state-led planning to more collaborative approaches involving residents. The research indicates that technological advances, community engagement initiatives, and creative design practices have continuously reshaped urban public spaces in the Visegrad region. Rigid top-down planning has given way to bottom-up, EU-funding-supported participatory and placemaking practices, but the progress is uneven. Poland is the clear leader in progress, while in the other three countries, the sporadic nature of interventions is slowing down the transition for the time being. The case studies prove that children, adults, and seniors have each played a role in shaping public spaces, yet volunteer burnout, tight budgets, and digital divides limit lasting inclusion. While these shifts tick the boxes of SDG 11.3 and 11.7, true equality in governance and public-space access still demands deeper facilitation and reliable political and financial support for participatory processes.

The study concludes that integrating inclusive participatory and placemaking practices could significantly improve the development of public spaces in the Visegrad Group countries. By taking into account the different needs of different age groups, policy makers and urban planners can create a more resilient, equitable, environmentally and socially sustainable urban environment. Therefore, the key implications of this research include institutionalizing facilitation, pairing high-tech tools with low-tech outreach, and the adoption of mixed-method evaluation while also designing funding and governance models that reflect local capacity.

The limitations of this study include the language barriers and the less-accessible documentation, as relevant sources may be scattered or unavailable in English translation. In addition, defining clear milestones in placemaking and participatory urban planning is always a complex issue, because transformations

often occur gradually rather than through distinct events. Nevertheless, the research results so far can provide a foundation for further study to investigate the current opportunities, difficulties, and good examples of participation in urban planning projects in the region.

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Managing Policy Change and Implementation: The Role of Local Authority Planners in Local Housing Delivery

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1 Introduction

The housing affordability crisis is affecting major urban agglomerations across the world Wetzstein 2017. There are key structural factors drive the crisis, including concentration of employment and amenities, widening wealth inequality within metropolitan economics Baum-Snow et al. 2018, and rising investment demand for real estate from international capital flows Stirling et al. 2022. These pressures will likely intensify as technological change makes global cities even more attractive to firms and capital Kemeny et al. 2022.

Under this pressure, many local governments across different contexts are under considerable pressure to increase local housing supply Raco et al. 2022, Rink & Egner 2021. A typical situation is that local government primarily relies on private developers to enhance local housing delivery, over whom they do not hold administrative control. This poses challenges for officials who are functionally responsible for housing development within local government: local government planners.

This research is interested in understanding how local authority planners can enhance local housing delivery through private developers in the context of high-pressure urban housing markets. Following this interest, the study intends to examine the phenomenon of planner-involved policy entrepreneurship related to local housing delivery. There are three critical aspects this research is particularly focused on. The first is how planners can be involved in the process of policy change. The second is how planners can manage the process of deciding strategic policy directions. The third is how planners can manage implementation in ways that support local housing delivery.

All three are fundamental for planners to enhance local housing delivery, based on the understanding that planners play a bureaucratic-advisory role in local government. The planned empirical inquiry includes field work in London's local authorities, the UK's most "high stress" housing markets. The field work will afford case studies of three London boroughs.

2 Methodology

This research adopts Design Recovery in Cases (DRC), an extended case study approach developed by Barzelay (in press). Case study methods are particularly appropriate for examining how local authorities implement housing targets, given both the specificity and complexity of the challenges they face and the processual and relational nature of implementation processes Healey 1997. DRC offers specific advantages for this research: it provides structured guidance for developing mechanistic explanations within cases based on new mechanical philosophy, while also offering methods for characterizing empirical phenomena, identifying explanatory targets, and translating case-specific findings into domain knowledge applicable to other contexts. The approach also facilitates systematic case comparison to enhance theoretical contributions.

Figure 1 offers an overview of how DRC is operationalized. The process begins with case data, such as observations, interviews, and documents. These materials are examined through three phases. The first, characterization, involves organizing information about activities, contextual conditions, and outcomes. The second, designation, identifies which outcomes meaningfully reveal how the case functioned as a whole. The third, explanation, develops accounts of how activities and conditions were responsible for those outcomes. At this stage, existing social scientific theories can be drawn upon to sharpen analytical clarity, showing how particular activities and conditions generated specific outcomes without imposing predetermined findings. This process yields what DRC terms "recov-

ered designs," an account of how the arrangement of activities and conditions made the case's functioning possible.

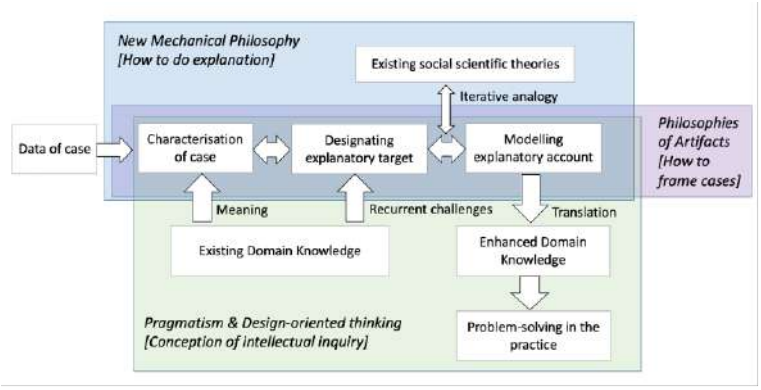

Figure 1: The operation of DRC research, by author

Case selection followed two stages: identifying an appropriate type of phenomenon to study, then selecting specific cases within that phenomenon for comparative analysis.

To restate, the research intends to investigate the phenomena of planner-involved policy entrepreneurship in response to local housing supply. The research has interest on investigate in the context of major urban agglomerations, where housing delivery pressure is particularly severe. To investigate this, this research selects London borough's response after the 2018 introduction of Housing Delivery Test (HDT) as targeted phenomena of inquiry.

There are two reasons for selecting London borough's post-HDT response as targeted phenomena as inquiry:

First, selecting London boroughs is of both practical relevancy and academic interest, for the practical relevance is London in general are experiencing one of greatest housing delivery pressure within England. For academic interest, the London's housing market condition, including high land values, market financialization, and concentrated developer power, makes findings relevant to other major cities in wider context.

Second, selecting borough responses after the introduction of the HDT fits with this research's purpose. The phenomenon under investigation is policy entrepreneurship in local housing delivery, where planners are deeply involved. The post-HDT context is appropriate for two main reasons. On the one hand, because the HDT imposes a mandate based on actual housing delivery that goes beyond theoretical land supply, borough responses are more likely to

address practical delivery challenges. This makes it more likely to observe efforts focused on actual housing delivery, rather than merely demonstrating compliance with technical land requirements. However, this research admits political and administrative coping behaviours may still occur. On the other hand, the HDT introduced a moment of institutional change that opened up a policy window, creating an opportunity for policy entrepreneurship. In this window, planners are especially likely to take an active role. The technical complexity involved in delivering housing targets gives planning and housing officers considerable discretion in shaping how implementation unfolds. As Haas (1992) argues, conditions of uncertainty and complexity tend to increase the authority of experts compared to elected politicians, enabling professionals to exert greater influence over the direction of policy responses.

Within post-HDT implementation, this research examines three London boroughs: Waltham Forest, Southwark, and Westminster. One borough will serve as the focal case with intensive interviews, while the other two provide comparative analysis. These cases were chosen to capture variation in how local authorities respond to similar regulatory pressures under different conditions. The design aims to generate both practical framework for planners addressing specific challenges and framework that is broadly applicable to broader contexts.

Table 1 presents the characteristics of the three case boroughs. From 2018 to the present, all three councils have responded to the Housing Delivery Test (HDT) by drafting action plans, adopting new local plans, and revising site allocations. These shared activities reflect the broader institutional response to increasing central government pressure on local housing delivery.

3 Data Collection

This research employs a sequential mixed methods approach to data collection, examining housing target implementation processes from 2018, when the Housing Delivery Test (HDT) was introduced, to present. The data collection strategy follows an iterative design in which archival analysis is used to construct a chronology of implementation and identify potential turning points Abbott 2004. These turning points then inform the selection of targeted expert interviews. Figure 2 illustrates this sequential relationship.

The rationale for this strategy is that seven years of post-HDT responses generate a substantial volume of data, making it necessary to focus analytical attention. The archival study functions as a screening tool to pinpoint major episodes that may signal shifts in strategic direction or changes in how implementation is

	Waltham Forest	Southwark	Westminster
Land availability	High	Moderate	Lower
Land Value	Lower	Moderate	High
Housing Target	Moderate	High	Low
Party Control	Labour majority council, with Conservatives as the main opposition	Labour majority council, with the Liberal Democrats as the main opposition	From Conservative control to Labour majority in 2022
Delivery Pattern	More big sites	High small site. High council-led development; High large scheme; Major infrastructure coordination (Bakerloo line extension)	High small site and windfall development
HDT Measures	None	2018 Buffer; 2019 Action Plan; 2020 Presumption; 2021 Action Plan; 2022 Presumption; 2023 buffer	2020 Action Plan

Table 1: Comparison between Waltham Forest, Southwark, and Westminster, by author

managed. Once these key moments are located, expert interviews are conducted to examine in detail how those changes unfolded in practice.

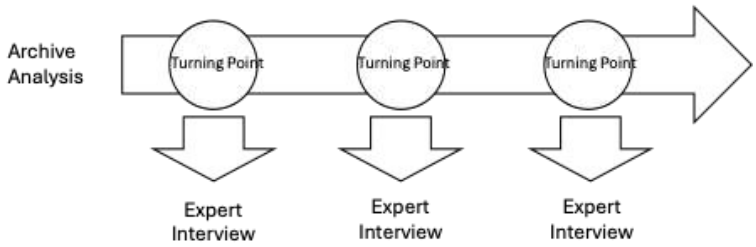

Figure 2: Data collection strategies, by author

4 Indicative Findings

Field works has not been carried out by the time of the submission. Preliminary examination of case characteristics identifies three contrasting contexts that could shape how planners respond to Housing Delivery Test requirements.

Waltham Forest presents an unusual case: it voluntarily produced an HDT Action Plan without being formally required to do so. This is the only London borough to take such action. This voluntary compliance beyond regulatory requirements raises questions about what drives such proactive behavior and how planners justify additional work without external mandate.

Southwark's context involves multiple intersecting pressures. The borough shifted strategy around 2018 from its previous position as England's largest council housing provider, having delivered one-third of all council homes in England in 2021/22, toward increased collaboration with private developers. This shift coincided with fiscal mismanagement at the council. Simultaneously, Southwark manages exceptionally high housing targets, diverse development types, and coordination requirements for the Bakerloo Line Extension. These overlapping challenges create a complex implementation environment.

Westminster experienced unprecedented political change with Labour gaining majority control in 2022 for the first time in the borough's history. This political shock combines with the borough's distinctive reliance on windfall sites for housing delivery, creating dual uncertainties, both political and market-based, that planners must navigate simultaneously.

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Co-Designing Active Parks with Teenage Girls in Birmingham Using Digital Technology

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1 Introduction

The unique needs and wants of girls and young women are almost completely ignored in the process and products of architecture and urban planning (Kern 2019). As a result, the city that is produced presents a range of physical, social, economic, and cultural barriers for women and young girls, influencing their daily experiences in predominantly gendered ways (Barker et al. 2024).

This doctoral study focuses on teenage girls, a particularly overlooked group that is 'designed out of public spaces' (Theocharides-Feldman 2022). Girls from the age of 8 years old tend to stop participating in public spaces (Grech 2024, Global Utmaning & UN-Habitat 2022) such as parks and green spaces. The existing disparities in the use of public spaces by teenage girls and boys are attributed to both exclusionary design processes and products. The absence of accessible, gender-sensitive active spaces for teen girls has a direct impact on their engagement in physical activity and on their psychological wellbeing. Sport England's (2024) yearly Active Lives report shows that teen girls are less likely than boys to meet the Chief Medical Officer's daily physical activity recommendations, particularly among those facing multiple disadvantages. Women in Sport (2024) also found that boys increasingly dominate the playground with football and tend to be both verbally and physically aggressive, which intimidates their female peers.

These findings highlight the importance of the presence of active parks where girls can feel both comfortable and empowered to engage in various physical activities, including but not limited to sports. To understand and design these spaces, it is essential to adopt a collaborative, data-driven design approach. This research will involve a generative co-design process, actively engaging teen girls from diverse backgrounds from the outset and throughout the process (Grech 2024, Ng et al. 2024), with their participation occurring at various stages of the research, starting as early as the front end of design (such as the data collection period for analysis). This research engages teenage girls not just as consultation subjects but as experts in their own lived experience, acknowledging that deep, meaningful engagement requires listening to the diverse voices of those for whom these spaces are created (Smaniotto Costa et al. 2020), rather than reducing them to a homogeneous group with stereotypical interests and needs

To enable both an effective participation process and meaningful products, the research also looks at the role and potential of Information and Communication Technology (ICT) and its digital tools in the context of collaborative and inclusive city planning. Various metaverse technologies are emerging and becoming more accessible compared to a decade ago, among them are components and devices of gamification and immersive technologies like virtual reality (VR) and augmented reality (AR) (Yaqoob et al. 2023). Given the recent emergence of these technologies in placemaking practices and their ability to enable immersive exploration of virtual spaces, this research will explore the potential of digital tools in co-designing inclusive and active parks with teenage girls.

1.1 Research questions

1. What do inclusive active spaces informed by the perceptions, experiences and aspirations of teenage girls in Birmingham look like?

2. How can immersive technologies and gamification enable the participation and co-production process of inclusive active spaces?

1.2 Literature Review

The literature review focuses on three interrelated themes: teenage girls, outdoor public spaces, and digital technology in planning and design. It explores the complex relationship between teenage girls and active public spaces, examining how these spaces reflect existing societal dynamics and how they can be reimagined to better serve the needs of teenage girls and foster their active participation.

Public spaces are the settings for mental, social, and physical development. It is well documented that teens and young people are some of the most frequent users of public spaces (Travlou et al. 2008). These settings provide an outlet for independence and exploring one's freedom away from their caregivers' eyes. They offer a place to show skills, socialise and make connections with peers, but also to self-isolate when needed (Subramanian & Rice 2023). Teenage girls face numerous barriers to engaging in active public spaces, many of which stem not from exclusionary design choices but from the existing societal dynamics that shape them.

The literature shows that the disengagement of teenage girls from public spaces begins at an early age, often around eight years old, as boys increasingly dominate outdoor settings such as playgrounds and sports facilities (Grech 2024, Global Utmaning & UN-Habitat 2022). Local authorities' budgets for public outdoor spaces often prioritise amenities like skateparks, football pitches or multi-use games areas, which are designed with boys in mind or used "practically entirely by boys and young men" (Theocharides-Feldman 2022). According to Grzesikowska (as cited in Subramanian & Rice 2023: 45), the design of these spaces also relegates girls to passive roles as observers on benches or in surrounding areas, reinforcing the sense of exclusion and marginalisation in accordance with the hierarchy of power. This spatial exclusion is compounded by the attitudes of male peers, who may exclude girls from games and sports due to gendered perceptions of reduced competence, as demonstrated in an experiment on basketball (Slingerland et al. 2013).

Research also identifies safety as the most significant factor shaping teenage girls' relationship with public space. Poor lighting, unsafe or secluded areas, poorly maintained urban furniture, single-use facilities, and the absence of essential amenities like public toilets further discourage girls from using public spaces for activities (Henning Larsen 2023). Alongside these physical factors, harassment and intimidation in parks and playgrounds remain pervasive: Girlguiding's (2021) survey found that half of teenage girls had experienced unwanted sexual comments in public spaces.

The literature also shows that girls have a wide range of needs, perceptions and aspirations that must be addressed in the design of successful outdoor active spaces. The Girls Just Wanna Have Fun research report (Subramanian & Rice 2023) shows that girls and boys differ in their play preferences, reflecting in varying physical activity levels, types of play, and criteria for choosing playmates. For instance, the report states that teen girls generally prefer play that is imaginative, collaborative, structured, smooth, and requires whole-body coordination. As for their choice of playmates, the report shows that girls

prioritise peer group compatibility, whereas boys base their choices on mutual interests (Subramanian & Rice 2023). While both genders value open spaces, greenery, and play facilities, girls place greater emphasis on well-maintained and safe parks compared to sports facilities (Mertens et al. 2019). Girls also prioritise features such as aesthetic appeal, vibrant colours, greenery, historical elements, and quiet spaces (Van Hecke et al. 2016).

Context-specific consultations are particularly important; what works in one place may not necessarily be effective in another. For instance, while a gender-sensitive play space in Malmö was intended to be inclusive, it was perceived as 'for boys' by a female participant in West Yorkshire (Barker et al. 2022). Additionally, some focus groups in the same study felt the Malmö and Stockholm spaces were open and overlooked, while two other groups noted that the Stockholm space appeared dark with hiding places (Barker et al. 2022). Birmingham, with its youthful population, diverse ethnicities, and varying socioeconomic backgrounds, and a multitude of green open spaces under decline (Birmingham City Council 2022), naturally presents its unique challenges in designing outdoor active spaces with teenage girls who live there. These examples and the specific context of Birmingham highlight the need to involve local girls as both consultants and active participants in the design process of their outdoor active spaces.

Co-design by nature should be easy, accessible, and intuitive for all users including non-experts without technical barriers and training (Dane et al. 2024). Digital tools have emerged as essential for participatory design, transforming urban planning processes by enhancing engagement and interaction among various stakeholders. Digital interventions help transform physical public spaces into hybrid spaces, enabling more inclusive and responsive environments (C3Places 2021). Through interactive and gamification features of VR and AR and real-time feedback capabilities, these tools allow for flexible, large-scale data collection and offer significant potential in urban design practices. These tools enable the integration of these models into participatory design sessions, fostering active and meaningful engagement from participants in the design of urban spaces (Dane et al. 2024). Both VR/AR and gamification tools have proven effective in engaging diverse age groups and expertise levels, offering immersive experiences that increase empathetic engagement, motivation, and design testing (Dane et al. 2024).

While recent initiatives have begun to include teenage girls in participatory design, these processes often remain limited in scope and rely on traditional analogue tools, which risk reproducing existing patterns of exclusion (Make Space for Girls 2023, Plan International 2020). At the same time, digital technologies

such as VR, AR, and gamification are increasingly recognised in urban planning for their potential to enhance participation and engagement (Dane et al. 2024, C3Places 2021), yet their application to the co-design of active public spaces with teenage girls is almost entirely absent. This highlights a double gap: teenage girls continue to be underrepresented in the design of outdoor active spaces, and the transformative potential of immersive technologies in enabling their meaningful participation remains unexplored. Addressing this gap is the core contribution of the present research.

