



Rethinking the multiplicity of urban infrastructure

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This special issue is the result of a collaboration that started nearly three years ago when, while discussing aspects concerning the co-constitutive nature of socio-political and material urban geographies in Latin America, a topic that noticeably defines our work, we agreed on the importance of understanding multiple key multi-scalar processes through the vantage point of infrastructure. This, of course, was not a serendipitous idea; while we were both working in different contexts and exploring seemingly different research topics, particular infrastructure and infrastructural arrangements kept jumping out at us as central components around which important processes pivoted. At the same time, and individually, what we were seeing on the ground inevitably brought us closer to literature ascribed to being part of an *infrastructural turn* in the social sciences (Graham and McFarlane 2015; Dodson 2017).

The infrastructural turn has challenged the ontology of urban infrastructure as no more than inert objects serving as mere backdrop to the unfolding of urban life. Instead, they are powerful organizers of social life in ways that exceed their materiality (Easterling 2014; Hetherington 2019). Indeed, for Appel, Anand and Gupta (2018) rather than a “thing,” infrastructure can be better conceptualized as a process – an “articulation of materialities with institutional actors, legal regimes, policies, and knowledge practices that is constantly in formation across space and time” (p. 12). In this sense, one can say that infrastructure codify key urban relations around matters of provision, omission, and ongoing maintenance within their seemingly exclusive material composition. Rodgers and O’Neill (2012) help us further elaborate on this point, arguing that infrastructure “demarcates both literally and figuratively which points in urban contexts can and should be connected, and which should not, the kinds of people and goods that can and should circulate easily, and which should stay put, and who can and should be integrated within the city, and who should be left outside of it” (p. 402). Thus, they argue that “broader processes of marginalization, abjection and disconnection often become operational and sustainable in contemporary cities through infrastructure” (p. 401). Infrastructure, as a sociopolitical-material process, then mediates power relations intrinsic to struggles over and transformations of urban space.

Let us use one aspect of infrastructure to illustrate this point: its centrality to forms of belonging, urban politics, and citizenships. In the words of Ash Amin, infrastructure is “a gathering force and political intermediary of considerable significance in shaping the rights of the poor in the city and their capacity to claim those rights” (2014, p. 137). The city’s infrastructure—asphalt, pipes, wires, etc., plays a central role in re-imagining citizenship as a gradual and incremental claim for recognition and political participation across urban territories. For example, as urban marginals negotiate around infrastructure and the services they provide, the peripheries become laboratories for plebeian experiments in democracy. Infrastructures codify these relationships and shed light on the ongoing forms of negotiation and recognition crucial to the reproduction (but also the production) of urban life in a majority of contexts. In this sense, we favor an understanding of infrastructure as sites of political apertures that allow disenfranchised populations to enter as political subjects, to negotiate the conditions of urban life, and to establish, even if precariously, new modes of belonging and participation. Thus, urban

infrastructure, as an analytical tool or vantage point, offers nuanced insights into the complex processes that shape political subjectivities, urban citizenships, and modes of governance, to name a few.

Our research interests are situated within the field of urban studies. Still, as we decide to concentrate our attention on “urban infrastructure”, we leave its definition with an intentionally broad and provocatively open-ended meaning. Lemanski observes that “within urban geography, infrastructure has become a core lens for understanding the city” (Lemanski 2020, p. 590). But what do we mean by urban infrastructure? Is it “only” a matter of exploring the effects of operations at the level of, for instance, water and electricity systems, roads and transportation plans, mobile data access, etc., or can we conceptualize urban infrastructure as operating *within* and *beyond* the traditional boundaries of cities? If we look at roads, tunnels, ports, railways, but also at infrastructures of care, solidarity, and resistance, can we always delve into these scenes detached from the multiple levels and spatially dislocated dynamics – and scales, to adopt a more geographical term – through which such actions take place? To provide an initial answer to this question, and building on specific literature on these topics, we are going to outline what our understanding of urban infrastructure is in this special issue.

In insisting on reflecting on the process-object and the analytical category of infrastructure, we first encounter a bounding question: what is the scale of infrastructure, what is included, and what is excluded? In this sense, infrastructure has been approached from the perspective of the global movement of goods, logistics, and the extractivist landscapes it shapes in regions of the world, yet still paying attention to the inevitable transformation of local spaces (Chua et al 2018; Mezzadra and Neilson 2019). For instance, logistic infrastructures such as ports, railways, roads, and warehouses – key elements to extractivist operations of global reach – often unify to become extended connective nodules around which urban space radically transforms along with modes of urban life in socio-spatial, economic, and political terms. At the same time, AbdouMalik Simone has provided an important conceptual device, particularly for unveiling what, in our view, are stable and massive socio-spatial territories of production and reproduction of urban life, by proposing *people as infrastructure* (Simone 2004; see also Simone et al 2023). Moving away from scripts of modernity which might associate infrastructure-less, “informal” landscapes and initiatives in global South cities with a not-yet-reached (modern) future, people themselves are conceptualized as the infrastructure capable of mobilizing the necessary resources to make life possible (as well as to produce wealth) in some of the most precarious conditions. We insist on the stable and massive aspect of these infrastructural configurations to contradict ideas of crisis and mere survival in (pejoratively) so-called third-world contexts. Furthermore, Yaffa Truelove has taken the insights provided by people as infrastructure to cast new light on how bodies too act as prosthetic to what we normally conceive of as material infrastructure. In fruitful conversation with feminist theory and from her work in Delhi, Truelove argues that casted/gendered/classed bodies particularly, in doing the labor of carrying water (or sanitation work, as one of the cases in this special issue explores) serve as prosthesis to supplement absent material infrastructure in contexts marked by unequal distribution of

