

PART III

TOPICS

55. Cities: stories of urban STS

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STORIES OF URBAN STS¹

New York City, 1950s: *The city planner Robert Moses is responsible for building the Long Island Freeway, which has such low underpasses that only cars can transit, thus preventing poor and mostly black populations from reaching Jones Beach, Moses's acclaimed public park.*

In the influential paper from 1980 'Do artifacts have politics?', Langdon Winner tells this story to answer the question with a resounding yes. Technical artefacts are political and their politics result from the willing or unwilling inscription of the designer's political ideologies (in this case Moses's racism) into the technical features of artefacts. In 1999, STS scholar Bernward Joerges turns the table and asks 'Do politics have artefacts?' His reverse storyline offers a detailed study of the construction of these underpasses, demonstrating that if Moses were to follow the freeway building standards and regulations, he could have hardly built the underpasses differently. He doubles down, arguing that as car ownership became extended among poor and black people, they still wouldn't travel to Jones Beach. Joerges explains that the politics of artefacts is not inherent to their material features, but relational—it depends on the relationships artefacts maintain with other entities. Winner's story would be just that, a story without much empirical validity told by people who 'don't know what they are talking about'. In a response to Joerges, entitled 'Do artefacts have ambiguity?', also from 1999, Steve Woolgar and Geoff Cooper argue that the story is an urban legend with performative effects. Joerges's separation between the actual politics of technical artefacts and the stories told about them cannot be held. Stories, Woolgar and Cooper argue, are to a great extent what the politics of artefacts is all about.

We start with these entanglements of urban legends and Science and Technology Studies (STS) stories because we are interested in how the city has been told in STS. Notably, urban legends—but also anecdotes, rumours or stories—constitute epistemic modalities that resonate with STS's modes of knowing. Both would be often articulated around 'iconic exemplars': stories providing easy to grasp motifs standing for a whole thematic strand of issues for STS, whose status as exemplars resides in their repeated use, rather than their internal qualities. *The Routledge Companion of Actor-Network Theory*, for instance, suggests that ANT is not a theory, but a repository of 'paradigms': that is, 'exemplars' scholars come back to when looking for inspiring problematisations (see entry 2, this volume). Legends also resonate with an increasing awareness among STS scholars of the ethical and political consequences of the stories we tell. As Haraway powerfully stated: 'it matters what stories tell stories'.

In this entry, we explore stories STS scholars tell about cities. In doing so, the story we aim to tell is one of field formation and transformation, as well as how the urban has de-centred the object of STS. We start by retelling stories about cities' socio-technical artefacts and systems

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(section 2). We then focus on stories about urban natures, activist ecologists, the city as a geological intervention, as well as about untameable nonhuman atmospheric elements (section 3). Finally, we engage with more recent STS stories about how participation and do-it-yourself activism in the infrastructuring of urban worlds re-shape what we take the city to be (section 4; see entry 20, this volume). Each section retells iconic stories and rehearses some key STS insights attached to them. In doing so, we take three perspectives: firstly, we draw attention to their shared urban ontologies, that is, the descriptions they give of what the city 'is'. Secondly, we identify the 'communities of readership', in Woolgar and Cooper's parlance, that these STS stories articulate, asking who the actors/readers being addressed are, and what kind of epistemic partnership (and boundary work) takes place. Finally, we look at implicit or explicit interventions these STS stories make or imply for city life and urbanism.

Two caveats before we start. On the one hand, we aim to remain faithful to the genre of storytelling and thus paraphrase stories rather than referencing or quoting them. In the reference section readers will find key works and introductions into urban STS. On the other hand, we reckon these 'received' urban stories mostly, but not only, relate to forms of Euro-American modernist urbanism. A burgeoning magma of more recent studies is soon to change this, producing new iconic stories and expanding the reach of urban STS to other places and topics. But that's a different story and shall be told another time.

FROM CITY INFRASTRUCTURES TO URBAN ASSEMBLAGES

Barcelona, 1860s: The Cerdà plan for the extension of Barcelona is officially approved and urban works begin. The plan is the result of a major public and political controversy shaped by the professional rivalry between civil engineers and architects. The state's civil engineer Ildefons Cerdà, proposed a plan for a modern 'foundation' of the city by means of an extendable urban grid. The local architect Antoni Rovira proposed a plan for the 'extension' of the old city, keeping with existing urban structures and architectural aesthetics. The controversy scaled up to conflicts of many kinds: between the Spanish state and the Catalan administrations, between science and art, as well as between the new industrial bourgeoisie and the older aristocratic class. At the end, a compromise was reached: Cerdà's overall layout for swift mobility and traffic was implemented, but his building's regulations were not approved, thus allowing for the high density and hierarchy of building proposed by Rovira. By incorporating elements of Rovira's 'extension' plan, Cerdà's 'foundation plan' became Cerdà's 'extension plan'.

