



Editorial: Infrastructures and migration

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Abstract. The article intends to bring together two perspectives on analysing and understanding societal developments and transformations. It takes infrastructures and migration as cases to discuss how a focus on infrastructures' role in migration processes can inform migration studies and how, in turn, a focus on migration processes can inform studies on and theories of infrastructures. Based on the assumption that studies on infrastructures can be carried out in all fields of society, as we find infrastructures in all societal sectors, and that migration, in turn, affects all fields of society and all its sectors, we shed light on the particular forms that infrastructures take in the course of migration journeys and the actors that are involved; the effects the infrastructures have on migrants and their (im-)mobility; the role they play before, during and after the migration; and how they are co-constituted by actors and co-create social, spatial and physical settings. The article provides the reader with an overview of key strands of research in both infrastructure studies and migration studies and develops an infrastructure-sensitive perspective for research carried out in the field of migration studies.

1 Infrastructures and migration

This theme issue deals with migration and infrastructures. It intends to bring together two perspectives on analysing and understanding societal developments and transformations. Studies on infrastructures can be carried out in all fields of society as we find infrastructures in all societal sectors. Migration, in turn, affects all fields of society and all its sectors. We therefore intend to shed light on the particular forms that infrastructures take in the course of migration journeys and the actors that are involved; the effects the infrastructures have on migrants and their (im-)mobility; the role they play before, during and after the migration; and how they are co-constituted by actors and co-create social, spatial and physical settings.

1.1 An infrastructural turn in the social sciences and in geography

While infrastructures were still rather a marginal topic within human geography and social science research until the early 2000s (Star, 1999), the research interest in infrastructures has risen sharply since then and assumes central importance in

the discipline, especially since social inequalities are made explicit through the distribution of infrastructures and access to them (for the German-speaking region, e.g. Matern, 2016; Flitner et al., 2017). For some years now, there has thus been talk of an “infrastructural turn” in the social sciences and geography (Steele and Legacy, 2017). This turn towards infrastructures and their role for social processes entails an important shift in focus: through addressing the interplay of social, spatial and material dimensions of infrastructures and the societies they are embedded in, attention shifts towards the trifold co-production of societies' sociality, spatiality and materiality. This, then, is analytically and conceptually novel and has methodological consequences for research on infrastructures carried out in the social sciences and geography in particular.

Infrastructures are analysed from the perspective of political economy (Graham and Marvin, 2001; McFarlane and Rutherford, 2008; Warf, 2003; Thiele, 2020), political ecology (Gandy, 2002, 2014; Heynen et al., 2006; Becker and Naumann, 2017), feminist research approaches (Siemiątycki et al., 2019; Carstensen, 2018; Marquardt, 2018), post-colonial theory (Chattopadhyay, 2012; Lawhon et al., 2018)

or assemblage theory (Bennett, 2005; Bowering, 2019). In doing so, these approaches are also sometimes intertwined, as in the feminist political ecology of Sultana (2011) or the postcolonial yet governance-oriented work of Kooy and Bakker (2008). Here, the focus is on social power relations, the socio-materiality of infrastructures and their socio-ecological modes of action (see, for example, Nielson et al., 2021; Flitner et al., 2017; Becker and Naumann, 2017).

1.2 Infrastructures and migration: from socio-technical arrangements to people as infrastructure

In the context of migration studies, there has also been a greater awareness in the international research community of the importance of infrastructures at different stages of the migration process (Xiang and Lindquist, 2014; Lin et al., 2017; Meeus et al., 2019; Leurs, 2020; Spijkerboer, 2018; Sigona et al., 2021; Hall et al., 2015). This theme issue continues the theoretical reflections and linkages of infrastructures and migration. The aim of the theme issue is to provide new insights into the dynamics between infrastructures and migration. To achieve this, the issue will weave together two strands of social scientific research on infrastructure and make them useful for migration studies.

One strand will address how certain infrastructures (understood as socio-material structures, technological artefacts and objects) promote, prevent or influence migration. Central to this is a mobility studies perspective that sees infrastructures as the socio-technological conditions that enable or impede (im-)mobility (Hannam et al., 2006; Lin et al., 2017; Garelli and Tazzioli, 2021).

In the second thematic strand, the agency of migrants is explored and highlighted in more detail with the help of the concept of infrastructures; here, for instance, it is about research that shows how migrants themselves temporarily become infrastructures and thus shape/enable migration and integration where state (infra-)structures are insufficiently flexible/present or open. At this point, it is not so much materiality and permanence that play a role, but “people as infrastructures” (Simone, 2004a, b) and their subjectivity, gender, class and concrete practices of coexistence in migrant networks.

