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TORONTO



Infrastructural futures across cities of the global north

Manchester Urban Institute

Manchester, 19 – 20 September 2019

 #infra_futures2019

Programme

Programme contents

| | |
|---|----|
| Maps and venue information | 3 |
| Welcome | 5 |
| Schedule | 6 |
| Thursday 19 September 2019 | 6 |
| Friday 20 September 2019 | 7 |
| Keynote speakers | 9 |
| Keynote abstracts | 10 |
| Parallel session abstracts | 11 |
| 1. Interface: digital and data presents | 11 |
| 2. Emerging institutions and practices of governance | 14 |
| 3. Mobility futures | 18 |
| 4. (Infra)structuring ideology: discourse and visuality..... | 21 |
| 5. Interactive paper/walking tour | 25 |
| 6. Social infrastructure: technologies of everyday life | 26 |
| 7. Critical infrastructure: grey, green and blue | 29 |
| 8. Extended infrastructures and global engagements | 33 |
| 9. Transforming civic infrastructure: who benefits? | 36 |
| 10. Breakdown: the end of the infrastructural ideal? | 39 |
| 11. Infrastructures of the anthropocene | 44 |

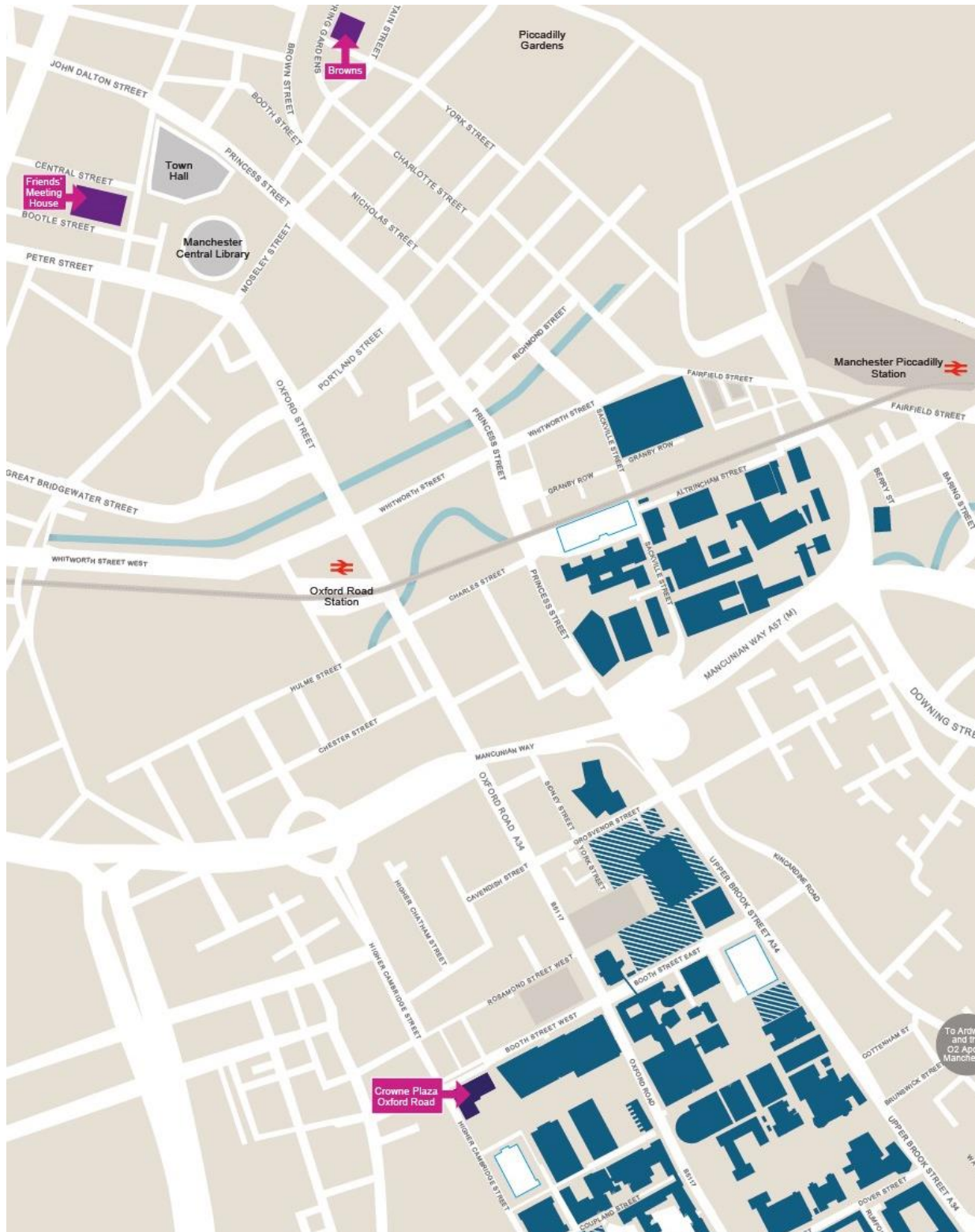
Maps and venue information

Accommodation: [Crowne Plaza Oxford Road](#)

Conference venue: [Friends' Meeting House](#)

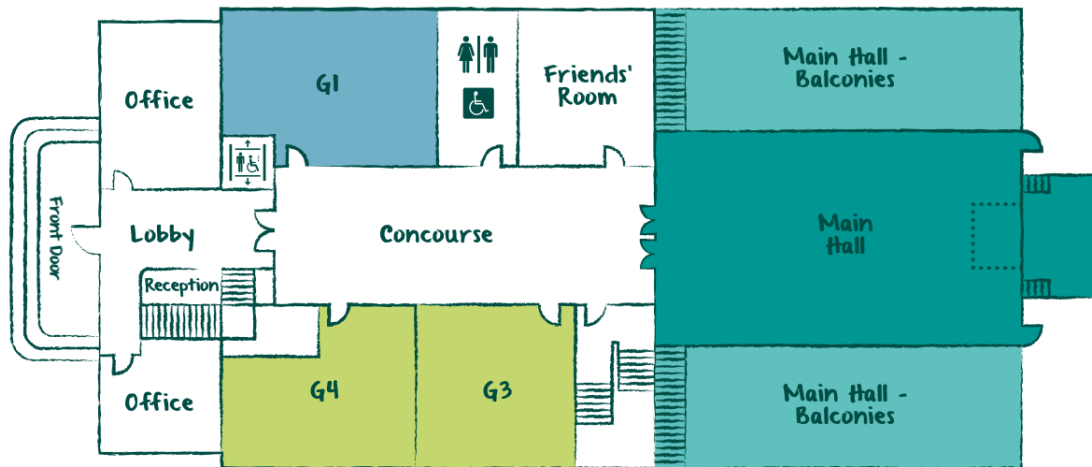
Dinner venue: [Browns Brasserie and Bar](#)

Manchester Map



Friends' Meeting House Plan

Ground Floor



Welcome

Welcome to Manchester and welcome to the international workshop, *Infrastructural futures across cities of the global north*. It is claimed that we are currently living both through an “urban age” (Burdett and Sudjic, 2008) and through an “infrastructure age” (Steel and Legacy, 2017). While on their own these are insightful arguments on the planet’s future, it is when taken together that these claims are most powerful, conceiving of any planetary future as both an infrastructural *and* an urban challenge. Cities are increasingly understood as sites – in both territorial and networked senses – through which planetary futures are being made and remade. As such, “infrastructure” is an increasingly central problematic requiring creative thinking by scholars from across the disciplines, including anthropologists, architects, economists, engineers, environmental scientists, geographers, historians, planners, political scientists, and sociologists.

It is this problematic, and how it plays out in cities of the global North, such as Boston, Manchester, Philadelphia, Sheffield and Toronto, our home cities, which is the focus of this two day workshop. Since the 1990s these five cities and many others have sought out strategies of being in the world as a way to render themselves competitive in the emerging multi-national, post-industrializing ‘smart’ economy. Infrastructure inside, outside and across formerly-industrial cities is foundational to these economic, environmental, political, and societal transformations. As such, the intellectual argument underpinning this workshop is that the pasts, presents, and futures of infrastructure offer a productive scholarly avenue for theorizing the turbulent state of today and tomorrow’s planetary urban condition.