basic resources (Truelove, 2022). In this way, bodies not only consume infrastructure, but are very much key to producing it, often in formalized labor relations with the state apparatus. Thus, we see that the bounding aspect of infrastructure lies in being able to grasp the multi-scalar processes interwoven into their particular manifestations, and the open-ended meanings and conceptualizations that are necessarily mobilized in research and practice.

Consequently, we do not work with a bounded definition of infrastructure, but rather hope to highlight how choices as to what gets included and/or excluded in a working definition can throw into sharp relief different processes at work in particular configurations. All papers in this issue showcase this multiplicity of infrastructure not only as an analytical unit, but as a mode of practice across the globe.

Likewise, instead of conceiving the urban only as a built form having definite limits and boundaries, we understand it, following Brenner and Schmid (in turn inspired by Lefebvre), as “a process.” That is, “a multiscalar process of sociospatial transformation” (Brenner and Schmid 2015, p. 165). In such a way, the urban becomes a set of relations and practices that are inherent to contemporary global capitalism, having in this sense, a planetary dimension. It is thus possible to find the urban not only in cities, but anywhere where the globalized (and globalizing) forces of capitalism act and shape the relations that are needed for the reproduction of such forces and for, more explicitly, their profit-making imperatives. Accordingly, within a combination of global, regional, and local scales, urbanizing processes have required a vast and multifarious network of infrastructure to articulate, solidify, and extend such a planetary nature of contemporary capitalism. As a result, our suggested understanding of urban infrastructure does not only embrace the study of infrastructure within the city space as part of an enclosed and self-contained socio-spatial system. Instead, we also aim to shed light on how urban infrastructure, to use Lefebvre’s expression reworked by Brenner (2014), *explodes* across the profoundly uneven but intimately connected planetary space. This condition creates sets of local relations that we understand as specific urban processes essential to the reproduction of contemporary capitalism, which extend both within and beyond the traditional geometries of cities.

Starting from our fieldwork experiences and our individual but increasingly connecting interests, which can be broadly defined as within both the sociopolitical and material aspects of infrastructure, as well as their co-constitutive nature, we moved forward with facilitating a collective dialogue with scholars who engage with these themes from different vantage points. We began by organizing five panels at the American Association of Geographers Annual Meeting in 2022, where we gathered an international group of scholars working on the most heterogeneous aspects of urban infrastructure and whose work was defined by different geographical, theoretical, and methodological foci. We carried on the conversation after the meeting until reaching a first summary that consists of this special issue kindly hosted by Urban Matters. We hope that this is the first step toward a long-term and deep exploration of current challenges, strategies, and re-conceptualizations concerning the study, as well as the political practice, of urban infrastructure.

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Nikolai Alvarado is an Assistant Professor in the Department of Geography and Geographic Information Science and co-director of the Latin American and Caribbean Cities Collective at the University of Illinois Urbana-Champaign. His research focuses on migrant urbanisms, street politics, migrant-state relations, and racialized body-space constructions from a global South perspective. His ethnographic work involves Nicaraguan migrants in Costa Rica and takes place in La Carpio, the largest migrant urban informal settlement in Central America.



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Simone Vegliò is a Project Researcher at Malmö University. He holds a PhD in Geography (King's College London, 2019) and his research is situated at the intersection of Urban Geography and Political Geography. His current project interrogates the implementation of "global infrastructure" in South America's River Plate basin. By focusing on commercial ports as key infrastructures serving the basin's agribusiness structure, the project investigates the socio-spatial and environmental impacts of infrastructure investments, specifically evaluating China's role in the region.

His previous work analyzed neo-extractive and logistical operations in Buenos Aires' southern area of Dock Sud, assessing the socio-material consequences of the urban environment. Prior to that, he investigated Latin America's urbanization from a historical and "postcolonial" perspective. In that study, he examined iconic episodes of architectural transformations in Buenos Aires, Mexico City, and Brasília, discussing these changes in relation to ideas of modernity, development, and geopolitical imaginations, and thus producing a historical geography that scrutinized the projects of naturalization and solidification of the nation-state in Latin America (1880-1964). He taught modules in the broad fields of Human Geography and International Relations at Malmö University, King's College London, University College of London, and Leuphana University