



The moral work of timing mobilities: 'limited insight' and truncated worth in municipal traffic management

Susann Wagenknecht

To cite this article: Susann Wagenknecht (2020) The moral work of timing mobilities: 'limited insight' and truncated worth in municipal traffic management, *Mobilities*, 15:5, 694-707, DOI: [10.1080/17450101.2020.1802105](https://doi.org/10.1080/17450101.2020.1802105)

To link to this article: <https://doi.org/10.1080/17450101.2020.1802105>



Published online: 04 Sep 2020.



Submit your article to this journal [↗](#)



Article views: 393



View related articles [↗](#)



View Crossmark data [↗](#)



Citing articles: 1 View citing articles [↗](#)



The moral work of timing mobilities: ‘limited insight’ and truncated worth in municipal traffic management

Susann Wagenknecht 

Institute of Sociology, Technical University of Dresden, Dresden, Germany

ABSTRACT

Timing urban traffic is moral work. In this paper, I show how the moral work that goes into timing traffic lights addresses both industrial, civic, and domestic worth in ways that cut generalization short. Relying upon ethnographic fieldwork, this paper focuses on how municipal traffic engineering maintains traffic lights and handles complaints about them. Steeped in moral ambiguity, the paper argues, municipal traffic engineering resorts to singularizing complaints, truncating worth, and working with *careful* dedication from one contestable compromise to the next. With this argument, the paper contributes to an understanding of the temporal and moral orderings at stake in adjusting and justifying urban mobilities.

ARTICLE HISTORY

Received 8 January 2020
Accepted 17 July 2020

KEYWORDS

Traffic infrastructure; orders of worth; valuation; care; complaint; public administration; traffic lights

Introduction

On a Thursday in December 2015, shortly after 9 o’clock in the morning, municipal traffic engineers and technical personnel are having their breakfast break, cramped together on chairs that they carried to the office of a veteran colleague. The office windows offer a view upon a town struggling with the decline of the German steel industry. As we are sipping coffee, the conversation shifts from the city’s budget for bicycle lanes (small) to Dutch traffic infrastructure (progressive). In amused tone, one of the municipal employees describes a particularly stunning roundabout that sits – or rather, floats – on top a signalized intersection, enabling cyclists and pedestrians to cross the roads without having to stop at traffic lights. ‘*Hovenring*, I think it’s called, you should google it’, he nods to me. The *hovenring*, I understand, is the perfect compromise between efficiency, equality, and safety. He is quick to add, however, that the *hovenring* could never be built in this city; too steep are its hills, too narrow its roads, too tight its finances. The Netherlands is where municipal employees like to go for summer holidays; it is a dreamy ideal rather than a blueprint (fieldnotes, 10 December 2015).

Still, the powerlessness that transpires in this piece of conversation stands in stark contrast to the powerful ways in which municipal traffic engineers in this city, too, are able to shape urban mobilities. As I will show, they do so not so much by planning and implementing grand designs but by *carefully* maintaining existing facilities (Mol 2008). Recent research on maintenance and repair has foregrounded the sophisticated material efforts that go into the operation of infrastructures, and traffic infrastructures in particular (Henke 1999; Graham and Thrift 2007; Harvey and Knox 2012; Denis and Pontille 2015; Roche 2017). In this paper, however, I will focus specifically on the time and the ‘moral work’ (Blok and Meilvang 2015, 21) that it takes to keep public infrastructures operating – and to keep them public: How to ensure urban mobility for everyone when everyone’s mobilities are conflicting?

Municipal traffic engineers are involved in ongoing struggles about urban ‘mobility justice’ (Sheller 2018). To study the moral work of traffic engineers at town hall, I examine how they justify and adjust, adapt and fine-tune the city’s traffic lights and their algorithmic timing. Traffic lights are the pacemakers that enforce patterns of stop and go. They have long been electrified – what Martin Dodge and Rob Kitchin call ‘code/space’ is nothing new to them as their digital algorithms have helped continuously to re-create ‘socio-spatial relations’ in the urban Global North since at least the 1960s (Dodge and Kitchin 2005, 172).¹ Unambiguously alternating between prohibition and release, traffic lights are the epitome of authoritative clarity. But their clear-cut sequences of red and green rely upon overlain patterns of valuation and multiple orders of worth (Boltanski and Thévenot 2006, see also Potthast 2017).

