Using Sociotechnical Methods: Researching Human-Technological Dynamics in the City
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Introduction

You are roused from a deep slumber by the buzzing of your digital alarm clock. It's 6 a.m., time to get up. You begrudgingly comply, reach for the light switch, and stagger to the bathroom to use the toilet. After getting a drink of water from the tap, you head to the kitchen to switch on the kettle. Outside your window and four stories down, automated photosensors switch off the streetlights in anticipation of the sunrise, while the sidewalks and streets gradually fill with daily commuters travelling in cars and on bus, bicycle, and foot. Back inside your flat, you settle into your favourite chair with a cup of hot tea and open your laptop to scan the day's headlines as the city gradually comes to life.

Technology saturates the city. From the most basic acts of sustenance and shelter to the most cutting edge forms of digital communication, city residents engage with a wide variety of technologies on a daily basis. Routinely, we pay little attention to these interactions; they are simply the taken-for-granted infrastructures of life in the contemporary age. We only recognize our reliance on technologies when they break down or act in unexpected ways – when a bridge collapses under too much weight, a heat wave causes a citywide blackout, an antiquated water main finally exceeds its service life, or a hacker successfully disrupts the Internet. But what if we made an explicit attempt to understand the relationship between urban technologies and everyday life? What if we recognized that technologies have cultural, social, and political implications that are intimately tied to our existence as urban residents?

In this chapter, we summarize what it means to study cities from a sociotechnical perspective. We use the compound term 'sociotechnical' to describe the indelible link between humans and technologies; in other words, one cannot be considered in isolation of the other. We begin with a brief review of the origins of the sociotechnical perspective and its scholarly implications when investigating urban development processes. We then provide a brief summary of four sociotechnical studies of cities to understand the methodology and methods employed as well as the types of knowledge produced. In conclusion, we argue that the sociotechnical perspective allows us to embrace the messiness of contemporary cities and imagine alternative futures by reworking the relations between humans and their material surroundings.

Conceptualizing technology in the city

The sociotechnical study of cities is rooted in two distinct but related academic discourses, urban history and Science & Technology Studies. Urban historians have long been interested in the technologies that are central to the development and function of cities, particularly the large infrastructure networks built in Europe and North America beginning in the 18th century to sustain rapidly industrializing societies. These studies demonstrate that the success of cities is highly dependent upon large-scale technological networks that can funnel natural resources, waste products,

information, goods, and people into and out of cities (Tarr, 2005). 'Urban infrastructure provides what may be called the vital technological sinews of the modern city: its road, bridge and transit networks; its water and sewer lines and waste disposal facilities; and its power and communication systems. These sinews permit urban functioning and facilitate urban economic development' (Tarr and Konvitz, 1987: 195).

A second inspiration to the sociotechnical study of cities is the interdisciplinary field of Science & Technology Studies (STS). STS emerged as a discipline in the 1970s as scholars in the social sciences and humanities began to formalize the social study of scientific and technological development. An early touchstone for these scholars was Thomas Kuhn's seminal 1962 book *The Structure of Scientific Revolutions*. STS was also influenced by the social movements of the late 1960s and early 1970s in North America and Europe, and the contentious scientific and technological issues of nuclear weapons and power, environmental pollution, reproductive technologies, biotechnology and genetic research, and so on. Today, STS includes a heterogeneous mix of philosophers, sociologists, anthropologists, political scientists and other social scientists who are interested in opening the 'blackbox' of scientific and technological development processes to reveal their origins, dynamics and consequences (Hackett et al., 2008; Hess, 1997; Sismondo, 2004).

STS scholars and urban historians argue that technological development does not occur in a vacuum; rather, it is inseparable from and implicated by developments in the social sphere. These scholars reject the technological determinist perspective that sees technological development as an exogenous, linear and inevitable process of innovation. Instead, technologies are understood to be shaped by a wide variety of social actors, not only scientists, engineers and policymakers, but also politicians, activists, artists and even users. However, rejection of a technological determinist perspective does not entail the wholehearted embrace of social constructivism. Social forces are not the sole determinant of technological development, either, because nonhuman influences – physical and chemical properties, natural disasters, ecological and biological forces, and so on – also shape and drive technological development.

