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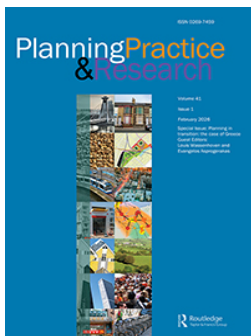
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Spatial capital in the web of life

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ABSTRACT

This paper advances a theoretical synthesis aspiring to extend the concept of spatial capital through a better elaboration of its engagement with more-than-human and more-than-city dimensions. It examines how the dialectics of concentrated and extended urbanization can shed further light on understanding how human and more-than-human assemblages take different forms across city as well as more-than-city landscapes, and how these arrangements develop into patterns of social and ecological inequality. Through this investigation, it aims to develop novel theoretical insights on how the organization of spatial environments enables the variegated production and unequal appropriation of social and ecological values.

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Introduction: extending spatial capital

Since the turn of the century, discussions around post-metropolitan, planetary urbanization have strongly reasserted the critical role of space in shaping social and ecological inequalities (Soja, 1989; Smith, 2008; Brenner & Schmid, 2011). Within a globalizing context that seemed to dissolve the social, ecological and economic interconnectivities and interdependencies of urbanization into a multiscalar web of flows and networks (Hesse, 2010), a breadth of research, and conceptual and theoretical contributions emphasized how these are underpinned by hierarchical and unequal physical and social (im)mobilities (Graham & Marvin, 2001; Urry, 2007; Merriman, 2009; Adey, 2017). In the context of escalating ecological crises and mounting pressures on planetary resources, understanding how inequalities are spatially produced and reproduced has become a core concern for planning research. This requires treating space not as a passive backdrop, but as an active element in shaping economic, social and ecological relations (Soja, 1989; Smith, 2008).

Within this context, the concept of spatial capital has gained traction in urban studies and planning as an analytical term that foregrounds the role of spatial arrangements in the production and distribution of social advantage (Mace, 2017). Introduced by Jacques Lévy in the early 1990s, the concept draws inspiration from Pierre Bourdieu's theory of capital, while shifting attention toward the ways in which location, mobility and spatial competence mediate access to resources

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(Lévy, 1994; Lussault & Lévy, 2003). Spatial capital has been mobilized to highlight how unequal access to advantageous positions, infrastructures and networks contributes to the reproduction of socio-spatial inequality. Importantly, however, it does not posit space as an autonomous field of capital accumulation in Bourdieu's sense, but operates as a heuristic construct within planning and geographical scholarship.

In this paper, I introduce an understanding of spatial capital as a dynamic and collective process of spatial advantage-making, shaped by both human and more-than-human forces across city and more-than-city landscapes. I emphasize the emergence of spatial capital through a relational meshwork of spatial arrangements producing differentiated advantages, advantages which are collectively produced but asymmetrically appropriated, leading to the emergence of spatial inequality.

Although the concept of spatial capital is quite generic, most of its applications have focused on examining the competitive spatial advantages and disadvantages that emerge from the concentration of people, infrastructures and economic activities in urban environments. Scholars focus on how urban environment structure access to jobs, housing and mobility (Rérat & Lees, 2011; Forsberg, 2019). The role of transportation networks, real estate speculation and elite urban enclaves further reinforces spatial capital as an urban phenomenon (Centner, 2008; Mace, 2017; Rérat, 2018). The concept of spatial capital has thus remained rather city centric, with the underlying processes that characterize its articulations linked mostly to the positive and negative externalities of agglomerations.

In recent years, however, a growing body of research around Planetary Urbanization has emphasized how urbanization exacerbates spatial inequalities, both in social and ecological terms, by positioning cities within a multiscale web of socio-ecological interdependencies that link them not only to other cities and settlements but also to a wide range of more-than-city landscapes of primary production (agriculture, forestry, mineral extraction, fishing etc.), circulation and waste disposal that support urban life (Brenner & Schmid, 2011; Brenner, 2013, 2014). These debates emphasize the struggles around resolving the metabolic interdependencies of urbanization, and their political ecologies, as a key source of social and ecological inequalities and tensions (Angelo & Wachsmuth, 2015). In doing so, they also emphasize the connection of urbanization to the assemblages of more-than-human life that is being metabolized, linking social and ecological inequalities not only with humans but also with more-than human work (Brenner & Katsikis, 2020; Katsikis, 2023). These approaches acquire particular importance in the current context, where the material basis of urbanization (and its 'footprints') is being restructured through the various responses to the climate crises in the form of green deal(s) and transition(s).

The aim of this paper is to extend the concept of spatial capital by situating it within this broader relational and socio-ecological understanding of urbanization. In doing so, it develops a theoretical synthesis bringing the concept of spatial capital in dialogue with the frameworks of planetary urbanization, territorial organization and ecological surplus. Each of these frameworks contributes distinct yet complementary insights into the spatial production of inequality and is elaborated across three sections: section one is focused in discussing spatial capital as an emergent spatial relation, rather than a fixed asset; section two in elaborating how it emerges through the articulation of bundles of human and

more-than-human work; and section three exploring how these bundles animate not only city but also more-than-city landscapes, resulting into broad patterns of uneven development.

The first section revisits the various framings of the concept of spatial capital and emphasizes how it can be reconceptualized as an emergent relational condition through Swyngedouw's (1992) notion of territorial organization, which unpacks how spatial advantages emerge through a relational layering of diverse spatial elements, human and more-than-human to be eventually appropriated unevenly, leading to patterns of uneven development.