Hence, the contribution of this theme issue is to bring together two conceptualisations of infrastructures that have so far been understood as rather distinct and to present them as approaches to be thought of together: infrastructures as (socio-)material entities on the one hand and as personal ensembles on the other. By highlighting the various interdependencies of socio-material and socio-technological aspects and individual-subjective aspects of infrastructures within the broad field of migration-related phenomena, the contributions of this theme issue bring to the fore how the two strands of research relate to each other. Even though existing studies on infrastructures already address the inherently social aspects of infrastructural technologies and, on the other hand, acknowledge that there is an inherently technical element in

understanding people as infrastructures (e.g. when they partake in care activities in certain spatial settings), the novelty of this theme issue is to make these interdependencies explicit. Through this, the relationship between migration and infrastructures in their various facets can be profitably and empirically investigated and theoretically and conceptually framed.

This also makes it possible to connect migration research that focuses on infrastructures to research from the fields of science and technology studies or institutional research with their insights into infrastructures’ role in societies worldwide and their intertwinedness with (geo-)politics (see, for example, Dijstelbloem, 2021; Hess and Kasperek, 2021). Moreover, it is possible in this way to overcome the often assumed dichotomy of infrastructure and the social and to bring into view the interconnectedness of individuals, collectives, infrastructures and institutions. Finally, elaborating on the “people as infrastructures” approach can serve the broader migration research community, as such a conceptualisation of migration is rare within research approaches so far. Of those studies that draw on the concept, several use a network perspective (Schmiz, 2011; Schmitz, 2013; Toppel et al., 2017). In this themed issue, however, wider questions of agency, capacities and power are addressed through the concept.

The collection of papers in this issue thus seeks to understand the relationship of infrastructures of migration beyond contexts of arrival as something that, firstly, can prove relevant at any moment of migration – from the decision to migrate, to leaving, to the practice of migration, to arrival and to translocal networks – and, secondly, can take different forms. Thus, migration is taken seriously as a phenomenon that does not refer to the concrete spatial movement or arrival at the supposed end of a migration (“arrival infrastructures”) but has a variety of temporal, spatial and social references. These references can reinforce each other, contradict each other, follow each other or run in parallel and are taken seriously in their interacting power by focusing on infrastructures as a tool for analysis, as proposed in this issue.

2 Introducing the theme issue on migration and infrastructure

In the following sections we will set the scene for the contributions of this theme issue. The contributions can be structured along three lines: the role of infrastructure for power relations within migration (theme 1), the characteristics and impacts of infrastructures on the ground (theme 2), and the ways how people themselves constitute infrastructures (theme 3).

2.1 Theme 1: (new) state infrastructures for channelling migration

In general, the starting point for the papers assembled in this section of the theme issue is the observation that migration as a socio-spatial phenomenon is closely linked to infrastructures. Institutional infrastructures are used to structure and (re-)order migration on the ground, and technical infrastructures in particular are applied to monitor and control migration (Leurs, 2020). Lin et al. (2017:167) highlight that

one particularly useful thread [exploring the connection between migration and mobility studies] revolves around the issue of infrastructures, which have generally been taken to mean the manifest forms of moorings and fixities that help order and give shape to mobilities.

Infrastructures thus enable, impede and prevent migration and help to anchor these effects in time and space. Moreover, special sets of infrastructures (or infrastructural appropriations of, for example, airports) are emerging across the globe to orchestrate practices of deportation and return (Walters, 2018; Lecadet and Walters, 2021). In turn, migration also generates specific migration-related infrastructures, such as networks and educational opportunities (social infrastructures) or smartphone applications for communication between migrants (technical infrastructures), which gain in importance in the course of integration processes and/or transnational migration movements. It is this interrelation between migration and infrastructures that is of particular interest here. Focusing on this interrelation then reveals power structures and modes of governance but also the agencies of diverse actors, such as the state.

Related to the aspect of agency of the various actors involved in and affected by migration is the topic of power. Recent contributions have addressed the dynamics of power and the negotiation of rights in the nexus of infrastructures and migration. Spijkerboer (2018:452) highlights the following:

The global mobility infrastructure consists of the physical structures, services and laws that enable some people to move across the globe with high speed, low risk, and at low cost. People who have no access to it travel slowly, with high risk and at high cost.