The story is told in a now classic paper from 1997 by Eduard Aibar and Wiebe E. Bijker, which paved the way for STS engagements with cities. It was published only a few years after Bijker and Pinch had proposed extending the key principles of the sociology of scientific facts to the study of technological artefacts. Along these lines, the city was to be understood as a socially constructed artefact, whose form and function was subject to the interpretative flexibility of the actors involved in its construction. Accordingly, town planning was to become a paramount research object for STS studies of cities, as it would allow studying the 'technological frames'—that is, the professional visions, social values and cultural assumptions—of actors involved in city-making, such as architects or engineers.

Based on the story of Barcelona, the authors proposed expanding the hitherto conventional studies of the SCOT (social construction of technology, see entry 6, this volume) programme in two regards. Firstly, they observe that when it comes to controversies about urban design, closure can also occur by means of composite compromises between the different positions—a mode of closure that had not been observed in other techno-scientific controversies. Secondly, the authors observe that after closure other hitherto invisible actors can at any moment reignite urban controversies around city-making (see entry 25, this volume). This is particularly noticeable in relation to the role of Barcelona's working classes, who came to radically challenge Barcelona's extension in the following decades, as they resisted and sabotaged the building process.

Maastricht, 1998: *All planning activities for the redesign of a two-kilometre highway section that cuts through Maastricht without overpasses and creates major mobility issues are postponed until 2012. The highway was built in the 1960s and, since then, its redesign, including plans for diverting the highway outside the city, as well as tunnelling it, has been not only high on political agendas, but also a matter of transversal consensus. All relevant actors seem to agree that the highway needs to be redesigned, and yet, the highway remains there, untouched, for decades.*

In her book *Unbuilding Cities. Obduracy in Sociotechnical Change*, Anique Hommels tells this and another two stories about obdurate urban structures—a commercial centre and a high-rise housing project—that persistently resist the broad social consensus about the need to demolish and/or redesign them. Conceptualising the city as a large socio-technical artefact, Hommels observes that the city offers an empirical opportunity to study something that is mostly overseen in studies of technological change: the obduracy of technological artefacts. The city, she argues, is the paramount example of a socio-technical artefact that is extremely reluctant to change. Obduracy, Hommels discusses, does not just lie in the material features of these artefacts, but it results as well from social relationships. Hommels proposes three sources of obduracy: the existence of dominant technological frames; the embeddedness of technological artefacts in larger socio-technical ensembles; and persistent traditions involving long-term structural developments.

Paris, 1987: *One of the most innovative mobility infrastructure projects ever attempted, Aramis, is declared a failure, after two decades of work and thousands of millions of French Francs invested in research and development. Small, automated cabs were to provide service on demand, thus combining the advantages of individual cars with those of public transport. Uncertainty reigns about what has brought down this wonderful project, which for many years was on the brink of becoming real: some say it was old fashioned, a future dream from the 1960s to be built in the 1980s; others point that it was simply too expensive; critical voices suggest that 'public authorities were losing interest in public transportation'; for some it was clear that the industrial developer was never fully committed; yet others argue that the mechanical uncoupling of cars was technically impossible; etc. The question that all actors pose is: what did ultimately kill Aramis?*

Latour's *Aramis, or the Love of Technology* is a multimodal work, in-between a detective story and a research report, mixing fictional conversations and situations with interview transcripts

and technical document excerpts. Fiction is not simply a means of peppering the dry thematic of transit systems but, as Latour argues, it is also the key mode in which technology begins to come into existence. Notably, the non-linear and multi-vocal writing experiment expresses a new premise concerning how to study technology: namely, sticking to the frameworks mobilised by the actors themselves, including also the nonhuman ones. Rather than uncovering the underlying social frameworks shaping technology, the task would be to document how actors create such frameworks. This approach enables a consideration of urban technical projects as trajectories of partial existence: becoming real as they enrol others in their frames, or falling into nonexistence when they fail to do so, as Latour would expand in *Paris Ville Invisible* in collaboration with photographer Emilie Hermant.