2 Methods

Breaking down the research objectives, there are two main strands: the first is related to current conditions of spatial relationships between girls and active spaces, perceptions and experiences; the other strand is a novel state requiring testing, sketching, and experimenting using analogue and digital tools. The study employs a staged, mixed-methods design with a strong participatory focus, engaging teenage girls aged 12–16 as co-researchers. The methodology is structured across three interconnected phases:

Phase 1: Perceptions This phase explores how teenage girls perceive and experience active public spaces. Surveys will be administered in schools to capture breadth, including park usage, barriers, and aspirations. Focus groups with small groups of 3–5 girls per school will expand on survey findings, exploring narratives of public space use. Walk-and-talk interviews will be conducted in parks identified through surveys. Groups of 6–10 participants will annotate printed maps, use stickers, and take photographs while walking through spaces, situating their reflections in the environments they use.

Phase 2: Co-design This phase translates participants' lived experiences into design ideas. Workshops will combine analogue and digital activities, including participatory mapping, collages, and mood boards. Visual diaries or zines will be created by participants over two weeks to document reflections on public space through drawings, collages, and photos. These hybrid tools capture both personal experiences and themes for group discussions.

Phase 3: Digital prototyping and feedback The final phase explores the use of immersive technologies in the design process. VR/AR workshops will be hosted at Birmingham City University, where participants will use accessible 3D software and VR headsets to create and test digital prototypes of park designs. Alternative tools such as sound rooms will be available for those less comfortable with headsets. The workshops will enable participants to manipulate virtual

spaces by adding, removing, or modifying elements, and designs will be shared through pictures, presentations, and electronic posters for refinement.

3 Anticipated contributions

One of the core contributions of this research is its assessment of available active spaces in Birmingham from the perspective of teenage girls. This will provide novel insights into teenage girls' spatial experiences outdoors and the types of activities they engage in, alongside a framework for digitally co-designing active spaces with their needs in mind. Digital tools and gamification approaches will also be analysed for their potential to enable and inspire teen girls at different stages of the project.

The research will culminate in a completed thesis, offering policy recommendations and guidelines for practitioners and local communities to better design and plan active parks with teenage girls. Additionally, this work will contribute to theoretical debates on gendered spaces and activities, shedding light on the importance of involving users in the design process from early on and how the design of active spaces affects teenage girls' empowerment and wellbeing.

Ethical approval has recently been granted. Therefore, new findings will be available by the time of the conference. than a tool for promoting equality and inclusion.

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An Intelligent Identification Method for Urban Renewal Potential Based on Spatial Gene Theory: A Case Study of Shanghai

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1 Introduction

Urban renewal has emerged as a central governance challenge in megacities undergoing the transition from expansion-driven development to quality-oriented redevelopment. In China, the "14th Five-Year Plan" and the "Urban Renewal Regulations of Shanghai" have elevated renewal to a national strategy, emphasizing people-centered, inclusive, and resilient development. Yet, governance practices face significant hurdles in identifying renewal areas: current evaluations largely rely on qualitative assessments, static surveys, or outdated planning documents. This results in inefficiencies, misallocated resources, and unequal outcomes, particularly in complex urban environments where physical form and socioeconomic dynamics interact in unpredictable ways.

International experiences highlight that accurate spatial identification of renewal zones is fundamental for adaptive governance. For example, London delineates renewal areas through multi-dimensional monitoring reports and strategic plans, Paris employs urban observatories to track change (Desjardins 2018), while Berlin integrates renewal monitoring into city development systems (Ahlfeldt et

al. 2017). These cases show that advanced tools can enhance governance by providing dynamic, evidence-based insights. In the Chinese context, however, the gap between traditional qualitative methods and the demand for precise, data-driven governance remains wide.

Against this backdrop, Chinese scholar Duan Jin first introduced the theoretical framework of "spatial genes," emphasizing that urban morphology emerges as patterned combinations accumulated over long-term interactions between natural environment and historical culture (Liu et al. 2023). Spatial genes not only reflect the uniqueness and relative stability of urban form but also profoundly shape evolutionary pathways and spatial logics across different stages of urban development. Building morphology serves as the phenotypic manifestation of spatial genes, with structural arrangements, scale systems, and layout patterns providing critical entry points for decoding the organizational logic of urban space. Because spatial genes are replicable and transmissible, morphological evolution often displays identifiable spatiotemporal trajectories, particularly evident during periods of intensive transformation such as urban renewal. Tracking building morphology dynamically during renewal processes thus offers both theoretical insight into spatial gene evolution and practical pathways for identifying areas with continuity and renewal potential.

A growing body of international and domestic research has expanded this perspective. (Delmelle 2016), for instance, treated neighborhood socioeconomic status as a phenotypic trait of spatial genes, using sequencing methods to reconstruct the trajectories of Chicago and Los Angeles neighborhoods, thereby revealing gentrification and suburban upgrading. In China, scholars have analyzed historic districts, traditional towns, and cultural landscapes through spatial gene theory, uncovering how morphological patterns encode cultural, social, and institutional logic. Much of this work draws on Conzen's urban morphology framework, which conceptualizes the city as composed of blocks, street networks, and buildings, and highlights how morphological evolution exhibits path dependence (Conzen 1960, Moudon 1997). While studies have successfully identified renewal trajectories using block-level transformations, remote sensing–based indices, or field surveys, existing approaches are often limited to static snapshots, lack standardized metrics, and remain dependent on manual classification. This restricts their ability to capture dynamic evolution in rapidly transforming megacities.

To overcome these limitations, this paper develops a four-step research framework: identify already renewed spaces, extract morphological evolution rules, construct a spatial gene atlas, and reverse-engineer renewal potential. Using the China Building Rooftop Area (CBRA) dataset, we extract morphological indicators to identify internal spatial genes of typical forms such as old urban districts

and central districts, and apply a Random Forest model to analyze the driving features and spatial potential of urban renewal. Shanghai's Old City, for example, has undergone massive redevelopment over the past two decades, with less than 40% of its traditional lilong fabric preserved (Shan et al. 2022). In this context of rapid transformation, recognizing areas of morphological disruption and guiding them toward sustainable renewal has become a critical challenge in planning. With Shanghai's ambition of building a "quantum city," digital transformation and smart urban governance are accelerating. By selecting Shanghai as a case study, this research aims to integrate morphological identification with renewal strategies, enrich methods of spatial gene analysis, and explore new pathways of urban renewal under the paradigms of "digital empowerment" and "data-driven governance."

2 Methods

The study draws on the China Building Rooftop Area (CBRA) dataset, the first multi-annual (2016–2021), high-resolution (2.5 m) building footprint dataset derived from Sentinel-2 imagery using deep learning segmentation techniques (Liu et al. 2023). This provides a dynamic foundation for monitoring morphological change across Shanghai. Six morphological indicators were extracted from building footprints: total building area, mean perimeter, building count, shape index, compactness, and orientation entropy. These indicators capture the "phenotypic traits" of spatial genes, reflecting the city's internal coding logic in physical form.

The analytical framework followed four steps:

1. Identifying renewed parcels by tracing transitions from "old urban district" (O-type) to "central urban" (C-type) building morphologies.
2. Extracting the morphological evolution rules using Gaussian Mixture Models (GMM), which cluster building morphologies into seven stable gene types.
3. Constructing a predictive model of renewal potential using Random Forest (RF), incorporating 14 variables across morphology, spatial accessibility, and socioeconomic factors.
4. Applying SHAP (Shapley Additive Explanations) to interpret variable importance, ensuring that model outputs could be understood in governance terms rather than treated as opaque algorithmic results.

Crucially, the methodology was designed not only as a technical exercise but also as a governance tool. Renewal parcels identified through spatial genes can be directly mapped to policy frameworks such as designated renewal units, urban design control zones, and district-level strategies. By offering dynamic, fine-grained insights, the method supports more inclusive and adaptive governance.

3 Results

The GMM clustering identified seven distinct spatial gene types: old urban district (O), central urban (C), near-suburban (U), suburban development (D), suburban low-density (S), rural continuous (L), and rural scattered (R). These types together reveal concentric morphological layers from central Shanghai to its peripheries, forming a gene-based typology of the city's urban fabric.

Renewal was defined as the transition from O-type to C-type morphology. Between 2016 and 2021, Shanghai's renewal areas exhibited shifting geographies: initially concentrated in the north, then spreading toward the southwest, with renewed parcels clustering in both inner-ring districts and suburban town centers. High-intensity updates occurred in central neighborhoods such as Huayang Road and Baoshan Road, while extensive renewal parcels emerged in suburban areas like Anting and Jiading.

The RF model achieved an accuracy of 88.7% on the test dataset, confirming strong predictive capacity. SHAP interpretation revealed that five variables were especially influential: total building area, mean perimeter, construction year, distance to city center, and housing price. Renewal potential was highest in areas characterized by small, fragmented parcels with poor compactness, favorable accessibility, moderate housing values, and older construction dates. Mapping results highlight a ring-shaped cluster of renewal potential between the inner and outer rings, particularly along the Suzhou Creek corridor, Huangpu River midstream, and historic districts such as Laoximen. Suburban renewal potential is concentrated in county centers like Jiangqiao, Sanlin, and Beicai, forming point-based clusters aligned with ongoing governance priorities. These spatial patterns provide clear evidence of where governance interventions may be most effective.

4 Discussion

The findings carry significant implications for governance under the theme of "tools revisited." First, the study demonstrates how data-driven tools can bridge

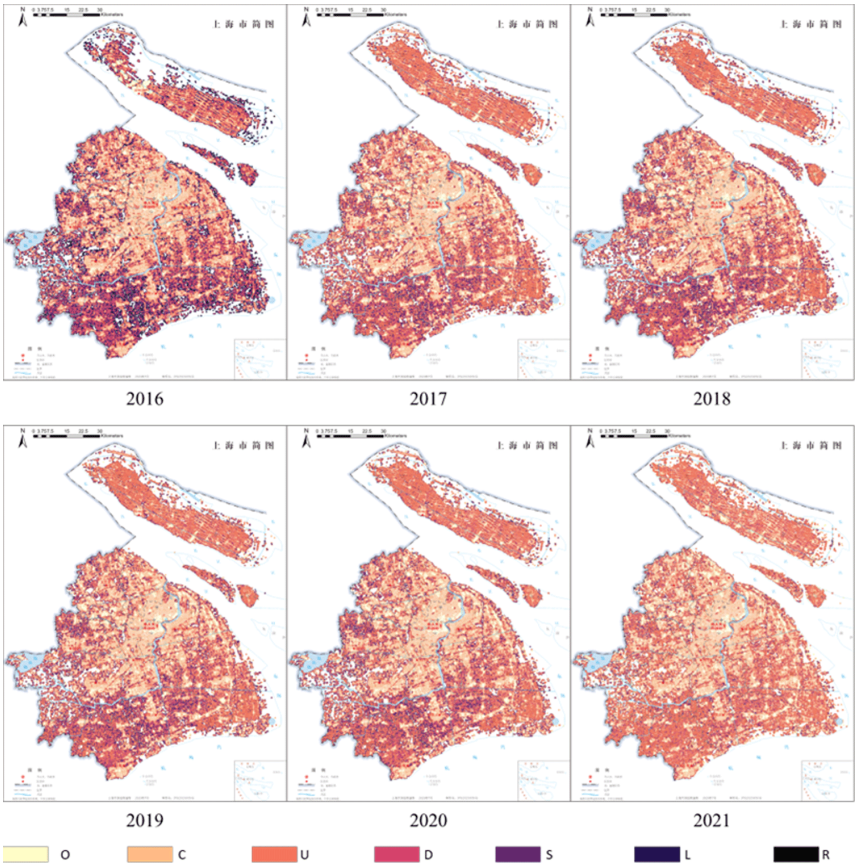

Figure 1: Spatial Distribution Map of Spatial Gene Types in Shanghai

the gap between morphological complexity and governance demands. Traditional methods of identifying renewal areas rely heavily on manual surveys or static indicators. By contrast, the spatial gene approach dynamically captures morphological transitions and provides predictive insights, enabling governments to move from reactive responses to proactive strategies. This contributes to building inclusive governance systems by improving transparency, accuracy, and accountability.

Second, the results highlight the social and economic accessibility dimensions of governance. Renewal potential is not evenly distributed: central historic neighborhoods face intense redevelopment pressures, while suburban county centers show concentrated potential. For governance, this implies the need to balance large-scale redevelopment with micro-renewal strategies to avoid exacerbating

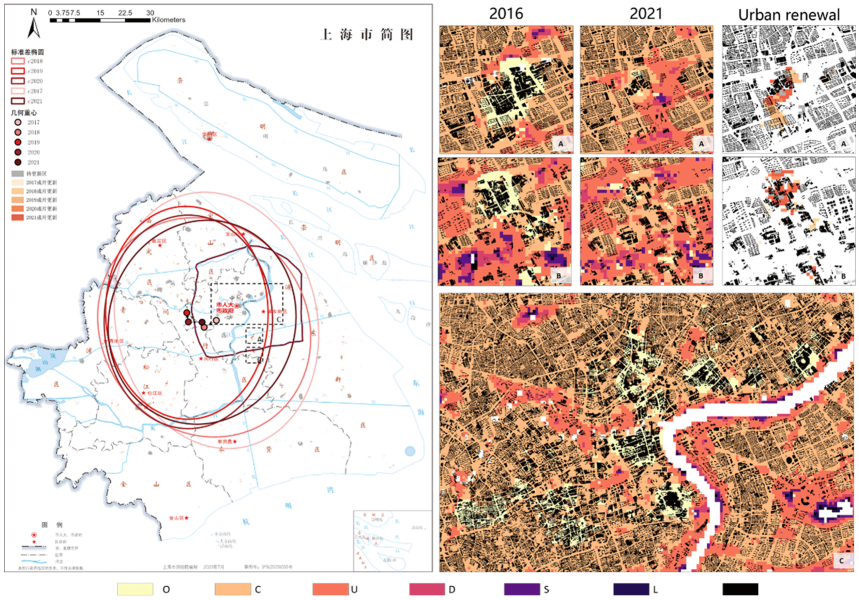

Figure 2: Urban Renewal Findings in Shanghai, 2016–2021

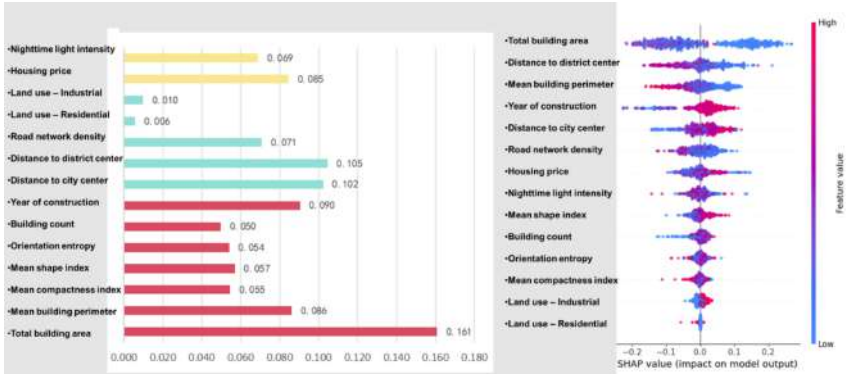

Figure 3: Feature Importance Distribution (Left), SHAP Beeswarm Plot (Right)

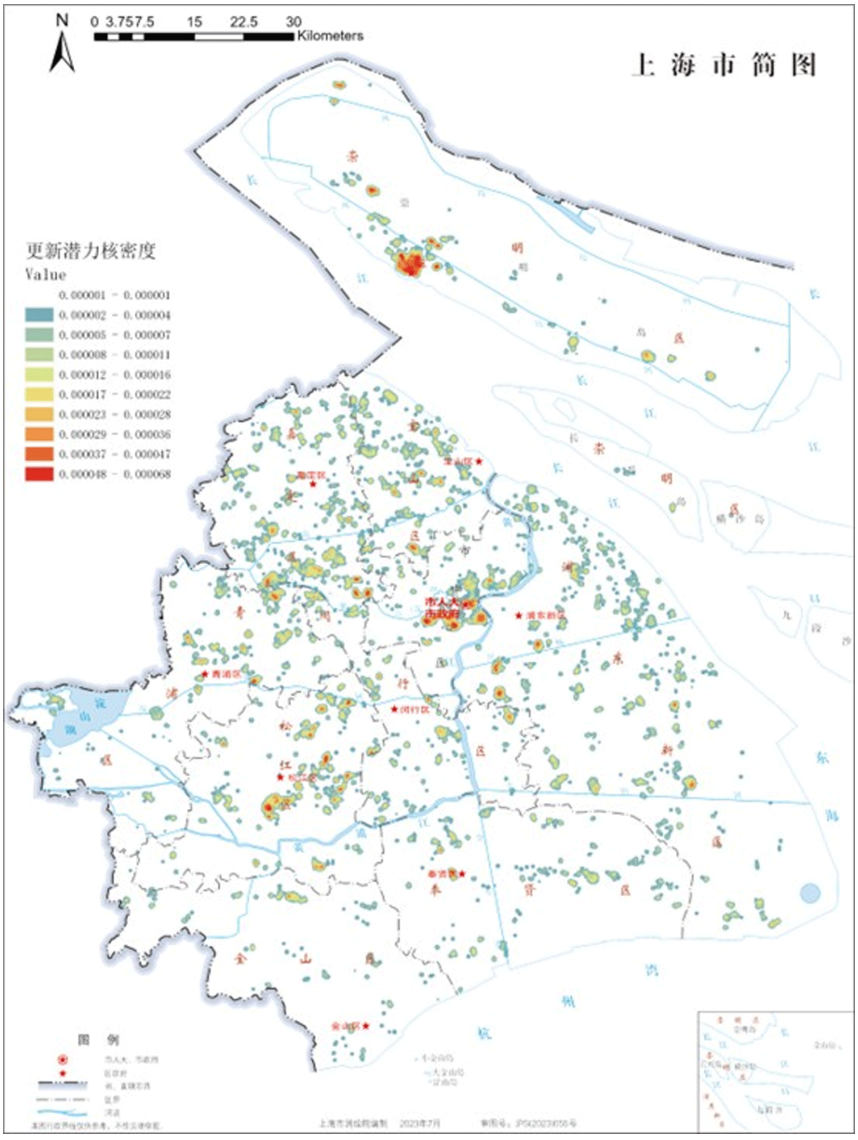

Figure 4: Kernel Density Map of Urban Renewal Potential in Shanghai

inequality. Integrating predictive results with participatory planning processes can ensure that data-driven decisions do not marginalize vulnerable groups.

