Material Assemblages – Towards a New History of Infrastructure

Veranstalter: Jan Eric Hansen, Humboldt-Universität zu Berlin / Los Angeles; Frederik Schulze, Universität zu Köln
Bericht von: Marcel Siegler, TU Darmstadt / FH Bielefeld

Material infrastructures have always built the material basis of organized society. The agenda of the Herrenhausen Symposium „Material Assemblages – Towards a New History of Infrastructure“ was to explore the potentials and challenges of engaging the materiality of infrastructures in the science of history and STS.

The first panel on the different materials and materialities of mobility infrastructures opened with an investigation by MARIE LUIŠA SOUSA (Lisbon) on the role of lateritic materials – from lat. later – in the colonial rule of post-WW-II Portugal over Angola and Mozambique. Lateritic materials, or laterites, represented a local and widely available resource in these countries and the well-known hardness of these materials made them suitable for civil engineering, especially road construction. Unlocking the characteristics of laterite in combination with forced labor generated a specific Portuguese knowledge about building and maintaining low-cost roads that aided in sustaining the material infrastructures of colonial rule.

MARTIN MEISKE (Munich) explored the cultures of maintenance and repair that emerged around the use of creosote in the industrial centers of Europe since the middle of the 19th-century. Starting as a by-product of coal production, the oily, sticky, and highly toxic creosote was used to impregnate wooden railway sleepers, thus almost doubling their mean service life. The transition from creosote as waste to work material arranged for the assembly of an intricate network of practices such as, for instance, the forced labor of war prisoners in impregnation facilities. Up to this day, the toxic residues of this assembly can still be found in the contaminated land sites of former impregnation facilities and the repurposed railway sleepers used in playgrounds.

ALICIA MAGGARD (Auburn) opened the second panel on infrastructure, empires, and questions of power with an investigation of the coupling of US marine steam technology, corporate, and state power alongside the Panama route from the mid to the late 19th-century. In the wake of the Mexican-American War (1846-1848), the development of shipping routes for Panama route steamers and pacific mail steamers to integrate the new Pacific territories necessitated the construction of a sociotechnical network consisting of dry docks, foundries, and supply chains for delivering coal and other materials. The US government greatly benefited from coupling with this privately built material assemblage, as the thus available steam infrastructure allowed for extending the reach of American market interests in the Pacific.

By shifting the focus from large built infrastructure networks in the Pacific to the public ways in the antebellum South, AARON HALL (Minneapolis) explored how the specific material constitution of southern road infrastructure shaped enslaved experience. Public ways in the antebellum South were not designed to enable swift traversal by foot. Rather, these roads were part of a regime to control the mobility of enslaved people; the same people that were forced to build, maintain, and travel these roads under immense hardship. In this way, the asymmetry of power between slavers and the enslaved took material shape in the public infrastructure of the South.

In her day one keynote lecture, ANKE ORTLEPP (Cologne) raised the question of how to make the materiality of materials speak about the neglected materialities of race, class, and gender in the science of history in general as well as everyday history and the history of infrastructure in particular. Selling Tupperware from their homes and taking their music out into the streets with boomboxes, for instance, allowed marginalized groups such as women of Mexican descent and African Americans to subvert certain power relations of culture, capitalism, and oppression in 20th century US, whereas racial segregation was still maintained in the material constitution of airports.

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The third panel focused on material networks of circulation. It opened with an insight on one century of street space by TIINA MÄNNISTÖ-FUNK (Turku/Zurich) from the perspective of curbstones in Turku, Finland, between 1880 and 1980. In contradistinction to other materials explored in this symposium, the dull inertia and durability of curbstones initially obscures their material agency. However, approaching street space as an intra-agential network of human and non-human entities reveals curbstones as material actors that co-shape the agency of pedestrians, bicyclists, cars, and other street users throughout the dynamic changes in the street space.

MARIE HUBER (Berlin) closed the panel with an investigation on the materiality of 20th-century air travel through the example of two aircraft models used in African airlines. Contextualizing the object biographies of the DC-8 and Boeing 720 within the socioeconomic mode of production of air transport as aviation infrastructure throughout Africa disentangles and realigns the shifting meaning and significance of these aircraft models. In this way, the social life of planes can be understood through the interplay of materiality, sociality, economy, and politics.

Panel four engaged in questions surrounding materials between stability and fluidity. GRETCHEN BAKKE (Berlin) pointed towards the dialectics of production and consumption in the interplay of the electrical grid and refrigerators. The electrical grid predominantly runs on fossil fuels. It produces a more or less steady baseload of electricity that must be redistributed, consumed, and generated anew. Similar to a linchpin that enables a cart’s proper functioning by holding its wheels in place, refrigerators, alongside other material technologies, stabilize the electrical grid by constantly consuming the produced baseload of electricity. Although this dialectic of production and consumption enables the domestic storage and preservation of foods, it gravely manifests the socioeconomic dependence on the commercial use of fossil fuels and obscures alternative ways of keeping food fresh.