In the last years, STS scholars have increasingly engaged with urban infrastructures, especially in smart city projects. Their stories look at the city with analytical tools developed for the study of socio-technical systems and technological innovation, as captured in the various books and special issues edited by Andrew Karvonen. What all these stories have in common is an attempt at paying attention to the technological choices, socio-technical imaginaries and technological frames shaping particularly the work of urban planners and experts. The city appears here as the background, the problem or the scale to which different types of technological artefacts and systems respond. Usually, urban dwellers or inhabitants don't play a major role. When they do, it is mostly as 'users': either imagined or excluded in the infrastructure development process or, more often, becoming unruly after its construction, as Sebastián Ureta's discussion of 'human devices' in infrastructural planning in *Assembling Policy* proposes.

There is a reason for such a strong focus on expertise: a desire to counter technological reductionism and determinism, revealing the burst dreams of expert reason. The tone of these stories meanders between acute criticism and an ironic stance vis-à-vis the everyday failures of technologies in cities. However, by focusing on what doesn't work as expected they also lend themselves to hope. This becomes apparent in STS critiques of the thesis of 'splintering urbanism' (popularised by Stephen Graham and Graham Marvin), which correlates the neo-liberal unbundling of urban socio-technical systems with a disintegration of urban societies. According to STS scholars Olivier Coutard and Simon Guy, this reproduces a dystopian conception of the relation between technology and society, thus overlooking the empirical ambivalences, potentials and contingencies of urban technologies. Both the ironic and the hopeful stories STS scholars tell are meant as antidotes to either technophilia or technophobia. And yet, their ambivalent stance paradoxically means that these stories cannot be easily processed by their protagonists, mostly from the fields of engineering, planning or policy making, who have to take unequivocal decisions on an everyday basis.

More recently, a new wave of near-ANT studies has focused on the everyday politics and poetics of urban infrastructures. This has led to challenging a binary understanding of infrastructural provision as either functioning and invisible or broken and visible—Nikhil Anand's *Hydraulic City*—displacing the focus of attention from the politics of system building to those of user interfaces—Antina von Schnitzler's *Democracy's Infrastructure*—and inhabiting infrastructures—Colin McFarlane's *Learning the City*—and, more importantly, analysing how infrastructures ground substantive forms of collective citizenship and the reaffirmation of communal political rights—Alberto Corsín Jiménez and Adolfo Estalella's *Free Culture and the City*. These approaches are thus closely connected with the proposal of de-centring the city

and turning from the study of the mobility, provision and communication infrastructures of the city towards the study of a multiplicity of urban assemblages.

FROM URBAN ECOLOGIES TO THE MORE-THAN-HUMAN CITY

Chicago, 1861: *Chicago is a booming metropolis: the last frontier, as well as the central node of the settler conquest of the Great West. The place where all would start and return to. The Dark City is a vast jungle of concrete, a busy hive full of skyscrapers that can be seen from afar. But the gargantuan growth of Chicago required more than building the city itself. It also entailed the transformation of landscapes—from the nearby Appalachian to the far-away Rocky Mountains and the Pacific—into a dense transportation infrastructure made of railroads, waterways and paved roads so as to gather the resources and energies for its construction and regular functioning. Chicago is not just Chicago. Given the far-reaching movements and circulations of mud, cattle, lumber, grain and people, the city has involved a vast geological transformation.*

This story is the cornerstone of Wiliam Cronon's 1992 magnum opus *Nature's Metropolis*, which details the major role played by Chicago in shaping the landscape and the economy of North America in the 19th century. Cronon's monograph doesn't attempt to foreground the regular social history of a city, for Chicago cannot be limited to its alleged boundaries. Running counter to classic rural–urban divides, the only possible way to talk about Chicago is to describe it as a vast and complex encompassing landscape connecting and mobilising many beings and places that the colonial conquest of the so-called Far West addressed as 'wild'. This not only has implications for the 'what' of city stories (where city and countryside, centre and periphery blur), but has also moral implications. In Cronon's terms, this means that any city must also feel responsible for the natural world it has mobilised and continues to relate to.