Third, the study raises critical risks of algorithmic governance. While machine learning improves accuracy, it risks reinforcing biases if left unchecked. For example, "hidden renewal" forms such as functional repurposing or internal retrofits may not alter building footprints and therefore escape detection. Relying solely on morphological indicators could privilege visible, large-scale renewal while overlooking community-led, small-scale improvements. This underscores the importance of combining AI-driven identification with institutional safeguards, public participation, and cross-validation through fieldwork.

Finally, the work connects to broader debates on digital twins and quantum cities. Shanghai's ambition to develop a "quantum city" requires governance tools that integrate AI, real-time monitoring, and simulation. The spatial gene approach contributes a foundational layer for such digital governance architectures. However, ensuring that these tools enhance democratic processes rather than replace them is a pressing challenge. The future lies in hybrid governance models where data-driven tools provide evidence and foresight, while communities and institutions retain agency in decision-making.

5 Conclusion

This study develops an intelligent method for identifying urban renewal potential using spatial gene theory and machine learning. The method demonstrates strong predictive performance and reveals spatial patterns of renewal potential in Shanghai. Beyond technical contributions, the research critically reflects on how data-driven tools can support or challenge inclusive governance. By explicitly addressing both opportunities and risks, the study positions spatial gene identification not just as a methodological innovation but as a governance instrument in the era of digital transformation.

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Going Green: Blue-Green-Cycling Networks as Effective Tools for Sustainable Development in European Cities

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1 Introduction

Contemporary cities face increasingly complex, dynamic, and multidimensional challenges that cut across environmental, social, and spatial domains. Environmental threats include climate change, biodiversity loss, groundwater depletion, flash floods, pollution, and urban smog. Social challenges involve declining quality of life, deteriorating public health, limited access to green areas, mobility exclusion, socio-spatial segregation, and inefficient public services. Spatial pressures stem from the rising costs of maintaining expanding infrastructure, the degradation of urban landscapes, car congestion, and suburban sprawl (Jha et al. 2013, Bilska 2016). Addressing these issues requires not only reactive mitigation of negative impacts but also proactive strategies that strengthen resilience, adaptive capacity, and the ability to sustain well-being under conditions of crisis and uncertainty (Montgomery 2021). The resilient city is not merely one that survives disturbances but one that leverages them to adapt and improve (Drobniak 2013, Czachor 2019).

One promising approach to urban resilience is the integration of blue-green infrastructure (BGI) with cycling networks, forming blue-green-cycling networks

(BZCNs). These networks connect natural ecological systems with active mobility infrastructure, diversifying urban functions and enhancing ecological, social, and economic sustainability (Garrard et al. 2018, Bruntlett & Bruntlett 2021). European initiatives such as London's All London Green Grid (ALGG), Milan's Cambio Plan, Lyon's Les Voies Lyonnaises (LVL), and Leipzig's Grüne Ring exemplify different strategies for designing and implementing such systems. This study analyzes these case studies, identifies and categorizes the planning tools applied, maps them against the United Nations Sustainable Development Goals (SDGs), and evaluates the effectiveness and potential of BZCNs as instruments of urban planning and resilience building.

2 Methods

The study employed a comparative case study approach, combining document analysis and literature review. Policy documents, municipal strategies, and relevant academic and professional literature were examined to identify tools used in the selected projects. Four European cities were selected for their diversity in scale, governance, and planning traditions: London, Milan, Lyon, and Leipzig. Each case reflects a distinct trajectory of integrating natural systems with cycling infrastructure.

The research process involved three main stages. First, project instruments were extracted and systematized across categories such as technical solutions (e.g., cycle highways, river-valley routes), governance frameworks (e.g., metropolitan strategies, inter-municipal cooperation), and social instruments (e.g., inclusivity, participatory planning). Second, these tools were categorized into six domains: society, economy, safety, infrastructure, environment, and strategy. Third, the tools were mapped against relevant SDGs, notably SDG 3 (Good Health and Well-being), SDG 9 (Industry, Innovation, and Infrastructure), SDG 11 (Sustainable Cities and Communities), SDG 13 (Climate Action), and SDG 15 (Life on Land). This process allowed for a comparative evaluation of the contributions of BZCNs to resilience and sustainability.

3 Results

The comparative analysis demonstrates that while the underlying principle of linking ecological systems with cycling infrastructure is shared, the emphases differ across cases. London's All London Green Grid, introduced in 2012, integrates existing river valleys, open spaces, green corridors, and peri-urban land-

scapes into a metropolitan ecological framework. Cycling infrastructure appears as a secondary component, mainly enhancing accessibility to green assets (Transport for London 2012). The strength of ALGG lies in its systemic vision and integration into the London Plan, though its relative neglect of transport functions limits its transformative mobility impact (Greater London Authority 2021).

Milan's Cambio Plan, unveiled in 2021, exemplifies a mobility-driven approach. It plans 750 kilometers of new rapid cycling routes across the metropolitan region, prioritizing transport efficiency, economic resilience, and social inclusivity. The project leverages natural features while embedding cycling in regional mobility planning, supported by safety measures and infrastructural innovation. Cambio demonstrates the power of cycling as both a transport solution and resilience-enhancing measure when linked with ecological and social objectives (Città Metropolitana di Milano 2021).

Lyon's Les Voies Lyonnaises, evolving from the Réseau Express Vélo launched in 2020, is an ambitious yet context-sensitive plan focusing on cycling safety and comfort. By 2030, the city aims to deliver a coherent network of cycle highways, linking parks and river valleys while improving green quality. Its strength lies in technical and legal innovations that foster everyday cycling, positioning it as a replicable model for mid-sized metropolitan areas (Métropole de Lyon 2021).

Leipzig's Grüne Ring, initiated in the 1990s, represents a pioneering landscape-based approach. It connects forests, rivers, and recreational landscapes through a circular ecological and cycling corridor at the regional scale. Unlike the other cases, it is rooted in inter-municipal cooperation and long-term landscape governance, strengthening ecological continuity and cultural identity while encouraging active mobility. Its integration of ecological, cultural, and mobility goals highlights the role of BZCNs in regional resilience (Stadt Leipzig 2020).

Cross-case analysis shows that environmental integration is a common denominator, while social inclusivity is most explicit in Milan and Leipzig. Strategic governance instruments are dominant in London and Leipzig. Infrastructure and safety measures feature prominently in Milan and Lyon. Economic considerations are strongly embedded in Milan's framework, while cultural identity is emphasized in Leipzig. Collectively, these initiatives demonstrate multiple pathways toward resilience.

Mapping against SDGs confirms that BZCNs support global sustainability agendas. All four cases advance SDG 11 by creating sustainable, inclusive cities. Climate adaptation strategies, including flood mitigation and reduced car dependency, address SDG 13. Health and well-being (SDG 3) benefit from active mobility and access to green space. Biodiversity and landscape preservation (SDG

15) are prominent in London and Leipzig. Infrastructure innovation (SDG 9) is particularly evident in Milan and Lyon's cycling highways.

4 Discussion and Conclusion

The findings underline the multifunctionality of BZCNs as planning instruments. They provide simultaneous benefits across environmental, social, infrastructural, and economic domains, diversifying urban resilience strategies. London demonstrates the potential of embedding cycling within ecological planning but risks underemphasizing mobility. Milan illustrates the transformative capacity of cycling networks at the metropolitan scale, though ecological integration requires vigilance. Lyon offers a technically robust, safety-oriented model adaptable to mid-sized cities. Leipzig highlights the significance of long-term governance, landscape management, and cultural identity.

The alignment with SDGs reinforces the global relevance of BZCNs, linking local urban initiatives to broader sustainability frameworks. However, imbalances persist: many projects privilege infrastructure and safety while underplaying economic, cultural, or governance aspects (Kazmierczak & Carter 2010). Comprehensive planning should therefore strive to integrate all categories of tools systematically.

In conclusion, BZCNs are an effective instrument for enhancing resilience and sustainability in urban and regional contexts. Their success depends on systemic approaches, adaptive governance, and cross-sectoral collaboration. The European cases analyzed here confirm that BZCNs not only mitigate current urban challenges but also proactively prepare cities for future uncertainties. Further comparative research and practical experimentation are needed to refine methodologies, strengthen governance frameworks, and maximize alignment with SDGs.

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Building Urban Resilience: A Tensor-Based Simulation Framework for Sensitivity Analysis

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1 Introduction

Cities are dynamic environments, constantly shaped by both routine activities and unexpected disruptions. Events such as natural disasters, major festivals, or sudden surges in tourism can dramatically alter how people move and gather, posing significant challenges for urban planners and policymakers (Batty 2013, Yabe et al. 2020). Understanding these shifts is essential for designing cities that are not only efficient but also resilient in the face of change (Kolda & Bader 2009).

The rise of large-scale mobility datasets, like aggregated mobile phone location data, has opened new possibilities for observing population behavior in real time (Lee et al. 2018). These datasets provide a detailed view of how people respond to different scenarios, but their complexity makes it difficult to extract actionable insights using traditional methods (Kolda & Bader 2009). As a result, there is a growing need for analytical frameworks that can handle high-dimensional data and reveal the underlying patterns that drive urban activity (Cichocki et al. 2016).

Advanced techniques such as tensor decomposition allow engineers and researchers to break down multi-array data into core components, making it possible to identify trends and behavioral shifts across time, space, and demographic

groups from the population dynamics data (Kolda & Bader 2009, Cichocki et al. 2016). When combined with forecasting models, these methods can simulate how cities might respond to future disruptions, providing valuable guidance for contingency planning and resilience-building (Hyndman & Athanasopoulos 2018).

This study introduces a simulation-based framework that leverages tensor decomposition and time-series forecasting to analyze and predict urban activity patterns under various disruptive scenarios. By applying this approach to mobile spatial statistics from Kyoto, Japan, the research aims to offer practical tools for urban planners and decision-makers, supporting more informed and adaptive strategies for managing cities in an uncertain world (Yabe et al. 2020).

2 Methods

This study develops a simulation-based framework to analyze how urban activity patterns shift under disruptive scenarios, using aggregated mobile phone location data and tensor decomposition. The process is illustrated in Figure 1, which shows how the core tensor from one condition (e.g., a disruptive event) is exchanged into the factorization structure of another, allowing us to observe changes in reconstructed activity patterns.

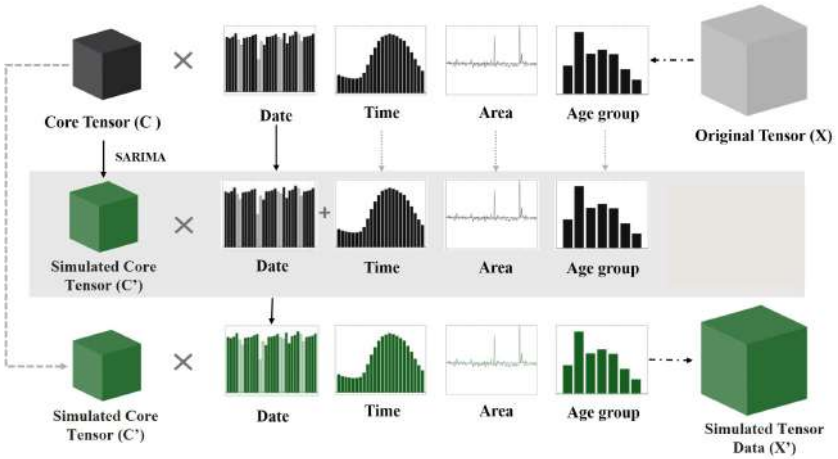

Figure 1: Simulating Tensor Methodology Framework

We use Mobile Spatial Statistics (MSS) data from NTT Docomo, which provides hourly population counts across different areas of Kyoto, Japan. The data are organized as a multi-dimensional array (tensor), with dimensions representing date, time, area, and age group (Yabe et al. 2020).

Tensor Decomposition To uncover latent patterns in the high-dimensional MSS data, we apply Tucker decomposition—a flexible tensor factorization technique widely used in urban mobility research (Kolda & Bader 2009, Gong et al. 2025, Wang et al. 2019), specifically Non-negative Tucker Decomposition (NTD).

Fundamentally, NTD is based on the decomposition of a tensor, which is a multi-dimensional array, into a core tensor and factor matrices along each mode (Shi et al. 2022). The core tensor represents the shared patterns across all modes, while the factor matrices capture the specific patterns unique to each mode (Pelechrinis & Lin 2017). By decomposing the tensor, we can uncover the underlying structure and extract the dominant patterns present in the data.

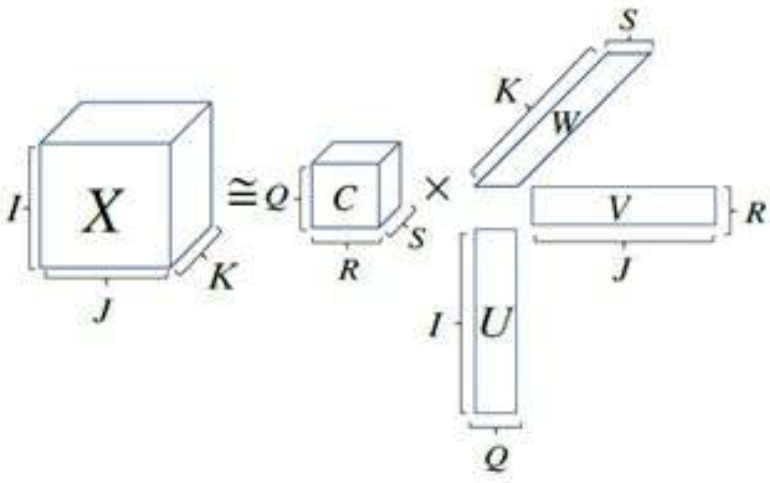

Figure 2: Three-dimensional Tucker Decomposition Approach Example

The method utilized is the Non-Negative Tucker Decomposition (NTD), the features of each dimension (each element axis) are represented by matrices called feature matrices and a core tensor. These are used to capture the characteristics of the data. Figure 2 illustrates the concept of NTD using a 3rd-order tensor as an example. Consider a 3rd-order tensor X with dimensions I × J × K. Dimensional compression involves mapping each element axis to a low-dimensional space. Specifically, it decomposes the dimensions of the I mode into Q (Q ≤ I), the dimensions of the J mode into R (R ≤ J), and the dimensions of the K mode into S (S ≤ K), thereby incorporating information reduction (Kuwano et al. 2017). NTD

accomplishes this by decomposing the tensor X, which has three modes given by I, J, and K, into a matrix U of size I × Q that holds information about the I mode, a matrix V of size J × R that holds information about the J mode, a matrix W of size K × S that holds information about the K mode, and a core tensor C of size Q × R × S. This decomposition is known as the rank-(Q, R, S) Tucker decomposition, with Q, R, and S being referred to as the factor numbers for each mode. Specifically, it is formulated by the following equation.

$$X \approx C \times U^T \times V^T \times W^T \tag{1}$$

Here, C represents the core tensor, and U, V, and W represent the feature matrices. Expressing equation (1) element-wise results in equation (2).

$$X_{ijk} \approx \sum_{q=1}^{Q} \sum_{r=1}^{R} \sum_{s=1}^{S} C_{qrs} U_{iq} V_{jr} W_{ks} \tag{2}$$

Furthermore, the number of dimensions to compress (Q, R, S) in the feature matrices is determined at the beginning to find the number of pattern we wanted to extract (Shi et al. 2022, Maeda et al. 2019, Kuwano et al. 2017). NTD has parameters C, U, V, and W, and these parameters are determined by imposing a non-negativity constraint to minimize the squared error (Kim & Choi 2007). In other words, parameter estimation is formulated as the following problem:

$$\min_{C,U,V,W} \left\| X - C \times U^T \times V^T \times W^T \right\|_F^2 \tag{3}$$

$$f(C,U,V,W) = \left\| X - C \times U^T \times V^T \times W^T \right\|_F^2 \tag{4}$$

where f is the Frobenius norm (Shi et al. 2022) or the square root of the total sum of the inside function .

Scenario Simulation by Core Tensor Exchange After decomposing the tensors for both normal and disruptive conditions, we simulate the impact of disruptions by exchanging the core tensor from the disruptive scenario into the factor matrices of the normal scenario. This reconstructs a new tensor that reflects how population patterns would shift if the underlying behavioral 'core' matched that of the disruption, while keeping the usual spatial and temporal context (Gong et al. 2025, Ishii et al. 2022). The resulting tensor allows us to examine plausible changes in congestion, distribution, or demographic activity under simulated conditions.

This approach does not rely on time-series forecasting models, but instead uses the internal structure of the tensor decomposition to explore how changes in the

core behavioral patterns affect overall urban activity. The method is inspired by recent work in urban mobility analysis, where tensor decomposition is used to reveal spatial-temporal relationships and simulate alternative scenarios (Gong et al. 2025, Wang et al. 2019).

3 Results

The simulation results, illustrated in Figure 2, provide a detailed view of how population distribution in Kyoto changes under a simulated typhoon scenario during the peak tourist season. By exchanging the core tensors between a normal peak tourism weekday (November 29) and a weekday affected by typhoon conditions (October 12), distinct shifts emerge in patterns across time, area, and age dimensions.

Notably, the time-based profiles indicate altered daily rhythms, with the most pronounced components showing a reduction in activity during typical commuting and leisure hours. Spatially, the area factor matrices reveal a concentration of population in limited districts, suggesting that movement across the city becomes more localized or clustered during disruptive weather. The age dimension shows changes in the activity levels among different demographic groups: for example, certain age groups—possibly older adults or children—display enhanced sensitivity, with sharper decreases in outdoor activity during adverse conditions. Together, these results highlight how severe weather leads to both spatial and temporal reorganization of urban activity, with some populations reducing mobility more than others.

4 Discussion and Conclusion

These findings emphasize the value of a tensor-based simulation framework for anticipating and understanding population redistribution during disruptive events. The ability to swap core patterns between contrasting scenarios demonstrates how urban managers can quickly assess which neighborhoods may become congestion hotspots or, conversely, see reduced activity, simply by observing changes in the core drivers of collective behavior (Kolda & Bader 2009, Gong et al. 2025).