The second section further delves into disentangling this relational meshwork, by emphasizing the role of the unpaid work of humans and more-than-humans building upon Jason Moore's concept of ecological surplus (Moore, 2015). While less focused on spatial questions, this concept is valuable in deciphering how the process of uneven development is linked to the capacity of certain actors within society to appropriate unevenly high rations of unpaid work (human and/or more-than-human), per unit of capital invested.

The third section, brings back the spatial dimension, linking the question of spatial capital to the urbanization process, building upon the agenda of planetary urbanization. This section is key in linking the relational interpretation of spatial capital the dialectical relationship between processes of concentrated but also extended urbanization, which allows the emergence and appropriation of spatial capital to not be confined to cities but to unfold across interconnected landscapes, from agricultural frontiers to resource extraction zones and logistical corridors (Brenner & Schmid, 2011; Brenner & Katsikis, 2020). These variegated geographies shape the uneven development of social and ecological relations, revealing patterns of inequality that transcend the traditional urban-rural divide.

By synthesizing these theoretical perspectives, this paper aims to extend the concept of spatial capital to consider more-than-city, more-than-human spatial articulations and the way they become part of uneven geographies of value creation and appropriation, thus contributing to broader discussions on spatial justice.

From spatial capital to territorial organization

Introduced more than three decades ago by Jacques Lévy, the concept of spatial capital builds upon and extends Pierre Bourdieu's work on capital, who, aimed to expand economic capital, by also considering cultural and social capitals (Bourdieu, 1986, 2011). For Bourdieu, economic capital refers to financial assets, property and other material wealth that can be directly converted into monetary value. Cultural capital exists in three states: embodied (personal knowledge, skills and dispositions), objectified (material cultural goods, such as books or instruments) and institutionalized (credentials and qualifications). Social capital consists of networks and social relationships that provide access to resources and opportunities (Bourdieu, 1986; Fogle, 2011). Together, these forms of capital structure social space, shaping positions of power and inequality.

In his work, Lévy (1994) proposed applying the concept of capital to space in a manner similar to how Bourdieu (1986) extended it beyond the economic sphere. In developing the notion of spatial capital, Lévy proposed that spatial conditions, because they are finite

and unequally distributed, function in many ways like a form of capital. Spatial capital thus includes the resources that allow actors to navigate and benefit from spatial arrangements, whether through advantageous locations, control over spatial networks, spatial competence or the ability to mobilize and trade spatial resources. This interpretation has been influential within planning and geography, where scholars have used it to examine how spatial inequalities emerge from differential access to locational advantages, mobility infrastructures, and territorial embeddedness.

At the same time, the importation of the term ‘capital’ into spatial analysis requires conceptual clarification. It is important to situate this analytical borrowing in relation to Bourdieu’s own treatment of social space and physical space. In Bourdieu’s framework, social space is organized along three interrelated dimensions: the overall volume of capital held by social agents, the composition of that capital (the relative balance between economic, cultural, social and symbolic capital), and the trajectory through which these forms of capital evolve over time. Each form of capital may exist in embodied, objectified or institutionalized states. Physical space does not constitute a separate field of capital, but rather a material expression of objectified forms of capital, produced and appropriated through social relations. In his analyses of residential location, site effects and mobility, Bourdieu shows how positions in social space are translated into spatial differentiation without recourse to a distinct category of spatial capital (Bourdieu, 1979, 1992, 2018; Bourdieu & Wacquant, 1992; Slater, 2021; Wacquant, 2022).

Lévy’s contribution can therefore be read not as a doctrinal extension of Bourdieu’s theory, but as a heuristic intervention that foregrounds the spatial mediation of social advantage. Since space is finite, it becomes subject to competition, making it comparable to scarce goods that function as a form of capital and, consequently, a source of inequality. Spatial capital, as he defines it, consists of all the resources that enable an individual to navigate and manage spatial constraints and benefits to their advantage. These resources can comprise both material and immaterial spatial resources that individuals or groups accumulate and mobilize for strategic benefits, including access to advantageous locations (e.g. proximity to economic hubs, cultural centers), control over spatial networks (e.g. transportation infrastructure, digital connectivity), competence in using and navigating space (e.g. spatial knowledge, cognitive mapping skills), and the ability to accumulate and trade spatial resources (e.g. real estate investment and relocation decisions). As a result, spatial actors within a society leverage their spatial capital to develop spatial strategies, while spatial goods derive their value from their potential exchangeability with other goods, influencing the level of profitability of the other forms of capital they possess (Lévy, 1994).

Furthermore, Lévy differentiates between two principal types of spatial capital: position capital and situation capital (Lévy, 1994). Position capital refers to the advantages derived from being located in a specific place. This can be understood as the spatial value tied to a fixed position, such as a residence, workplace or any other location that provides strategic benefits. The value of position capital is determined by the characteristics of the place itself – such as accessibility, infrastructure, proximity to economic centers or social prestige – rather than by movement or mobility. Essentially, it is the embedded spatial advantage that results from one’s location within a given social and economic landscape. Situation capital, on the other hand, is linked to an individual’s ability to appropriate and navigate a broader spatial environment through mobility and connectivity. It is not just

about where one is located but also about how well one can engage with and access various places. Situation capital encompasses the capacity to move efficiently between different locations, whether through transportation networks, knowledge of routes or financial and social means that facilitate movement. In this sense, it represents a dynamic form of spatial capital, where distance remains a factor but is controlled or mitigated through effective mobility and connectivity strategies. Together, these two forms illustrate how spatial capital is both location-bound and mobility-driven.