Although not explicitly framed as a work of history of science or STS, Cronon's story has been heralded by Bruno Latour in *Reassembling the Social* as an 'ANT masterpiece', on the grounds that the story is told without resorting to hidden social forces. The book's more-than-urban stance, with its *longue durée* emphasis on the ways in which materials circulate and are mobilised, renders the city into a larger ecological question and political problem. Indeed, *Nature's Metropolis* is regularly vindicated as providing ample evidence of how urbanisation and its market-driven formations have become intermeshed with the deep time of ecology thus contributing to tell what Nigel Clark calls 'the planetary history of cities'. Yet, Cronon's approach has not been exempted from critique. In *The Shock of the Anthropocene*, environmental historians Christophe Bonneuil and Jean-Baptiste Fressoz observe that its impersonal narrative deprives actors of environmental reflexivity: that is, their capacity to apprehend and conceptualise the complex ecological transformations they were undertaking.

West Berlin, 1957: *The young botanist Herbert Sukkop coordinated the publication of the first inventory of wild plant species found in the Berlin-Brandenburg region since the end of the war. Apart from exploring the most obvious sites, such as nature reserves, bombed sites in the city centre featured prominently. The rubble's warm and dry conditions made it a suitable ecological niche for foreign plants and animals. The building of the Berlin Wall in*

1961 that encapsulated West Berlin reinforced the dedication of Sukopp and collaborators (many of them amateur botanists) to the study of the specific urban ecosystems of Berlin. In the years to come, they would make at least three key contributions: firstly, they would develop a conceptualisation of ruderal plants and ecologies as unique to urban ecologies; secondly, they would develop the concept of 'urban biotopes', in order to describe the varying conditions that urban environments offer to living beings; and, thirdly, they would exert a significant influence on local urban policy, leading to the legal protection of wastelands and other ruderal sites.

Herbert Sukopp's story has been told and retold many times, supplementing more conventional STS questions about the politics of knowledge with a conceptualisation of the city in ecological terms. Jens Lachmund's book *Greening Berlin* from 2013 analyses how practices of urban ecology developed by Sukopp and colleagues in West Berlin led to the formation of an institutionally embedded 'nature regime' aimed at the protection of different urban biotopes. This is a story of the co-production of science, politics and nature (see entry 1, this volume). It studies how scientists innovate (conceptualising urban ecology), collaborate with policymakers (setting the basis for urban biodiversity protection), and form political alliances (with grassroots environmentalist movements). Moreover, it shows how this nature regime is never fully black-boxed, continuing to have effects and trigger controversies about urban planning in Berlin.

Two further renderings of Sukopp's story can be found in the work of cultural geographer Matthew Gandy and cultural anthropologist Bettina Stoetzer. Gandy's 2017 film *The Brachen of Berlin* tells the story of Berlin's urban wastelands as key sites of ecological transformation, scientific innovation and cultural experimentation. Sukopp himself is one of the main protagonists of the film. Bettina Stoetzer's 2023 book *Ruderal City* also takes the story of Sukopp as a departure point to think about 'the ruderal' as a cultural analytic with which to make sense not only of Berlin's rubble flora, but also the multiple ecologies of human and nonhuman practices of inhabiting the city from its cracks. The ruderal is thus expanded as a cultural figure to explore and value how racialised, displaced and impoverished urban inhabitants create fragile ecologies of life in Berlin.

These and other stories about urban materials, plants, animals, chemical pollutants, geological processes and atmospheric elements have proliferated in the last years. Even though in some cases the focus is on how nonhuman entities are exploited, governed and represented by different actors, there is a growing STS ethnographic record, notably in dialogue with multispecies ethnography, that tells stories of nonhuman agency and excess in urban ecologies. Chris Kelty's *Labyrinth Project* offers an exemplary and truly hilarious exploration of the diverse and surprising ways in which nonhumans disrupt urban life in Los Angeles, and the different attempts at managing them. In this and other works, attention has focused on regimes shaping the relationship between humans and nonhumans, natures and cultures, climates and politics. This often entails tracing the interaction between science and politics, particularly how the natural sciences are translated and incorporated in specific urban policy regimes—as in Hanna Knox's 2020 book *Thinking Like a Climate*, describing how the city of Manchester prepares for climate change.