ELLAN F. SPERO (Cambridge, MA) emphasized the importance of the lens of scale for the historical analysis of sociotechnical systems with the example of sand-based water filtration in and around the city of Lawrence, Massachusetts. Putting different scales of sociotechnical systems and technological landscapes into perspective reveals where the meaning and significance of different materials are preserved throughout certain scales and where this meaning and significance changes and even becomes potentially obscured. Whereas the material properties of individual grains of sand, for instance, may have a technical significance when approaching physical processes underlying the infrastructure service of water filtration on the microscale, the same sand grains lose their individual significance when sand resurfaces as a waste product that is to be discarded on the scale of civil engineering.

The fifth panel on invisible materialities started with an introspection into the quasi-alchemical flows and transitions of matter in cloud seeding in Los Angeles during the 1960s and 1970s. MARINA PETERSON (Austin) turned her eye from solid materials to clouds as an infrastructure that both generates and becomes precipitation. In Los Angeles, silver iodide was used for cloud seeding as a means to increase rainfall and eventually refill groundwater basins and reservoirs. A causal relation between a flood event that took the lives of 13 people in February 1978 and the preceding cloud seeding could never be fully reconstructed. However, much like the moral behind Vonnegut’s fictional substance ice-nine, which turns all water it touches into ice, the idea of controlling the weather through cloud seeding entails a certain hubris that can still be found in all too optimistic approaches towards global warming.

DAQING YANG (Washington, D.C.) continued with an investigation of the materiality and agency of void with the example of the development of communications infrastructure in the Asia-Pacific between 1900 and 1941. The history of radio communication is a history of longwave and shortwave frequencies that rival in conquering the wireless spectrum as natural infrastructure for communication. The Japanese government recognized the importance of securing access to this nat-
ural infrastructure in the Asia-Pacific, leading to various initiatives to render communication a national priority.

The keynote lecture of day two was given by KENNY CUPERS (Basel) and ZANDI SHERMAN (New Brunswick) and broached the issue of the coloniality of infrastructure by using infrastructure itself as a conceptual lens for colonial relations of power. The panopticon-like Bultfontein compound in Kimberley, South Africa, in which migrant laborers from across Southern Africa were confined for the duration of their contracts with the De Beers diamond mining and manufacturing company in the mid-1880s, was used to exemplify the interrelation of infrastructures and ontological questions of race. The racial violence that was exercised in compounds like this produced racialized Native bodies that were then used like natural commodities in the mining and manufacturing of diamonds. The colonial contradictions of infrastructure become apparent in the so-called unity highway. This trans-African highway project held the promises of an infrastructural imaginary by propagating the right for individual mobility while serving as a convenient means to extend state power into previously uncharted territories.

VINCENT LAGENDIJK (Maastricht) untangled the interplay of road building, urban reconstruction, and race relations in Baltimore between 1910 and 2018 against the background of the role of infrastructure in the making of the so-called modern city, as focused on in panel six. The connection between Baltimore’s racial policy, dating back to Baltimore’s racial segregation ordinances from 1910, and Baltimore’s city design, including housing and road building, generated path dependencies that led to a so-called ‘racial lock-in’ that materially segregates the city up to this day.

By investigating the design and construction of pneumatic tube systems in European and Northern American cities, LAURA MENEGHELLO (Siegen) explored the co-construction of communication and transport infrastructure on one side and narratives of the modern city on the other. Around 1900, the two main ways of constructing pneumatic tube systems were the radial and the circular system. Whereas the radial system that was used in Paris represented the nation’s centralized form of government, the use of a circular system led to the perception of inclusiveness and connectedness in the city of Munich. The flow of information and material that was enabled through pneumatic tube systems was perceived as a necessary step towards modernity.

In keeping with the theme of panel seven on concrete as a medium of power, MARÍA JELDES OLIVARES and PAUL SPRUTE (Erkner) reflected on the construction of the subway in Buenos Aires between 1933 and 1944 from a contractor’s perspective. Reflecting on the material contingencies, constraints, and exigencies of a large construction project such as the Buenos Aires subway reveals two oft-neglected dimensions of the feasibility of material infrastructure: supply logistics and constructability.