While this distinction has proven analytically useful, Lévy's formulation largely treats spatial capital as an accumulated condition, rather than interrogating the historical and structural processes through which spatial advantages are produced and unevenly distributed. This paper proposes a shift: to approach spatial capital not only as a relational condition but also as a historically produced process involving both material configurations and metabolic dynamics.

The concept of spatial capital has been the basis of further elaboration, not always building upon the work of Lévy (which nevertheless has remained key), but largely reflecting the importance of locational advantages (reflecting Lévy's position capital), mobility, connectivity and access to networks, whether physical or social (reflecting Lévy's situation capital). For example, the work of Rérat and Lees on gentrification adds the dimension of gentrifiers' mobility to the locational advantages of real estate properties (Rérat and Lees, 2011), further discussed by Rérat as part of planetary processes (2018), while in the work of Barthou and Monfroy (2010), prime location or increased mobility factors influence schooling choices, thus amplifying educational inequalities. Thus, most engagements with the concept of spatial capital revolve around the processes that construct position, and situation capital, and their effects, even if they are not referenced directly as such. In these accounts, spatial capital appears primarily as an outcome of advantageous position or connectivity, with limited attention to the processes through which such advantages emerge. How can we understand in a systematic manner the processes shaping this uneven assemblage and distribution of spatial advantages? How do they emerge, and what makes them uneven?

In order to address this, it would be beneficial to explore spatial capital as a process, rather than as a condition. In doing so, I turn to historical materialist perspectives stemming from Marxist critical urban theory, in which capital is considered a social process in motion, rather than a resource (Harvey, 1985). The spatialization of capital has been a core concern in critical urban theory, with a growing body of literature examining the production of space as part of the broader process of capital accumulation and its associated patterns of uneven development (Smith, 2008; Harvey, 2010). Among this extensive literature, the work of Swyngedouw (1992) offers one of the most systematic assessments of the processes through which space becomes at the same time a force of production, and at the same time a source of inequality through the uneven appropriation of its productive capacities.

Similar to spatial capital, territorial organization involves the spatial articulation of social, technical and natural elements, ranging from natural resources and infrastructures to institutional forms and labor characteristics. What Swyngedouw adds, however, is a historical materialist lens: he emphasizes how these spatial arrangements generate externalities, indivisible, emergent benefits that enhance economic activity, and how these are unevenly produced and appropriated (Swyngedouw, 1992). Territorial

organization thus offers a process-oriented perspective that complements the spatial capital framework: it allows us to analyze not just who has access to spatial advantage, but how such advantages come into being, through collective spatial and socio-ecological arrangements. These include:

First, 'Natural goods', that can be here interpreted as natural resources that are not only inputs to the production process (as raw materials) but also inputs that are crucial to social reproduction, such as clean air, water etc.; second, what are broadly framed as 'collective goods', which include the elements of fixed capital that is again necessary for the production and circulation process, but also for social reproduction, but also include the characteristics of the labor force, not only demographic in terms of size, age etc. but also in terms of their skills; third, the specific institutional and regulatory forms that guide and frame the interactions between all the elements of territorial organization; and, fourth, the characteristics of the specific capitalist units, from firms to individuals, which mostly refer to the cultural norms that shape their practices (Swyngedouw, 1992, p. 418). The way conditions of territorial organization turn space into a machine, has to do with the potential of exploiting particular 'externalities' out of certain spatial configurations, which '*produce a structural and indivisible commodity which confers capacities upon a macro-economic ensemble which cannot be attained without them.*' (Swyngedouw, 1992, p. 420).

Similar to the conditions that allow for the emergence of spatial capital, the externalities that emerge out of forms of territorial organization are not planned, but rather an emergent property of any configuration that adds some sort of advantage to the activity that will be able to identify them but also exploit them (Swyngedouw, 1992). Externalities are specific to different processes and as a result, the same territorial organization can present different degrees of externalities to different operations that could harness them in different ways.

What is important for Swyngedouw is to understand how the emergence and appropriation of externalities out of forms of territorial organization is part of the broader process of uneven development under capitalism, in which the productive capacities of space are instrumentalized in the search for profit (Harvey, 1985; Smith, 2008). What social tensions arise as these elements are continuously combined and recombined into different territorial organizations? How do forms of territorial organization become sources for the appropriation of capitalist surplus value? How they are unevenly appropriated?

For Swyngedouw, what is key to consider is that the externalities that emerge out of the conditions of territorial organization are almost always collectively produced by various social agents operating across the various elements that constitute territorial organization and are rather indivisible in their spatial embeddedness: if one of the elements is transformed, or ceases to be bundled with the rest, the whole externality disappears (Swyngedouw, 1992). For example, the mobility of the workforce in an urban environment that could be considered as an externality for the location of firms, could be the result of a combination of factors that could include the density of the urban fabric, the decision of local governments to invest in public transport, even the climatic conditions that would allow the extensive use of bicycles. The value of these processes that is hard to be calculated and thus be charged, through for example the real estate market, could be offered as a positive externality, a locational advantage to the process that will

manage to identify and exploit it. Most importantly, while the production of forms of territorial organization is a collective process, the appropriation of their externalities does not often benefit the collective that made it but is often a private one (Swyngedouw, 1992).