We hope you will enjoy the workshop and that it will provide a forum for genuine engagement – a space in which to argue, debate, speculate and, ultimately, reflect, on your own work and that of your peers. It will start with a pair of plenaries to set the intellectual context and to outline some themes that are sure to be picked up over the duration of the workshop. These are by Matti Siemiatycki (University of Toronto), and Wendy Steel (RMIT). There is then a pair of parallel paper sessions before a walking tour and the workshop dinner at Brown’s Brassiere and Bar in central Manchester. The second day of the workshop starts with a third plenary by Mimi Sheller (Drexel University) followed by three parallel paper sessions and then ends with some closing remarks by the organizing team.

On the social side we hope that you have opportunities to make new friends, renew old acquaintances, and enjoy some of the many activities that Manchester has to offer. As a walk around the centre will confirm to you, Manchester is a city transformed. It has undergone dramatic renaissance in recent years, but like many similar cities, its transformation remains a work in progress, with inequalities of various kinds persisting. Its industrial past remains present in the urban fabric, and its future still being made.

As organizers we look forward to meeting you and we hope you find the workshop an intellectually stimulating and, perhaps as importantly, an enjoyable, experience.

Kevin Ward (University of Manchester)
Theresa Enright (University of Toronto)
Mike Hodson (University of Manchester)
Hamil Pearsall (Temple University)
Jon Silver (University of Sheffield)
Alan Wiig (UMass-Boston)

Schedule

Thursday 19 September 2019

09.30 *Registration and coffee*

10.00 *Welcomes*

10.15 *Plenary 1 – Matti Siemiatycki (University of Toronto)*

11.00 *Break*

11.30 *Parallel sessions:*

1. Interface: digital and data presents – Main Hall

- 1.1. Data on the wind: extractive frontiers in Ireland
Patrick Brodie
- 1.2. The platform-infrastructure of Airbnb in southern European cities
Chiara Iacovone
- 1.3. Free wifi and the governance of polyphonous infrastructure
Nathaniel O'grady

2. Emerging institutions and practices of governance – G1

- 2.1. Infrastructural regionalisms: an initial research agenda
Jen Nelles
- 2.2. New infrastructure regionalisms: state-territoriality, business regionalism, and thinking regions geographically
John Harrison
- 2.3. Infrastructural change, urban futures and the state: a European perspective
Olivier Coutard
- 2.4. Financialising city statecraft and infrastructure
Andy Pike

13.00 *Lunch*

14.00 *Parallel sessions:*

3. Mobility futures – Main Hall

- 3.1. Infrastructuring just urban mobilities: cycling in London
Tim Schwanen
- 3.2. Urban mobility platforms as marketization infrastructure: toward a typology of platformization trajectories
John Stehlin, Michael Hodson, and Andrew McMeekin
- 3.3. How venture capital drives the upscaling of niche innovations in social-technical transitions: the case of shared mobility
Tim Schwanen

4. (Infra)structuring ideology: discourse and visibility - G1

- 4.1. Infrastructural imaginaries and development fantasies: building an arc/k
Allan Cochrane, Matthew Cook
- 4.2. The art of transit
Theresa Enright
- 4.3. The peace dividend as an intangible benefit in mega-project justification: a comparative content analysis of the Dead Sea-Red Sea canal
Itay Fischhendler

- 4.4. The infrastructural landscape of Paris: dissecting the metaphors to develop new methodologies
Justinien Tribillon

15.30 *Break*

16.00 *Walking tour/session*

5. Interactive paper/walking tour

- 5.1. Infrastructural explorations: embodied encounters with the urban infrastructure
Laura Henneke, Louise Rondel

18.00 *Conference dinner: Brown's, Spring Gardens*

Friday 20 September 2019

09.00 *Coffee*

09.30 *Plenary 2 – Mimi Sheller (Drexel University)*

10.30 *Break*

11.00 *Parallel sessions:*

6. Social infrastructure: technologies of everyday life – Main Hall

- 6.1. Urban ecological infrastructures for resettlement
Matthew DelSesto
- 6.2. Education infrastructure: urban futures, power, and political imaginaries in Chicago
Keavy McFadden
- 6.3. Housing unaccompanied and separated minors in the Greater Toronto area
David Roberts

7. Critical infrastructure: blue, green and grey - G1

- 7.1. Critical infrastructure, food and climate change in cities in the global north
Seona Candy
- 7.2. Practices of repair in conditions of climate crisis
Nate Millington
- 7.3. Examining equity in adaptive reuse of post-industrial urban infrastructure for next generation public spaces
Hamil Pearsall
- 7.4. Nature's infrastructural turn: instrumentalizing and financializing trees in Greater Manchester
Mark Usher

12.30 *Lunch*

13.30 *Parallel sessions*

8. Extended infrastructures and global engagements – Main Hall

- 8.1. Sustainable cities and extractive hinterlands: on the urban infrastructure of commodity production
Alberto Valz Gris
- 8.2. Infrastructures of cognitive-cultural capitalism: data extraction as a new colonialism
Dillon Mahmoudi

- 8.3. “Hell on Earth”, or what’s past is future: logistical labour through global infrastructure in Manchester
Jon Silver, Alan Wiig

9. Transforming civic infrastructure: who benefits? – G1

- 9.1. Water infrastructure redevelopment and environmental justice in the post industrial city: historicizing flood mitigation and landed justice in the St. Louis metropolitan region
Sarah Heck
- 9.2. The high line effect and socio-spatial inequality: a comparative study
Brian Rosa
- 9.3. Reconceptualising urban green space: planning for green infrastructure in inner London
Meredith Whitten

15.00 *Break*

15.30 *Parallel sessions*

10. Breakdown: the end of the infrastructural ideal? – Main Hall

- 10.1. The everyday vulnerabilities of urban interconnection: rethinking infrastructure security
Martin Coward
- 10.2. Overlooked pasts and fragile futures: the age of infrastructure maintenance
Jérôme Denis, Daniel Florentin
- 10.3. Financial markets, economic infrastructure, and remaking of urban space
Chris Muellerleile
- 10.4. When infrastructure fails: the asymmetrical infrastructures of Detroit
Martin Murray, Maria Arquero de Alarcon

11. Infrastructures of the anthropocene – G1

- 11.1. Offshore wind infrastructure, work and the future of urban coastal economies
Sarah Knuth
- 11.2. Imagining and producing forests as infrastructure at the wildland-urban interface
Patrick Bigger

17.00 *Closing remarks*

Keynote speakers

Mimi Sheller, Director, Center for Mobilities Research and Policy, Drexel University

Mimi Sheller, Ph.D., is Professor of Sociology and founding Director of the Center for Mobilities Research and Policy at Drexel University in Philadelphia. She is founding co-editor of the journal *Mobilities* and past President of the International Association for the History of Transport, Traffic and Mobility. She helped to establish the interdisciplinary field of mobilities research, and is also a key contributor to Caribbean Studies. Her most recent books are *Mobility Justice: The Politics of Movement in an Age of Extremes* (Verso, 2018), *Aluminum Dreams: The Making of Light Modernity* (MIT Press, 2014), and forthcoming *Island Futures: Caribbean Survival in the Anthropocene* (Duke University Press, 2020).



Abstract: Mobilizing “smart city” infrastructurescapes through stakeholder-driven design processes

Rapidly proliferating technology applications for “smart mobilities” emphasize shared, electric, and potentially autonomous systems for “mobility as a service.” These transformations of urban mobility infrastructure are closely tied to an emerging discourse of “smart cities.” This paper will address the challenges and pitfalls of applied “smart city” research that seeks to build “stakeholder processes” and “human-centered design” (Andreani et al. 2018) into city-scale Internet-of-Things (IoT) implementation. In partnership with the City of Philadelphia, I have joined a multidisciplinary research team from Drexel University that is seeking to pilot various IoT technologies and cross-sector collaboration processes. This talk will address the potentials and limitations of such stakeholder-driven smart city processes to mitigate issues of infrastructural (in)justice, and will consider how they might be contributing to new processes exclusionary infrastructuring. Ethical considerations include the governance of “big data” collection in relation to privatization of public data and spaces, platformization through opaque algorithms, and threats posed by market domination by single companies. How can human-centered process design counter these ethical challenges during the roll-out of digital “infrastructurescapes” that will shape future urban mobilities?