A key practical insight is that standard interventions—such as opening additional shelters, rerouting transit, or communicating targeted advisories—can be informed by these scenario analyses. By capturing not just the overall magnitude but also the demographic and temporal contours of change, planners are better

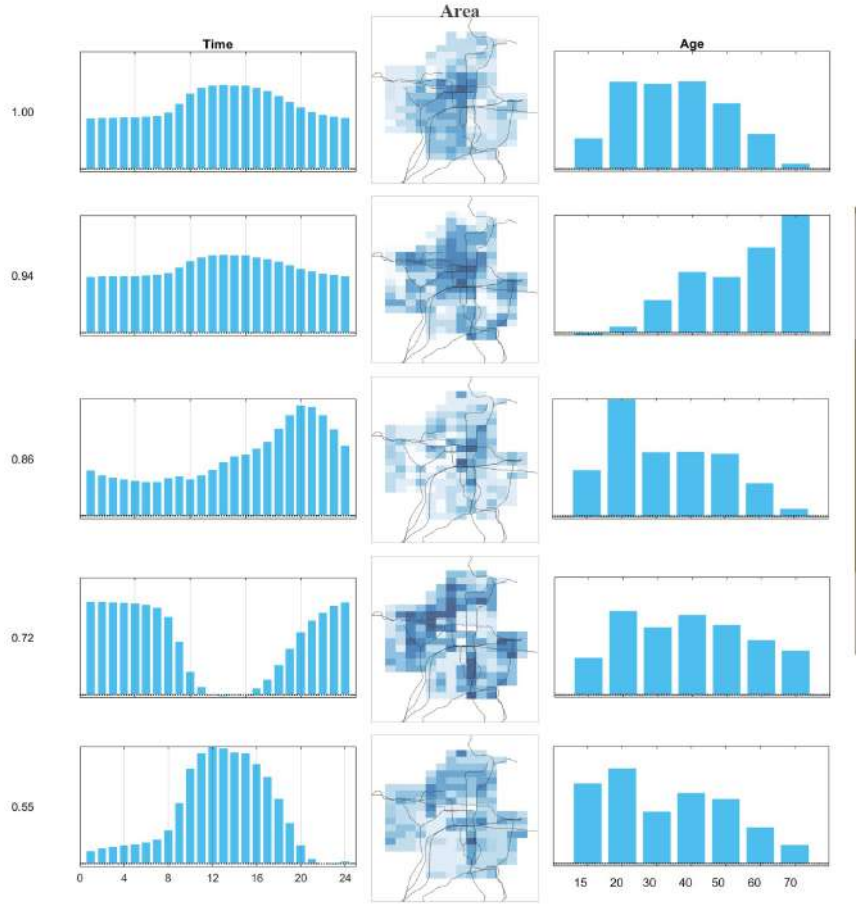

Figure 3: Simulated Typhoon Pattern for Time, Area, and Age group

equipped to design responses that fit real-world urban complexity (Yabe et al. 2020).

Importantly, the simulation approach does not rely on deterministic forecasting but instead leverages the latent structure of real population data to create plausible behavioral alternatives. This flexibility allows stakeholders to proactively explore various "what-if" conditions and test mitigation strategies in settings where actual disruptive events are unpredictable or rare (Ishii et al. 2022, Shi et al. 2022).

While the current application focuses on tourist and weather disruptions, the framework can be generalized to other types of urban stress, such as major public events, transportation outages, or policy changes affecting urban mobility. Continued refinement, such as integrating more granular demographic or behavioral factors and validating simulated outcomes against additional empirical data, will further enhance the tool's relevance and utility for urban resilience planning (Gong et al. 2025).

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Towards a Diagnostic Framework of Sustainable Housing Expertise

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1 Introduction

Contemporary housing systems across advanced economies are defined by deep and persistent dysfunction. In Ireland, this is crystallised in competing policy imperatives to simultaneously improve housing affordability by ramping up supply, address sustainability concerns through mass retrofit and circular construction, and uphold the economic viability of market-led development.

This paper presents these three imperatives as a 'trilemma' of housing policy which produces irreconcilable contradictions for those tasked with delivering it, arguing that such contradictions are materialised in built outcomes that fall short of what might reasonably be called 'sustainable housing equitability' – that is, a fair system of access to safe, comfortable, and culturally adequate housing that universally supports the long-term prosperity of human communities.

The paper thus addresses two questions:

1. How might sustainable housing equitability be usefully defined for decision-makers and practitioners?
2. What kind of conceptual tools can support actors tasked with navigating the tensions of the housing trilemma in practice?

To address these questions, I propose an analytical framework that approaches the housing trilemma through three theoretical lenses – strategic agency, value/s, and the ethics of care. Revisiting early conceptions of "sustainability", notably the Planner's Triangle (Campbell 1996, 2016, Hirt & Campbell 2024), I argue that the concept of sustainable housing equitability is not a new synthesis but a tautology: a housing system cannot be considered sustainable unless it is equitable, and vice versa. At the same time I critique portrayals of sustainability as a balancing act between economic, environmental, and social concerns, which in practice shut down debate and legitimise business-as-usual patterns of growth and extraction, arguing instead for a new approach that centres justice and embraces productive conflict as a core constituent of any fair housing system.

2 Methods

The paper adopts a problematising literature review methodology (Alvesson & Sandberg 2020, George et al. 2023). Rather than attempting comprehensiveness, the review maps how affordability, sustainability, and viability have each been defined, measured, and contested across academic literatures, policy documents, media / commentary and other key sources.

The review process unfolded in three stages:

1. Decomposition of the trilemma – the three core concepts (affordability, sustainability, viability) were broken down into working definitions, indicators, and policy framings, and situated within broader political-economic debates.

2. Iterative searches and snowballing – the corpus of relevant literature was built up through a combination of searches across major databases (Scopus, Web of Science, Google Scholar) as well as industry (professional institutions, statute books) and media resources, with bibliographic snowballing, citation mapping, and selective use of AI-assisted tools (Litmap, Paper Digest).

3. Comparative synthesis – materials were organised around the three concepts o identify emergent subcategories and trace overlaps, tensions, and blind spots, with particular attention to the role of professional expertise at the practice nexus.

The analysis was also informed by the author's professional background in architecture, environmental consultancy, and community organising, which

guided the search strategy and provided critical insight into how policy conflicts are negotiated in real-world settings.

3 Results

The literature review surfaced three key themes:

1. Siloed research domains: While debates continue around affordability metrics (Baker et al. 2015, Bieri 2014, Corrigan et al. 2019, Ezennia & Hoskara 2019, Herbert et al. 2018, Hulchanski 1995, Quigley & Raphael 2004, Stone 2006, Wood & Ong 2011), contemporary research focuses on the political choices underpinning affordability problems, how they are shaped by processes of financialisation and neoliberal land-use policy (Aalbers 2016, Byrne 2020, Colenutt 2020, Fields 2017, Forrest & Hirayama 2015, McKee et al. 2020, Waldron 2023). However, much scholarship remains siloed and that which does attempt to bridge divides often falls short at the applied level. For instance, while some have examined the influence of divergent sectoral interests on policy formulation (Waldron 2019), few have considered how this plays out where policy conflicts materialise at the implementation stage (Weible & Heikkila 2017, Yang et al. 2026) – ie. where policies meet the ground of design coordination, procurement, budgeting and contracts.

2. Emphasis on technical metrics: Much research emphasises technical responses to climate change (e.g. energy efficiency, low-carbon construction, etc), but neglects broader social, economic and political implications of sustainability (Hegarty & Kinnane 2023, Hofheinz et al. 2024, Irish Green Building Council 2019). For example, an emerging body of literature attempts to synthesise existing measures of housing affordability and carbon neutrality in order to guide practitioners towards the integrated goal of sustainable housing equitability (Silva et al. 2024). However, such frameworks rarely account for development economics – arguably the key determinant of development outcomes in a market-led housing system (Alshubiri & Ani 2024, Edgell 2024, Pullen et al. 2010). Questions thus remain about how policies aimed at producing sustainability influence the lived realities of the housing crisis (Waldron 2023).

3. Dominance of 'cost' drivers: Scholarship around development viability largely focuses on the performative role of financial modelling and how

this functions to shape public discourse and thus influence planning practices (Christophers 2014, Crosby 2019, Foye 2022, Henneberry 2016, McAllister 2019, McAllister et al. 2016, Sayce et al. 2017, Waldron 2019). However, most of these studies tend to focus on upfront (supply-side) cost trade-offs between viability on the one hand and affordable housing or design standards on the other. An integrated conception of sustainable-affordable housing might shift the focus of valuation models onto 'viability' in the true sense, from the end-user's point of view.

Tracing the definitional lineage of "sustainability" reveals its origins in law (as a matter of validity and truth – ie. justice), its uptake in economics (as a balance of resources across time), and its popularisation in environmental policy (as conservation and harm reduction). These three meanings are crystallised in the "three pillars" of sustainable development. However, the persistent portrayal of sustainability as a balance between these three has depoliticising effects, obscuring the conflicts that actually drive development. Re-asserting the radical (ie. root) position of justice reveals that the trilemma's apparent tensions, especially that between affordability and environmental goals, are only thus when viewed through the lens of economic viability. This suggests the supposed dichotomy between sustainability and affordability in housing is in fact false: the real challenge lies in confronting cultural and political choices about what we sustain – and for whose benefit. Thus the notion of professional expertise emerges as a decisive element – the arbiter of policy conflicts. Architects, planners, engineers, and cost consultants adjudicate on what gets prioritised and what gets compromised in the delivery of housing, translating abstract policy goals into built realities, enacting implicit value judgments, guided by contradictory obligations of care (to client, profession, and the public) and bound by the limits of their agency within deeply embedded institutional structures.

4 Discussion and Conclusion

Prevailing approaches to policy implementation reproduce a narrow conception of expertise that privileges technical and financial efficiency over ethical substance (Forester 1993). I argue instead for a framework that foregrounds productive conflict in order to draw attention to the ethical challenges of delivering true sustainable housing equitability.

To this end, the paper proposes a diagnostic framework, drawing inspiration from Ostrom's (2009) Social-Ecological Systems (SES) analysis, as well as more

recent work such as Weible & Heikkila's (2017) conceptualisation of policy conflicts, and Novalia et al.'s (2018) diagnostic approach to strategic agency. Unlike traditional policy analysis, which seeks to derive empirically testable causal relationship, the diagnostic approach looks primarily at observable 'symptoms' to infer relationships and thus guide inquiry and frame dialogue.

The proposed diagnostic framework of sustainable housing expertise is structured around three analytical entry points:

- Value – interrogating the priorities, assumptions, and beliefs underpinning decisions; (Graeber 2001)
- Care – examining professional duties, maintenance practices, and responsibilities toward people and environments; (Tronto 2015)
- Agency – recognising how actors' decisions, capacities, and constraints shape institutional reproduction or transformation, and vice-versa (Emirbayer & Mische 1998)

These perspectives are operationalised in a provisional matrix that gathers indicators of affordability, sustainability, and viability, and reframes them through guiding questions oriented around value, care, and agency. Rather than producing a "score" of success or failure, the tool is designed to structure reflection across project stages; support negotiation among stakeholders; facilitate comparison across schemes or policy regimes; serve as a prompt for participatory debate in research and practice.

The framework's contribution is twofold. Conceptually, it reframes the housing trilemma as a diagnostic problem of justice and conflict, rather than a balance of trade-offs. Methodologically, it offers a transferable tool for interrogating how sustainability, affordability, and viability are enacted in practice.

By situating decision-making expertise at the centre of sustainable-affordable housing debates, this paper aligns with the conference track "Governance and Tools Revisited". It demonstrates the potential of diagnostics as a governance innovation: a way of bridging disciplines by surfacing the implicit or assumed values that guide them and enabling inclusive dialogue around the goal of sustainable and affordable housing for all.

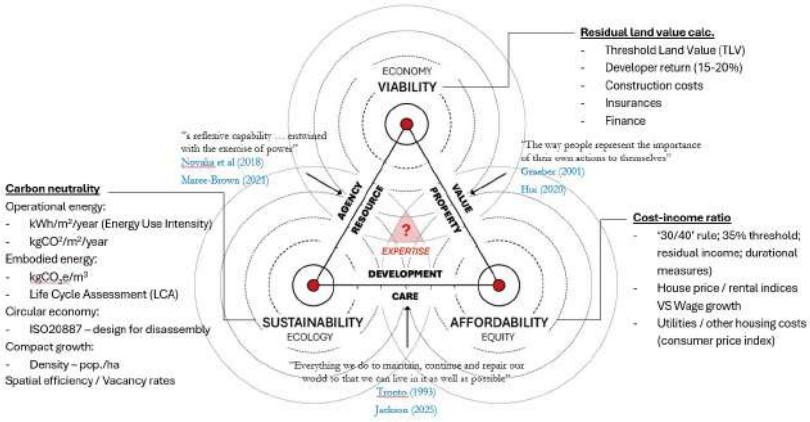

Figure 1

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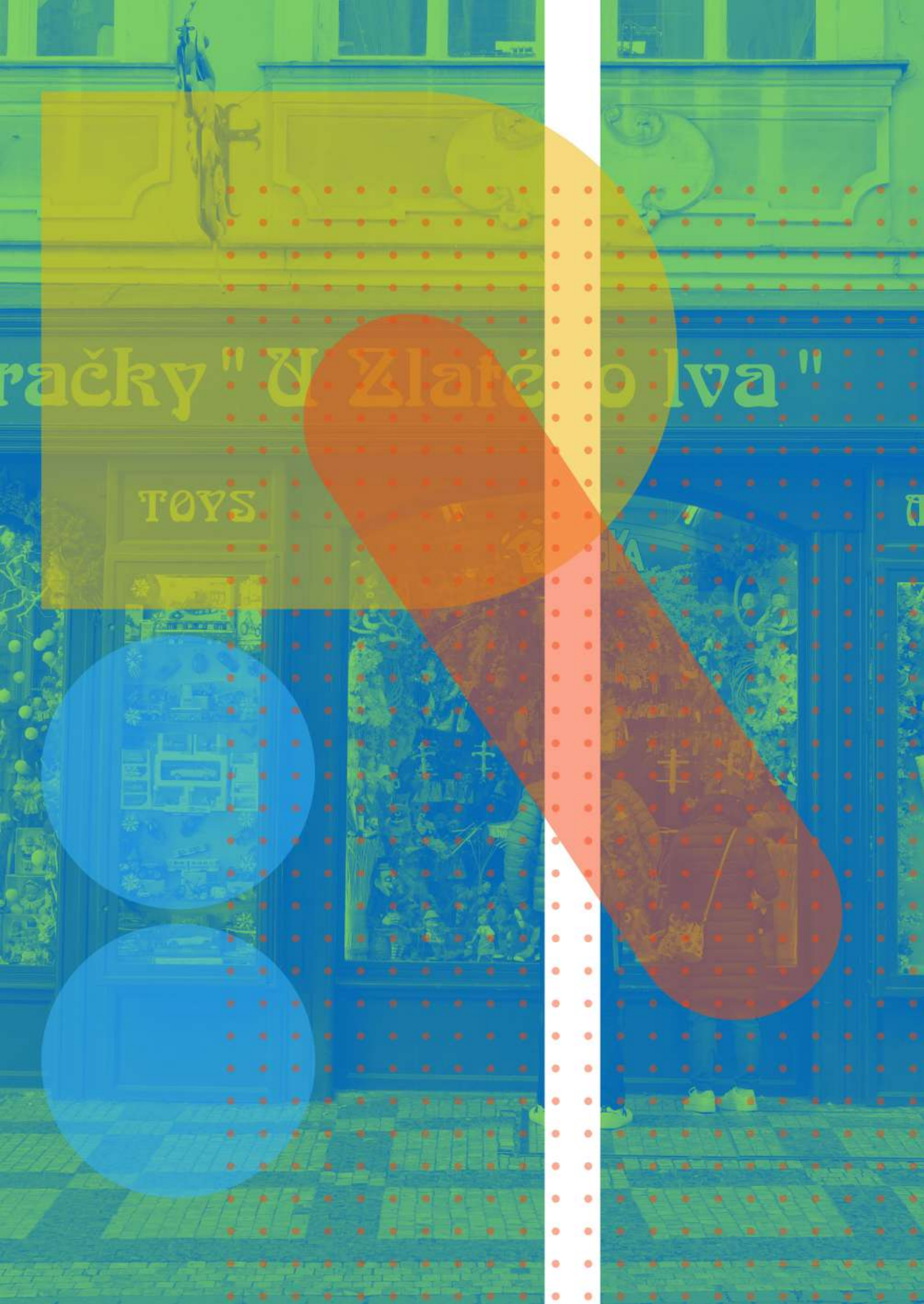
TOYS

Track 4: Inclusion and Dynamics Revisited

This track will focus on how urban and rural spaces can remain inclusive and adaptable in the face of ongoing social, economic, and environmental changes. It will delve into the ways that access to housing, public services, and employment can be maintained or improved, even as technological, policy, and climate transformations take place. Contributions are encouraged that examine the changing dynamics of spatial, infrastructural, and social systems, and how they influence both the inclusivity of spaces and the risks of exclusion, particularly for marginalized or vulnerable groups. The track will encourage dialogue on how cities and settlements can balance stability and innovation, and how these transformations can lead to either equitable outcomes or, conversely, exacerbate existing inequalities.

Ageing in Place as a Governance Strategy for Inclusive Urban Planning: Comparing insights from Italy and Canada

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1 Introduction

The global demographic phenomenon of population ageing constitutes both a critical challenge and an opportunity for governance innovation, urban planning and promoting social inclusion. As of 2019, "the second largest share of older persons (aged 65 years or older) currently lives in Europe and Northern America" and the United Nations estimates that within the next twenty-five years, one in six people globally will be aged 65 years and older United Nations, Department of Economic and Social Affairs, Population Division 2019: 6. Simultaneously, cities have increasingly become the last bastion in a multi-level governance system, charged with filtering national and regional legislation into localized actions that must respond to immediate and long-term contexts. Municipal governments are therefore confronted with the Herculean task of adapting built environments, housing systems and governance frameworks to support a growing and increasingly diverse group of older adults—not only now but for decades to come.

In this context, the concept of aging in place is a useful conceptual framework and governance tool for advancing accessibility, resilience and spatial justice

for older adults. In this research, ageing in place is defined as the capacity for older adults to grow older in their communities with dignity, independence and choice, irrespective of socioeconomic status, age, gender or ability. This paper reframes ageing in place as a policy framework for urban planning that can bridge interrelated issues across housing, accessibility, service provision and the environment. The research provides comparative insights from two case studies of cities in Italy and Canada, using multi-scalar spatial analysis together with a comprehensive policy scan and program review. This paper focuses primarily on the latter, to identify critical gaps and opportunities for governance and policy innovations of ageing in place at municipal, regional and national levels.

2 Methods

The study employs a comparative case study methodology, examining the spatial and governance conditions of Brescia, Italy and Windsor, Canada. The comparative lens provides useful insights into the adaptability and transferability of ageing in place across different housing typologies, cultural traditions, and institutional structures, while still addressing common experiences of demographic change. The multi-level policy scan and program review reviews municipal, regional, provincial and national documents and policies, to understand the extent to which ageing in place has been referenced or implemented as a planning concept, policy or strategy. The policy scan and analysis uses a critical interpretative framework that identifies areas of innovation or opportunities for cross-sectoral integration, and contradictions or areas lacking or in need of improvement.

