

Infrastructure

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Any consideration of infrastructure in relation to dis:connectivity should start with a definition of the term itself. However, as it was put recently, 'It may ultimately be futile to try and define infrastructures'. Its vagueness of definition explains its very popularity, as it affords multiple qualities and can be applied to different, and a still expanding number of, fields (Burchardt and Laak 2023, 2–3). Nevertheless, what is clear is that 'connection' and 'movement' are generally at the centre of conceptions of infrastructure. According to Dirk van Laak, infrastructure is meant to 'enable and direct the distribution of dynamic elements in space' (Laak 2004, 11). Brian Larkin holds that 'Infrastructures are built networks that facilitate the flow of goods, people, or ideas and allow for their exchange over space' (Larkin 2013, 328). Accordingly, the focus in infrastructural research has been on how infrastructures increase connectivity. Historically, the term has also been imbricated in the rhetoric of 'opening up' spaces (through infrastructure), which equally emphasised connection and was linked to the bourgeois-liberal utopia of letting everything circulate for the benefit of individuals and the whole (Burchardt and Laak 2023, 4). Connection is also inherent in conceptions of infrastructure as 'networks' (→ **Networks**) or 'large technical systems', which see infrastructures themselves already as a set of connected material or immaterial elements (Neuman 2006, 3–6; Hughes 1987).

The analytical connection between infrastructure and connectivity has been even stronger when it comes to scholarship on globalisation processes. In fact, infrastructure is generally seen as the basic enabler of such processes. Infrastructure constantly crosses borders (→ **Transborder**), and it has proven a highly successful export product, often across political-ideological divisions. Infrastructures of communication (→ **Communication Technologies**) and transport (→ **Transport**) have integrated and connected territories, often also as 'hidden integration', and have standardised regions and countries on similar technical systems and procedures (Laak 2018, 281; Brendel 2019; Misa and Schot 2005). More concretely, the acceleration of globalisation processes in the second half of the nineteenth century has widely been attributed to the enormous expansion of infrastructures such as railways, the telegraph, ports and shipping lines. Similarly, the globalising push of the 1990s–2000s rested particularly on the growth of telecommunication infrastructure, mainly the world wide web (Osterhammel 2014; Wenzlhuemer 2012).

What does it mean to bring infrastructure, so intrinsically bound up with notions of (increasing) connectivity, into contact with the concept of global dis:connectivity and its insistence that connections and disconnections are not binary opposites, but rather co-constitutive of all globalisation processes? First, it should

be highlighted here that disruptions (→ **Interruptions**), frictions and marginalisations in the global connections produced by infrastructure have in many cases not gone unnoticed by scholars. Van Laak noted generally on infrastructures that while they might have emancipated humans in many aspects, they have simultaneously entrenched our vulnerability to disruptions in those same systems. AbdouMalig Simone, renowned for his postcolonial redefinition of infrastructure, has equally pointed out that ‘Any transverse from “point A” to “point B” will be vulnerable to interruptions, deviations, and momentary conjunctions—among bodies and things—that cannot be put into words. But these in-between moments will exert an affect, and people will learn from them. This, too, will be an aspect of infrastructure’ (Simone 2012). More specifically, case studies on individual infrastructures of globalisation have also regularly noted the manifold disruptive or even plainly disconnecting effects of these, as the examples below will demonstrate.

Rarely, however, have these insights been taken to problematise the relationship of infrastructure and global connectivity at large. In relation to infrastructure, therefore, the concept of global dis:connectivity should be an incentive not only to note the many frictions and countervailing forces inherent in and produced by supposedly globally connective infrastructures, but predominantly to reinforce our focus on these effects and forces, to think them through analytically, place them in explicit connection with common conceptions of globalisation processes, and, last but not least, to highlight the ‘simultaneity’ of both connective and disconnective aspects of infrastructure. Below, a number of themes in infrastructure research are presented which, rudimentarily, show what a globally dis:connective approach to infrastructures can look like.

Where such approaches have probably progressed furthest is, first, in the now sprawling literature on how Western infrastructures have been adopted and hybridised in non-Western contexts – literature that, like the concept of dis:connectivity, problematises global connectivity or ‘diffusion’ [for a research agenda, see (Arnold 2005)]. Secondly, research on ‘infrastructural violence’ [for an overview, see (Rodgers and O’Neill 2012)] also offers a solid base for the new approach. It is now widely recognised that infrastructures are always exclusionary (→ **Exclusion/Inclusion**) to an extent, and their benefits unequally distributed or even unattainable for many. A particularly egregious example of this is provided by Hannah C. Appel’s study of the infrastructures erected by American oil companies in Equatorial Guinea. On the one hand, these certainly produce global connections: they enable the transport of oil from the Gulf of Guinea all the way to the United States, bring with them the influx of an expatriate workforce, and themselves represent the import (and further global spread) of certain infrastructural models, not least because the Government obliges the foreign oil companies to build new, high-rise, shiny office buildings they actually do not need. On the other hand, the people of

the country are not only excluded from the benefits of this oil wealth, they are also physically excluded from many of its infrastructures: the working and living spaces of the oil companies' staff are built as strictly-guarded enclaves where Equatoguineans are not allowed to live and to which their access as workers is tightly controlled. The enclaves offer electricity and running water (facilities from which most locals are excluded) and they are often said to look like Houston suburbs – in a way, another instance of globalisation, but one clearly built on the exclusion of everything and everyone local (Appel 2012).