In sum, it could be argued that the unequal patterns of construction and appropriation of the positive advantages of territorial organization create winners and losers in the process of the production of space, contributing to the production of spatial forms of inequality and uneven development. Processes of territorial organization are never neutral and are part of the social struggle in the production of space. The production of territorial organizations is not just a spatial, but also a historical process, which proceeds through the re-combination of particular bundles of territorial effects. These effects are embedded into the landscape and are therefore, both space forming and space dependent. In short, the operational and transformational capacities of each new territorial organization does not happen in vacuum but is largely influenced by the previous forms of territorial organizations that were shaped to exploit the potentials of previous externalities, according to previous goals, which in turn were the result of past configurations and so on and so forth. The relative fixity of territorial organization (meaning not only the physical, infrastructural and spatial allocation but also the institutional form, skill and qualification patterns of social entities) is necessarily rooted in space and history and its use-value (and, hence, value) cannot be dissociated from this rootedness (Brenner, 1998). Since every new configuration of territorial organization must undo or restructure previous versions, this historical and geographical fixity creates certain restrictions in the reconfiguration of landscapes, but also another series of social tensions and struggles around it, reinforcing its deeply political nature. The concept of territorial organization provides a powerful conceptual apparatus for reconceptualizing spatial capital as an emergent and dynamic socio-spatial process. It highlights and allows us to unpack two important questions: how are spatial advantages produced collectively (and by whom), who appropriates them and how are these processes resulting in patterns of uneven development across space?

Territorial organization and the spatialities of ecological surplus

Territorial organization deepens the analysis of spatial capital by revealing how spatial advantages emerge as collectively produced externalities that allow space to become operationalized and unevenly appropriated. These emergent spatial advantages do not arise solely from processes of social production but are embedded within broader socio-ecological relations that connect production and reproduction. Through these relations, space becomes not only a site of economic activity but also a metabolic medium through which the material conditions of social life are sustained and transformed.

Examining the social processes behind the collective production of forms of territorial organization, Swyngedouw's analysis, is initially highlighting the city as a condition of territorial organization where numerous externalities emerge through mechanisms, such as 'agglomeration, scale, multiplier or infrastructure effects, but also through the combination of diversified activities, bundles of information centers, networks and flows, decisions centers, market organization and characteristics, etc.' (Swyngedouw, 420)

Subsequent work, however, mostly through the lens of Urban Political Ecology and Planetary Urbanization, as well as World Systems Ecology recognizes the importance of considering the important work of more-than-human actors in the process of the production of space (Swyngedouw, 1996, 2006; Heynen *et al.*, 2006; Brenner & Schmid, 2011; Moore, 2015). These approaches offer a crucial lens for understanding the complex processes of urbanization that go beyond human-centred perspectives. They highlight the role of more-than-human actors in the production and transformation of space, addressing environmental inequalities, the politics of infrastructure and the ecological consequences of urban life, within and beyond cities. While Swyngedouw's (1992) listing of the elements of territorial organization includes environmental processes and conditions under 'natural goods' the way these factor in the production of forms of territorial organization deserves some unpacking, especially since they are key to questions around the broader metabolism of urbanization. How do more-than-human agents contribute to the collective construction of the positive (and negative) externalities that characterize forms of territorial organization?

The work of Jason Moore on the concept of 'ecological surplus' offers a useful framework in understanding the role of more-than-human work in the production of the collective advantages that characterize forms of territorial organization (Moore, 2015). For Moore, capitalism does not merely extract value through the direct exploitation of wage labor (the paid work of humans), but mobilizes a broader set of unpaid work processes that sustain the material reproduction of surplus value (Moore, 2015). This unpaid work spans the human and more-than-human domains alike, encompassing activities as diverse as domestic reproductive labor, biological growth cycles and geo-physical transformations. The development of capitalist accumulation, in this sense, is not confined to the wage relation but is fundamentally premised upon the extraction of value from ecological processes that remain uncommodified or only partially integrated into circuits of exchange.

The concept of ecological surplus formalizes this dynamic as the ratio between capital's investment in direct production – through wage labor, fixed capital and raw material extraction – and the mass of unpaid work that is harnessed in the process. When capital is able to set in motion minimal investments while appropriating vast reservoirs of unpaid work – whether through the clearance of a previously untouched forest, the tapping of an unexploited aquifer or the extraction of mineral deposits formed over millennia – the costs of production fall, surplus value rises and capital experiences a moment of expansionary dynamism. Such conditions characterize the early stages of each major wave of accumulation, as capital moves to secure high ecological surpluses by opening new commodity frontiers. However, this relation is not static. Over time, as these previously 'free' resources are drawn into circuits of commodification, the ratio of ecological surplus declines. What was once an externality, absorbed without cost, is increasingly subject to direct investment, regulation and technological mediation, thereby eroding its capacity to function as a site of 'cheap' accumulation (Patel & Moore, 2017).