Matti Siemiatycki, Associate Professor, School of Cities, University of Toronto

Matti Siemiatycki is Canada Research Chair in Infrastructure Planning and Finance and Interim Director of the University of Toronto School of Cities. His work focuses on delivering large-scale infrastructure projects, public-private partnerships, and the effective integration of infrastructure into the fabric of cities. His recent studies explore the value for money of delivering infrastructure mega-projects through public-private



partnerships, the causes and cures for cost overruns on large infrastructure projects, the development of innovative mixed use buildings, and the diversity gap in the infrastructure industry workforce. He was also a faculty leader of StudentMoveTO, a joint initiative between the University of Toronto, York, Ryerson and OCADU that successfully developed a model for inter-university research collaboration and mobilization on city-building issues. Siemiatycki is a frequent media commentator on urban planning and infrastructure related topics, and served on the board of directors of the public agency Waterfront Toronto. He earned a PhD in Community and Regional Planning from the University of British Columbia.

Abstract: The gendered production of infrastructure

Around the world, infrastructure investment has risen to the top of the urban agenda. Billions of dollars are spent annually to upgrade and expand urban transportation, energy, water, sewage, waste, telecommunications, and social infrastructure. Over the years, many studies have documented how the negative impacts of infrastructure investments are disproportionately borne by women, the poor and racial minorities. Conversely, far less attention has focused on the ways that unequal gender dynamics are a key feature of the production of infrastructure. Drawing on research conducted in collaboration with Theresa Enright, Mariana Valverde and Cecelia Pye, this talk shows how masculinity is deeply embedded in the organizational structures, employment practices, symbolic narratives and systems of power that create the vast arrays of infrastructure globally. It discusses the implications of a masculine network of infrastructure development, highlights strategies to close the diversity gap in the infrastructure sector, and points to directions for future research.

Parallel session abstracts

1. Interface: digital and data presents

1.1 Data on the wind: extractive frontiers in Ireland

Patrick Brodie, Concordia University

At the forefront of discourses around data futures and its infrastructural alignments are the energy demands of these power-hungry networks. While increasing attention is being paid to the energy-intensiveness of hyperscale data centers, these are only a (however integral) part of a complex and interconnected web of infrastructures that allow tech companies to extract value from the environment and from data. Shifting attention away from the energy-intensiveness and materiality of the cloud, however, this paper examines the particular work required to harness wind energy to this expanding logic of accumulation. Focussing on Ireland, we show how wind and data have become part of a shared discourse of green growth, but also of a material re-working of infrastructures, territories, technologies and subjectivities. With popular discourses around the unlimited potential of Irish wind, there is still an immense amount of infrastructure required to make these natural conditions useable for capital. Wind is not public or private—it is atmospheric. As such atmospheric patterns shirk ownership, extraction from them rely on a *logic* of enclosure. Wind and data both require an enormously sophisticated technological infrastructure allowing the capture of *potential* value. Achieved through innovations in data analytics and automation, the contingencies in wind power (unpredictability) and “dirty” data (whether rogue information or carbon emissions) are reduced, while simultaneously displacing the negative consequences to less visible sites and populations. Data is optimized through the extraction of wind energy, just as data optimizes the extraction and use of wind energy, representing a moebius strip of wind energy/data. With these and other developments, Ireland is predictably becoming a place where these technologies, and more efficient methods of extraction and optimization, will and should be tested, with its already-abundant wind farms, data centers, and friendly intellectual property and research and development incentives.

1.2 The platform-infrastructure of Airbnb in southern European cities

Chiara Iacovone, DIST-FULL Polytechnic of Turin

Platform economies are a capillary presence in today's economic system, through digital transmission and physical expansion they represent a sprawling regeneration of capitalistic structure. Airbnb, as one of the main peer-to-peer rental platform, captures also the most profitable assets that drive the global economy, the real estate market.

Considering the meaning that the term infrastructure can embrace in the structural analysis of urban economy, the paper proposes a reflection both on the interpretation of Airbnb as a structural and infrastructural component of today's cities and on the analysis of its urbanization force.

The paper seeks to understand the development of Airbnb in the context of Southern European cities as an infrastructural development that finds its roots on the austerity urbanism derived from the 2008 financial crisis.

The comparative analysis of Airbnb data correlated with local policies of liberalization of real estate and rental market allow a broader view on the development of Airbnb in relation with the global trend of financialization of housing, retracing the political consequence of platform urbanization.

What will emerge is a complex system of different kind of infrastructures that merge and works together at different scales. The aim of this paper is to propose a zoomed-out and transcalar approach in the studies of platform economies rather than a place-based analysis and thus, focus on the role of Airbnb as an economic, political and digital infrastructure and inscribing it in a political economic perspective to better understand its structure and its performances as a global trend.

1.3 Free wifi and the governance of polyphonous infrastructure

Nathaniel O'Grady, University of Manchester

Engaging with the case of new free wifi systems gradually appearing on city streets, the paper seeks to extend conceptualisations of infrastructure and its political effects amidst the emergence of big data and smart urban policy initiatives in the global north. I argue that free wifi exemplifies the existence of infrastructure in the form of a polyphonous assemblage whose operation occurs across, and bears traces of, multiple temporalities simultaneously. This complex temporality engenders ontological effects too; shaping the way that the reality of infrastructure appears to citizens and governments alike. Drawing on interviews with the 'public-private hybrid' of organisations behind a burgeoning iteration of this free wifi infrastructure emerging steadily across New York City called LinkNYC, the paper extends to show how this conceptualisation of digital infrastructure translates to inform our understanding of how the development of infrastructure is governed, whose interests are apparent in its functioning and how its gradual materialisation is reshaping experiences of urban space itself.

2. Emerging institutions and practices of governance

2.1 infrastructural regionalisms: an initial research agenda

*JP Addie, GSU, Michael Glass, University of Pittsburgh, and Jen Nelles
Hunter College CUNY*

We are in the midst an infrastructural epoch that belies the notion of infrastructure as a staid or neutral set of technical solutions to the challenges of late-capitalist society. As cities within the Global South develop new infrastructures for transportation, information and communication, sanitation, and habitation, cities across the Global North are holding different discussions that often revolve around infrastructural decline and austerity. What global conversations about growth and decline, investment and disinvestment have in common is the sense that our collective urban futures are grounded in the capacity of infrastructural systems to sustain them. Research across the social and policy sciences has taken describes these discussions as an ‘infrastructural turn’ that attends to infrastructure as a central element that makes the urban possible in its myriad forms. This paper seizes on this infrastructural moment to lay out a critical research agenda that focuses on the regional dimension of these debates about the production of urban and metropolitan space. Specifically, it outlines why we need to interpret, through a regional lens, (1) how we study and produce knowledge about infrastructure; (2) how infrastructure is governed across or constrained by jurisdictional boundaries; (3) how we ‘see like a region’ and, crucially, who gets to drive the construction of spatial imaginaries through infrastructure; and (4) how individuals and communities differently experience and ‘live’ the region through infrastructure. This paper provides a foundation for the RSA Network on Infrastructural Regionalism that will explore these questions over the next three years (2019-2022).

2.2 New infrastructure regionalisms: state-territoriality, business regionalism, and thinking regions geographically

John Harrison, Loughborough University

Infrastructure and supply chain expansion are coming to be seen as the structuring principle for governance collaboration at the multi-city region scale, resulting in the emergence of 'infrastructure alliances' (Wachsmuth, 2017). Contextualising this as the fourth phase of growth-oriented regionalism, this paper reveals several important intellectual blind spots in our approaches to researching contemporary processes of region-making generally, and infrastructure regionalisms in particular. The aim is to show how new infrastructure regionalisms highlight the importance of breaking free from a state-territorial trap in much regional thinking to consider the potential for business regionalism at the multi-city scale. Moreover, it is the contention that more than shining the spotlight on business engagement in region-making, we need to equip ourselves with the concepts, vocabulary and methods to 'see like a business'. Only by doing this, it is argued, can we (i) examine the motivations, tactics and strategies of businesses engaged in orchestrating regionalism through infrastructure alliances, (ii) reveal the anatomy, politics and ethics of business involvement in planning and governing urban regions, and (iii) develop appropriate conceptual and analytical frameworks for researching business orchestrated regionalism and current forms of infrastructure regionalism. Arguably as a general principle this can happen anywhere, so the remainder of the papers examines why multi-city infrastructure regionalism has emerged in some places and not in others, and why it takes the form that it does. The paper does this through a case study of Peel Holdings Atlantic Gateway Strategy, opening up for a discussion about (re)new(ed) approaches for consolidating research examining the links between business regionalism, infrastructure, and thinking regions geographically.