3 Results

3.1 Canada

In Canada, the primary responsibility for older adults' care lies with the provincial and territorial governments that "plan, manage and oversee the delivery of health care and social services" Lazar 2011: 1. The federal government sets national standards through the Canada Health Act, oversees retirement income systems and provides funding transfers Government of Canada 2016. Despite federal accessibility legislation, implementation at the provincial and territorial levels is fragmented. For example, although the National Building Code of Canada mandates accessibility standards for residential dwellings, provinces and territories interpret these standards differently resulting in uneven implementation Sinha et al. 2016.

In Ontario, historical healthcare reforms have generally focused on provider payment models rather than access and delivery Williams et al. 2016. Furthermore, Canadian Medicare does not mandate access to publicly funded home care, resulting in a fragmented and unorganized system of home and community care programs and services with inconsistent eligibility criteria Williams et al. 2016. Despite this, Ontario has emerged as a policy innovator on ageing as an important policy area, beginning with the 2001 report *Time for Action: Advancing the Rights of Older Persons in Ontario* by the Ontario Human Rights Commission, with the 2005 Accessibility for Ontarians with Disabilities Act that mandated accessibility reporting, the 2012 Ontario Building Code that included accessibility requirements and barrier-free access paths, the 2013 Action Plan for Seniors, and the 2017 *Aging with Confidence: Ontario's Action Plan for Seniors*. The province is also unique in offering Seniors Active Living Centres (SALCs) that are provincially funded community centres to promote health and wellbeing of older adults. At the municipal level, since 2012 the city of Windsor has committed to the World Health Organization's Age-Friendly Cities Network, unveiling an environmental scan of age-friendliness in 2012 and an Action Plan in 2014, while older adults in the community are also represented by the Seniors Advisory Committee.

3.2 Italy

The Italian healthcare system is similarly decentralized, wherein national government is responsible for funneling tax revenues for publicly funded healthcare, outlines available benefits, and oversees and manages the entire process, while each region is responsible for organizing and delivering health services through local health units OECD/European Observatory on Health Systems and Policies 2019. While the national government has introduced various general interventions indirectly addressing older adults, there is no concrete national strategy, and many initiatives and legislation remains aspirational rather than implemented.

In national health policies, key challenges include the absence of a national definition of older adults in policy thus leaving regions to define their target demographic group, and the fact that policy discourse is primarily framed around non-self-sufficiency rather than the view of older adults as active contributing members of society Barbabella et al. 2020. As a result, the majority of these national plans and strategies are mostly rhetoric, without concrete timelines or incentives that push regions and municipalities to implement these strategies through projects and actions. Instead, the Third Sector together with non-profit and non-governmental organizations, trade union and pension associations, third age uni-

versities and foundations are largely called upon to supplement gaps or oversights by government institutions in supporting older adults. In the housing and construction sector, the Italian government has introduced legislation indirectly supporting improvement and adaptation of the built context that would enable older adults to age in place. This includes legislation concerning energy efficient renovations through tax deductions and legislation pertaining to accessibility in the built environment, the latter focusing on accessibility and adaptability of public buildings and elimination of architectural barriers in newly constructed buildings and public spaces.

At the regional level in Lombardy, historical policies concerning older adults mainly focused on non-self-sufficiency while since the 2000s, there has been renewed attention to preventative programs to promote health and well-being Barbabella & Principi 2020. Recent policies and projects that promote aspects of ageing in place in Lombardy are framed within the context of welfare, including prevention and health promotion, improving the quality of life through preventing non-self-sufficiency, and promoting social inclusion Barbabella & Principi 2020. Despite these recent additions, the region of Lombardy's approach to designing policies for older adults and/or ageing in place subsequently annexes these policies within containers, that does not allow for flexible and adaptable interventions that would better meet the needs of diverse older adults Barbabella & Principi 2020.

At the municipal level in Brescia, there are no direct references to ageing in place in municipal policies and projects, but there are a number of non-profit and non-governmental organizations that are making significant progress in addressing accessibility and usability of housing and the neighbourhood, towards removing architectural barriers, and supporting older adults to take an active role in their personal health management.

4 Discussion

From the policy scan and program review, it was possible to identify five criticalities and potentialities for ageing in place as an urban planning framework and strategy and its relevance to other cities or urban areas.

Firstly, the most critical issue is that of local funding and allocation, that inherently affects the efficacy of the subsequent four themes. This issue is dictated primarily by the federal or constitutional level of government. In both Canadian and Italian cities, there is a convoluted and unnecessarily complicated system of funding responsibilities and allocation for home care or home accessibility. This

includes a lack of human resources, unclear policy frameworks, the measures of how service delivery is organized, and limiting eligibility criteria that leaves access to home care only for those in the most fragile conditions.

Secondly and concurrently with the issue of funding, there is a need for improved integration of home care support with existing housing typologies. This would support the development of a continuum of care for older adults ageing in place at home, particularly in private homes that is the predominant living situation for both case study contexts.

Thirdly and following from this point, the trend of older adults in smaller household sizes living in homes with multiple bedrooms can be leveraged to alleviate the strain on public housing demand, by introducing innovative housing schemes that introduce adaptable homes, secondary suites, homesharing, intergenerational housing, senior cohousing, and reorganization of residential structures.

The fourth issue speaks to the larger challenge of sustainable interventions and prioritizing energy-efficient choices in residential buildings. Older adults on a fixed income who are residing in private homes without the means to renovate or in public housing constructed before sustainable design standards were mandated, would benefit from government programs and tax subsidies aimed at green retrofits, particularly public housing that is already owned and managed by the state.

Finally, the majority of older adults reside in homes that were constructed during a period when building codes did not include specialized regulations on accessibility or adaptability. As a result, older adults (especially those living alone or with health difficulties) face the daily insurmountable challenge of barriers within their own home that prevent full participation in everyday activities and in society. Renovations can be costly for older adults who are on fixed incomes in private homes, or out of reach for those living in public housing and dependent on the will or funding capacity of operators to renovate.

5 Conclusion

This research advances ageing in place as a conceptual framework and a governance strategy for urban planning. Through comparative analysis of Italy and Canada, it identifies criticalities in governance structures and policy integration while highlighting opportunities for how planning can improve positive outcomes for older adults already ageing in place or who will age in place in future, through inclusive and adaptive strategies. The findings make clear that ageing

in place is not only a singularly social or healthcare concept, but a cross-cutting framework that can guide more inclusive, resilient and just urban planning strategies to produce more inclusive and accommodating urban environments for older adults and for the entire community.

Firstly, ageing in place must be repositioned and adopted as a governance and planning innovation, that bridges housing, accessibility and care systems, while advancing social inclusion and spatial justice for diverse older adults. Secondly, the successful implementation of ageing in place as a governance strategy requires cross-sectoral and multi-scalar policy integration that aligns opportunities in housing, health and accessibility, and builds resilient governance frameworks capable of responding to demographic challenges and societal needs. Finally, the implementation of ageing in place strategies and policies speaks to the opportunity to activate participatory and community-driven planning practices that are grounded in the lived experiences of older adults. Altogether, these insights outline how reframing ageing in place as an innovative urban planning and governance priority towards developing more inclusive and equitable urban environments.

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Hidden Voices, Healing Spaces: Centring Women in Healing, Peace, and Policy Reform in Belfast's Interface Communities

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1 Introduction

This research investigates how planning and the built environment can contribute to social healing and peacebuilding in contested cities, through the lens of women's roles and gender-based theorisations of contested space. By questioning how peace manifests spatially in post-conflict cities, this research reveals the extent to which reparative planning can and should have a role in healing contested urban communities. Additionally, by using a case study of Belfast, Northern Ireland, the usefulness of using a gendered lens through which to understand healing processes in post-conflict cities is illustrated, revealing the gendered dimensions to living and working in and reproducing healing spaces. Moreover, this research assesses national and local policies in peacebuilding, evaluating the extent to which they have been successful in generating healing effects for communities in Belfast. In doing so, a deeper understanding of the role of structural actors in facilitating reparative planning is produced. Finally, this research questions the use of traditional participatory methodologies in planning research, and advocates for reflexive approaches to be deployed when engaging with communities in post-conflict cities.

2 Methods

This research uses a qualitative approach to examine the lived experiences of women in these communities in Belfast. Focus groups have been deployed with local women's groups, offering spaces to discuss power relations, the influence of stakeholders in their local community, and their sense of healing in the contested spaces in which they live. For a more structural perspective, semi-structured interviews have been conducted with policymakers, civil servants, community workers, and political representatives to unveil institutional narratives and approaches within these communities. Finally, policy analysis has been conducted to evaluate the ways in which local and national policies are effective in achieving or manifesting peacebuilding and healing in Belfast. Moreover, by analysing policy outputs, the role of structural actors in facilitating reparative planning has been developed.

3 Discussion

The city of Belfast, Northern Ireland endured over thirty years of conflict, which claimed the lives of over 3000 people. Belfast now lives with the physical scars of conflict in the form of defensive urban architecture, known as interfaces, which segregate rival factions of working-class communities within the city, despite currently functioning within a time of peace. Indeed, since the signing of the Good Friday Belfast Agreement in 1998, an extraordinary peace accord designed to end three decades of conflict, the number of interfaces continuing to divide communities in Northern Ireland stands at approximately 50 (Department of Justice (DoJ) 2019). As a post-conflict city, Belfast is actively engaged in attempting to heal from its past and embrace a respectful and prosperous future. In a world in which conflict is commonplace, the devastating consequences of it are increasingly impacting how we construct our urban communities. In so-called 'post-conflict' cities, the reconstruction of communities that are situated in heavily contested spaces is an area of urban planning research that is constantly evolving. The relationship between the built environment and peacebuilding is examined within this research, (Harboe & Hoelscher 2023), exploring the ways in which peace is negotiated spatially as well as politically. Healing approaches within planning advocate for community and survivor-centred methods of planning, arguing that peacebuilding is designed not only by macro processes and political decisions, but by everyday acts in ordinary communities (Mac Ginty & Richmond 2013, Coyles et al. 2023). It is within this context that the concept

of healing becomes a useful framework for reshaping how we, as planners and policymakers, approach interventions in cities and communities recovering from the scars of war, violence, and conflict.

In cities healing from conflict, peacebuilding is negotiated incrementally by grassroots programmes, community initiatives, and active integration of opposing factions. These everyday acts are crucial in healing communities affected by violence and are often organised by women and women's organisations. Space is therefore not neutrally formed, but actively produced and contested by social, economic, and environmental processes that consequently affect the communities that inhabit it (Harvey 2005: p. 23). The built environment therefore echoes and replicates harms, injustices, inequalities, and power dynamics, transforming it into a geopolitical stage (Markowitz 2020). Therefore, peacebuilding is undoubtedly a spatial process, one that has considerable influence on the (re)production of the post-conflict built environment. In conducting this research using Belfast as a case study, the roles and experiences of women will be highlighted, offering a unique perspective through which to investigate interfaces in Belfast. This research reveals previously under-researched narratives not only of the conflict itself, but of how these communities have persevered and rebuilt. The impacts of conflicts in cities across the world are particularly felt in a gendered way, with gender influencing each resident's experience of the aftermath differently (Moser & McIlwaine 2014). Therefore, a key aim of this research has been to illustrate the value of the gendered experience when transforming contested spaces within post-conflict cities. The women's sector in Northern Ireland was particularly vocal on the need for a true and lasting peace process, often spearheading public demonstrations, while simultaneously populating many of the grassroots movements in communities, founding women's centres, Women's Aid in 1975 and local women's associations, supporting each other to thrive (Connolly 1999).Despite their key role in encouraging and sustaining peacebuilding activities in Belfast, the stories and roles of women within wider narratives of peacebuilding are often missing. Since the signing of the Good Friday/Belfast Agreement in 1998, the role of women within Northern Ireland has changed, with more women than ever before entering politics and populating high-level positions of power within the state. In a time in which both First Minister positions here are filled by influential women, alongside a female Head of the Civil Service and a female Lady Chief Justice, the tides have truly shifted for women in Northern Ireland, at least at a structural level.

4 Results

By using Belfast, Northern Ireland as an example, the key premises proposed by reparative planning theory will be confirmed to be present in various forms in Belfast, demonstrable through data collected during fieldwork. This research also demonstrates the key role of planners and policymakers in transforming contested spaces into inclusive and shared environments, using women's groups as an example. Subsequently, this research has contributed to a growing body of knowledge on the relationship between peacebuilding and the built environment, as well as the development of the use of reparative or healing planning approaches. Moreover, the use of Belfast as a case study provides evidence of, for example, healing strategies contained within the spatial spiral model proposed by Catalina Ortiz and Oscar Gómez Córdoba in their territorial healing concept (Ortiz & Gómez Córdoba 2024)(Ortize & Gómez Córdoba, 2024). It is hoped that new aspects to these approaches might be revealed, further expanding its impact and relevance to cities across the globe. Moreover, the usefulness of participant methodologies, such as focus groups, in generating healing effects for communities affected by conflict has been evaluated. Consequently, the use of more flexible methodology considers the expediency of participatory methods when conducting focus groups in communities and consider how traditional methods of research in urban planning have proven to be too rigid to yield fruitful data in complex and contested communities. These insights are based on reflections from primary fieldwork, further contributing to academic debates on methods in urbanism and geography. Additionally, this research reveals the experiences of communities who are actively conducting peacebuilding activities from both semi-structured interviews and focus groups, which provide comprehensive and contemporary insight into the production of healing spaces in Belfast. By considering the gendered dimensions to living and working in interface communities in Belfast, this research has considered the extent to which gender can enhance our understanding of healing in these spaces. It is hoped that by investigating these spaces with a gendered lens, renewed understandings into the link between the built environment and how women specifically live, work and thrive within it have been unveiled, as well as how women have influenced, and continue to influence, healing strategies.

Finally, it is anticipated that this research will contribute to growing discussions around the effectiveness of policies in achieving peacebuilding in Belfast, by way of policy analysis. This research has highlighted the structural position on interface areas, and how government departments have approached, or failed to approach, planning through a reparative system. Findings from this research

may also reveal insights that might be useful to governments locally and nationally, providing insight into contemporary experiences of communities living and working along interfaces in Belfast. The role and views of women, for example, may prove to be useful to government departments who actively manage and support interface communities in Belfast. Moreover, the findings from this research may be useful to the communities themselves, particularly those who seek empirical research to evidence their experiences. When conducting this research, ensuring that the process is not merely an extractive one, in which the researcher obtains information from participants with no perceived benefit to the communities it is from. Rather, it is hoped that this research might prove to assist the communities involved by providing fresh insights into the dynamics at play in their communities and encourage new practices of, has been a key priority. Rather it is hoped that participants will be fully informed and engaged throughout the data collection process. Following this, participants will be provided with access to the research outputs once completed. Consequently, it is hoped that this research could then be incorporated into bids for funding applications, community regeneration, and further resources for those most impacted by violence. However, it is acknowledged that despite anticipating this research to follow the expected outcomes and aims, it is deeply rooted in empirical research. Therefore, there is a strong possibility that the trajectory of this research will evolve as new findings influence future avenues of investigation. These findings may provide ample ground for future research into the value of reparative and therapeutic approaches in planning in post-conflict cities, and stimulate novel discussions into the importance of addressing injustices that the built environment may be complicit in. Overall, it is expected that this research will prove to be valuable, offering refreshing insight into not only the concept of healing, but also the communities themselves along interfaces in Belfast.

5 Conclusion

This research approaches interface areas through a reparative planning approach, applying the concept of healing with a focus on Belfast, Northern Ireland. Healing spaces, by focusing on empowering communities to reclaim narratives and foster collective resilience, can offer an alternative contribution to further understanding these communities in Belfast and expand the realms of research from a spatial perspective. Likewise, the use of the case study of Belfast can contribute positively to expanding the applicability of reparative planning practices and of healing to further explore the European dimension of its application. This research will also contribute to a growing body of knowledge on the relationship

between peacebuilding and the built environment, and how this can be applied in the healing of post-conflict cities. Specifically, it is intended that this research examine how the spatialisation of conflict manifests, through scrutinising what healing spaces are, how they are defined by communities and the impact they can have on transitioning cities into restorative and prosperous post-conflict environments. Moreover, the use of participatory methods in research, such as focus groups and semi-structured interviews, will be evaluated to highlight the healing effects of inclusive and engaging research for communities living and working along interfaces in Belfast. This research will also examine the role of policymaking in achieving reparative planning, by evaluating the effectiveness of peacebuilding policies previously enacted in Belfast. It is hoped that this will reveal current policy narratives around peacebuilding agendas and expose areas of improvement as evidenced by data collected during policy analysis conducted as part of the research.

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Environmental Justice Struggles and Neoliberal Intervention in Access to Sustainable Housing of Marginalised Communities: A Study of Mumbai's Rehabilitation and Resettlement Policy

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1 Introduction

This study examines the impact of resettlement on Mumbai's marginalised communities, with a focus on Muslim communities and Dalits (Scheduled Caste). Each year, various infrastructure projects are undertaken to promote the city's development and beautification. However, during these projects, the homes of marginalised communities are demolished. This leads to displacement, with most affected communities resettling 30–40 km away from their original locations, which disrupts their daily lives, livelihoods, and other aspects (Bhan 2009, 2014, Sikka 2020).

Several studies have analysed the impact of slum rehabilitation and resettlement on communities. Still, the issue remains under-researched from the perspectives of gender and marginalised groups (Ayyar & Khandare 2007, Ayyar 2013, Contractor 2008, Doshi 2019, Jatkar 2024, Hazarika 2023, Parwez 2024).

Development-related displacement increasingly affects the urban poor. According to the United Nations Special Rapporteur on Adequate Housing, approximately 400,000 slum dwellers in Mumbai have been displaced since November 2004 (Contractor 2008: p. 153).

There is no doubt that for urban development, city expansion, and economic growth, it is necessary to focus on roads, highways, shopping malls, cultural institutions, playgrounds, city beautification, and environmental conservation. However, it is equally important to develop this infrastructure while also considering the needs of slum residents and marginalised communities. Often, these families' homes are displaced and evicted during the construction of these projects (Ghosh 2017). The displaced settlers are primarily located approximately 25–30 km from the city centre and live in crowded housing with limited job opportunities, inadequate education, and a lack of amenities (Shaw & Saharan 2019).