As Moore suggests, the history of capitalism can be interpreted as a *longue durée* strategy of appropriating ecological surplus to counteract the tendency toward falling rates of profit (Moore, 2015; Patel & Moore, 2017). The expansive movement of capital into new frontiers – spatially, technologically and ecologically – has historically served as

a mechanism to secure fresh reservoirs of unpaid work. Yet as each successive phase of accumulation unfolds, the very conditions that once made such surpluses possible become internalized within the capitalist system, converted into fixed capital, commodified inputs or regulated assets. This structural dynamic necessitates an ongoing dialectic of expansion and intensification, in which new landscapes of production must be incorporated even as existing ones are subjected to deeper processes of capital investment and infrastructural embedding (Katsikis, 2023).

The construction of forms of territorial organization, then, must be understood within this dynamic as a process of securing locational advantage through the appropriation of ecological surpluses. The movement of capital into new geographies – whether in the form of agrarian expansion, resource extraction or industrial restructuring – can be conceptualized as an effort to maximize the yield of unpaid work embedded within the biosphere (Brenner & Katsikis, 2020; Katsikis, 2023). As these frontiers are absorbed, however, the conditions that once underwrote their profitability shift. The depletion of soil fertility, the exhaustion of aquifers or the saturation of urban infrastructures necessitate an intensification of investment to sustain production. What was once a ‘free gift’ of nature – fertile land, abundant water, open access to natural energy flows – becomes an object of capital expenditure, as artificial fertilizers replace depleted nutrients, irrigation systems compensate for dried reservoirs and new infrastructural networks supplant former logistical routes.

The concept of ecological surplus sharpens our understanding of territorial organization by revealing the metabolic processes, composed of biophysical flows, unpaid human and more-than-human work and ecological conditions, which underpin spatial advantage. It shows that spatial capital is not merely a product of urban strategies but emerges through the appropriation of socio-ecological work and the power and capacity to appropriate it, emphasizing its biopolitical dimension (Viganò, 2021). Under conditions of generalized, planetary urbanization, these metabolic processes are increasingly interwoven with the metabolic interdependencies of urbanization. The next and last section discusses how urbanization suggests a specific form of territorial organization and unpacks what this means for the (unequal) production and appropriation of spatial externalities across its various landscapes.

Territorial organization and extended urbanization

While the concepts of spatial capital and territorial organization are both theoretically generic, their application has historically privileged urban spaces – densely concentrated and connected territories of people, infrastructure and economic activity. Some, like (Marcus, 2010, 2024), even define spatial capital as a property specific to urban form, linking it to qualities, such as accessibility, density and diversity, that enhance human interaction and productivity. This framing implicitly assumes a singular urban object whose spatial advantages can be measured internally, leaving unexamined the broader socio-ecological relations through which such advantages are produced.

This interpretation reflects a dominant tradition in urban studies, where the ‘urban’ is equated with dense, built-up environments – cities, metropolises and their functional regions (Scott, 2017, 2022; Fox & Wolf, 2024). However, this city-centric framing conceals the extensive territorial systems that support urban life. Over the past two

decades, scholars of planetary urbanization have fundamentally reframed our understanding of urbanization, emphasizing that dense urban cores are only one moment in a broader metabolic process, a process through which urban life is reproduced via geographically dispersed flows of energy, materials, labor and ecological work (Brenner & Schmid, 2011; Brenner, 2014; Brenner & Katsikis, 2020).

Planetary urbanization draws attention to the vast operational landscapes that sustain cities: agricultural zones, extractive sites, logistical corridors and waste-processing infrastructures. These landscapes – while often less densely inhabited – are essential components of the urban fabric, functioning as metabolic extensions of concentrated agglomerations. In this sense, the material reproduction of urban life depends on geographically dispersed systems of labor, energy, food and waste that are unevenly integrated into circuits of accumulation. Cities do not self-sustain; their ability to sustain dense agglomerations of capital, infrastructure and economic activity is predicated upon an expansive network of landscapes that provide their necessary material basis (Barles, 2019). These ‘operational landscapes’ of urbanization, comprising agricultural zones, extractive sites, logistical corridors and waste processing regions, function as integral yet often invisible extensions of urban space (Brenner & Katsikis, 2020). Importantly, these operational landscapes rarely correspond to a single city. The same agricultural basin, energy system or logistical corridor may simultaneously sustain multiple urban agglomerations, embedding them within overlapping metabolic configurations. Through the circulation of raw materials, energy, food and waste, these landscapes become structurally embedded within the production of urban life, forming part of an extended division of labor that allocates land-intensive and geographically constrained operations to territories outside the dense urban core. These landscapes, while typically hosting lower densities of human settlement, sustain concentrated urban life through their own intensities – the densities of livestock populations, monocultural plantations and extractive infrastructures that undergird the planetary urban economy (Brenner & Katsikis, 2020; Brenner *et al.*, 2022).

The production of forms of territorial organization can this be understood as part of the dialectical relationship between what Brenner and Schmid conceptualize as ‘concentrated’ and ‘extended urbanization’ (Brenner & Schmid, 2011). Rather than treating urbanization as a discrete condition that unfolds within demographically dense city-regions, this approach examines the ongoing production of urban space through the metabolic interweaving of core urban agglomerations with the vast operational landscapes that sustain them. This perspective challenges the inherited spatialization of urban processes into a simple city-hinterland model, in which a single urban core is conceptualized as a point and its associated hinterland as an adjacent, territorially bounded periphery. Instead, it conceptualizes extended urbanization not as an external condition to the urban but as an active dimension of urbanization itself, produced through infrastructural networks, supply chains and extraction regimes that link dispersed operational landscapes into planetary systems of production (Brenner *et al.*, 2022).