2.3 Infrastructural change, urban futures and the state: a European perspective

Olivier Coutard

From the mid-nineteenth century, national states in Europe have played a key role in the development of infrastructure systems for the supply of transport, telecommunications, energy and other services essential to the everyday life of their population. Infrastructure systems can even be regarded as the main form of the material presence and logistical (Mukerji) – or, indeed, infrastructural (Mann) – power of the state. Especially in the decades following the Second World War, infrastructural development and the development of the welfare state in Europe have gone hand in hand (de Swaan).

Over the last three decades, this relation between the development of state institutions and infrastructure systems has been reconfigured, and often weakened, by so-called reforms of liberalization. This has occurred in (and contributed to the advent of) a broader context in which the ability of the state to ensure public order and the safety of the population, to mitigate geopolitical or environmental risks, to hold down inequalities and to foster collective prosperity is increasingly doubted, if not challenged. For the first time in a century may be, the question is asked of what institutions, existing or new, are best positioned to ensure social protection, solidarity and prosperity.

In this context, infrastructure development tends to escape state oversight or steering capacities; a little regulated oligopoly of infrastructure services providers is now largely established, which does not necessarily pursue the same objectives as state institutions; and local infrastructures (re)emerge, potentially involving specific development processes, new scales, new actors, and new social meanings and imaginaires of infrastructure.

In my presentation, I would like to explore the social, political and urban meaning and implications of the contemporary conditions of infrastructural development. In particular, I would like to reflect on how they may shape European urban futures and, incidentally, on how social science approaches may best apprehend these infrastructural and urban transformations to come.

2.4 Financialising city statecraft and infrastructure

Andy Pike, Newcastle University

Are we reaching the limits of transformation frameworks and archetypes in explaining changes in the funding, financing and governing of urban infrastructure? While the distinctions of Harvey's managerial and entrepreneurial forms have proven enduringly useful, the current conjuncture presents a testing moment for understanding and explanation. New archetypes are emerging in the wake of the 2008 crisis – including those categorised as 'financialised', 'asset price', 'speculative', and 'austerity' – in attempts to interpret contemporary urban infrastructure provision. Yet, such ideas are often presented as twists on the existing conceptions and are struggling to engage the messy mutation and variegation of governance forms. This contribution takes up the idea of 'statecraft' as a way of taking a more agency-oriented perspective to investigate the operation and practice of governing urban infrastructural provision. Recovering the ideas of Jim Bulpitt from British political science and critically reviewing recent urban and regional work on statecraft, a conception of city statecraft is articulated to remedy recent accounts where the idea is invoked but not specified or developed and to extend analysis of sub-national governance beyond Bulpitt's 'low politics' of local government. Rather than constructing new typological categories and transition schema, this formulation tries to support conceptualisation and theorisation of forms of city statecraft more capable of explaining the socially and spatially uneven mixing, mutating and hybridising ways in which urban infrastructure governance is unfolding in particular geographical, temporal and institutional settings.

3. Mobility futures

3.1 Infrastructuring just urban mobilities: cycling in London

Tim Schwanen, University of Oxford

Academia's "infrastructural turn" (e.g. Graham 2009; Dodson 2015) has been paralleled by an "infrastructure frenzy" (Cowen 2017) among stakeholders in sectors such as transport, from public authorities and supranational NGOs to private developers and community groups. Under prevailing governmentalities infrastructural interventions by networked actors are widely seen as more acceptable and desirable means of shaping everyday practices than putatively heavy-handed, top-down state action. This is particularly so in urban transport, which has traditionally featured prominently in (local) economic development policy and is now often a key site of mayoral politics. Nonetheless, partly because speed and uninterrupted flow are usually correlated with efficiency, understandings of infrastructure among many stakeholders tend to be narrow and often limited to the 'hardware' of rail tracks, bus lanes, cycle paths and so forth. Focusing on cycling in London and building on the infrastructural turn, this contribution will demonstrate how prevailing discourses about urban transport render invisible much infrastructuring by civil society organisations. It will highlight two functions of 'civigenic' infrastructures for cycling. One is practically oriented, consisting in the provision of infrastructural 'services', such as bike maintenance/repair, to somehow disadvantaged social groups. The other is symbolic and involves drawing attention to the rights of all city residents and communicating a narrative of empowerment through community action. Civigenic infrastructuring is no alternative to cycling infrastructure provision by the state or private sector but demonstrates a politics of infrastructure configured around justice and can play an crucial role in the achieving of just urban mobility futures.

3.2 Urban mobility platforms as marketization infrastructure: toward a typology of platformization trajectories

John Stehlin, Michael Hodson, and Andrew McMeekin, University of Manchester

Transport is a key frontier in the transformation of social life through digital platforms. While comparatively more attention has been paid to digital media and e-commerce ‘ecosystems’ like Facebook and Amazon, a recent surge of investment in new mobility services has highlighted the uniqueness of transport, particularly its stubborn materiality, place-specificity, and social embeddedness. While Uber is the largest and best-known mobility platform, not every platform is an “Uber for _____”; there is enormous variety and endless mutation within “platform urbanism” (Barns 2016). In this paper, we focus on specific trajectories of platform formation, the political-economic interests driving them, and the spaces that they tend to produce, based on a compiled global database of over 175 mobility platforms. These are extremely diverse but can be grouped into three broad tendencies: 1) “disruption” of existing mobility relations by venture capital-funded new entrants; 2) diversification by existing auto manufacturing and infrastructure management firms; and 3) state- or third sector-driven coordinative services that promise better and more equitable platform governance. Although these paths interweave as platforms mutate, this focus on trajectories, rather than formal features, uncovers previously under-explored contours of platform urbanism as an emerging form of infrastructural politics.

3.3 How venture capital drives the upscaling of niche innovations in social-technical transitions: the case of shared mobility

Nina Teng and Tim Schwanen. University of Oxford

Radical niche innovations by digital shared mobility start-ups have undergone unprecedented, rapid upscaling in user adoption in cities globally. How these niche innovations have scaled widely through competition financed by venture capital firms remains understudied in the extant socio-technical transitions literature. Through a case analysis of the digital shared mobility industry in Southeast Asia, we explore how four niche actors— Grab, Uber, Go-Jek and EasyTaxi— rapidly scaled ride-hailing, bike-sharing and micro-mobility innovations in the socio- technical transitions process since 2012. The case analysis revealed that venture capital firms like Softbank Capital—a lead investor in both Grab and Uber—accelerate the adoption and upscaling of niche innovations by fostering: 1) price-driven competition, 2) industry consolidation and 3) a “winner-takes-all” view of competition between niche actors. Our findings contribute a deeper understanding of the upscaling process of niche innovations enabled by digital technology, particularly on how exogenous market forces like venture capital funding can expedite user adoption at extraordinary speed and scope. Ultimately, our findings elucidate the accelerated growth and adoption of innovative shared mobility services in urban cities, which has implications for how city governments, firms and citizens can address the policies, education and infrastructure needed to support the rapidly changing urban mobility landscape.

4. (Infra)structuring ideology: discourse and visibility

4.1 Infrastructural imaginaries and development fantasies: building an arc/k

Allan Cochrane and Matthew Cook, The Open University

The implications of – neo-liberal – urban austerity seem clear: the local welfare state is being actively residualised. But at the same time different state spaces are being constructed, finding an expression in a language of ‘infrastructuring’. Infrastructural investment is presented as a solution to a range of governance and policy problems.

In this contribution, we explore these issues by investigating the history and practices associated with the Oxford to Cambridge Arc. This largely imagined space is situated on the edge of London’s city region and brings together the apparently mundane possibilities of opening up long closed railway connections and joining up cross-cutting road networks, while sprinkling the fairy dust of Oxford and Cambridge to open up the less favoured spaces in and between. Crucially, the Arc delivers a framework that aims to draw housebuilders to deliver new communities and new suburbs. Its mapping appears to describe the present but only in order to generate visions of development for the future.