Marginalised communities in India, mainly SCs (Scheduled Castes) and STs (Scheduled Tribes), are situated near heavy industry sites and major accident hazard zones. Prominent examples across the state include Ahmedabad in Gujarat, Mumbai in Maharashtra, Bhopal in Madhya Pradesh, Bangalore in Karnataka, Chennai in Tamil Nadu, and Hyderabad in Telangana, among others (Ayyar 2013, Jonnalagadda 2023, Chu & Michael 2019, Chakraborty & Basu 2022, Konda 2020, Shaban & Aboli 2021, Bhimraj 2020, Vakulabharanam & Motiram 2023, Jha 2023).

Caste-based eviction and caste inequalities related to housing space and infrastructure in urban India are not new. Slum Rehabilitation and the challenges faced by the Dalit community are exemplified by their continued exclusion from access to sustainable housing and basic amenities, as well as by caste-based discrimination in cities (Waghmore & Contractor 2015, Ranganathan 2022b,a, Upadhya & Rao 2023).

The built environment is closely linked to human social and personal lives. Suitable and sustainable housing, along with open spaces for social interaction with family, friends, partners, and children, play a crucial role. In addition to women's social interactions, security and socio-cultural factors play significant roles (Mouratidis 2018, Vaid 2024). However, this aspect of the slum rehabilitation housing policy and its implementation remains under-researched. Research on Slum Rehabilitation Housing and its effects on the physical and mental health of re-housed communities remains limited (Vaid & Evans 2017). Additionally, health-related quality of life in slum dwellings within slum rehabilitation housing remains insufficiently researched (Evans 2003, Bardhan et al. 2015, Vaid & Evans 2017, Sarkar & Bardhan 2020, Pardeshi et al. 2020, Vaid 2021, 2023).

Extensive literature has examined the growth, risks, health impacts, and environmental hazards associated with the formation of informal settlements in cities and other urban areas. However, there are still gaps in understanding the daily environmental challenges faced by informal settlement communities and the environmental justice issues present in these habitats (Kekana et al. 2023: p. 3711). Poor housing conditions directly affect residents' mental and physical health, which further impacts their livelihoods, living conditions, and children's education, creating a vicious cycle. In these communities, the highest proportion of people belongs to marginalised groups. Tacoli & Satterthwaite (2013) and Sharma & Jothiprakash (2022) elucidated the challenges faced by women in urban resettlement colonies. These challenges include livelihood struggles, environmental hazards, climate change impacts, and poor access to water, sanitation, and other basic services, which severely affect the health of women slum dwellers.

2 Research Methodology

This study draws on secondary literature and qualitative ethnographic fieldwork conducted from January 2025 to June 2025, building on a pilot study carried out between September 2024 and December 2024. Through this, I gained an understanding of the impact of displacement and eviction on the daily struggles of Mumbai's slum dwellers and migrant labourers in resettlement colonies, with a focus on livelihoods, health, and infrastructure challenges—the study centres on marginalised communities in India, specifically Dalits (Scheduled Castes) and Muslim communities. I employed a case study approach to examine three different sites for my research. The data collection tools included:

1. in-depth interviews,
2. participant observation, and
3. a photographic field survey.

All participants were pre-categorised as state and non-state actors and were purposefully selected. Consequently, I employed purposive sampling in my study, yielding a total of 70 samples.

3 Results

Based on primary data collection and interviews with slum-rehabilitated communities from marginalised sections, it has been observed that after rehabilitation and resettlement, these communities face more crises due to relocation from the city's central periphery to the outskirts around chemical factories, industrial areas, and nearby dumping grounds, which are not suitable for human living. Furthermore, poor infrastructure, congested housing, compact building designs, and a lack of green space make the resettlement socially and environmentally unsustainable. Due to relocation and resettlement, 1) jobs/livelihoods, 2) health, and 3) education were most affected among the slum dwellers.

While interviewing NGOs, social activists, and planners, it has been observed that poor urban planning, lack of community participation, increased involvement of developers, and a focus on the quantity rather than the quality of rehabilitation housing have caused segregation of the rich on one side of the city and the poor on the other. This results in socio-spatial segregation and environmental injustice among marginalised communities during rehabilitation and resettlement.

On the other hand, during interviews with government officials, it has been observed that the government acts as a mediator between politicians and builders, serving as a planner. All decision-making authority for policy changes has been delegated to politicians. Builders are entirely responsible for the development of construction projects. As a result, this affects the policy's actual objectives, delays the project, and leads to poor construction quality. Hazardous sites were selected for resettlement. However, despite these shortcomings in decentralisation, hierarchy, and coordination among parastatal government bodies, politicians, builders, and the government, they are fully accountable for the poor implementation of slum rehabilitation housing.

4 Conclusion and Discussion

Sustainable housing for marginalised communities is one of the most urgent needs in this era of climate change and urbanisation. However, governments and politicians in cities such as Mumbai are expanding the real estate market and beautifying the city at the expense of land owned by informal settlers. In return, they provide congested, poor-quality slum rehabilitation housing to slum dwellers in the city's poorest areas. Additionally, forming social movements against the government's discriminatory housing policies and halting evictions

of marginalised communities for city beautification and infrastructural development are key to strengthening these communities.

Therefore, focusing on participatory planning, capacity-building workshops, and the involvement of marginalised communities is one of the most crucial aspects of urban housing and its development. Furthermore, emphasising sustainability in slum upgrade housing is very important, with a key focus on 1) Environmental Sustainability, 2) Social Sustainability, and 3) Financial Sustainability. Planning for sustainability should consider five dimensions: a) the preservation of physical benefits; b) the training and coaching of communities to promote durable social development; c) the economic growth of the locality, aiming for self-sufficiency; d) the enhancement of the budget; e) the environmental compatibility of all works and initiatives. This means that, for slum upgradation programs, it is necessary to focus on socio-cultural balance and sustainability. Infrastructure development and benefits, financial sustainability, accountability, and environmental sustainability are key considerations in the sustainability of slum upgradation (Fuentes 2019: p. 111).

In detail:

1. Integrating social sustainability—such as women's safety, ethnic and religious cultural aspects and community well-being—into housing design and evaluation.

2. Participatory planning involves ensuring that affected communities have decision-making power in site selection and project design.

3. Considering public health of the community as a priority, Environmental assessment and zoning, prohibiting relocation to polluted or industrial areas.

4. Enhancing connectivity between resettlement colonies and the urban core through transport, education, and health infrastructure.

5. To focus on the green built environment, open spaces, and surrounding areas while constructing public housing for Mumbai's slums.

6. To emphasise a self-governed, self-financed community housing model that can be established through community funding and a cooperative housing society. A self-governed and self-financed housing approach will help create socially, economically, and environmentally sustainable housing for Mumbai's marginalised groups. Self-governed housing model implemented between 1977 and 1997 under the sites and services scheme

funded by the World Bank in Mumbai, which has had a lasting impact on Mumbai's sustainable housing (Patel 2015, Owens et al. 2018, Nair & Lahoti 2019, Testi 2023).

7. Vary the Models of Rehabilitation and Funding. To promote the use of alternative models that go beyond Public-Private Partnership (PPP) models led solely by developers, support government-led projects in less profitable areas where private developers have little interest and endorse self-redevelopment by slum-dweller communities with government assistance. Advocate for incremental housing policies that enable slum areas to be improved gradually by residents investing in their homes after securing land tenure, instead of relying solely on extensive, top-down demolition and reconstruction. Utilise land pooling and readjustment mechanisms by adopting plans like Ahmedabad's Town Planning Scheme (TPS) to acquire strategically located public land within city limits for affordable housing, thereby reducing the need to relocate people from the outskirts away from their livelihoods.

By reconceptualising resettlement as an issue of justice rather than charity, Mumbai can align its housing policies with SDG 11: Sustainable Cities and Communities, ensuring that urban housing transformation benefits the most vulnerable populations. The experiences of marginalised Dalit and Muslim communities in Mumbai underscore that inclusive urbanism must commence with acknowledging their entitlement not only to shelter but to the city.

Finally, to adopt successful public housing model strategies from countries such as Singapore and Hong Kong, it is crucial to implement effective housing programs for Mumbai's urban informal settlers (Lin-Heng 2020). Furthermore, Lin-Heng (2020), Di Mauro (2018), and Hanapi et al. (2023) while discussing the Singapore housing model's success story, mentioned that the government's focus and transparency, along with its willingness to provide good-quality, affordable housing at a low price, have enabled it to cater to low-income families, youngsters, people of different ethnicities, elderly couples, young couples, single individuals, and families. Indeed, Singapore's successful housing program has served as a model for both developed and developing countries. Alongside affordable housing, the government also focused on sustainable housing management and related services, including green spaces, green commuting, environmental management, waste management, water conservation, and energy efficiency. These are the various aspects considered when implementing the housing program.

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Densifying Wrocław's City Centre with Housing, 2010–2021

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1 Introduction

The context for this study is the intensifying housing affordability crisis and—paradoxically—the simultaneous surge in investment activity on Poland's housing market. In recent years, locally high developer activity has led to intensive densification of Wrocław's inner city, accompanied by significant transformations of the city's urban fabric.

The point of departure for reflecting on densification is its usefulness as a tool to counter urban sprawl. In contemporary Polish academic discourse—and, following it, in municipal strategic documents—the prevailing view is that spatial planning should aim to build compact cities. This theory, however, is not reflected in local law. According to research, the Local Spatial Development Plans (miejscowe plany zagospodarowania przestrzennego) currently in force across Poland designate residential areas capable—by the most precise estimates—of accommodating housing for a further 59.6 million people Śleszyński et al. 2016, even though Poland's population is expected to decline. Moreover, in 2018 the Committee for Spatial Development of the Country of the Polish Academy of Sciences published the extensive report *Studies on Spatial Chaos* (*Studia nad chaosem przestrzennym*). In it, P. Śleszyński estimates the costs of spatial chaos at PLN 84.3 billion per year Śleszyński et al. 2018. Given the high costs of suburbanisation, directing settlement development inward—through

the densification of already urbanised areas—appears to be a precondition for sustainable development today. Yet there is a lack of any strategies, or even systematic reflection, on how to conduct densification responsibly.

The research topic is firmly grounded in the broad context of housing. It is commonly held that the greatest problem affecting Polish housing is the housing deficit Surówka 2018. In 2002 it amounted to 1.7 million dwellings in Poland, 1.1 million of which were lacking in urban areas Lis 2008. By 2015 the deficit had decreased to 900,000 dwellings Nowak 2021, and in 2019, according to the Ministry of Investment and Development, it stood at 641,000 Ministry of Investment and Development 2020. At the same time, according to Eurostat, 36.9% of Poles lived in overcrowded dwellings in 2020, and 7.9% in substandard dwellings Eurostat 2020. Paradoxically, alongside Poland's housing deficit there is also a surplus of dwellings, defined as the difference between the total number of dwellings and the number of households. In 2019 this surplus was 424,000 dwellings and in recent years it has grown faster than the reduction of the housing deficit—a trend which, according to the Ministry of Investment and Development, may indicate a rising number of vacant units resulting from the recent popularity of purchasing residential property as an investment Ministry of Investment and Development 2020. Although year after year new housing completions hit fresh records, the everyday Polish vocabulary has also absorbed the term "patodeweloperka", referring to profit-driven commercial housing projects that prioritise quick returns at the expense of architectural quality and residents' comfort, often by exploiting loopholes in building law and in locations lacking essential social and technical infrastructure.

Wrocław has particularly high densification potential in its inner-city zone due to spatial conditions shaped by geography and historical processes. This potential stems from the incompleteness and discontinuities of the urban fabric, which to this day has not been fully rebuilt after approximately 60% of the city was destroyed during World War II Dudek 2013. Despite extensive reconstruction efforts, numerous gaps in perimeter blocks remain, as well as undeveloped blocks and areas that before the war were filled with compact development but are now called "squares" despite not in fact functioning as public spaces. Another important factor is the disappearance of industrial functions from the inner city—uses that were historically tied to proximity to rail infrastructure and to Wrocław's particularly numerous river channels, which served as key transport corridors during the industrial era. These conditions make Wrocław a particularly valuable setting for investigating the phenomenon of urban densification (fig. 1).

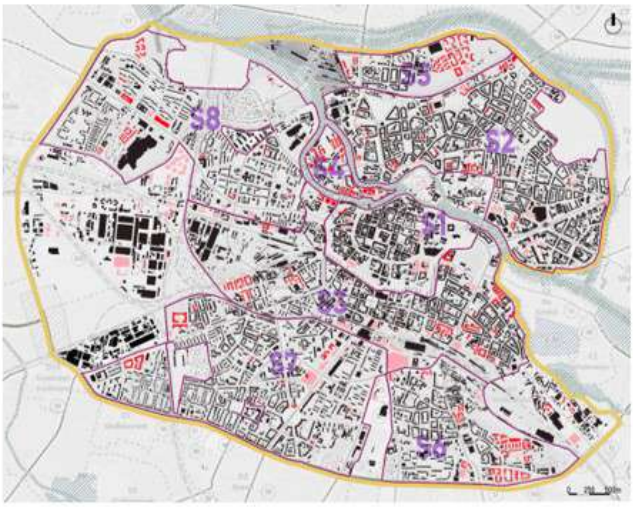


Fig. 1 Development delivered in Wrocław's inner city, 2010–2021: (i) residential (red), service/commercial (pink). Inner-city boundary (yellow line); research sector boundaries (purple lines).

Figure 1: Development delivered in Wrocław's inner city, 2010–2021: (i) residential (red), service/commercial (pink). Inner-city boundary (yellow line); research sector boundaries (purple lines).

2 Methods

For the purposes of this study, we analysed housing developments completed between 2010 and 2021. Information on project indicators was collected from the national Spatial Information System and from the websites of developers, investors, and design offices. The analysis covered indicators such as: building footprint area, building height expressed as the number of above-ground storeys, and the number of dwellings in each project. In addition, for every development we calculated a housing efficiency index, defined as the ratio of the number of dwellings to the building footprint area.

The legal basis for each building were also verified: whether it was implemented under an applicable Local Spatial Development Plan or on the basis of an individual zoning decision (decision on development conditions).

The case studies were enriched with in situ observations: a site visit was carried out and photographic documentation was prepared for all analysed projects.

3 Results

The analysed examples of multi-family housing built in Wrocław's inner city point to several leading modes of land acquisition for residential development (Fig. 2, 3):

- development on sites that had lost their previous functions, mainly industrial and service uses;
- infill development completing gaps within existing perimeter blocks;
- use of existing land reserves;
- appropriation of green areas, most often recreational spaces belonging to existing estates;
- build-out of block interiors whose function had been undefined.

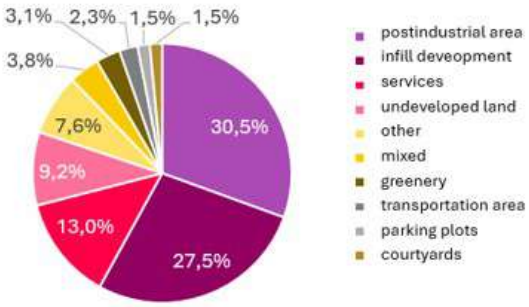


Fig. 2 Previous land use of sites where residential projects were delivered. Percentage share relative to the number of projects completed in Wrocław's inner city, 2010–2021.

Figure 2: Previous land use of sites where residential projects were delivered. Percentage share relative to the number of projects completed in Wrocław's inner city, 2010–2021.

Among the 131 housing projects analysed, 30.5% were built on post-industrial (brownfield) sites. A similar share was accounted for by infill projects (27.5%). In 13.0% of cases, mixed residential-service development replaced prior service uses, and only 9% of projects were located on unused land constituting a reserve for future development. Within the 7.6% of projects on sites classified as "other", former barracks predominated. In the "mixed" type (3.8%), a notable subgroup

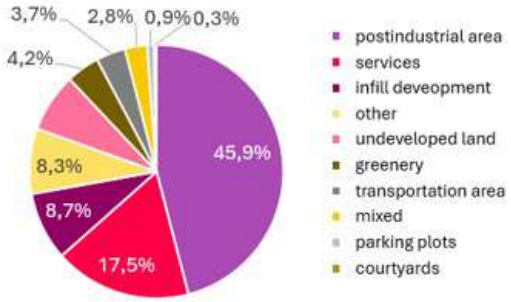


Fig. 3 Previous land use of sites where residential projects were delivered. Percentage share relative to the number of dwellings completed within projects in Wrocław's inner city, 2010–2021.

Figure 3: Previous land use of sites where residential projects were delivered. Percentage share relative to the number of dwellings completed within projects in Wrocław's inner city, 2010–2021.

comprised block interiors that had contained nineteenth-century industrial buildings (e.g., a former paper mill and automobile workshops).

A different perspective on land-acquisition patterns emerges when we examine the number of dwellings delivered on each site type. In this view, post-industrial sites clearly dominate, accounting for 45.9% of dwellings completed in 2010–2022. Second place is held by sites formerly occupied by service buildings (17.5%). Infill—despite its large share in the total number of projects—accounts for only 8.7% of completed dwellings.

The housing efficiency indicator applied in the analysis shows an upward trend over the study period (Fig. 4). This means that, on average, the number of dwellings achieved per square metre of building footprint increased over time. This may indicate a decline in average unit floor area and/or an increase in the average number of storeys in new buildings. Economically, it points to growing investor effectiveness in maximising the average yield per square metre of building footprint.

Over the study period there was a widespread tendency to reduce green and recreational areas within completed housing developments. The construction of multi-family residential buildings was not accompanied by public investments in recreational spaces. Courtyards and block interiors were pared down to a minimum in both area and function; within this functional minimum, developers typically provided playgrounds of minimal size and, optionally, private greenery for ground-floor units, while the remaining space was taken up by parking (Fig. 5).

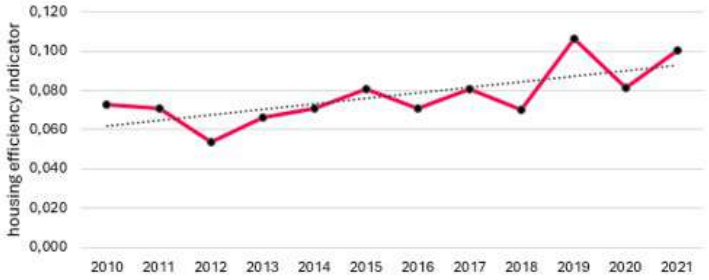


Fig. 4 Average housing-efficiency index of projects delivered each year in Wrocław's inner city. The dashed line shows the trend line averaged for the period 2010–2021.

Figure 4: Average housing-efficiency index of projects delivered each year in Wrocław's inner city. The dashed line shows the trend line averaged for the period 2010–2021.