In place of social constructivist and technological determinist perspectives, many STS scholars and urban historians embrace what is referred to as a 'co-constructivist' approach. The co-construction of technology rejects the essentialist tendencies of technological determinism and social constructivism in favour of more nuanced positions where mutual shaping occurs between the two (see Bijker et al., 1987; Bijker and Feenberg, 1999; Latour, 1993; Law, 1992; MacKenzie and Wacjman, 1999b; Misa et al., 2003.). 'It is mistaken to think of technology and society as separate spheres influencing each other: technology and society are mutually constitutive' (MacKenzie and Wacjman, 1999a: 23). There is an explicit attempt to look beyond conventional definitions and dualistic typologies that divide the world into humans and nonhumans, objects and subjects, and facts and values, while also avoiding a relativistic account of the world that has no point of reference (see Latour, 1993; Law, 2004). There is significant and heated disagreement among these scholars as to how the various processes of co-construction occur, but, in general, they tend to emphasize the relations between society and technology rather than focus on one or the other independently.

In the past decade, the sociotechnical study of cities has broadened beyond urban history and STS to include research in the spatial disciplines of architecture, urban planning and geography. The result has been an expanded view of technology that includes not only the artefacts produced through technological development but also 'the knowledge required to construct and use these artefacts, as well as the practices that engage them' (Guy, 2009: 232). Sociotechnical scholars examine topics such as the design, construction, maintenance and occupation of buildings; urban planning and policy activities; the relationship between infrastructure networks and metropolitan governance; the

intertwining of nature, technology, and humans in the urban landscape; and the introduction and evolution of municipal regulations and codes (Graham and Marvin, 2001; Guy and Moore, 2005; Guy and Shove, 2000; Guy et al., 2001; Hård and Misa, 2008; Moore, 2007). The city is interpreted as a sociotechnical artefact where technology and humans interact through the political, cultural and economic dramas of daily life (Aibar and Bijker, 1997; Brand, 2005; Hommels, 2005). Technical experts such as engineers, architects, planners and policymakers play a large part in these studies but there is an explicit attempt to understand how other, seemingly 'non-technical' actors also influence the development and management of technologies.

Sociotechnical scholars share at least four common perspectives on urban technologies. First, technological development processes are *contextually based*. While it is possible to transfer techniques, skills and knowledge between different places, processes of translation and interpretation dictate the success or failure of technologies in a particular locale. An example of the contextual nature of technological development is the skyscraper, a building type that has dominated North American skylines for over a century. The skyscraper has been slow to catch on in other developed countries, particularly Northern Europe where the existing urban fabric and cultural expectations are not receptive to these Modernist monuments to capitalism. The aversion to the skyscraper building type is due to its aesthetic and financial implications, and more broadly, to how the technological artefact resonates with specific cultural and material conditions.

Related to context, sociotechnical scholars also interpret technological development as a *contingent* process. While it is tempting to view seemingly mundane technologies such as road and water infrastructure networks as inevitable products of human progress, we can frequently identify alternative pathways of development that could have been taken. In other words, ''interpretive flexibility' is attached to any artefact: it might be designed in another way' (Moore, 1997: 25). Again, this refers to the wide variety of actors and contextual factors that shape technologies, and in the process, create multiple pathways or alternative routes by which technologies are realized (see Evans, Guy, and Marvin, 2001; Guy and Marvin, 1999; Guy and Marvin, 2001; Guy and Moore, 2005; Moore, 2001; Moore, 2007; Moore and Brand, 2003). This is not to suggest that there are an infinite number of ways a technology could have been deployed in a particular context but rather that the resulting way was not the only one.

An historic example of the contingent nature of technological development is the adoption of combined and separated sewer systems in North America and Europe beginning in the late nineteenth century (Tarr, 1979). Sanitary engineers, public health officers and municipal officials engaged in heated debates to decide whether liquid wastes (stormwater and sanitary wastes) should be conveyed in one pipe or two, and argued for their positions on economics, physical and bacteriological grounds. Each technology had specific advantages and disadvantages and the final decision in each city depended upon influential technical actors, the availability of scientific and empirical data, past experiences with sewer technologies, climatic conditions, financial resources, user habits and preferences, and estimates of future urban growth. Today, both types of systems exist, demonstrating the multiple pathways upon which urban technologies can be developed.