Concentrated and extended urbanization should thus be understood as interrelated processes rather than opposing spatial categories. The dense spatial configurations of concentrated urbanization, defined by the clustering of capital, infrastructure and economic activity, are fundamentally sustained by the expansive geographies of extended urbanization, in which primary production, waste management and extractive industries

operate. This dialectic unfolds through a complex and dynamic relational matrix, where supply chains, logistical corridors and production networks do not simply link discrete cities to their immediate hinterlands but instead interweave multiple urban and operational landscapes at multiple scales, thereby producing multiple, partially overlapping urban formations that cannot be reduced to a single territorial or morphological definition of the city (Brenner *et al.*, 2022). The logics of supply, extraction and waste circulation do not map onto a single urban core but produce shifting geographies of operational intensification and spatial obsolescence, activating and deactivating landscapes in accordance with cycles of capital accumulation and crisis (Brenner & Katsikis, 2020).

From this perspective, we can explore the role of concentrated and extended forms of urbanization in structuring the collective (human and more-than-human) spatial assembly, and (following Swyngedouw) – private appropriation of the externalities of territorial organization. Urbanization as a process of territorial organization can be schematically conceptualized as a constant interplay between the agglomeration landscapes of concentrated urbanization, and the multitude of operational landscapes of extended urbanization. This allows for the interweaving of a multitude of externalities across space: agglomeration landscapes can be conceived to allow the emergence of presence of agglomeration externalities (linked to density, connectivity, spill over effects and the like) as well as forms of social surplus that are connected with the shared costs of social reproduction and care; on the other hand, the operational landscapes of extended urbanization allow for the emergence of externalities and locational advantages through the spatial articulation of forms of ecological surplus, lines to the contribution and appropriation of the unpaid work of nature. These processes generate differentiated spatial advantages while displacing ecological and social costs unevenly across landscapes, contributing to intertwined forms of social and ecological inequality.

As the production of forms of concentrated urbanization depends upon the production of forms of extended urbanization (through the metabolic interdependencies of urbanization), the emergence of these externalities across agglomeration and operational landscapes should be considered to operate across continua, not in isolation. This allows us to also consider how the historical resolution of this dialectic is directly tied to the circuits of social and ecological value that structure urbanization. Forms of territorial organization, which once functioned as regionally embedded sites of production integrated with urban economies, have been progressively restructured under the imperatives of global capital, severing their direct connections to local consumption and embedding them instead within dispersed, transnational networks of commodity production. This shift has resulted in new forms of uneven development, in which capital-intensive production systems externalize their ecological and social costs, exacerbating the metabolic rifts that characterize capitalist urbanization (Brenner & Katsikis, 2020). The exhaustion of ecological surpluses that once sustained urban life, whether in the form of depleted soils, collapsing fisheries or declining water reserves, has increasingly turned primary production zones into ecological sacrifice zones, their landscapes degraded by extraction regimes that, paradoxically, render them obsolete even before their full economic potential is realized. Yet these shifting metabolic configurations are poorly captured by planning and statistical frameworks that continue to rely on discrete, settlement-based representations of urban space.

Forms of territorial organization have thus not only served for the appropriation of positive externalities, but also, and increasingly, for the dissemination of negative externalities, with the collective nature of forms of territorial organization not only allowing for the emergent of positive externalities, only to see them privately appropriated, but also have to absorb the negative externalities of often privately initiated processes (such as environmental degradation and the like). In this sense, territorial organization becomes a biopolitical mechanism through which both life-sustaining and life-degrading processes are spatially distributed.

Conclusions: spatial capital in the web of life

By rethinking spatial capital through the dialectics of concentrated and extended urbanization, this paper aimed to highlight the production of spatial advantages as not merely a fixed asset inherent to (urban) spaces but as actively produced through the collective interplay of natural resources, infrastructural networks and socio-institutional practices across scales. It aimed to extend its analytical reach beyond conventional, human-centered and city-centric frameworks to encompass the roles of more-than-human agents in sustaining urban life, demonstrating that the emergent externalities of spatial configurations, ranging from the locational benefits of dense urban centers to the ecological surplus inherent in more dispersed operational landscapes, are collectively generated yet unevenly appropriated, reinforcing patterns of socio-ecological inequality.

Recent debates in urban theory have already challenged inherited pole – hinterland models and bounded territorial conceptions of the city. Scott's critique of territorial essentialism emphasizes the political-economic and institutional coherence of urbanization without reducing cities to isolated cores (Scott, 2017, 2022), while Fox and Wolf reject administrative and morphological boundary-making in favor of phenomenological understandings of urban experience (Fox & Wolf, 2024). These contributions play an important role in destabilizing simplistic notions of the city as a discrete, dominating entity. However, they largely stop short of examining the socio-ecological metabolic processes through which urbanization is materially reproduced across space.

By foregrounding metabolism, this paper advances these critiques by showing that urbanization is constituted through overlapping configurations of energy flows, resource extraction, food systems, logistics and waste circulation (Barles, 2019; Brenner & Katsikis, 2020). These configurations are not merely extensions of a single city but form multiple, partially overlapping urban formations, each defined by distinct metabolic relations. This metabolic perspective also clarifies the production of social and ecological inequality. Spatial capital emerges through differential capacities to appropriate unpaid socio-ecological work, while the costs of urbanization are displaced unevenly onto more-than-city landscapes (Moore, 2015; Katsikis, 2023). Ecological degradation, labor exploitation and infrastructural saturation are not external side effects but integral to the reproduction of spatial advantage. Inequalities between places, and between human and more-than-human life, are thus co-produced through the organization of urban metabolism.