Within this strand of scholarly contributions, the role of state and statehood, borders, and labour regimes is particularly highlighted through a critical illumination of infrastructures for guiding or resisting migration.

The first section of this theme issue thus advances our understanding of the intersection between (state) power and migration (e.g. Xiang, 2017; Rajan and Saxena, 2019; Morris, 2021; van Baar, 2021). Lisa Marie Borelli's contribution in this theme issue looks at the new assemblages of deportation

infrastructures in Switzerland. Her paper adds a new sensitivity to and understanding of hidden infrastructures to the literature on migration studies and border regime studies by highlighting, for example, airports and hospitals as sites of control and deportation. Here, we can learn about infrastructural transgressions as these sites are increasingly enrolled into the control of people and asked by authorities to perform roles they were never envisioned to perform when they were built. While the paper is set in a particular geographic context, it shares a concern for the arbitrariness of how infrastructures can be chosen by authorities to channel (im-)mobility and the deeply ambivalent effects of power and resistance in an ever expanding migration regime.

2.2 Theme 2: infrastructures on the ground – the camp and the city

In addition to conceptualising infrastructures as expressions and mechanisms of state sovereignty and power, social scientific and geographic infrastructure research also focusses on the study of infrastructures as (socio-)material entities. Thus, migration research focused on infrastructures also becomes connectable to research from the field of science and technology studies and institutional studies. It is then a diverse range of infrastructures that come into focus, from camps (e.g. Krause, 2021) to border technologies (e.g. Kreichauf, 2018) and arrival centres. Here, two kinds of infrastructures are most often addressed: those that either enable/hinder migration (such as border fences) and those that play a role when migrants (temporarily) settle in a new place (such as welcome centres). In addition to institutions such as camps or arrival centres and material or technological equipment, urban infrastructures also play a major role in the context of migration and are often discussed under the heading of “arrival infrastructures”.

It also becomes clear that in addition to the socio-material dimension, infrastructures contain an important temporal component because certain infrastructures are more significant in some stages of migration than others. In particular, “arrival infrastructures” (Meeus et al., 2019) in “arrival cities” (Saunders, 2011) have been studied so far. The anthology by Meeus et al. (2019) on arrival infrastructures thereby presents both historical (e.g. Rächle, 2019) and contemporary infrastructures (e.g. Sidney, 2019) of the arrival and integration of migrants in Europe and the USA, emphasising in particular the city as a place where these infrastructures exist in condensed form and their effects on the perception and functions of the urban. Furthermore, arrival infrastructures are analysed regarding their social (e.g. Kox and van Liempt, 2022) and their architectural-spatial characteristics (e.g. Steigemann and Misselwitz, 2020) and regarding their particular role also within the respective city they are located in. Contributions in our issue tie in with these debates and examine how arrival infrastructures are changing

through, for example, processes of gentrification in German inner cities.

Within this theme issue Nihad El-Kayed and Leoni Keskinkilic share their insights about arrival infrastructures and new and established neighbourhoods in German cities. Based on case studies from Kreuzberg in Berlin and Gorbitz in Dresden, they highlight the need for a differentiated analysis of infrastructures' effects on newly arrived migrants. According to their findings, infrastructures such as housing, public spaces and social infrastructures can work as mechanisms of both inclusion and exclusion, depending on the needs and resources of the individual migrant.

Not least the often controversial public and media debates about so-called arrival centres, border closures to fight a pandemic, tracing apps and deportation centres point to the immense importance of infrastructures on the ground for migration, migrants and migration societies (Mecheril, 2012) and the potential for conflict that does not only come to bear in urban centres. Our theme issue therefore expands the urban debates on arrival infrastructures with contributions on camps as infrastructures of (im-)mobility that distinguish themselves as spaces between the sovereign power of the state and the individual agency of migrants. Here, too, the temporal-spatial and socio-material significance of infrastructures in the context of migration is emphasised. Thus, we connect to research done in the field of refugee studies on camps as socio-material sites, intended to be temporal, which are co-produced as social spaces through refugees, humanitarian agencies and other actors involved (Senarclens de Grancy and Zettelbauer, 2019; Krause, 2021).

Adding insights to this strand of research, Philipp Themann and Benjamin Etzold share their insights into camps in Bosnia and Herzegovina. Their paper achieves an understanding of infrastructures that brings together both the physical and digital infrastructures of (im-)mobility with "social infrastructures", i.e. social embedding, networks and relationships. With the dual attention to infrastructural materialities and infrastructures of social interactions among migrants within the makeshift sites of the border camps, their paper foreshadows and links to the final contribution of this issue in which the concept of "people as infrastructures" is further explored.