The continued use of combined and separated sewer systems suggests a third theme of the sociotechnical study of cities: *obduracy*. This is simply to state that urban technologies were long lived and they were embedded in a complex array of material realities, social habits, and institutional standards. Indeed, many cities in North America and Europe continue to rely on 19th century infrastructure networks because replacing them with newer, more cost effective and environmentally friendly systems would be too costly and disruptive. Of course, these infrastructure networks were designed to be long lived, but their obstinacy is also due to their embeddedness in their cultural and

material contexts, making the introduction of a new technology a highly contentious process (see Hommels, 2005).

Finally, processes of sociotechnical development are often *uneven*. Megacities in developing countries provide some of the starkest examples of unequal infrastructure service provision, with peripheral slums lacking the water, wastewater, and electricity services (not to mention zoning, building codes, paved streets, and so on) that are ubiquitous in the central city. And this tendency is not restricted to developing countries; the notion of the 'digital divide' in the global north belies the rhetoric of the Internet as a neutral and readily available communication network. Technologies can replicate and exacerbate existing social hierarchies and class distinctions, creating interstices and recesses of partial or no service rather than a level playing field for all urban residents (see Graham and Marvin, 2001; Swyngedouw, 2004).

These four themes – contextuality, contingency, obduracy, and unevenness – permeate the sociotechnical studies of cities. They encourage the researcher to ask: How and why did a technology develop in a particular place and time? Who was included in development processes and who was excluded? How did processes of negotiation over competing technologies occur and how was a decision reached? What geographic and material conditions influenced the adoption or rejection of a technology? What were the political, cultural, environmental, and economic consequences? The overarching aim of these questions is to interrogate the multivalent character of sociotechnical development processes in cities.

Studying the Sociotechnical City
Researchers who adopt a sociotechnical approach to study cities come from a wide range of disciplines and thus, their research methods vary to some degree. However, there is a general tendency to apply qualitative methods to unpack the various meanings and implications of technological development. The case study methodology is prevalent in the sociotechnical study of cities because it allows the researcher to analyse the concrete, context-dependent interactions between humans and technology. In place of a single pathway, these researchers explore the multiple pathways and different meanings of technologies to urban actors. Macro characterisations of the city as a massive economic engine, a concentrated zone of human settlement, or a complex web of technological networks, are rejected in favour of fine-grained investigations of human/technology interaction. The research tends to be grounded, both theoretically and physically, with the researcher engaged in processes of tracing the relations or connections through multiple narratives and transects.

Similar to conventional case study research, sociotechnical scholars employ methods of archival document review, semi-structured interviews, and various forms of ethnographic data collection. Archival reports, books, maps, and photographs provide an historical record of debates over technologies and the contextual and contingent factors involved in their success or failure. When studying a particular technology, there is a tendency for the researcher to assume that the existing technology was the 'correct choice'. However, the historical record frequently reveals a palette of options that were weighed and contested by various social actors and material conditions, resulting in the success of one particular technology over others (Bijker, 1997). Exploring these processes of contestation can help the researcher uncover particular influences of culture and materiality embedded in the topic of study.

In addition to the review of archival materials, sociotechnical researchers frequently seek to 'follow the actors' by conducting structured or semi-structured interviews with technical experts, policymakers, political actors and users. The intent of these interviews is to gain insight from key

actors who were involved in the design and development of a particular technology, what types of social conflicts and controversies occurred, how changing contexts informed the process and how the final design of the technical artefact eventually came into being. These interviews can provide some of the most illuminating data, particularly when the respondents provide conflicting interpretations of the subject at hand, revealing the multivalent character of technological development.

Finally, sociotechnical researchers often perform site visits to gain firsthand 'participative' experience as to how a particular technology is embedded in its material and cultural surroundings, and how its final shape emerges through design, dialogue, and dispute. It is here where the researcher becomes intimate with the subject of study and discovers details and issues that are not addressed explicitly in the historical record or through interviews with key actors. The site visit also offers the researcher a chance to engage directly in the study, rather than through representations in books or from secondary accounts by various stakeholders. These ethnographies also produce different forms of data, such as photographs, maps, calculations, models, even sensory experiences, that help to color and shade the textual data of interviews and archival research. Through these alternative data-sets new 'voices' are added to the process of interpretation, allowing more actors to 'join the story' and provide the narrative of technological change with 'more voices, vantage points and concerns' (Yaneva, 2009: 7).