The Arc is defined through its particular geography as a localised phenomenon. Yet it is also the product of more complex and overlapping topological political and economic relationships. Its formation is an expression of the ways in which national states reach in to local spaces to shape outcomes, even if they do not do so directly. Seen this way, the National Infrastructure Commission acts as a two way transmission belt, as it seeks to draw local actors into the process, while they in turn work to carve out particular niches for themselves.

4.2 The art of transit

Theresa Enright, University of Toronto

Around the world, cities are incorporating arts and cultural programming into their transit networks in an attempt to increase the attractiveness of vital infrastructures and to enhance the commuting experience. “Creative mobility” is now a best practice of urban transit design and operation, advocated by diverse stakeholders ranging from local artists to global placemaking consultancies to inter-city policy networks. This paper traces the development and use of arts programming across a number of sites. It considers why transit agencies and public authorities have turned to integrated arts and cultural programming in recent years, how they have done so, and the effects of these endeavours. It finds that while arts policies have been pursued for a wide variety of objectives, as these initiatives become more standardized and technocratic in nature, they risk becoming depoliticized. The resulting aestheticization of infrastructure links transit networks into cultural and creative-city economies, while frequently concealing power laden practices constitutive of urbanization, mobility, and public space.

4.3 The peace dividend as an intangible benefit in mega-project justification: a comparative content analysis of the Dead Sea-Red Sea canal

Itay Fischhendler, The Hebrew University of Jerusalem

Large infrastructure schemes have become part of our landscape. Their controversial nature often requires elaborate justifications including the use of intangible benefits. One intangible benefit that has increasingly been raised in support of mega-projects is the peace dividend. Yet, to date, few studies have systematically addressed the following questions: to what extent, by whom, and in what ways is the peace dividend used as a strategic tool when it comes to justifying contested mega-projects? This article examines the use of different types of arguments in mega-project justification, with a focus on the peace dividend as a political intangible benefit. Through a comparative content analysis of coverage of the Dead Sea-Red Sea Canal project in Israeli and Jordanian news media, we illustrate how the peace dividend is employed as a framing device by both project supporters and opponents and how it is positioned in relation to other types of benefits and costs. We found that the marketing of contested mega-projects to public and political constituencies entails a variety of justifications, reflected in the various framing modes used to influence public opinion in both Israel and Jordan. The nature and intensity of these justifications are sensitive to the media environment and the degree of economic development. Our findings indicate that the peace dividend as a line of defense for the project is the most controversial of all other justification domains.

4.4 The infrastructural landscape of Paris: dissecting the metaphors to develop new methodologies

Justinien Tribillon, UCL, Bartlett School of Planning

Building on Matthew Gandy's observation that infrastructure and landscape are two closely related domains (Gandy 2011), this paper will attempt to propose new methodologies to analyse urban space, using Paris's Boulevard Périphérique as terrain.

The combination of these two concepts, infrastructure and landscape, is highly evocative for researchers studying cities: together they allow to mix history and memory, policy and technology, experience and the imaginary, publicness and the intimacy. Yet we arguably need to go beyond the metaphor to develop a set of methods that is applicable in the field. Paris, France appears to be a perfect testing ground: the boundary between city proper and banlieue is arguably materialised by its ring road, or Boulevard Périphérique, completed in 1973. A new metropolitan government created in 2016 and a major ongoing upgrade of the metropolitan public transport system, are today presented as the solution to Paris's disconnection from its metropolitan area.

Theoretically, this paper will propose to discuss the work of John Berger and Henri Lefebvre. Art critique John Berger develops in *Ways of Seeing* (1972) a very political understanding of landscape. Henri Lefebvre does not require an introduction but to mention that his production of space is contemporary to the building of the Boulevard Périphérique. Writing in 1986 about the *Production de l'Espace* (1974), Lefebvre explains that "this book has missed the opportunity to describe in a direct, incisive, if not pamphletary way, the production of the banlieues."

5. Interactive paper/walking tour

5.1 Infrastructural explorations: embodied encounters with the urban infrastructure

Laura Henneke and Louise Rondel, Goldsmiths, University of London

This interactive and participatory paper builds on a series of Infrastructural Explorations which we have been co-curating since June 2018. During these, we invite participants to consider their embodied and sensorial contact with the infrastructure we encounter in order to cultivate an 'infrastructural literacy' (Mattern 2013). In this, we problematise the notion that infrastructure in the global north is hidden until it fails (Graham 2010). We further ask how (and, indeed, if) embodied encounters with infrastructure can engage with questions of power and distributional (in)justice, with the politics of the siting of infrastructure, with its unequal socio-spatial impacts and with forms of structural violence (Amin 2014, Graham and McFarlane 2015, Latour and Hermant 1998, Star 1999, Tonkiss 2015).

Today we invite delegates to join us in exploring the Castlefield area of Manchester: 'home to a Roman fort, networks of canals, old mills, new bars, sophisticated restaurants and a wide range of accommodation' (visitmanchester.com). During the Exploration, as we open our sociological imaginations to the city, an emphasis is placed on collective experiences, on the unexpected and on happenstance conversations. Together, we will consider the methodological potential offered by an open-ended, corporeal and collective attention to infrastructure and its impacts on the urban landscape.

We also critically interrogate the ethics of the detached 'explorer' asking, alongside Mattern (2013), 'but then what?'. Having attuned to the visual, aural, olfactory and haptic effects on the landscape and the human and non-human populations who dwell there, we invite delegates to reflect on what these bodily engagements may enable?

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6. Social infrastructure: technologies of everyday life

6.1 Urban ecological infrastructures for resettlement

Matthew DelSesto, Boston College

This paper contributes to a broader framework for understanding links among resettlement, infrastructure and urban transformation in the contemporary era of intensifying global migrations and displacements. On one hand, the Global North initiated urban ecological transformations that are displacing record numbers of people around the globe. At the same time, countries in the Global North are currently experiencing the effects of processes that uproot communities—most notably with the challenge of migration and resettlement. Accordingly, this paper explores how the issue of resettlement is an infrastructural concern for societies of the Global North, with special attention to the prospects for creatively remaking spaces, protocols, and practices that might expand people’s capacity to co-exist or inhabit the city.

The paper first contextualizes the causes of displacement within complex processes of global urbanization, which result in political instability, environmental disruption, or state-sanctioned removals and imprisonment. Then, it explores infrastructural failures in the resettlement process—for example in the radicalization of migrants who have been excluded from mainstream society and space, or the high rates of recidivism among people who are not well reintegrated after their incarceration. Finally, the paper examines the implications of resettlement initiatives that engage people with local urban ecologies including, green infrastructure, therapeutic horticulture, or participatory forms of sustainable development. The paper concludes with insights on what an “infrastructural approach” can contribute to resettlement and recidivism reduction, in addition to what resettlement processes reveal about contemporary urban infrastructures.

6.2 Education infrastructure: urban futures, power, and political imaginaries in Chicago

Keavy McFadden, University of Minnesota

Competing visions of the education landscape in Chicago have far more at stake than just the location of school buildings, the minutiae of education policy, or the allocation of municipal resources. Instead, education politics open up broader questions about who has a say in decision-making, what urban spaces experience divestment and destabilization, and what visions of Chicago's future are supported or thwarted. Taking education infrastructure as central to the production of urban space, I argue that contestations over education landscapes in Chicago should be understood as a primary terrain on which urban futures are imagined, negotiated, and enacted in the city. I ask: how do competing visions for Chicago's future manifest and materialize in infrastructure, political practices, and cultural representations pertaining to the education landscape? Drawing on ethnographic and participatory methods, my dissertation research argues for the centrality of education infrastructures to the fashioning and imagining of urban futures in Chicago. While urban geography often overlooks education infrastructure in favor of infrastructures such as transportation, water, electric utilities, I consider how urban theory's conceptualization of education as a social infrastructure might be expanded to account for the dynamic and differentiated anticipatory political practices that coalesce around the education landscape in Chicago. My research suggests that education infrastructures highlight the material and social elements inherent in any infrastructure, thus offering a generative place from which to theorize the complex ways in which the material and non-material infrastructural elements help to produce urban space.