Block interiors were also frequently built out in such a way that recreational areas were placed on top of parking decks accessible from ground level, which precludes the growth of tall vegetation (trees).

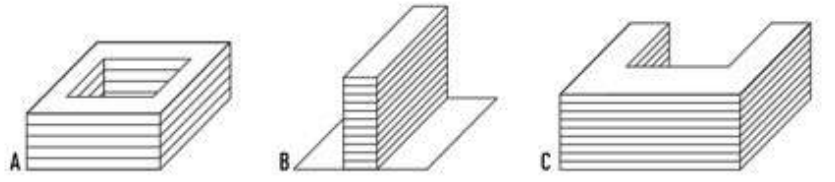
The height of new inner-city development is comparable to that of prefabricated panel-housing estates. Its composition, however, references perimeter-block (quarter) typologies (Fig. 6). This combination fosters higher land-use density, yet it can be assumed to negatively affect residential comfort in such environments.

4 Discussion and Conclusion

The study does not corroborate the thesis that the densification of Wrocław's inner city is a spontaneous and uncontrolled process. In fact, the vast majority of the projects analysed were implemented on sites covered by Local Spatial Development Plans, and thus embedded in the framework of local spatial policy. Nevertheless, in many cases the resulting development tends to deepen spatial chaos and offers low-quality environments around buildings from the resident–user's perspective. Many of the projects examined align with what is widely criticised in public debate as "patodeweloperka"—profit-driven development at the expense of architectural and urban quality. This state of affairs raises, on the one hand, the question of the extent to which the Polish planning system even enables the creation of local law that guarantees high spatial quality, and, on the other, whether the local regulations in force in the study area fully deploy the available tools.

Fig. 5 Block interiors and courtyards of residential developments occupied by parking areas; author's photographs (2022).

Figure 5: Block interiors and courtyards of residential developments occupied by parking areas; author's photographs (2022).



Il. 6 Conceptual diagram. a — traditional perimeter-block urban fabric; b — housing-estate layout with freestanding stairwell-access blocks; c — contemporary open-block development with a substantial number of above-ground storeys.

Figure 6: Conceptual diagram. a — traditional perimeter-block urban fabric; b — housing-estate layout with freestanding stairwell-access blocks; c — contemporary open-block development with a substantial number of above-ground storeys.

An important factor shaping residential complexes delivered under market-economy conditions is undoubtedly the state of the housing market. Although the economic aspects of the housing market were beyond the scope of this research, it is plausible that documented market trends—treating dwellings as investment assets—have left their mark both on the scale of inner-city residential densification and on the design of buildings and their surroundings. Dwellings, particularly those in the centres of large cities, are increasingly viewed as stores of value rather than places to live. These trends have likely lowered expectations regarding the quality of accompanying spaces (e.g., recreational areas) while increasing pressure to maximise saleable residential floor area, parking provision, and private ground-floor gardens—elements perceived to boost return on investment. At the estate-design level, this results in an extreme reduction of common, semi-private, and semi-public spaces.

At the same time, high demand for investment units encourages architectural-level densification through the design of very small dwellings ("micro-apartments"), which may fail to meet statutory minimum floor-area standards. There is a clear need for local government not only to provide conditions conducive to investment—which Wrocław's authorities did very effectively during the study period—but also to ensure good living conditions in the emerging estates. Potential pathways to improving the residential environment include the expansion of social/affordable housing, raising the quality of adopted Local Spatial Development Plans, and greater municipal involvement in delivering public spaces accompanying residential developments.

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Affective Placemaking: Unpacking the Relational and Emotional Dynamics of Urban Coexistence

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1 Introduction

This study investigates how individuals emotionally connect to their neighborhoods and its public spaces, emphasizing the significance of feelings of belonging, attachment, detachment, and alienation. These emotional ties are central to understanding social dynamics in urban settings. To delve deeper into this, we introduce the concept of **affective placemaking**, which examines how emotions shape and circulate through people's experiences and narratives about everyday places.

Placemaking, an established concept in urban planning studies, is commonly referred as a formal, professional practice that aims to create places with an imagined identity shared by the community members (Project for Public Spaces 2015, Ellery & Ellery 2019, Antonić et al. 2023). However, such views often treat place as a static product shared by a homogeneous community. Drawing upon Doreen Massey's (2005, 2008) work, we argue that place should be seen as dynamic, relational, and shaped by diverse interactions. This perspective is especially relevant in contemporary cities marked by multiple diversities, differences and fragmentations. We argue that moving beyond formal approaches towards the informal placemaking enables us to deepen our understanding of the intersubjective and often contested everyday politics through which places are made.

Accordingly, we adopt an affectively nuanced understanding of placemaking that centers human experience, showing how routine interactions and embodied practices contribute to placemaking beyond formal planning. Relying on Sara Ahmed's (2005) theorisations on affects, we perceive emotions as cultural formations that both produce and are produced within power relations but also challenge the prevailing power dynamics. While drawing on both Ahmedian understanding of the circulation affects (Ahmed 2005) and Massey's (2005) visions of relationality and dynamic nature of place, we suggest that everyday encounters with diverse others and urban surroundings continuously shape affective orientations toward places and people. Affective meanings circulate through interacting bodies, which create and dissolve boundaries of inclusion and exclusion (Ahmed 2005) and form what we call the 'push and pull effects' of a place.

Our research is based in two suburban neighbourhoods in southern Stockholm—Rågsved and Farsta—often portrayed negatively and segregated in media and public debate, associated with violence and crime. Through urban ethnography and affective mapping, we explore everyday practices of belonging, avoidance, inclusion and exclusion by unpacking the spatio-temporal threads of affective placemaking. While ethnography enables gaining nuanced insights into the lived experiences that challenge dominant segregation narratives, affective maps help situate and visualise the emotions people associate with, experience and remember spaces. With this conceptual take, the study contributes to the debates in urban coexistence by exploring how push and pull effects of places are affectively and temporarily formed amid various forms of diversities, inequalities, and historically embedded stigmas. The perspective also offers a critical framework for understanding how places are continuously made through contested power relations, affective solidarities, and historical narratives that are shaped within the nexus of local, national and global dynamics.

2 Methods

Our inquiry into affective placemaking draws on the ethnographic fieldworks that we conducted in Rågsved and Farsta during May-June and October 2024. Data collection included interviews, narrative walks, mental mapping, and participant observation. We gathered insights into daily routines, urban development, security measures, and socio-political changes. The empirical material consists of thirteen individual, pair and group interviews (approximately 12 hours) and seven maps, alongside informal conversations and extensive fieldnotes.

Interviews were open-ended, guided by participants' interests, but covered themes like neighbourhood reputation, personal connections, socio-economic

changes, childhood memories, everyday routines, and lived experiences that somewhat engraved affective associations in their personal and collective histories. For the mental maps, we asked participants to draw a map of their everyday spaces; places they like to visit as well as places they dislike or avoid. Based on the flow of the conversation, the maps have taken different forms from a very comprehensive depiction of the area marked with various places, emotions and symbols (see Figure 1) to the drawing of a single location that has a specific meaning or story for the interviewee (see Figure 2). Not only did mapping enable us to get into the spatial relationships, but it also allowed us to gain an understanding of spatial agency, struggles, tensions, inclusive and harmonious actions practiced in place (Pánek 2019, Forde 2019). Together, the empirical material reveal how everyday landscapes of affects are formed through lived experiences amid historically engraved reputations, institutionalised stigmas, everyday forms of neighbourly relations, conflicts and solidarities.

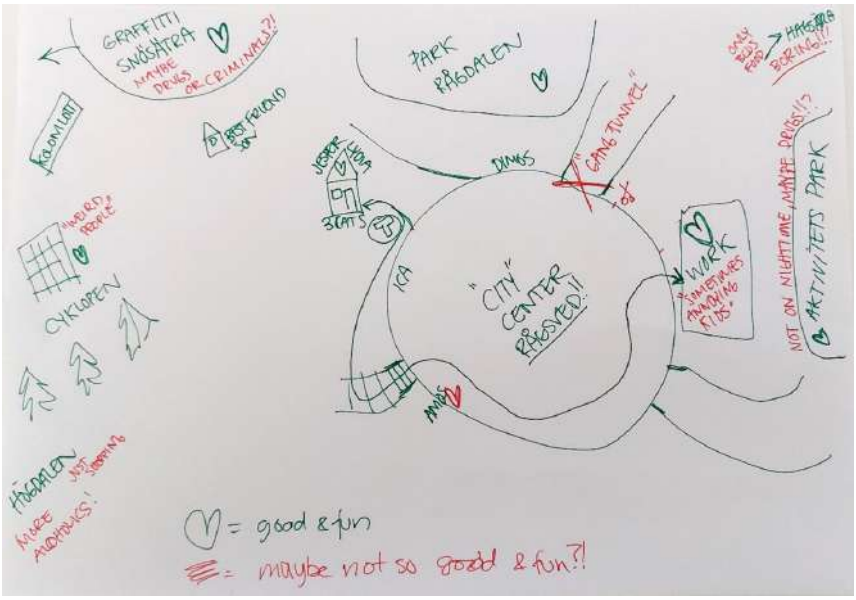

Figure 1

While doing the analysis, we used affective-discursive reading (Wetherell 2012), which enabled us paying attention to affectively tuned expressions, such as tropes (metaphors, irony), word choices, emphasis of words, comparisons, and the use of emotional words (love, hate, etc.) (Ojala et al. 2019). At first, we read and reread the interviews, paying attention especially to the ways the interviewees described different relationships between their affective orientations and

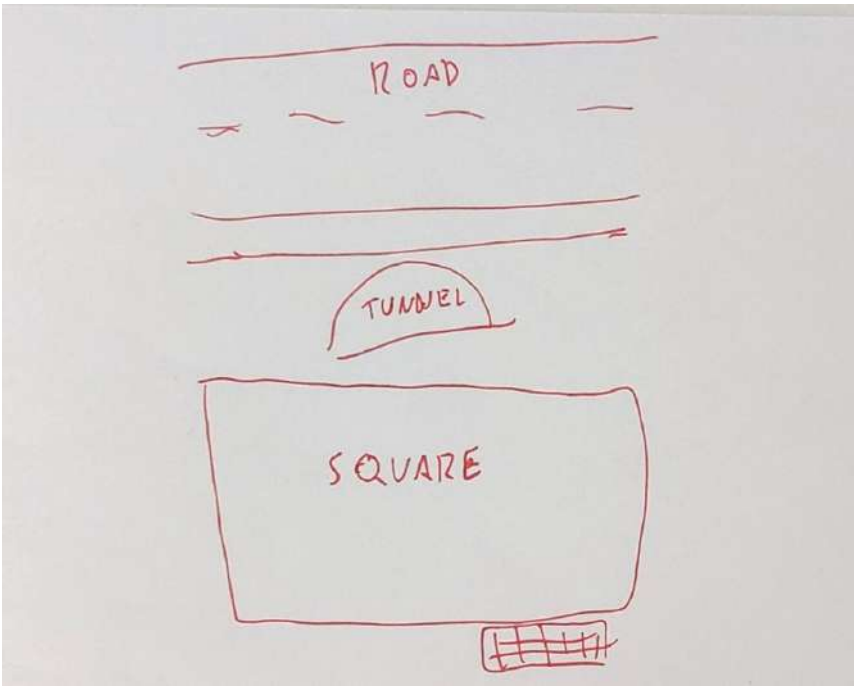

Figure 2

different entities, such as certain places, the neighbourhood as a whole, the state, global and local scales as well as different actors, like local authorities, police and different groups that were mentioned. Following Massey's (2005) relational approach to place, we examined how these entities interrelatedly impact people's affective orientations in space. We found that affective intensities varied in intensity and duration, ranging from deeply embodied emotions to more mundane, ephemeral feelings.

3 Results

Our analysis identified three different compositions that capture affective intensities, temporal frameworks, and meanings attached to places; whether they are small spots of hang out, large public sites where strangers are 'thrown*together*' (Massey 2005), administrative spaces or imagined places that do not necessarily conform to a physical, geographical location. We call these compositions as '**threads of affective placemaking**' through which we explore personal or collective narratives, establishing connections between material dimensions and re-

lationships. By this we argue that all threads can simultaneously be present in people's everyday lives. These threads emerge from the lived experiences that take various forms and lengths, evoking different affective intensities. They are culturally and historically scripted as well as shaped by social, economic and political structures that govern everyday life.

The first thread '**Scenes of shock and sticking affect**' unpacks the affective intensities in certain point-form moments where the urban flow gets disrupted by sudden events. These moments—charged with fear or anxiety—become sticky, as Ahmed (2010) suggests, attached to particular neighbourhoods, and shape the ways how they are felt and remembered. Over time, such affects circulate through media representations, reinforcing negative reputations and accumulating emotional associations in place.

The second thread '**Everyday choreographies, accumulating intensities, and (making of) symbolic places**' untangles the stories about places that have longer term symbolic meanings for dwellers, involving struggles and claims over places and spatial rights. Global markets of drug trade, local histories as well as personal experiences and collective actions intertwine and formulate affective orientations that are localised in certain places and embed symbolic meanings. Different than sudden incidents and shocking scenes that evoke affective responses as a reflex and accumulate mostly in personal memories, symbolic places gain their meanings through strong sense of ownership and agency that heavily materialize through collective actions (Awan et al. 2013: p. 31).

Finally, the third thread '**Loving and living amid diversity and stigma**' focuses on the wider discourses on diversity and (contested) narratives about neighbourhood and how the residents negotiate them in their everyday lives. In the context of stigmatised neighbourhoods, negativity is not restricted only to the place but also labels people living there (Tonkiss 2005, Wacquant et al. 2014). People in these areas tend to internalize the stigma, which makes them feel shame, guilt and willingness to distance themselves from other inhabitants to uplift their own moral worth (Wacquant 2007). At the same time, a strong sense of attachment, ownership and communal ties in stigmatised areas are found heavily prevalent (e.g., Junnilainen 2019).

The empirical data however illustrated that these narratives are neither fixed, homogenous nor stable. Socio-economic inequalities, certain privileges and disadvantages that situate individuals in different societal positions shape how people make sense of their everyday interactions and living environments in which they coexist with diverse others. The focus on affects has crucially demonstrated that the push and pull effects of place are relationally formed and

oftentimes reveal contested conceptions, even in one's own account, as regards both individually and collectively shared histories, embodied practices and local and global dynamics that intertwine and materialize in the everyday.

4 Discussion and Conclusion

The affective threads of placemaking have shown that places gain their meanings through embodied social interactions, historically embedded narratives, temporal dynamics, and local, national and global changes that evoke and accumulate affective intensities in everyday spaces of coexistence. Together, these three interwoven compositions demonstrate that affective placemaking is not a linear or uniform process, but a dynamic interplay of emotions, memories, and spatial practices. They offer a critical framework for understanding how places are made through everyday encounters, contested narratives, and emotional solidarities—always in flux, always in the making. Capturing how people relate to and orient in everyday places through different affective intensities, the threads also unpack the temporal creation of push and pull effects based on lived experiences and changing positionalities.

The examples highlight that places cannot be approached as fixed entities perceived and experienced in the same way by the members of an imagined, homogeneous community. Places become emotionally charged, symbolically meaningful, and socially negotiated through lived experiences and constant encounters with diverse others. Affective orientations toward people and places, or the push and pull effects as we call them, play a significant role in building communal ties, sense of belonging and place attachment as well as detachment, alienation and exclusion that are emotionally charged and historically scripted. This approach challenges the notion of placemaking in urban planning as a neutral, objective endeavour. In understanding of how people make sense of their interactions with others as well as negotiate the living together in cities, where multiplicity of people, politics and practices shape the dynamics of coexistence interrelatedly, we argue that planning must recognize the emotional geographies of place and engage with the everyday lived experiences of people. To build socially sustainable neighbourhoods, urban planning therefore must move beyond formal interventions and incorporate everyday practices of affective meaning-making into the decision-making processes. In doing so, visual methodologies, such as mental mapping, offer valuable tools for capturing these emotional landscapes and recognising residents' spatial agency.

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The Multiple Roles of Urban Affordability in Inclusive Smart Cities

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1 Introduction

The smart city concept, which relates to the application of advanced technology and data-driven solutions to meet increasingly complex urban service demands (Angelidou 2015), has become prominent in urban planning and management. However, the concept requires careful application in practice as smart cities could exacerbate urban exclusion, notably as a result of the digital divide (Caragliu & Del Bo 2023, Colding et al. 2024) and especially in developing countries (Indraprahasta & Alamsyah 2024). In such contexts, residents who are unable to access, utilise, or benefit from digital connections can be left out of smart city processes and outcomes (van Deursen & Helsper 2015). These tendencies were critiqued in early literature on smart cities, with concerns raised about their potential impacts on social equity and their disregard for the actual needs of citizens (Hollands 2008, Kitchin 2014). Scholars thus highlighted the need for a paradigm shift that centres citizens in the pursuit and objectives of smart cities, moving away from techno-centric conceptualisations (Echebarria et al. 2021, Kummitha & Crutzen 2017).

More recently, the concept has evolved to focus on inclusive outcomes, grounded on the smart city's primary objective of improving the quality of everyday urban life (Chang & Smith 2023, Paskaleva & Cooper 2022). Smart city efforts are now being evaluated in terms of how they benefit all citizens

regardless of their socio-economic conditions or intra-urban locations (Tekin & Dikmen 2024, Wang et al. 2021). As such, the smart city and the inclusive city have become intertwined concepts, birthing the smart-inclusive city where citizen-centred processes produce outcomes that are shared by all (Lee et al. 2024, Lee & Park 2025). Overall, this conceptual evolution has subjected the smart city to deeper investigation from the lens of inclusivity, drawing attention to factors such as urban affordability which is central to inclusive cities across spatial, social, and economic dimensions (Shah et al. 2015).

Urban affordability is vital for ensuring access to essential services such as housing, transportation, education, healthcare, and water and sanitation (United Nations 2015), all of which can be enhanced through smart city initiatives. It can be understood when economic interpretations of affordability such as the budget-shares ratio, potential affordability, or residual income (Kessides et al. 2009) are combined with broader social and environmental considerations in the urban context. This broad framing positions urban affordability as a human rights criterion (Hertel & Minkler 2007), which concerns the sustained capacity of all citizens to access essential services, in complementarity, so as to live a decent urban life (Baquero et al. 2017, Goddard et al. 2022, Mulliner et al. 2013). This implies that 1) the services should be consistently available and accessible for citizens to depend on at all times, 2) the affordability of one essential service should not be at the expense of another, and 3) the services should be quality enough to guarantee urban well-being.