2.3 Theme 3: migrants as infrastructures?

As a third field of infrastructural research, we would like to point to the important theoretical contributions of Abdoumalig Simone, who is approaching his reflections from a Global South perspective. Simone's (2004a, b) contributions on "people as infrastructures" help us here to examine more closely the agency of migrants and to explore what role gender, ethnicity and class play in these migrant infrastructures. Simone's concept of "people as infrastructure" consciously attempts to counter the narrative of "the dysfunctional African city". Where material and technical infrastruc-

tures are lacking to create a certain stability and reliability in the urban fabric, people come to the fore and use these gaps to create a minimum of stability, reliability or security through the exchange and sharing of resources. Here, Simone is not concerned with altruistic action in a crisis-ridden urban context but rather with a perspective of transactions and one's own advancement through cooperation in improvised networks:

Residents can orient themselves in this conflict and discover profitable opportunities only through constant interactions with real and potential antagonists. (Simone, 2004b:419)

Similarly, Rutledge and Roble (2010) understand the agency of migrants and their networks as a direct counterpart to the official infrastructures of border regimes:

[...] the migration regime creates an international system of laws that ipso facto inhibits migration, while the diaspora creates and participates in a transnational community that operates to overcome those legal barriers. (Rutledge and Roble, 2010:153)

Moreover, in situations of reorientation in foreign societies, learning from, with and about infrastructures is very present. For example, immigrants face the challenge of having to learn the language, daily life, culture and related infrastructures of a new country. This includes, for example, learning practices of using transportation infrastructures (bus riding, train schedules, ticketing systems and parking rules) or learning how social infrastructures (educational institutions, health care system, sports facilities) function. Following recent work in cultural and social geography, we understand learning as a complex process of appropriation that involves both spatial and temporal dimensions and is co-determined by unequal access to resources (Tuitjer and Müller, 2021). Here again, other migrants or migrants networks play a crucial role in passing on infrastructure-related knowledge.

This is not only relevant for the moment of arrival but also beyond, as Sigona et al. (2021) show in a comparative study from the United Kingdom and Japan. Their study highlights the value of focusing on the temporal dimension of infrastructures in the migration process that goes beyond the moment of arrival:

focusing on infrastructures of entry, settlement and exit, casting a comparative light on the mechanisms that produce precarious and expendable migrant lives in relation to access to labour and labour conditions, access and quality of housing and law enforcement, and how migrants adapt, cope, resist or eventually are overpowered by them. (Sigona et al., 2021:1)

Here again, migrant lives are characterised by a particular temporality that plays out, among other things, in adapting to

new social and institutional contexts and learning-related infrastructures, but also in developing coping strategies to permanently live with them. Hence, migrants' agency lies not only within migrant networks, but also in individually or collectively adapting to infrastructures and, possibly, transforming them through their (subversive) practices.

Within this theme issue Nils Hans shares his research on informal brokering practices between long-established migrants and newcomers in Dortmund. Within his paper he documents how these brokers assume an important role in shaping integration experiences of newcomers. In fact, their ongoing presence and continuous willingness to assist new migrants turns them into an important element of the urban informational and support infrastructure of marginalised people.

3 Conclusion or how to read the theme issue

The collection of the papers within this theme issue can either be perceived as individual contributions that shine a light on specific aspects or uses of the concept of infrastructures in migration studies or add new insights to the role of infrastructures for migration. However, within their specific arrangement in this theme issue the papers also form an arc spanning from understandings of infrastructures as socio-material entities to an appreciation of people themselves as infrastructures of migration, highlighting also how infrastructures are deployed by the state and its institutions and how they play out on the ground. Further research could usefully extend the investigation of the specific interfaces of these three types of perceptions of infrastructures. The contributions of this paper make an excellent starting point to further dive into the very questions infrastructural research and migration studies pose about "socio-materiality" that has interested the wider social scientific community for a while now. By investigating infrastructures of migration, we are now equipped to further ask at what point, for example, people and material artefacts (e.g. cell phones) begin to form such close assemblages that it becomes impossible to separate them into "people as infrastructures" on the one hand and material-technical infrastructures on the other hand. This then would also open up questions of technology as infrastructure and whether and how infrastructures work simultaneously in digital and analogue contexts and co-constitute them. At the same time, we might pose the question of what types of socio-material arrangements are necessary for people to become infrastructures and for whom and in what situations they serve as infrastructures.

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