6.3 Housing unaccompanied and separated minors in the Greater Toronto area

David Roberts, University of Toronto

The infrastructure that is the focus of this research is not about making the city more globally competitive but rather more humane and liveable. The problematic state of housing unaccompanied and separated refugee minors in Canada was the focus of a 2016 court action brought by Justice for Children and Youth (JFCY), a not-for-profit advocacy organization, against the Canadian Minister of Citizenship and Immigration (IMM-5754-15). This case ended with a court order limiting the state's ability to house minors in immigration detention facilities. At present, several court-sanctioned housing options exist. One—and least optimal—is temporary detention. A second, which is an alternative to detention, includes placing minors in the custody of organisations like Matthew House or the Children's Aid Society. Third, and most desirable, is to reunite minors with a relative or other caregiver of the youth's choosing. Given the relatively recent significant changes to the landscape of housing for unaccompanied and separated refugee minors brought on by ruling in the JFCY case, it is essential to map current housing provisions and practices. From this, we plan to create a typology of current non-detention or familial housing options within the Greater Toronto Area (GTA). Once created, this landscape of housing practices will provide the foundation for workshops to co-design alternative housing options, in partnership with GTA stakeholders – including unaccompanied and separated minors, services providers, and policymakers. In doing so, this project hopes to harness insights from design thinking to reimagine the service provisions for unaccompanied and separated refugee youth.

7. Critical infrastructure: grey, green and blue

7.1 Critical infrastructure, food and climate change in cities in the global north

Seona Candy, Helsinki Institute of Urban and Regional Studies

Lack of global action to reduce emissions means that we are now 'locked in' to impacts from climate change in the coming decades. We will need to address both mitigation and adaptation concurrently. This has caused a shift in critical infrastructure (CI) discourse from protection of assets from short term threats or crisis response, to addressing and anticipating longer term threats.

Cities are key intervention points when it comes to CI and climate change, and mitigation and adaptation. Urban areas are responsible for the majority of global emissions and are where most impacts will be felt. Concurrently, it is recognised that food security is increasingly becoming an urban problem due to rising urban populations, resource intensive diets, lengthening food supply chains and competition for land use.

Previous CI research mostly focused on energy, water and other sectors, but rarely on food. That which does, is at a national scale and/or in response to short term threats. The aim of this paper is to explore the concept of critical infrastructure with respect to urban food security and climate change, and its intersection with urban planning in the global north. Artificial intelligence tools are used to assist with the review of extensive transdisciplinary literature on CI and urban food systems. Components, structure and characteristics of urban food infrastructure are defined and vulnerabilities and cascading impacts are identified. The 'criticality' of urban food infrastructure is discussed in relation to other sectors in the context of current and future challenges and conclusions drawn.

7.2 Practices of repair in conditions of climate crisis

Nate Millington, University of Manchester

Repair and maintenance have long been subjects within geography, but they've taken on new visibility in recent years. Repair, a concept that highlights diverse forms of maintenance work that are present in the contemporary landscape, takes uncertainty and breakdown as starting points, and develops forms of action that are predicated on that which exists. Practices of repair are ongoing, even if invisible; they suggest the critical ways in which planetary breakdown is being responded to and possible pathways for an ethics and a politics going forward. There are limits to the figure of repair, however. Repair can service regressive ends or suggest that tinkering with the existing can forestall the need for deep structural changes in the foundations of contemporary life.

This text considers the ethics and politics of repair in a context of climate crisis and apparent planetary breakdown in Cape Town, South Africa. I consider how two repair practices – one, efforts to develop a waste economy predicated on recyclable materials, and second, efforts to keep the city's water infrastructure running in the context of a near catastrophic water crisis – suggest the limits and possibilities of repair in contexts of intensifying and deepening precarity. I focus on different forms through which repair has been understood in contemporary critical social science, and suggest forms of critical repair practice that are decoupled from efforts to monetize degradation through new forms of accumulation predicated on devaluation.

7.3 Examining equity in adaptive reuse of post-industrial urban infrastructure for next generation public spaces

Hamil Pearsall, Temple University

This study examines the ways in which infrastructure reuse projects have successfully recast dilapidated industrial infrastructure as opportunities to promote equitable redevelopment through signature parks. The High Line serves as the iconic example of the sheer economic development potential of such infrastructure reuse, yet the backlash over its associated gentrification and marginalization of local residents has produced a new mission that centers equity as part of the goal of reuse and is diffused through a peer-to-peer network led by the creators of the High Line Park (The High Line Network). The network includes nineteen projects in cities across North America, including The Rail Park in Philadelphia, PA and The Bentway in Toronto, Ontario, which suggests the power of this organization to define appropriate uses of derelict and often contaminated industrial infrastructure. This study examines the connections among these projects, with an eye towards how concepts of equitable development are developed and deployed in different urban contexts. This examination uncovers how the concept of equity has become both adaptable and fixed as the green growth machines that advance the concepts are increasingly connected across cities that are in competition to unveil their next generation public spaces.

7.4 nature's infrastructural turn: instrumentalizing and financializing trees in Greater Manchester

Mark Usher, University of Manchester

Urban studies has revealed how infrastructure not only provisions urban populations with vital services but creates new institutional arrangements and integrates cities into global political economic assemblages. Thus far, the focus has predominantly been on 'grey' infrastructure, utilities, sanitation, transport and housing, which provide a networked material basis for facilitating broader social, economic and political change. This paper will argue that urban nature has experienced its own 'infrastructural turn' over the last decade, making trees, rivers and parks amenable to the same political economic dynamics as traditional grey infrastructure. Indeed, it could be argued that this is the overarching purpose of green infrastructure, aligning urban ecological systems with government strategy on economic growth and development. Focusing on Greater Manchester, this paper will argue that trees have been instrumentalized, financialized, *infrastructuralized*. This infrastructuralization of nature has transformed existing governance arrangements, which is not only adapting environmental management to austerity but delivering it through green infrastructure planning and design. In particular, the paper will consider how the natural capital approach, which Greater Manchester is pioneering as DEFRA's urban case study, is being hard-wired into green infrastructure delivery, economizing the language of environmental policy, bringing different actors into relationship, and providing a technical basis for the political undertaking of public sector reform. The physical network is only the most visible manifestation of infrastructure, which acts as an integrative medium for connecting expertise, finance, planning and design. This not only challenges conventional understandings of nature but the meaning and role of infrastructure *in toto*.

8. Extended infrastructures and global engagements

8.1 Sustainable cities and extractive hinterlands: on the urban infrastructure of commodity production

Alberto Valz Gris, Polytechnic University of Turin

The proliferation of both speculative and materializing post-carbon urban futures centered on cities calls for a wider examination exceeding city-centric approaches. This is motivated by the increasing concern towards the renewed socioecological transformation produced in invisibilized territories of extraction, production and circulation. As both recent and longstanding scholarship on uneven geographical development and planetary urbanization has foregrounded, territories of extended urbanization constitute a quantitatively, epistemologically and politically relevant portion of contemporary urban conditions through the unprecedented extension of urban metabolic flows and their corresponding infrastructure. Ties between urban concentrations and scattered planetary hinterlands are materialized by the way in which key green technologies remaking cities emerge from and traverse increasingly urbanizing territories (the non-city) across infrastructural landscapes. By mobilizing a commodity chain approach this paper attends to the making of lithium extraction landscapes across the Capricorn corridor in the Atacama region, a fundamental site in the production of li-ion batteries. Ethnographic and secondary data highlight the constitution of these urban-infrastructural landscapes through the connection of sites both within and beyond the spaces of the corridor across financial, extractive and logistics geographies. This paper seeks to foreground an urban political ecological approach to the study of the shortcomings and possibilities engendered by infrastructure as a global urban strategy in the urgent transition towards more socially and environmentally just planetary futures.

8.2 Infrastructures of cognitive-cultural capitalism: data extraction as a new colonialism

Dillon Mahmoudi, University of Maryland

Urban areas have recently taken on a cognitive-cultural form predicated on the agglomeration of capital through intensified forms digital technologies, labor divisions, and affective commodification (Scott 2011; Wyly 2013). At the same time, seven of ten of the largest firms by market capitalization are digital firms whose platforms take on the labor and affective dimensions described of cognitive-cultural production. Notably, these seven firms are concentrated in Silicon Valley, Seattle metro, Hangzhou, and Shenzhen, while the remaining three are large financial conglomerates with headquarters, or large operations, in the New York metro. This paper traces the infrastructures necessary for the operation of these firms and their urban areas. Through an examination of the geography of fiber optic lines with urban production statistics, this paper argues that third-wave urbanism is a necessary form for the exploitative extraction of data relationally connecting city-regions across the world to urban profit-centers in the US and China. While this urban-infrastructural future is on the one hand radically new because of digital technologies and the restructuring of urban areas for data extraction, it is on the other hand remarkably similar to the infrastructure of commodity and slave-labor shipping routes of first-wave urbanism and the commodity and air-traffic routes of second-wave urbanism. This paper ends with a charge from Clapperton Chakanetsa Mavhunga (2017), asking what could an infrastructural future 'from' the global south look like and what might we learn of urbanism?