A particular challenge for sociotechnical researchers involves scale. The city is a frequent starting point for these studies because it has well-defined material and social boundaries that serve to delineate the stage upon which humans and technologies interact. It serves as a manageable starting point to study an infrastructure network, an urban development policy, a new building design, and so on. However, even the smallest technologies have a tendency to transgress these boundaries and circulate in regional, national, and global flows of knowledge, capital, and natural resources. A good example is historian Ruth Schwartz Cowan's (1987) study of the diffusion of American cast iron stoves and gas cooking ranges through which she traces the networks of interests and influences on the consumer and their choices. By following influential actors and drawing network diagrams, Cowan identifies the site of consumer choice as the 'consumption junction', the interface where technological diffusion occurs and the place where technologies begin to reorganize societal practices and structures.

Like Cowan, the sociotechnical researcher is often faced with the challenge of tracing networks and jumping scales to connect the micro and macro implications of technological development. The city serves as a meso-scale and the sociotechnical scholar scales up and down to make connections between the global and the local. Critically, this requires the researcher to decide which connections to trace, how far to trace them spatially and temporally, and when to stop, thereby becoming another 'actor' in the network of assembly that surrounds the technical object.

A second challenge of the sociotechnical researcher is to interrogate the nonhuman and material aspects of technologies. This follows a more general trend in the qualitative social sciences to go beyond the human aspects of the world and engage with its material aspects (Dant, 2005; Thrift, 2007). From a co-constructivist perspective, it is not sufficient to follow the social actors who shape technological development because this only tells half of the story (Latour, 1992). Rather, there is a need to understand how the materiality of technologies is related to their development. This is a particularly tricky task for qualitative social scientists that tend to leave the characterisation of the nonhuman world to the natural sciences and continues to be a contentious and emerging approach for sociotechnical researchers.

Examples of urban sociotechnical research

To illustrate the range of urban sociotechnical study, we briefly summarize four case studies in the following paragraphs. These examples illustrate how scholars in geography, architecture, planning and sociology have interpreted technological development as it relates to the introduction of water supply infrastructure, the politics of architectural design, the reform of urban transportation policies and the latent opportunities in modest building practices. The examples suggest some of the different types of knowledge and insights produced by examining cities through a sociotechnical lens.

In *City of Flows: Modernity, Nature, and the City*, geographer Maria Kaika examines how technological networks of water infrastructure are bound up in notions of human progress by tracing the development of water supply networks in Athens, Greece. The purpose of her study is to understand how nature, technology and urban development are embedded in messy sociotechnical configurations and to understand how the network logic of urban infrastructure is related to Western notions of progress and modernity. On the importance of technology to the city, she writes:

> The material mediators, the carriers of the flows that constitute the urban are technological networks: water, gas, electricity, information, and so on. Given their central role in the production of modern cities, technology networks are integral parts of the urban fabric and of the process of transformation of nature into the city and vice versa. (Kaika, 2005: 28)

Kaika argues that while the goal of societal progress and modernization was to separate humans from nature, the introduction of new technological networks does just the opposite, creating new hybrid human/nature configurations. She illustrates this by tracing water flows from the household scale (where nature, technology and humans interact face-to-face) to the neighbourhood, city and regional scales (where water supply networks are planned and built), and finally, to national and global scales (where ideas of capitalism and modernity are shaped). Engineers, planners, policymakers and politicians use infrastructure networks to define particular configurations of nature and society through narratives of technological progress and societal improvement, which have important implications for defining cities as centres of accumulation, capitalization, and the consumption of nature.

A second example of the sociotechnical study of cities is architect Steven Moore's analysis of the design and construction of the Commerzbank Tower in Frankfurt, Germany (Moore, 2007; Moore and Brand, 2003). The project, completed in 1997, is a well-known example of a sustainable skyscraper that simultaneously satisfies stringent economic and environmental criteria when compared to a conventional building. Here, Moore unpacks the history of the project to understand how the influence of competing actors is embodied in the technical artefact that now dominates the Frankfurt skyline. He argues that:

> This project was central to the city's growth pains in the 1980s and 1990s because it focused the attention of citizens, bankers and city officials on the future of the banking industry in the city. As a result, it serves as a concrete laboratory for more conceptual planning issues. (Moore, 2007: 125)

Through semi-structured interviews with key actors, archival research, site visits and mapping, Moore identifies dominant and counter storylines that had significant influence on the final design of the building. The Commerzbank Tower study demonstrates how a single technical artefact, a building, is related to particular forms of democratic politics that involve negotiations between the various vested interests of urban development. The process of creating an architectural icon was not merely one of balancing aesthetic preference with functional necessity; design is a contested process

that involves complex negotiations between powerful social actors and material flows. Through processes of coalition building and conflict resolution, the building owners and design team were successful in bringing on board the banking community, environmentalists, political actors, municipal officials and residents to devise a project that would, for the most part, satisfy their competing visions of Frankfurt's future.