Another focus lies in reimagining the city as a contact zone, in which nonhumans interact, interpellate and challenge human urbanites, their infrastructures and imaginaries of city life. Thom van Dooren with Deborah Bird Rose speak of a 'multispecies city' and have inspired

interdisciplinary forms of storytelling, mobilising knowledges of natural scientists and environmental activists about urban environments, also engaging in multimodal works. An inspiring example of this is the 2023 book *A Guide to the Creatures in Your Neighbourhood* by The Urban Field Naturalist Project. Beyond this, STS scholars have also increasingly engaged with the sensory ungraspability of many environmental issues, such as pollutants. Notably, urban atmospheric conditions usually come attached with contested struggles around the production of ignorance and the abject conditions that many neglected urban dwellers living in toxic ecologies need to navigate—as wonderfully described in Michelle Murphy’s *Sick Building Syndrome and the Problem of Uncertainty*. Collaborations between STS researchers and both artists and communities using more-than-textual strategies to make things perceivable—in forms ranging from the audiovisual to the performative—are gaining traction as an STS register of knowledge production. Nicholas Shapiro and collaborators’ work on ‘inviting apprehension’ and Nerea Calvillo’s 2023 book *Aeropolis* are important examples.

FROM URBAN TECHNICAL DEMOCRACY TO THE CITY OTHERWISE

Madrid, 2011: *On May 15, the community-managed space El Campo de Cebada (Barley Field) officially opened its doors; on the same day a month-long series of demonstrations, occupations and popular assemblies against austerity politics started throughout the country, in what was to be known as the 15M, Indignados or Assemblarian Movement. The story of El Campo de Cebada is closely connected to that movement, but begins a bit earlier, as in 2010 the space was temporarily occupied for a cultural festival organised by the architectural collective Zuloark. A series of assemblies of neighbours interested in reclaiming the space followed, leading to a negotiation with the city administration that resulted in the formal lease of the vacant lot to a local neighbour association. In the following years, El Campo de Cebada was to become a key place for cultural and political experimentation. It quickly gained international attention as an example of a commons-oriented self-made urbanism, featuring in prestigious newspapers, architectural magazines and exhibitions, such as the Venice Biennale, or being awarded Ars Electronica’s Golden Nica.*

The story of *El Campo de Cebada* became good to think about the democratisation of city-making and urbanism. In Alberto Corsín Jiménez and Adolfo Estalella’s *Free Culture and the City*, *El Campo de Cebada* is explored as the place where the ‘assamblerian method’ was developed and experimented with as a form of learning, which resonates, but significantly differs from the imaginary of ‘hybrid forums’ and ‘parliament of things’ developed by Michel Callon and Bruno Latour. Corsín and Estalella describe assemblies as structured around ‘matters of sense’: these are not common problems or issues, but a common preoccupation for what is yet to matter. It entails assembling a common sensorium to slow down thinking and action, in order to listen to emerging issues and possibilities of living together. A second focus of attention has been *El Campo de Cebada*’s DIY furniture: an example of the open prototyping of urban elements and infrastructures, which reflects the epistemic and legal borrowings between the open software/free culture movement and forms of urban activism that reclaim

city-making. Open prototypes are not only available for others in the form of open-source documentation, but also entail openings entitling actors to reclaim a ‘right to infrastructure’.

Johannesburg, 2003: Initially conceived as a European and cosmopolitan place, Johannesburg’s inner-city bears today the violent imprint of Apartheid, giving a feeling of a city in ruins, long abandoned by the white minority elites. But under the radar of this failed modernist dream, something is happening besides decay. Indeed, 90 per cent of downtown Johannesburg’s residents were not there just a decade ago, amongst them a large population of migrants coming from other African countries. A quick stroll along Quartz street shows a tentative and fragile, yet burgeoning social life, made of improvised tactics and ties of all kinds—from kin to manifold forms of livelihood and reciprocity—supporting the strained lives of residents in the midst of this ruined landscape, attempting to make the most of the limited means they have at their avail.

With his characteristically poetic tone, urban scholar AbdouMaliq Simone tells this story and coins in the process a powerful concept to grasp the modes of inhabiting urban arenas in the Majority World: ‘people as infrastructure’. Rather than the modernist socio-technical networks that have, in Simone’s words, ruined Africa ‘by urbanisation’, ‘people as infrastructure’ foregrounds the economic collaborations between residents, hence emphasising alternative forms of envisioning what makes a city productive, or how life in the city is sustained notwithstanding these difficult conditions. Against the grain of a colonial gaze that discusses cities in the Majority World as ‘failed’, Simone’s project attempts to revivify the resourcefulness of urban dwellers to make seemingly unworkable cities ‘work’: not as material sediments already there for the taking; rather, as ongoing projects ‘yet to come’, unfolding from their tactical undertakings and improvisations.