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8.3 “Hell on Earth”, or what’s past is future: logistical labour through global infrastructure in Manchester

Jon Silver, University of Sheffield and Alan Wiig, University of Massachusetts, Boston

As platform capitalism’s key firms reshape the exchange and circulation of goods and information within cities through services like two-day shipping, cities are concurrently attempting to re-industrialize through investment in trans-national, trans-continental infrastructure corridors and nodes that may attract companies like Amazon. This occurs through prioritized spatial planning, privileged economic policy, and premium infrastructure provision, creating nodes to locate these new industries in close proximity to trans-national flows. Through a ‘nested’ case study of the evolution of Manchester Airport City’s Global Logistics Hub and then the arrival of — and dismal labour conditions within— Amazon’s distribution center in the node, this chapter argues that, if industries like Amazon represent the economy of the near-future, understanding the infrastructural politics of and work inside spaces like Airport City are central to theorizing the infrastructure underpinning urban futures.

9. Transforming civic infrastructure: who benefits?

9.1 Water infrastructure redevelopment and environmental justice in the post industrial city: historicizing flood mitigation and landed justice in the St. Louis metropolitan region

Sarah Heck, Temple University

In 2012, the St. Louis Metropolitan Sewer District (MSD) negotiated the largest EPA consent decree in the continental US over the region's persistent problem of combined sewer overflows, a form of flooding in contemporary US urban regions. In an effort to lower the overall cost of redevelopment projects, the MSD innovated a geographically bifurcated approach wherein the southern half of the city will receive large-scale grey infrastructure improvements to increase underground wastewater storage capacity and the northern half of the city will receive green infrastructure projects aimed to keep water out of the already existing sanitary and stormwater infrastructure. Known as Project Clear, the dual approach to infrastructure redevelopment maps tightly to the region's persistent patterns of racial segregation. As Project Clear became a means for the post-industrial city to experiment with proposals addressing urban greening, fiscal austerity, and infrastructure redevelopment, the Justice Department released a report following the 2014 Ferguson uprisings on the suburb's parasitic relationship to its majority Black residents in the form of the excessive use of fines and fees to generate municipal revenue. The Justice Department report spearheaded efforts by activists and the city to formulate paths towards addressing racial inequity in the region. This research situates racialization (Roy, 2017) as a prime analytical category through which to theorize the relationality of uneven infrastructural development projects as the St. Louis region engages in its largest infrastructural investment in decades. I draw attention to the role of regional power blocs and public works projects (Woods, 2017) in shaping the uneven social production of flooding risk. In doing so, this project raises questions about how infrastructure redevelopment in post-industrial Northern cities is informed by histories of racial capitalist accumulation and the implications for social and environmental justice.

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9.2 The high line effect and socio-spatial inequality: a comparative study

Brian Rosa, City University of New York and Universitat Pompeu Fabra

I am in the early stages of a three-year research project examining the proliferation of newly-designed, linear public spaces along urban transport infrastructures. Corridors such as elevated railways have increasingly become the focus of “green” urban design, environmental regeneration and ecological restoration worldwide, which I refer to as the “high line effect.” I take the namesake of the High Line in New York City (Lindner and Rosa, 2017): as I have argued, “high line” is no longer exclusively a proper noun; rather, it is a replicable typology of infrastructural reuse. Design firms involved in the creation of the original High Line are routinely asked to design replicas, and I am aware of over 30 cities attempting to create “their own high line.” Through considering the high line effect from an urban political ecology approach, I aim to investigate how, and under what circumstances, infrastructural reuse projects drive gentrification. Particularly in cases in the United States, such projects are often spearheaded and funded by property developers who see the potential profitability of the introduction of new green space amenities. As I am in the early phase of a study looking at cities throughout North America and Europe, my aim is to develop a theoretical framework for understanding the high line effect and what it can tell us about contemporary urbanism, spaces of infrastructure and designers’ fascination with them, and neoliberal policy mobilities. I will discuss the first case I am investigating, the Rambla de Sants in Barcelona, Spain.

9.3 Reconceptualising urban green space: planning for green infrastructure in inner London

Meredith Whitten, London School of Economics and Political Science

Urban green space has risen up the policy and research agendas, buoyed by a heightened awareness of the role nature plays in addressing contemporary urban challenges, such as climate change, chronic health conditions and waning biodiversity. The focus on green infrastructure has further elevated the role of urban green space, connecting it with critical urban systems and services, such as urban cooling and flood prevention. Yet, as urbanisation continues at a rapid pace, urban green spaces have not realised their economic, environmental and social potential. Instead of being managed as critical scaffolding or essential elements of a multifunctional, interconnected system of green infrastructure, green spaces are conceptualised as an ornamental amenity, detached from the city around them.

Using qualitative research conducted in three Inner London boroughs, my research shows how a powerful cultural and institutional preoccupation with heritage – grounded in a Victorian-era perspective of nature – leads to an “institutional straightjacket,” resulting in missed opportunities to employ green space as an effective planning tool to provide the strategic connectivity and multifunctional infrastructure identified as essential for urban sustainability. A path-dependent conceptualisation of urban green space has become embedded in planning, governance and funding processes. This has significant ramifications for policy and practice in the 21st-century city. Ultimately, this research addresses the paradox of discussing urban green space as a panacea to urban problems with an expanding list of benefits, yet in practice providing it as an optional, cosmetic afterthought, disconnected from other critical urban systems.

10. Breakdown: the end of the infrastructural ideal?

10.1 The everyday vulnerabilities of urban interconnection: rethinking infrastructure security

Martin Coward, University of Manchester

This paper examines the different registers in which vulnerabilities of infrastructure in the global north are understood. Infrastructure is constitutive of interconnective dynamics that underpin the multi-centric agglomerations and urban mega-regions that characterise global urbanisation. The disruption of infrastructure thus comprises a distinctive vulnerability in an epoch often referred to as the 'urban age'. As such, infrastructure protection has risen up the security agenda. Understandings of infrastructure (in)security have focused on its role either as material resource or the manner in which it is represented as threatened. However, infrastructure vulnerability also reveals the affective resonance of interconnection in an urban age. Many discussions of infrastructure fail to grasp the affective relations between individuals and communities and the everyday infrastructures that shape their ways of life. It is through these affective relations that we grasp what is at stake in the potential disruption or destruction of infrastructure. This paper examines these affective relations in the context of the disruption of road and electricity infrastructures. I will argue that these cases show us two different ways in which infrastructural vulnerability is felt - as the disruption of either national or critical infrastructures. These two modes of vulnerability have different spatial and political implications. Understanding infrastructure in this way challenges the current security oriented discourses of critical infrastructure protection and foregrounds the everyday vulnerabilities of ways of life. As such it attempts to challenge the registers in which the disciplines of politics and international relations have understood infrastructure in the global north.

10.2 Overlooked pasts and fragile futures: the age of infrastructure maintenance.

Jérôme Denis and Daniel Florentin, Mines ParisTech

Urban studies have long demonstrated the importance of large networked infrastructures that have forged the 'modern' cities of the global North (Coutard and Rutherford, 2016; Tarr and Dupuy, 1988). This coincided with the extension and equipment phase of growing urban territories. One such equipment era seems to be well completed and universalized in these urban contexts, and seems to be substituted by a long neglected dimension of integrated infrastructure management, the age of maintenance (Graham and Thrift, 2007).

Maintenance practices offer a unique entry point for investigating overlooked dimensions of infrastructures lives. Because they deal with the mundane and the unspectacular, they notably contrast with more traditional issues such as the political implications for infrastructural development or the dramatic consequences of infrastructure collapses (or threat thereof) (Denis and Pontille, 2017) Drawing on an in-depth study on the maintenance of water networks and practices of asset management in various French urban contexts, we will show that, far from being an inert technical substrate that maintainers would only have to mechanically supervise, infrastructures remain partly obscure and unknown, even to those who are supposed to take care of them, and even in a country from the global North. By doing so, we will show how maintenance practices are shaping the ordinary management of the infrastructures and are reversely shaped by them.