Immersed in the nitty-gritty of traffic infrastructure, municipal engineers are challenged to answer to demands for justification as they keep traffic running. To do so, they tinker with seconds, fudge solutions, and find middle grounds. They care for flow and safety, and are criticized harshly for not doing enough to serve citizens at the same time. They trade in visions but know from excruciating experiences what Susan L. Star and Karen Ruhleder formulate so succinctly: ‘Infrastructure does not grow *de novo*’ (Star and Ruhleder 1996, 113). Traffic infrastructure is difficult to change yet easy to complain about. In handling complaints, I will argue, municipal traffic engineering relies upon singularization – truncating complainants’ worth and forging one preliminary traffic solution at a time.

Ethnographic work, municipal work

To examine the moral work of municipal traffic engineering, I take my cues from Baszanger and Dodier (1997) ‘combinative ethnography’ and weave a tapestry of fieldnotes whose analytic patterns are composed of contrast and variation. I draw upon the ethnographic fieldwork² I have conducted with municipal traffic engineers and technical planners working for a German city of about 100,000 inhabitants – a city just large enough to employ an engineer, Alex,³ dedicated solely to its 150 traffic light installations. Between the end of 2015 and summer 2017, I visited the field over 30 times, often for a full workday, to shadow Alex and his colleagues at town hall’s Department for Roads and Traffic.

The city’s traffic infrastructure is not what many would wish for. It operates at capacity, with the city center’s roads freighted beyond capacity at rush hour. For a German city this size, its (privatized) public transport is poor and the network of cycle tracks is underdeveloped. Still, over the course of my fieldwork, I have come to appreciate the dedication with which Alex and most of his colleagues go about their work. Arriving with both doctoral degree and bike helmet in hands, however, I have implicitly assumed the role of a critic (Balmer et al. 2015). The *hovernring* episode recounted in the introduction to this paper hence has to be read through the specific positionality I assumed in the field. The *hovernring* is assumed to cater to my sensibility for the needs of cyclists and pedestrians and what they perceived as my attachment to a ‘green’ future (Lafaye and Thévenot 1993). Yet the comments that frame the *hovernring* are meant to justify the status quo, educating me about the technical, topographical, and financial requirements for building roundabouts.

During field visits, I focused on the design, installation, and maintenance of traffic lights. In engineering theory, traffic lights can be designed by the rule book, strictly following traffic law, industry standards and the instructions laid out in the engineering handbooks and national guidelines. Relevant for the design of traffic lights are *Richtlinien für Lichtsignalanlagen* (RiLSA) and *Handbuch für Bemessung von Straßenverkehrsanlagen* (HBS), handbooks that define the formulae by which ‘optimal’ traffic solutions can be calculated. Optimality, in turn, is defined as the highest possible level of ‘quality’ that roads, crossroads or roundabouts can achieve. It defines the highest quality level (level A) as a state in which ‘the individual freedom of mobility of traffic participants is almost not compromised’ and ‘traffic flows freely’ (FGSV 2015, 7). The lowest quality level (level F) is defined as a state in which ‘the individual freedom of mobility of traffic participants is permanently compromised’ and ‘functional capability is not given’ (ibid.). The formulae that the HBS offers for the design of traffic lights are

calculations of maximum throughput per hour. These calculations require precise traffic data, particularly about the number of motorized vehicles in a direction. Yet in engineering practice, these data are hard to come by. In this city, the traffic engineers try to do their best in a poorly datafied and little-controlled environment (cf. Struhkamp, Mol, and Swierstra 2009).

To complement deficient traffic data, municipal engineering relies upon personal knowledge and complaints. Throughout an ordinary working week, Alex receives about a handful of complaints and error-messages from colleagues, bus drivers, citizens, and local politicians. Complaints and error reports – by phone, email, or word-of-mouth – are, in fact, judged so important that one municipal employee, when I asked about the first traffic computer system that town hall purchased in the early 1990s, replied to me: ‘At that time, we only got the computer systems because we had to modernize several installations. [...] That was a package deal. You don’t actually need [the traffic computer]. Because when things don’t work, people call at once’ (Olaf, formerly responsible for traffic lights, fieldnotes, 17 December 2015).

By now, times have changed and then they haven’t. The traffic computer system, together with induction loops, cameras, traffic counts, and traffic simulations provides municipal engineers with incomprehensive data. The system is incomplete and error-prone. Traffic counts are very expensive, cover only limited periods in time, and are always a step behind the city’s ever-changing traffic patterns. Not only do the flows of vehicles grow and change direction as parts of the city center are being fundamentally re-modeled. Political sensibilities seem to be shifting, too, away from the paradigm of a car-friendly city towards more (if not enthusiastic) support for cyclists and pedestrians. For this reason, Alex and his colleagues continuously tweak the city’s traffic lights. Smaller changes in traffic signaling are made single-handedly, and they are often triggered by civic complaint. To illustrate this point, let me refer to an anonymous complaint issued in December 2015.