SADIA AMIN and MONIKA MOTYLINSKA (Erkner) closed the panel sessions by vivisecting the urban landscape between Eko Bridge and Carter Bridge in Ebute-Ero. Juxtaposing photos from 1954 until today, in combination with archival research in Germany, unravels neglected aspects, efforts, and challenges accompanying the planning and construction of Ebute-Ero’s infrastructure that run parallel to the dominant narrative of successful infrastructure investment and construction. While German construction company Julius Berger Ltd. tried to render their work a success story, the archival work not only uncovered the narrative reframing of practical problems on-site but also the labor-intensive delivery of granite gravel that was dug by hand by the local workforce around Lagos.

At the day three roundtable, KENNY CUPERS (Basel), UTE HASENÖHRL (Innsbruck), and TIMOTHY MOSS (Berlin) passed the symposium in review and discussed the potential of exploring the materiality of infrastructure for the science of history. The discussion showed that the materiality of infrastructure is not studied for materiality’s sake, but to uncover hitherto uncovered and thus unexplored social aspects – from relations of power, race, and exploitation to tacit knowledge – underlying the built environment.
The key insight of the symposium was that despite the material focus of the panel sessions, there is no productive divide between the material and social aspects of infrastructures. Humans are materially entangled with their surrounding matter, and the forms of societal organization that ensue from the practical relations between these humans are shaped by what the material environment offers them. The fact that infrastructures are artifacts, i.e. products of human labor, reveals the inherently sociomaterially constructed nature of human society and its transitions. The role of infrastructure research, history, and STS is to properly capture these transitions by also highlighting changes in the spatiotemporal contexts in which infrastructures are explored alongside their changing sociomateriality. The discussion surrounding the materiality of infrastructures will continue at the next Herrenhausen symposium on material assemblages in July 2022.

Conference Overview:

Introduction
Jan Hansen and Frederick Schulze: Infrastructures as Material Assemblages

Panel 1 Roads: One Infrastructure, Different Materials
Maria Luísa Sousa (Lisbon): The Portuguese Intra-Imperial Research on the Use of Laterite in Road Construction in Angola and Mozambique
Martin Meiske (Munich): Toxic Traces of Maintenance and Repair: Exploring the Rise of Creosote and its Precarious Legacy in Europe
Discussant: Julia Obertreis (Erlangen-Nuremberg)

Panel 2 Infrastructure, Empires, and Questions of Power
Alicia Maggard (Auburn): Steam Power and State Power: The United States, New Granada, and the Panama Route
Aaron Hall (Minneapolis): Bad Roads: Slavery and Public Ways in the Antebellum South
Discussant: Ute Hasenöhrl (Innsbruck)

Day 1 Keynote Lecture
Anke Ortlepp (Cologne): Putting Things into Perspective: Reflections on the History of Materials and Materiality

Panel 3 Material Networks of Circulation
Tiina Männistö-Funk (Turku): What a Curbstone Does: A Century of Material Entanglements in Street Space
Marie Huber (Berlin): The Social Life of Planes: Approaching the Materiality of 20th Century Air Travel through Object Biographies of Passenger Planes
Discussant: Daqing Yang (Washington, D.C.)

Panel 4 Materials between Stability and Fluidity
Gretchen Bakke (Berlin): Refrigerator as Lynchpin: A Short History of the Fossil Fuelled Electricity System
Ellan F. Spero (Cambridge, MA): Sand, Microbes, and Machinery: The Materiality of Potable Water in a Manufacturing City
Discussant: Gretchen Bakke (Berlin)

Day 2 Keynote Lecture
Kenny Cupers (Basel), Prita Meier (New York), and Zandi Sherman (New Brunswick): Coloniality of Infrastructure

Panel 5 Invisible Materialities
Marina Peterson (Austin): Cloud Seeding Los Angeles: The Poetics of Aerial Infrastructure
Daqing Yang (Washington, D.C.): The Materiality and Agency of Void: Wireless Spectrum and the Communications Infrastructure in the Asia Pacific, 1900–1941
Discussant: Gretchen Bakke (Berlin)

Panel 6 Infrastructure and the Making of the „Modern“ City
Vincent Lagendijk (Maastricht): Concrete Racism: Road-Building, Urban Reconstruction, and Race Relations in Baltimore, 1910–2018
Laura Meneghello (Siegen): Assembling the City: Pneumatic Tubes and the Social Space

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Discussant: Timothy Moss (Berlin)

Panel 7 Concrete as a Medium of Power: Corporate History Perspectives


Sadia Amin and Monika Motylinska (both Erkner): (Dis)Connecting Elements: A Vivi-section of Ebute-Ero in Lagos

Discussant: Vincent Lagendijk (Maastricht)

Round Table
Kenny Cupers (Basel), Ute Hasenöhrl (Innsbruck), Timothy Moss (Berlin)