Through the lens of these maintenance practices, French water infrastructures appear as elusive sociotechnical assemblages whose present, but also past, are investigated in order to consolidate their fragile future.

10.3 Financial markets, economic infrastructure, and remaking of urban space

Chris Muellerleile, Swansea University

While several geographers have recently suggested that money and central banks function as national scale economic infrastructure, the argument has not been systematically extended to financial markets, nor has it been used to rethink urban space. While always important for the reproduction of the capitalist space economy, this paper suggests that post-1970 financial markets have taken on the political-economic character of infrastructure in three ways. First, financial markets have become technocratic 'vital systems', meaning they are so important for the production of value and the reproduction of everyday life that the capitalist state has little choice but to safeguard them and quickly repair them when they malfunction. Second, especially since 2008, financial markets have increasingly become automatic and mundane technical systems, but always with an inherently limited capacity to process financial transactions. This helps explain financial markets' tendency to fail when their capacity is overstretched but also why regulatory action that might shrink financial markets is redirected toward incremental change and technical fixes that result in the growth of the system. Third, financial infrastructure has increasingly become a relational system of 'rights of way' through both public and private space from the bodily and local to the inter-urban and global scales. All the while these markets are more dependent than ever on the reproduction of urban financial centres as nodes of skilled and unskilled labour, regulatory management, technological innovation, and the concentration of other digitally infused infrastructure. Employing examples of financial market 'breakdown' from Chicago, New York, and London, this paper makes the case that infrastructure is more than just a metaphor for making sense of financialization. Rather it must be a basic component of any incisive description of the material basis of 21st century urbanized capitalism.

10.4 When infrastructure fails: the asymmetrical infrastructures of Detroit

Martin Murray and Maria Arquero de Alarcon, University of Michigan

What happens when infrastructure – once robust and utilitarian – breaks down? In struggling post-industrial cities in distress, the failure of infrastructure is a symptom of a much deeper structural crisis linked with the shrinkage of public resources, austerity, and indebtedness. Looking at the city of Detroit enables us to make sense of asymmetrical patterns of ongoing stagnation and decline mixed with the re-conquest of landed property via speculation in real estate markets. Detroit embodies what Simon Marvin and Stephen Graham refer to as “splintering urbanism,” where premium networked infrastructure linked with asymmetrical distribution of resources have carved cities into two rival terrains: well-serviced enclaves of privilege versus distressed zones of deprivation. Media depictions of the “Detroit Renaissance” and its highly touted “Comeback” after bankruptcy and “Emergency Management” is largely the mythical construction of large-scale real estate developers clustered around Rock Ventures/Quicken Loans, Blue Cross Blue Shield, and the Illich family who have collectively commandeered the bulk of tall office buildings in the historic downtown core and introduced their own hard infrastructure (in the form of new light rail transport system) and soft infrastructure (in the form of semi-autonomous private security).

While about seven square miles along the Woodward Corridor has undergone an infrastructural rebirth in order to accommodate real estate investment in office building, sports facilities, and entertainment venues, most of the remainder of the city (consisting of about 140 square miles) has experienced decay and ruination. The long litany of infrastructure failure – contaminated and unaffordable fresh water supplies, collapsing sewer systems, periodic flooding, toxic wastelands (associated with abandoned factories and production facilities), periodic ‘brown outs’ brought about by the under-serviced electrical grid, unrepaired roads, the disappearance of public transportation, school closures, and the erosion of social services provide vivid testimony to systematic patterns of abandonment and neglect. Looking at three particularly distressed neighborhoods – Brightmoor (northwest), Poletown East (north central), and Riverbend (southeast) – provides a useful lens through which to explore the “Other Detroit” overlooked in the celebratory rhetoric of revival.

In these three neighborhoods, more than half the housing stock has either disappeared (due to fire or demolition) or has reached an advanced state of disrepair. Besides these conditions of precarious living, what these three neighborhoods share is that municipal plans for the future have completely ignored their plight of residents who have remained. In short, city officials have “no plans to make a plan” to rejuvenate these neighborhoods. Faced with such an accumulation of challenges, ordinary residents of these distressed neighborhoods have taken matters into their own hands, engaging in a variety of unofficial, unsanctioned, and sometimes extra-legal practices that amount to a kind of do-it-yourself (DIY) urbanism. Equally important, just as the proximate causes for decline vary across struggling neighborhoods, the kinds of improvisational tactics that emerge are quite different, depending upon circumstances and location.

In looking at what happens to leftover spaces after abandonment, we have found that ordinary people improvise, developing various coping strategies designed to substitute ingenuity for neglected infrastructure. Local narratives also portray their distrust with contemporary forms of land-grabbing in Detroit, where large swaths of vacant property owned by the (Detroit) Land Bank is leased or bargained to innovative productive uses with the promise of taxes and jobs. Our preliminary research has uncovered that the residents of Poletown East have not only battled against existing regional waste infrastructure located in

their backyards, but also questioned ongoing plans for business in the area. For instance, the Food Innovation Zone fuelled by the Eastern Market Corporation, or the coupling of the Great Lakes Recovery Initiative on Green Infrastructure with the urban agriculture operations of Recovery Park, are not trying to compensate the existing 'food desert' in the neighborhood. With their expansive plans for future development these projects see in the accessibility to vacant land as a profitable economic opportunity that capitalizes on privileged access to available transportation infrastructure.

11. Infrastructures of the Anthropocene

11.1 Offshore wind infrastructure, work and the future of urban coastal economies

Sarah Knuth, Durham University

As offshore wind power emerges as an important industry for a range of urban coastal economies in transition, its developers and political advocates confront an essential, yet underexamined paradox. Like other frontier green economic sectors today, the development of offshore wind infrastructure has attracted a wave of digital innovation and would-be technological disruption: schemes for drone monitoring, machine learning and other 'Internet of things' and Modern Methods of Construction (MMC) interventions to boost wind farms' economic productivity and spin off new support industries. Such economic development visions have likewise enticed regional and national governments as they work to imagine and promote a green economy in the United Kingdom, United States and other Northern contexts. Yet wind infrastructure developers face competing mandates. Notably, as offshore wind industries and infrastructure locate in deindustrialised cities and along disinvested coasts, governments and developers have framed wind projects as a locus of working class job creation and regional revitalisation – local jobs largely absent from the high-tech imaginaries above. These competing priorities for labor-saving technological innovation (with jobs for the highly-educated few) and broad-based 'green collar' job generation demand further investigation. Fundamentally, they offer a window into profound questions facing a green economy, geographies of work within it and the nature of its resource-economic and infrastructural frontier, including within new proposed visions for a Green New Deal: what kind of economy will it be, and for whom?

11.2 Imagining and producing forests as infrastructure at the wildland-urban interface

Sara Holiday Nelson, UBC and Patrick Bigger, Lancaster Environment Centre

In thinking through the contemporary politics of infrastructure, most scholars have tended to focus on more familiar ‘grey’ infrastructures that comprise housing, transport, energy, or water delivery systems. Meanwhile, critical geographers have tended to engage the ‘services’ that non-human environments provide to society through the lens of nature’s commodification, marketization, or financialization, generally without specific reference to infrastructure. We aim to bring these two perspectives together by examining some recent policy and political-economic interventions reflecting the perspective that (as one recent report from The Nature Conservancy put it) “ecosystems are infrastructure.” In this paper we explore a pilot project underway in central California that links a municipal power and water utility to the US Forest Service, institutional investors, and a variety of physical science disciplines to reimagine sprawling, ecologically degraded forests as critical infrastructure in need of investment. This pilot project positions forests as critical infrastructures that both provide crucial services (hydrological regulation) and mitigate environmental threats (primarily wildfire) to populations and other forms of infrastructure. We demonstrate how rapid expansion of the ‘wildland-urban interface’, coupled with historical practices of total fire suppression on federally managed forests, has produced risk-laden social-ecological landscapes that transcend any neat urban/rural binary across the US West. We ask what sorts of political rationalities operate through emerging investment mechanisms that treat forests as infrastructure and what the reimagination of ‘nature’ as infrastructure might tell us about contemporary financial and political investments infrastructure more generally.