For complainants, it is not unusual to use a pseudonym: ‘Well yes there are people who write to us anonymously every now and then’, Alex comments, as if hurt by anonymity, which he seems to perceive as lack of trust and fair-mindedness. Nonetheless, he carefully reads the email that complains about too short a green phase for pedestrians at a specific crossing and threatens to bring the issue to the attention of a local television channel – so that, finally, the city would ‘do something for pedestrians’, a reproach that Alex completely ignores. He gets up and moves over to the adjacent office, the ‘computer room’ where the traffic computer terminal is installed. Since the traffic light that the email complains about is located in the city center and connected to the traffic computer network, Alex is able to ‘see what the lights are doing’ in real time. Alex opens a window that displays the state of different signal groups over time (red, green, yellow, switched off or yellow flashlights). The induction loops are gone, so the lights run on a fixed cycle, independent of traffic volume. ‘With this installation’, Alex explains, ‘we intentionally made it so that pedestrians have little time, so that they cross the street at the beginning of their green phase, before turning cars arrive’. He adds: ‘We did that for safety reasons but of course pedestrians feel bossed around’.

On a sheet of paper, Alex jots down the length of green phases for different signal groups. Since signal groups in this system are designated differently than in the software that he uses to plan algorithmic modifications, he has to get up and gather a black file from the wall closet in his office. He translates the designation of signal groups and moves to a different computer to access his planning software. After a couple of minutes, he concludes that the green phase for pedestrians ‘really was timed very tightly, to minimize pedestrian influx’ and decides to prolong this phase by several seconds. To do so, he wheels his chair back to the terminal through which he accesses the traffic computer network and implements changes in the traffic light algorithm (fieldnotes, 10 December 2015).

Moral work and time

For municipal traffic engineers, timing urban traffic is moral work. Moral work with and within public administration means addressing multiple registers of valuation. As Claudette Lafaye (1990) shows,

municipal employees draw upon diverse measures of value in assessing who is due for promotion, commendation or favor. Anders Blok, Marie Meilvang, and Laura Centemeri, in turn, study the ways in which civic participation and environmental activism mobilize value on different scales to make their voices heard and accounted for by public administrators (Blok and Meilvang 2015; Centemeri 2015, 2017; Meilvang, Carlsen, and Blok 2018). And Tobias Röhl (2019) examines how citizens invoke multiple registers of value when evaluating breakdowns in public infrastructure.

Moral work is the work that it takes to draw and redraw ‘the lines between “personal troubles” and “public issues”’ (Blok and Meilvang 2015, 20, citing Mills 1959). Thus understood, moral work is not a distinct type of work, not even a distinct type of effort or practice. Rather, moral work concerns *valuations* (Lamont 2012) woven into the very texture of practices, interlacing the day-to-day business of municipal traffic engineers. Whether unblocking an intersection, updating traffic light facilities, tweaking the algorithm of a signal, or addressing complaints, traffic engineers are working with valuations – they are attributing value to people and things.

Valuations attach worth (Lamont 2012). They deem something (or someone) good or bad, normal or deviant, legitimate or despicable, appropriate, fitting, worthwhile and worthy. They *qualify* things and people (Thévenot 2002) – and, in doing so, help organize social life: ‘[O]perations of qualification [...] constitute the basic cognitive operations of social interaction; social coordination requires a continuous effort of comparison, agreement on common terms, and identification’ (Boltanski and Thévenot 2006, 1).⁴ In this manner, valuations help expand the scope of coordinative efforts. They are a means of *scaling*, a capacity crucial in dealing with infrastructures (Star 1999).⁵

Woven into practices, valuations are no stand-alone operations. Rather, they are embedded in moral economies; i.e. webs of valuations ‘that stand and function in well-defined relationship to one another’ (Daston 2005, 4). As analytic concept, moral economies describe ‘the production, distribution, circulation, and use of moral sentiments, emotions and values, and norms and obligations in social space’ (Fassin 2009, 37). With moral economies sprawling and frayed, worth circulates widely. While worth is invoked in the most mundane activities (complaining about traffic jam), it is tied to the noblest and most consistent ideas about how to organize social life (such as, e.g. civic equality or industrial efficiency, both of which are reflected in notions of ‘good’, smoothly navigable traffic).