As this case shows, generally a look not only at the users, but also the builders and operators of global infrastructures tends to bring to the fore many, often more hidden, dis:connections. In a particularly illustrative example, Jonathan Hyslop has portrayed the crews that manned the Southampton to Durban (South Africa) Union Castle (UC) shipping lines. While such lines might lead one to expect globally expansive connections and diverse ship crews, this was a rather different case. Due to the prevailing racism and immigration restrictions in South Africa, the UC workforce consisted nearly exclusively of whites. Most were drawn from a rather narrow area around Southampton; many even lived in the same neighbourhood. Every few months they would journey to South Africa, but they would always return to Southampton, to which they had very strong ties. Hyslop rightly speaks here of 'paradoxes of localism within globalism' (Hyslop 2017).

Another field where infrastructure research and global dis:connectivity fuse together acutely is in the conceptualisation of borders as infrastructure (Dijstelbloem 2021). While it might be obvious in the consideration of such objects as border walls that they do not serve primarily to facilitate seamless connectivity [for instance, (Pfordte 2023)], most research has gone beyond the obvious here and shown the complex working of borders as mechanisms of selection, where mobility is restricted for some and facilitated for others (Dijstelbloem 2021, 27; Huber 2013; Mau 2021). Here, we see reflected the insistence of the dis:connectivity concept on the co-existence of connection and disconnection.

It would be odd not to also consider global dis:connectivity together with the manifold forms of destruction of infrastructure. On the one hand, this is a natural process. All infrastructure is subject to daily wear and tear of its natural environment: climatic factors, erosion, parasites etc. In an interesting intersection of infrastructural history with colonial and environmental (→ **Ecologies**) history, Martin Kalb has, for instance, explored how the influences of seawater, sand and molluscs constantly threatened the pier in Swakopmund in colonial Namibia (Kalb 2020). While these represent the seemingly small natural factors that break down infrastructure, big natural disasters just as often destroy infrastructures: floods, hurricanes, earthquakes, etc. These factors point to the potential of thinking about

the agency of nature and drawing on the environmental humanities to enrich our thoughts on global dis:connectivity.

Just like nature, humans also frequently break down what other humans have built, and thus continuously impact the connectivity established by these infrastructures. Sometimes, this destruction derives from small acts. For instance, the cutting of telegraph cables was a recurring act of resistance against colonial penetration (of which infrastructures were, not rarely, both a conduit and a symbol) (Topik and Wells 2012, 663). At other times, human destruction of globally-connecting infrastructure was not so small an act but, for example, part of wide-ranging military strategies in globe-spanning wars. Again, such occurrences of infrastructural destruction, whether natural or man-made, are already relatively prominent in research, but should also be thought of as a factor in the interplay of connection and disconnection of globalising processes.

Nevertheless, while infrastructures are vulnerable, research has found that they are oftentimes also quite durable. When destroyed, they are often quickly rebuilt or restored, frequently in the same spot [(Laak 2018, 283); for an example, see (Vries 2022)]. The globalising effects of specific infrastructures can therefore be, in many cases, long-lasting and relatively stable. In recent years, the repair and maintenance work that is central to the operation of so many infrastructures has also increasingly moved to the centre of scholarly attention (Henke and Sims 2020) – combining this strand of research with a dis:connective perspective could also prove fertile. Generally, when thinking about infrastructure from the perspective of dis:connections, it is important to keep this frequent durability of infrastructure in mind.

Less obvious than destruction, another mode of bringing ‘dis:connective’ aspects into view more explicitly would be to focus on the secondary effects of transport infrastructures. Infrastructures have certainly established new global connections (one need only think about the Suez Canal), enormously strengthened existing ones, and linked formerly peripheral regions to global networks. But connecting certain places does not only mean that other places will remain unconnected. More importantly, the establishment of these infrastructures oftentimes also leads to the marginalisation or demise of other formerly important routes and nodes. While this is a development that has been noticed many times in studies of transport arteries, it rarely has been given much further thought or theoretisation. And yet, this seems to be a recurring, possibly even inevitable aspect in the history of infrastructures. Many of the new global connections established for the purpose of resource extraction by nineteenth-century colonial powers cut through or marginalised previously existing transregional connectivities – whether these were links to food resources or cattle pastures, now cut by colonial railroads, canals or the like, or centuries-old trade routes marginalised by trade diversion (Diogo and

Laak 2016, 150; Huber 2013). Sometimes these colonial routes were in turn superseded a few decades later: the multiple small ports of the sail era, for instance, lost significance at the end of the nineteenth century to a few megaports that allowed refuelling of the new coal-fired ships (Hyslop 2017, 175). Thinking from a dis:connective angle is once again an incentive here not only to focus more systematically on such developments, but also to integrate them further in our understandings of infrastructure and globalisation processes.

The infrastructures of global connectivity also offer an opportunity to consider the whole gamut of dis:connections that are ‘less obvious’ interruptions, such as detours (→ **Detours**), delays, or absences (→ **Absences**). Concerning the latter, invisibility would, for instance, be an important absence when it comes to infrastructure research. It has famously been claimed of infrastructures that they are invisible until they stop working (Star 1999). This describes the fact that infrastructures often underlie basic processes of humans’ daily life, and people have thus stopped noticing them. While this has meanwhile been shown to be inapplicable to manifold infrastructures, some global ones certainly share this characteristic. It was only when certain supply chains stopped working during the Covid-19 pandemic or when the Suez Canal was blocked by the run-aground container ship *Ever Given* (2021) that most people really became aware of some of the essential infrastructures underwriting globalisation. These cases in a way sum up what this contribution has tried to state in relation to infrastructure and global dis:connectivity: infrastructures can undeniably have important and relatively durable globalising effects, but we should problematise their association with ever-increasing connectivity and be much more attentive to their simultaneously connecting and disconnecting aspects.

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