Despite its significance, particularly in relation to the now inclusive-entangled smart city concept, urban affordability remains underexplored in smart city literature (Malhotra et al. 2021, Park & Yoo 2023). Smart city studies often make passing references to affordability within overarching notions such as sustainability (Sharifi et al. 2024), or approach affordability in terms of the high financial costs of providing or accessing smart services (Bello et al. 2024, Jonek-Kowalska & Wolniak 2021, Puron-Cid & Gil-Garcia 2022). However, limited studies have featured urban affordability as a central focus or methodically explored its broader implications for smart inclusive cities. To address these gaps, this research aims to systematically investigate how urban affordability can be positioned within the smart city context, and its implications for the provision of essential urban services to all. This extended abstract presents and discusses the preliminary findings from the overall research.

2 Methods

This research is conducted through a scoping review, which synthesizes fragmented references to affordability across smart city literature. Specifically due to the research's exploratory nature, the scoping review was employed as it is suited for mapping key concepts and examining the extent and nature of available research (Munn et al. 2018). The review incorporated recommended best practices for scoping review data extraction, analysis, and presentation (Pollock et al. 2023).

Data was sourced from two reputable bibliographic databases, Scopus and Web of Science, according to four search queries that reflect the foundational concepts of the research. The first query featured commonly used smart city related terms (i.e., "smart cit" OR "technology cit" OR "intelligent cit" OR "connected cit" OR "digital cit"). The second ("smart govern" OR "e-govern") focused on governance as a facilitator of smart cities. The third included various essential smart services (i.e., "smart mobility" OR "smart transport" OR "smart energy" OR "smart water" OR "smart waste" OR "smart living" OR "smart home" OR "smart infrastructure" OR "smart econom"). The fourth incorporated conceptual terms now intertwined with the smart city concept ("smart inclusive cit" OR "smart sustainab cit"). Using the "AND" Boolean operator, each of these were paired with urban affordability related terms (i.e., "urban affordab" OR affordab OR access OR inclusiv*). The search queries were refined for quality, relevance, and minimised risk of misinterpretation according to three filters: publication type restricted to peer-reviewed journal articles, disciplinary scope limited to Social Sciences (for Scopus) and Urban Studies (for Web of Science), and publication language as English. Articles that matched the search filters and featured any combination of the search terms in their titles, abstracts, or keywords were retrieved.

In total, 2,075 articles were retrieved from the databases (1816 from Scopus and 259 from Web of Science) which were subjected to three levels of screening. The first level excluded duplicates within and across databases. The next levels of screening were conducted to retain only articles that sufficiently meet the criteria of making references to urban affordability and, at least, one essential service delivered through smart city initiatives. Accordingly, articles were screened after readings of their titles and abstracts, and then of the full text. Lastly, other relevant articles that were identified through background research and backward citation were included. The final review dataset consisted of 130 articles. Following the PRISMA statement recommendation (Moher et al. 2009), the dataset screening workflow is illustrated in Figure 1.

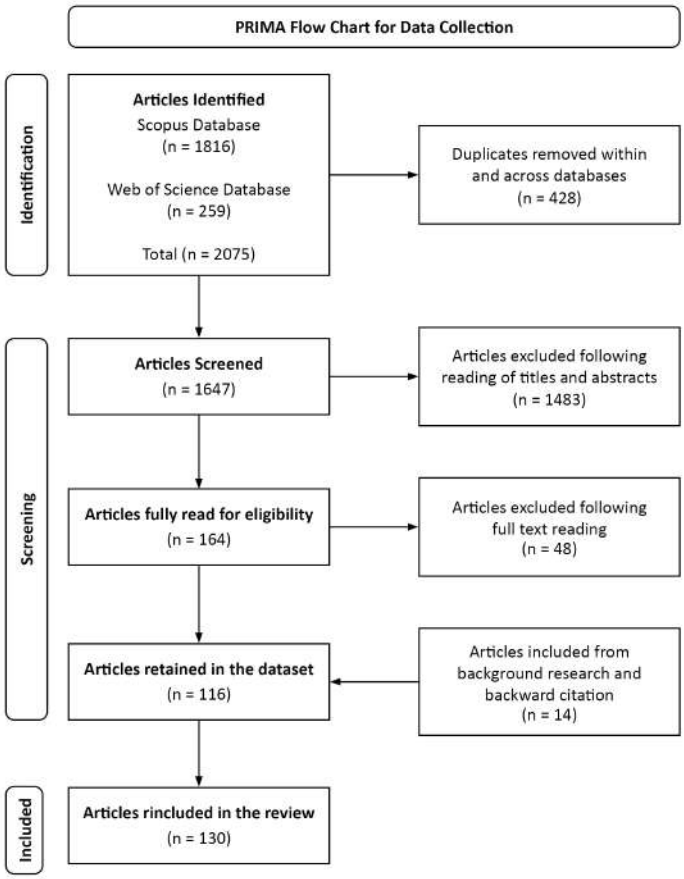

Figure 1: PRIMA Flowchart for Data Collection

Preliminary data analysis was conducted inductively, with identified recurring themes organised into different clusters. Among those clusters, this submission focuses specifically on the roles that urban affordability plays in the pursuit of smart inclusive cities.

3 Results

From the data set, it was observed that urban affordability plays multiple interconnected roles, serving as a condition, a means, and an outcome of smart service provision to all. Firstly, affordability serves as ***a critical condition for***

smart inclusive cities, relating to resources that must be deployed for the smart city concept to be practically realised. For cities to deliver smart services, certain 'contextual conditions' such as socio-economic and technology development inherently determine the effort and cost for accessing and deploying the required resources (Neirotti et al. 2014). In this sense, affordability is about the ease of deploying those resources towards: 1) the provision of basic urban infrastructure as a foundation for sociotechnical urban processes (Graham & Marvin 2001) and the physical medium for service delivery (Das 2024); 2) the integration of Internet-of-Things (IoT) technology into the urban system (Ciuffoletti 2018), which has become less cost-intensive due to innovations in artificial intelligence and data processes (Anjomshoaa et al. 2021, Radu 2020), and 3) digital connectivity for inclusive digital spaces which enables citizens fully participate in and benefit from smart cities (Graham 2002). Essentially, cities that are unable to afford these resources either fail to effectively implement smart city initiatives or exclusively direct services to specific social groups (Chakrabarty 2019, Tan & Taeihagh 2020).

Secondly, affordability serves as ***a means for smart service delivery***, whereby minimised cost in the processes of delivering services render it a more feasible endeavour for service providers. In the smart city context, studies highlight two dominant pathways to such affordability. The first is the adoption of technology in service delivery which can optimise associated processes and lead to long-term savings (Silva et al. 2018). Innovations like smart meters applied to energy and water supply systems (Grigg 2020, Shafiullah et al. 2023, Yi et al. 2011), IoT and machine learning in waste management processes (from collection to recycling) (Gopikumar et al. 2021, Lella et al. 2017), and use of big data and GIS for mobility service optimisation (Aqib et al. 2019, Aquilué Junyent et al. 2024) offer some exemplary applications of technology that can minimise cost (money, time, effort, etc.) and improve output. The second pathway is the involvement of citizens in the service delivery processes which can be facilitated through open city platforms (Barns 2018). This allows residents contribute in governance by reporting incidences, communicating service demands, and influencing proposed interventions (Hansen et al. 2025, Lee et al. 2023, Torabi Moghadam et al. 2024). These help to ensure that resources are directed towards actual needs, reducing the overall cost of urban governance and service delivery.

Thirdly, affordability serves as ***an inclusion-enabling outcome of smart city initiatives***, as smart cities ideally support the socio-economic development of citizens and offer them increased capacity to afford essential services. This aligns with Sen's (1999) capability approach (Sen 1999), which stipulates that people's rights are only as meaningful as their ability to benefit from them. In this sense, services enhanced in smart cities are meaningless if the end-users

are unable to interact with them in fulfilment of their urban rights (Harvey 2008). Therefore, technology interventions in education that enhance access to quality informational resources and improve learning outcomes (Revak & Gren 2022, Sahlaoui et al. 2024), as well as those that expand income generation opportunities by opening up employment streams in the digital economy (Alfaro-Navarro et al. 2024, Jabeen et al. 2024, Mossberger & Tolbert 2021) are critical. Such initiatives facilitate human capital development and set citizens on a path to socio-economic prosperity (Becker 1964). This strengthens their capacity to utilise and benefit from essential services for quality urban life, and ultimately fosters smart urban inclusion.

4 Discussion and Conclusion

By synthesising the literature, this study systematically highlights how urban affordability contributes to the pursuit of inclusive smart cities. The preliminary analysis of the literature, which forms the basis of this submission, helps to organise multiple roles of urban affordability into a more apparent and comprehensive framing. It indicates that urban affordability is a consistent factor that emerges even before the process of service provision is initiated, as it impacts the pre-requisite deployment of resources. In addition, it aligns with both the technological and human dimensions of smart cities (Nam & Pardo 2011) throughout the process of service delivery, as it is facilitated by technology adoption and citizen involvement. Lastly, it emphasises inclusive outcomes for all citizens, aligning with the current evolved state of the smart city concept. Overall, this framing advances current fragmented research that engages with urban affordability with a narrow focus on financial resources, or from analytical vantage points of either the service provider (city government, private institutions, or citizens themselves) or the end-user.

A more systematic organisation of the findings is expected as the dataset is being subjected to in-depth analysis, with the objective of a conceptual framework that appropriately positions urban affordability in the smart city discourse. The Input-Process-Output (IPO) model, which offers a lens for understanding the systematic processes of planning and service delivery (Chadwick 2013) is being considered as a tool for further analysis and presentation. This will help to illustrate the relationships between the roles discussed herein, the stakeholders involved in delivering affordable smart services, and other identified thematic clusters. Such future outputs will bring this research closer to uncovering how urban affordability can foster truly inclusive smart cities where all citizens can access the services necessary for quality life.

This extended abstract is drawn from preliminary analysis of a more comprehensive scoping review research, which forms the literature review section of my PhD. A literature review paper that features more in-depth and structured findings is being co-authored by myself (Mohammed Lawal Shaibu) and my PhD supervisors (Juhyun Lee and Joon Sik Kim).

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Women's Environmental Advocacy in Cities: Motivations, Activities, Outcomes and Challenges

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1 Introduction

A growing body of scholarship points to the significant role women play in environmental movements and community-based ecological initiatives (Arora-Jonsson 2014, Asteria et al. 2018, Bell 2016, Tran 2021). Yet their everyday practices and situated expertise remain marginalized in planning and policy debates – a gap this work addresses by examining women's grassroots environmental advocacy in Polish cities. The study draws upon ecofeminism, feminist geography, environmental justice and moral geography concepts. While the literature within these fields is extensive, there are some gaps in existing knowledge, especially when it comes to women's experiences in grassroots environmental activities in cities. Ecofeminist studies often foreground rural and Indigenous contexts, documenting close ties between marginalized communities, especially women, and local ecosystems, as well as care and embodiment (Mies & Shiva 1993, Gaard 2010, Jabeen 2020, Kings 2017). Feminist geography has more often focused on cities, highlighting everyday inequalities around safety, accessibility, spatial justice, and the gendered dimensions of public and private space (Massey 1994, 2005, McDowell 1992, 1999, Rose 1993).

Much of the existing research on environmental movements in Central and Eastern Europe has concentrated on institutional dynamics, public mobilisation

and the broader shifts in environmental politics that followed the post-socialist transition (Agarin & Grīviņš 2016, Carmin & Fagan 2010, Chodkowska-Miszczuk et al. 2021). The environmental justice field is gradually emerging in the region with the focus mostly on public participation and inequalities in governance (Domaradzka 2022, Novák 2021, Paloniemi et al. 2015), or the environmental protection (Biernacka et al. 2022, Burchard-Dziubińska 2019, Frankowski 2020, Maltby et al. 2024, Pixová & Kolářová 2025, Szulecka & Szulecki 2013). However, little attention has been paid to women's activism or feminist perspectives. With some exceptions (Pixová & Kolářová 2025), gender remains largely absent from these discussions.

Central and Eastern Europe offers a distinct landscape shaped by rapid urbanization, neoliberal restructuring, and a legacy of centralized governance. Conflicts over rivers and green areas are common here, and marginalized voices are still under-represented in formal fora. Extending the insights from feminist geography and ecofeminism to urban and peri-urban activism in this region helps understand how women and other marginalized groups defend nature in human-altered environments and why their strategies matter. This study explores how women in Polish cities mobilize around environmental problems. Guiding research questions are as follows: What drives women to engage in grassroots environmental protection initiatives in cities? What strategies and tools do they use? What effects result from their engagement? What challenges do women encounter in their pursuit of more sustainable environments? How does women's environmental activism reflect ecofeminist, environmental justice and feminist geography perspectives?

2 Methods

The study uses a mixed-methods design, integrating qualitative and quantitative strands. Six case studies cover river (Oder, Vistula, Wilga) and urban green areas' protection initiatives (Wawer Bend, Grabiszyński Park, Kliny) across Warsaw, Kraków, and Wrocław. The work primarily focuses on campaigns within cities, though in the case of rivers it also considers actions that cross city boundaries. Short description of selected case studies is as follows:

- Oder River, Wrocław. Following the 2022 Oder River catastrophe, the Oder Tribe movement emerged to protect the river's ecosystem and establish legal personhood for the waterway.

- Vistula River, Kraków and Warsaw. The Sisters Rivers collective works to prevent the Vistula River regulation, pollution and degradation. The main aim of the group is rewilding Polish rivers.
- Wilga River (and Wilga River Park), Kraków. Grassroots activities of the Sisters Rivers are aimed at protecting the Wilga River from pollution and hard-engineering intervention. The Rescue Action for Kraków engaged in protecting riparian willow and poplar forests, expanding the ecozone in the Wilga River Park and water quality monitoring in the Wilga River.
- Grabiszyński Park, Wrocław. Grassroots movement is aimed at protecting a large green area – Grabiszyński Park – and the site of a former cemetery. The group of local stakeholders developed a wildlife preservation plan for the park (e.g. restoring the undergrowth, limiting mowing, leaf raking).
- Wawer Bend swamp, Warsaw. Community initiative is aimed at protecting the urban wetlands called the Wawer Bend. The group advocates in favour of preserving the Wawer Bend area as a park showing the role of wetlands in times of climate crisis.
- Kliny, Kraków. Residents' movement is aimed at preserving green areas, including natural meadows, in the intensively built-up city district in southern Kraków.

Data were collected through media discourse analysis, in-depth interviews with activists and field observations in sites of conflict and protest. During 2023-2024 13 interviews have been conducted. In-depth semi-structured interviews with women activists (leaders, organisers, carers, experts) directly involved in campaigns to protect rivers and green areas explored motivations, campaign strategies, interactions with stakeholders, reflections on environmental awareness, the challenges and achievements of the movements. Materials were thematically coded and analyzed using MAXQDA software.

A CAWI survey targeting female residents in Warsaw, Kraków and Wrocław has also been conducted (600 respondents). The questionnaire covered environmental attitudes and behaviours, forms and frequency of engagement, motivations and barriers, awareness of local initiatives, and socio-demographics. Data processing in Excel and SPSS produced engagement clusters and two composite measures: an environmental behaviour index and an environmental activism index. Ethical procedures included informed consent, anonymization and secure data management.

3 Results

Participants frequently framed their engagement through care: care for nature, health, children. Care appeared as both moral stance and method: repeated site visits, hands-on monitoring, and keeping communities informed. The strongest narrative revolves around nature-inspired activism, pointed out by the majority of respondents. Justice-oriented motivations were also common, especially where hazards or benefits seemed unevenly distributed. Emotions were important, as hope, grief and outrage often translated into collective action. A feminist notion related to motherhood and sisterhood also appears to be a powerful narrative.

Women-led groups are actively reclaiming and redefining river and green spaces through river trips, field walks and artistic happenings that make ecosystems visible and worth defending. Their actions shift stigmatizing narratives, (e.g., Wawer Bend from "useless wetland" to an important ecosystem that might be a climate-relevant community park) and helped turn threatened sites like the natural areas along the Wilga River into publicly accessible, eco-recreational space. The March for the Oder reclaimed symbolic and physical ground, advancing the idea of rivers as rights-bearing subjects rather than extractable resources. Engagement is embodied: swimming, performances and multisensory walks cultivate attachment and broaden participation across genders and generations. Campaigns mobilize local and experiential knowledge (inventories, photo logs, routine observations). Across cases, this mix of care, creativity and evidence widens coalitions, changes planning conversations and seeds governance alternatives.

Environmental outcomes include the slowdown or revision of environmentally harmful projects, stronger biodiversity considerations, and more attentive maintenance practices. Socially, initiatives built communities around specific natural sites or environmental problems, raised awareness, and encouraged more inclusive participation formats (e.g., child-friendly meetings, on-site consultations). Some groups achieved procedural adjustments (policy and land-use changes). Barriers include gendered patronization, discrimination, time scarcity, institutional resistance, burnout and the discounting of situated knowledge.

The survey revealed care for health, care for nature and concerns over climate crisis as core motivations for engaging in environmental protection activities. The main barriers revolved around the lack of time and the lack of support from formal institutions. The ongoing analysis includes clustering, that shows several engagement profiles of women, including observers, occasional volunteers, participants, activists and agents of change.

4 Discussion and Conclusion

Findings suggest that women's urban environmental activism in post-socialist cities is rooted in both justice and feminism domains, though they often intersect. Several ecofeminist strands manifest in women's activism, shaped by their perceptions of nature and their work to protect it. River protection initiatives adopt an anarcho-ecofeminist approach, challenging patriarchal systems and technocratic modes of governance. These cases often incorporate spiritual and cultural ecofeminist elements, framing rivers as living beings and, at times, resonating with Shiva's notion of the feminine principle in nature (Mies & Shiva 1993). Activism related to the preservation of urban green areas tends to reflect deep-green ecofeminism, with a strong emphasis on biodiversity and ecological continuity. The study also shows that women's grassroots activism is influential as it leads to policy adjustments and promotes inclusive decision-making. These efforts advance environmental justice, albeit unevenly, while reshaping environmental governance in contexts marked by post-socialist legacies.

Studied cases reject the notion of space as a passive backdrop. They show space as lived and relational, co-created by human and non-human actors. Women's efforts to reclaim and redefine natural spaces in cities advance Kern's (2020) idea of a "feminist city," where protest and community work open room for alternative futures. They also demonstrate how embodied engagement and local knowledge can counter environmental harm. This study offers a starting point for imagining more equitable environmental policies and may help inspire new forms of activism in Central and Eastern Europe. Seats at the table matter, but process matters more. If decisions honor gender-sensitive experiences, community knowledge, and acknowledge human-ecosystem interdependence, environmental and spatial governance can actually change.

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