In a third case study, urban planning scholar Ralf Brand (2005;, 2008) examines the Belgian city of Hasselt and the attempts by the municipality to implement transportation reforms in the 1990s. The city had been plagued by mobility issues including congestion, accidents, air pollution and poor accessibility for several decades and the municipality considered implementing a technical fix approach (building a third ring road) or a behavioural fix approach (persuading residents to use non-automobile forms of transport). In the end, the municipal government chose to adopt neither strategy and instead embarked on a redevelopment program 'to make the built environment and other elements within its political remit more conducive to alternative forms of mobility through an integrated set of institutional, infrastructural and urban design interventions' (Brand, 2008: 183). The redevelopment included renovation of infrastructure services to facilitate mass transit, bicycling and walking, as well as significant changes to existing transportation, land use and parking policies.

Brand is particularly interested in the rhetoric of sustainable urban development and how integrated strategies to reorient urban metabolic processes are related to technological development. He describes the transportation reforms in Hasselt as a 'co-evolution of technical and social change' where the synergies between humans and technical networks are identified and exploited to produce a more livable and environmentally friendly city. Expanding upon the co-constructivist position described above, he argues that artefacts of the built environment such as bicycle lanes and convenient bus routes have inherent 'agendas' that facilitate particular forms of human activity. This is not to prescribe a social engineering approach to urban development but rather to recognize that technological design offers opportunities to encourage different habits and behaviours by urban residents.

Finally, sociologist Simon Guy (2009; 2010) explores sustainable architecture practices in Japan to understand how different cultural contexts enable particular arrangements of technology, nature, and humans. Guy's research goes beyond the textbook visions of Japanese architectural culture that, he argues, serve to fix and essentialize particular typologies of Japanese urbanism. This traditional form of architectural research relies on an interpretive mode of analysis that assumes cultural norms and values can be simple read off of urban surfaces through photographing, drawing, and memorializing. Faced with the scale, density, dynamism and heterogeneity of Tokyo, Guy suggests that this form of architectural research is unable to make sense of contemporary Japan.

Taking a more ethnographic approach to the study of Tokyo, Guy discovers a seemingly chaotic built environment that belies the conventional Western perspective of Japanese architecture in serene harmony with nature. Rather than seeking out the remnants of ancient Japan or contemporary expressions of high Japanese architectural culture, Guy instead widens his analytical focus to acknowledge the sights, sounds and smells of contemporary Tokyo. Widening his reading beyond architectural histories to include novels, anthropology field notes, diaries and newspaper columns, he moves between interviews with architects, developers, planners and academics and his own ethnographic explorations of the city to explore how particular ideas of nature are being preserved, celebrated, exploited, ignored, discarded and damaged through processes of urbanization.

Case studies of individual developments are complimented by studies of the work of different architectural practices, notably the work of a small architecture practice, Atelier Bow-Wow. At this

firm, the members take inspiration from what they call 'pet architecture', or monstrous buildings that embrace and celebrate wild juxtapositions of use, from temples and shops to laundries, saunas, restaurants, pachinko parlors, and golf driving ranges. Writing of their own research approach, principal architect Yoshiharu Tsukamoto (2008: 60) states, 'One could say that this research was to show that the vital, animate order of Tokyo's urban space, which joins together its disparate parts, is something that stands in opposition to existing modes of architectural criticism.'

Inspired by the 'rhythmanalysis' approach of Henri Lefebvre, Atelier Bow-Wow follow the unfolding of the city over time and through space, with buildings growing and shrinking and the use of spaces and places shifting between pubic and private, individual and collective, and document these processes with ethnographic field notes. Drawing on this research, the designers apply the lessons from these hybrid buildings to inspire their residential and commercial micro-projects that reinvent the 'non-standard spaces, the leftover, awkward spaces of urban development' that are abundant in Tokyo (Guy, 2010: 126). Rather than emphasize the artefacts produced, Guy is interested in their novel form of design practice that responds flexibly to the restless flux of humans, technology and nature bound up in the dynamism of the contemporary urban metropolis.