This disjuncture between relational urban theory and operational urban delineation has significant implications for planning and spatial justice. By rendering metabolic connections invisible, prevailing delineation frameworks contribute to the misrecognition of ecological sacrifice zones, the displacement of environmental

burdens and the uneven appropriation of spatial advantages. Addressing social and ecological inequality therefore requires planning approaches that move beyond bounded territorial categories toward representations capable of tracing urban metabolism across landscapes and scales. This reconceptualization positions spatial capital within the capitalist ‘web of life’ not as an asset to be possessed, but as a meshwork of relations: a node within overlapping metabolic, territorial and political ecologies. These nodes are not neutral or static; they are sites of contestation, configured through struggles over access, exploitation, regulation and care.

While reflecting a theoretical exploration, this reconceptualization of spatial capital could carry important implications for planning and policy. Despite growing recognition of relational and extended urbanization, planning practice and policy continue to rely heavily on discrete systems of urban delineation. Tools such as the Degree of Urbanisation (DEGURBA), widely used in governance, statistics and funding allocation by institutions such as the European Commission, OECD and United Nations, operationalize the city as a contiguous, density-based settlement unit (Eurostat, 2021). While such systems are indispensable for administrative purposes, they systematically obscure the metabolic interdependencies through which urbanization actually operates. They cannot represent overlapping urban formations, nor can they account for the distributed socio-ecological responsibilities embedded in extended operational landscapes. The paper calls for a shift in planning and policy away from isolated, site-based interventions and toward a multiscalar, multilayered ethics of spatial justice, one that acknowledges how urban prosperity depends on distant landscapes, unpaid ecological work and uneven territorial arrangements. Planning must respond by reconfiguring infrastructures to redistribute ecological burdens, regenerating the operational landscapes that sustain cities and supporting forms of territorial governance that prioritize collective reproduction over private accumulation. Planners can help reconfigure these landscapes through policy tools that embed ecological surplus into value accounting, introduce land-use regimes that protect metabolic functions and support cooperative territorial arrangements that challenge privatized appropriation of collectively produced spatial assemblages.

In a world increasingly shaped by climate instability, ecological exhaustion and uneven development, spatial capital can no longer be understood in isolation. It must be theorized and politicized as part of the capitalist web of life. Ultimately, this integrated approach not only deepens our theoretical understanding of spatial inequality but also provides a vital framework for developing future forms of alter-urbanizations: configurations of collective life that are metabolically balanced, territorially just and ecologically grounded.

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References

- Adey, P. (2017) *Mobility* (London: Routledge).
- Angelo, H. & Wachsmuth, D. (2015) Urbanizing urban political ecology, *International Journal of Urban and Regional Research*, 39(1), pp. 16–27. doi:10.1111/1468-2427.12105.
- Barles, S. (2019) Urban metabolic self-sufficiency: An oxymoron or a challenge? in: G. Debizet, C. F. Newell, & F. Jaglin (Eds) *Local Energy Autonomy: Spaces, Scales, Politics*, pp. 331–350 (London: Routledge).
- Bartho, C., & Monfroy, B. (2010) Sociospatial schooling practices: A spatial capital approach, *Educational Research & Evaluation*, 16(2), pp. 177–196. doi:10.1080/13803611.2010.484978.
- Bourdieu, P. (1979) *La distinction: Critique sociale du jugement* (Paris: Les Éditions de Minuit).
- Bourdieu, P. (1986) The forms of capital, in: J. Richardson (Ed) *Handbook of Theory and Research for the Sociology of Education*, pp. 241–258 (New York, NY: Greenwood).
- Bourdieu, P. (1992) *La misère du monde* (Paris: Seuil).
- Bourdieu, P. (2011) The forms of capital, in: I. Szeman, & T. Kaposy (Eds) *Cultural Theory: An Anthology*, pp. 81–93 (Malden, MA: Wiley-Blackwell).
- Bourdieu, P. (2018) Social space and the genesis of appropriated physical space, *International Journal of Urban and Regional Research*, 42(1), pp. 106–114. doi:10.1111/1468-2427.12534.
- Bourdieu, P., & Wacquant, L. (1992) *An Invitation to Reflexive Sociology* (Chicago, IL: University of Chicago Press).
- Brenner, N. (1998) Global cities, glocal states, *Review of International Political Economy*, 5(1), pp. 1–37. doi:10.1080/096922998347633.
- Brenner, N. (2013) Theses on urbanization, *Public Culture*, 25(1), pp. 85–114. doi:10.1215/08992363-1890477.
- Brenner, N. (2014) *Implosions/Explosions: Towards a Study of Planetary Urbanization* (Berlin: Jovis).
- Brenner, N., Ghosh, S., & Katsikis, N. (2022) The global industrial feedlot matrix: A metabolic monstrosity, in: J. S. Nesbit, & C. Waldheim (Eds) *Technical Lands: A Critical Primer*, pp. 132–155 (Berlin: Jovis Verlag).
- Brenner, N., & Katsikis, N. (2020) Operational landscapes: Hinterlands of the capitalocene, *Architectural Design*, 90(1), pp. 22–31. doi:10.1002/ad.2521.
- Brenner, N., & Schmid, C. (2011) Planetary urbanization, in: M. Gandy (Ed) *Urban Constellations*, pp. 10–13 (Berlin: Jovis).
- Centner, R. (2008) Places of privileged consumption practices: Spatial capital, the dot-com habitus, and San Francisco's internet boom, *City & Community*, 7(3), pp. 193–223. doi:10.1111/j.1540-6040.2008.00258.x.
- Eurostat (2021) *Applying the Degree of Urbanisation: A Methodological Manual* (Luxembourg: Publications Office of the European Union).
- Fogle, N. (2011). *The Spatial Logic of Social Struggle: A Bourdieuan Topology* (New York: Bloomsbury Academic).
- Forsberg, S. (2019) “The right to immobility” and the uneven distribution of spatial capital: Negotiating youth transitions in northern Sweden, *Social and Cultural Geography*, 20(3), pp. 323–343. doi:10.1080/14649365.2017.1358392.
- Fox, S., & Wolf, L. J. (2024) People make places urban, *Nature Cities*, 1(12), pp. 813–820. doi:10.1038/s44284-024-00150-5. Article 150
- Graham, S., & Marvin, S. (2001) *Splintering Urbanism: Networked Infrastructures, Technological Mobilities and the Urban Condition*, (London: Routledge).
- Harvey, D. (1985) *The Urbanization of Capital*, (Baltimore, MD: Johns Hopkins University Press).
- Harvey, D. (2010) *Social Justice and the City*, Rev. ed. (Athens, GA: University of Georgia Press).
- Hesse, M. (2010) Cities and material flows, *Global Networks*, 10(1), pp. 75–91. doi:10.1111/j.1471-0374.2010.00275.x.
- Heynen, N., Kaika, M., & Swyngedouw, E. (2006) *In the Nature of Cities: Urban Political Ecology and the Politics of Urban Metabolism*, (London: Routledge).