As a concept ‘people as infrastructure’ has circulated widely, being reappropriated by numerous scholars interested in describing and doing political work on what counts as an infrastructure otherwise. The concept continues and challenges STS work on infrastructure (see entry 34, this volume), which has opened up infrastructural black boxes by focusing on what Susan Leigh Star would call ‘infrastructural inversion’: moments in which the otherwise invisible everyday work of maintenance and repair happening in the gaps of infrastructures comes to the fore. Simone’s concept flips the table and proposes reimagining infrastructures as primarily made of bodies. Rather than as powerful socio-technical regimes, infrastructures are here made visible from their fragility or brokenness, from the need of urban residents to work these conditions out. But what’s perhaps more important in Simone’s works is that beyond treating the city as a technical object, in highlighting urban dwellers’ variegated knowledges and sensitivities, their improvised techniques and speculative tactics, what is attempted is a displacement of ‘what the city might come to be’.

In the last years, these and other stories featuring diverse activists and dwellers reclaiming the means of city-making, have proliferated as part of an interest in STS and other neighbouring fields to discuss the promises, the predicaments and the overflows of technical democratisation in city-making. Urban STS has not only critically unpacked the ambiguous and ambivalent work of experts in different machineries of citizen participation or public engagement. There has also been a shift in focus, paying attention to the practices of activists, militants, artists, dwellers and citizens as ‘issue publics’ and ‘recursive publics’: that is, not only publics organised around a shared matter of concern, but also publics that create the

material conditions of their own existence. Thus going beyond what early STS addressed as ‘lay people’, these approaches have not only unearthed the crucial material knowledges and sensibilities that these actors mobilise, but also the manifold approaches to the politicisation of expert-driven arenas, especially taking city-making activities in their own hands, democratising them beyond expert control, hence doing the city *by other means*.

In the process, what the urban is or could be has not remained unaltered. Rather than a technical object or a more-than-urban ecology, what these ‘activated’ urban practitioners as well as neglected dwellers struggling for their subsistence display is something akin to what María Puig de la Bellacasa calls ‘matters of care’: modes of life and existence, hitherto neglected, pointing to possible practices of city-making beyond modernist urbanism (see entry 44, this volume). Take the stories told by urban geographer Michele Lancione about a network of dwellers, usually addressed as ‘homeless’, who struggle to make their home in an underground tunnel in Bucharest; or the ones by urban anthropologist Isaac Marrero-Guillamón about his collaboration with artists and neighbours in Hackney Wick, creating zines, curating exhibitions and devising public fora to imagine ways of resisting the urban development of the London 2012 Olympics. These stories make visible arts of survival, inquiry, and design that unfold in the ruins of the city as a modern project of social integration through infrastructural connection. They shift attention from social movements to the movements—or, rather, displacements—of the social through which actors—many times situated at the very edges of habitability—explore the possibility of a *city otherwise*: be it speculatively reimagining what a city could be or, to paraphrase anarchist Buenaventura Durruti, carrying new urban worlds in their hearts.

These struggles to pluralise, democratise and speculatively reimagine cities have also expanded the constituencies of urban STS to manifold urban scholars and practitioners, ranging from urban artists to neighbours and civic initiatives as well as not-so-formal yet otherwise organised dwellers, also including the works of urban designers, such as architects or planners, all of these who have found in STS registers inspiration to redesign their own practice. This expansion has entailed changing the modes of engagement of urban STS scholars, not purely attempting to generate descriptive tales—ethnographic or otherwise—but entering what Tomás Criado and Adolfo Estalella have called ‘experimental collaborations’ with various epistemic partners interested in studying as well as multimodally reimagining the city. Urban STS is thus increasingly being undertaken ‘with others’ and ‘by other means’ in arenas where what is at stake is the ‘joint problem-making’ of urban worlds.

NOTE

1. For this encyclopedia entry on STS and the city we have chosen a very specific format. Rather than including all references at the end of the entry, we have provided sufficient information for the reader to find them online. The key readings offer further background to the topic. These readings do not necessarily link to particular points in the entry. Our hope is that this approach will allow the reader to engage with some broader trends and arguments within the field.

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