Guy's study focuses on the less glamorous side of architectural production, namely the incremental shaping of the urban fabric. Here, he discovers an alternative and inspiring approach to engage with and reorder the messy relations of the city. Using a sociotechnical lens, he identifies the unfamiliar and strange practices of Atelier Bow-Wow as an instructive way to understand the intertwined processes of urban development. Reflecting on the artefacts they produce, he writes, 'These are buildings as infrastructures of everyday life and demonstrate a remarkable fluidity of programme and purpose which presents the city as rather less obdurate than is often portrayed in urban studies' (Guy, 2010: 126). His emphasis is on the opportunities to change the relations between technology, humans and nature in urban contexts through tactical interventions that can respond to the rhythms of the contemporary city. Describing the objective of Bow-Wow's research work, Tsukamoto writes:

> The goal of our 'void metabolism' research is to find a way to counter-act the haphazard fashion in which single-family houses and small buildings are generally executed by presenting a framework in which buildings may develop contextual consistency. (2008: 61)

In this way, urban research escapes the objectifying distance of cultural criticism that seeks to define, historicize and evaluate Japanese design. Instead they engage in an action research project that contributes to processes of 'architectural production' that are capable of 'enriching people's lives' (Tsukamoto, 2008: 61).

The four studies described above provide examples of the knowledge produced by studying the sociotechnical aspects of urban development and change. Kaika's study of Athens focuses on the development of a new infrastructure network and how the flows of nature, namely water, are reoriented in the face of modernity and progress. Moore's study of the Commerzbank Tower in Frankfurt demonstrates how the design of a building influences the flows of capital and the politics of urban development in a globally connected metropolis. Meanwhile, the reordering of Hasselt's transportation network, as described by Brand, is a study of the flow of people and the simultaneous change of material and cultural conditions. And finally, Guy's study of pragmatic architectural practices in Tokyo recognizes opportunities for intervention in the ever-changing flux of the city. The connection between the four studies is an emphasis on technological development as central to urban culture, whether through infrastructure networks, politics, policies or practices. The researchers resist the tendency to carve these activities off from other aspects of urban development and instead, see

them as an integral part of how cities evolve and change over time. Thus, they consider not only what was built but under what specific temporal and geographic circumstances these technical artefacts came into being.

Conclusion

> If we want to think about the messes of reality at all then we're going to have to teach ourselves to think, to practice, to relate, and to know in new ways. We will need to teach ourselves to know some of the realities of the world using methods unusual to or unknown in social science. Law (2004: 2)

The objective of sociotechnical research in urban design and development is two-fold. First, there is a desire to open up analysis to the critical importance of technological artefacts, networks and practices as they relate to the social, economic and ecological life of cities. And second, as illustrated by the vignette at the beginning of this chapter, the approach is an attempt to explore the city as a site of dense and complex co-evolution of humans, technologies and ecologies. The aim is to understand the city as a sociotechnical artefact, thereby opening research to the connections and interactions between society and technologies, and inviting new voices to reinterpret and reshape how cities develop and change over time.

The sociotechnical approach suggests and even depends upon novel implications for research methodology. Understanding the city as a heterogeneous mix of humans, technology and nature requires the researcher to embrace the messiness of urban change and then develop research approaches to unravel these complexities. But as Law has argued, messiness is not something to fear methodologically or recoil from analytically; rather, it is in the messiness of the city where we can find its vitality. This means that, as researchers, we need to look beyond our routine methodological expectations, our 'desire for certainty', our search for 'more or less stable conclusions', our belief that as researchers we have 'special insights', and our tendencies to generalize or 'universalize' our findings. In other words, the sociotechnical perspective encourages us to 'unmake many of our methodological habits' and explore the ebbs and flows of urban change, the subtleties and ambiguities of human choice, and the plasticity and obduracy of urban form (Law 2004: 9). Such a perspective is a productive way to engage with the messiness of the city, to interpret the vitality and realness of the present urban moment, and ultimately, to imagine alternative futures.

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