- Katsikis, N. (2023) The horizontal factory: The operationalisation of the US corn and soy belt, in: C. Schmid, & M. Topalović (Eds) *Extended Urbanisation: Tracing Planetary Struggles*, pp. 121–158 (Basel: Birkhäuser). doi:10.1515/9783035623031-004.
- Lévy, J. (1994) *L'espace légitime: Sur la dimension géographique de la fonction politique*, (Paris: Presses de Sciences Po).
- Lussault, M., & Lévy, J. (2003) *Dictionnaire de la géographie et de l'espace des sociétés*, (Paris: Belin).
- Mace, A. (2017) Spatial capital as a tool for planning practice, *Planning Theory*, 16(2), pp. 119–132. doi:10.1177/1473095215617000.
- Marcus, L. (2010) Spatial capital and urban form, *Journal of Space Syntax*, 1(1), pp. 30–40.
- Marcus, L. (2024) *Measures and Meanings of Spatial Capital: Contributions to a Theory of Land*, (Cambridge, MA: MIT Press).
- Merriman, P. (2009) *Mobility, Space and Culture*, (London: Routledge).
- Moore, J. W. (2015) *Capitalism in the Web of Life*, (London: Verso).
- Patel, R., & Moore, J. W. (2017) *A History of the World in Seven Cheap Things*, (London: Verso).
- Rérat, P. (2018) Planetary gentrification and spatial capital, *Urban Studies*, 55(4), pp. 865–882.
- Rérat, P., & Lees, L. (2011) Spatial capital, gentrification, and mobility, *Transactions of the Institute of British Geographers*, 36(1), pp. 126–142. doi:10.1111/j.1475-5661.2010.00404.x.
- Scott, A. J. (2017) *The Constitution of the City: Economy, Society, and Urbanization in the Capitalist Era*, (Cham: Springer).
- Scott, A. J. (2022) The constitution of the city and the critique of critical urban theory, *Urban Studies*, 59(6), pp. 1105–1129. doi:10.1177/00420980211011028.
- Slater, T. (2021) *Shaking Up the City: Ignorance, Inequality and the Urban Question*, (Oakland, CA: University of California Press).
- Smith, N. (2008) *Uneven Development: Nature, Capital, and the Production of Space*, 3rd ed. (Athens, GA: University of Georgia Press).
- Soja, E. (1989) *Postmodern Geographies*, (London: Verso).
- Swyngedouw, E. (1992) Territorial organization and the space–technology nexus, *Transactions of the Institute of British Geographers*, 17(4), pp. 417–433. doi:10.2307/622708.
- Swyngedouw, E. (1996) The city as a hybrid, *Capitalism Nature Socialism*, 7(2), pp. 65–80. doi:10.1080/10455759609358679.
- Swyngedouw, E. (2006) Metabolic urbanization, in: N. Heynen, M. Kaika, & E. Swyngedouw (Eds) *The Nature of Cities*, pp. 21–40 (London: Routledge).
- Urry, J. (2007) *Mobilities*, (Cambridge: Polity).
- Viganò, P. (2021) Life as a common: Space for a new biopolitical project, in: M. Mahdavi, & L. Wang (Eds) *New Geographies 12: Commons*, pp. 286–300 (Cambridge, MA: Harvard GSD).
- Wacquant, L. (2022) *Bourdieu in the City*, (Cambridge: Polity).