In conveying what is good, moral worth is distinct, but entangled with, what *is*. Worth entertains a ‘partial connection’ (Strathern 2004) with reality, animating dreams and action. In modulating the tension between what is and what is good, moral work handles ideals and wishful thinking, in pleas, demands, orders, praise, as well as in desires, likings, and repugnance. Moral work covers a wide spectrum ranging from incidental to fundamental, personal to public, particular to general, ‘good’ as convenient to ‘good’ as just. Different notions of what is good, Laurent Thévenot (2007) observes, help coordinate arrangements of things and people in different ways, in different ‘regimes of engagement’ between which people ‘slip back and forth’ (Thévenot 2007, 420).

Thévenot (2007) distinguishes the regime of familiar engagement from the regime of public justification. The regime of familiar engagement ‘maintains a personalized, localized good: feeling at ease;’ it is oriented towards a person’s wellbeing and convenience in ‘a milieu shaped by continued use’ to which the person entertains personal ‘attachment’ (Thévenot 2007, 416). As I will argue below, friendship and care thrive upon this kind of engagement. In contrast, the regime of justification is concerned with public legitimacy. The regime of justification configures the dependence of a person upon her surroundings as the relation that a person entertains to a public and vis-à-vis a common good. What is at stake in the regime of justification is the person’s public status – her membership as a (more or less) ‘worthy’ person in a ‘polity’, i.e. a collective of people and things organized by publicly contestable appeals to specific measures of (public) value or ‘orders of worth’ (Boltanski and Thévenot 2006). Orders of worth are neither undisputed nor easily reconciled with one another but if mobilized skilfully, they help ‘communize’ causes. In appealing to orders of worth, personal issues can be transformed into public problems – problems, e.g. that a municipal administration should be committed to address.

A limited number of orders of worth are available for public justification, two of which take front stage in municipal traffic engineering: the civic and the industrial order of worth. A case in point of the latter are engineering handbooks. Their formulae for the calculation of 'optimal' traffic solutions aim to design efficient and controllable traffic flows from scratch, with road safety a precondition. Virtually a paradigm of industrial worth, engineering handbooks are all about control and achievement. They qualify various traffic solutions according to efficiency, reliability, and 'their capacity to [...] respond usefully to needs' (Boltanski and Thévenot 2006, 205). On this measure of worth, worthy is what is functional. The industrial order of worth values instrumentality and thereby, as Boltanski and Thévenot point out, risks treating people as things (211). It is oblivious to the past and oriented towards the future (208). The civic order of worth, however, attaches value to civic equality and impartiality 'above' the partial interests of single citizens (Boltanski and Thévenot 2006, 107 f.). In the civic order of worth, 'the ones who accede to higher states of worth are not human persons but rather collective persons' such as unions, political parties, and interest groups (185). Complainants appeal to the civic order of worth when they claim to speak in the name of an ignored group of participants in traffic and call upon municipal traffic management to 'do something for pedestrians'.

Civic and industrial 'worths' are 'the objects of intense compromise efforts' and they converge, e.g. on the notion of public safety (Boltanski and Thévenot 2006, 325ff.). Remember the *hovernring*, a traffic solution that efficiently engineers civic integrity by separating traffic flows and stacking them – motorized vehicles on ground level, cyclists and pedestrians elevated to a first floor roundabout. The *hovernring* minimizes mutual impairment, allows non-motorized traffic to move freely but keeps traffic signalling in place for motorized traffic (hourly throughput of which, according to engineering models, decreases at unsignalled roundabouts). As the *hovernring* illustrates, compromise is an important element in the moral economy of traffic engineering. But it is not easy to come by. To forge compromise, municipal traffic engineering deals in multiple worths at varying scales of generalizations. It addresses both industrial, civic, and domestic worth in ways that cut generalization short.

People (and things) do not summon the public all the time. As Thévenot (2007) points out, they stay private and personal in the regime of familiar engagement. Boltanski (2012) explores the limits of publicity and generalization when he enquires into friendship (*philia*), a regime of mutual valuation that cultivates reciprocity and privacy and foregoes public justification. For an analytic grip on how valuation precedes justification and extends beyond it, a rich body of research relies upon the notion of care. Manoeuvring back and forth between public and private (Damamme and Paperman 2009), care attends to the mundane minutiae of everyday lives and the infrastructures they require (Denis and Pontille 2015; Kocksch et al. 2018). Care refuses to conceive of value as a means of generalization. It is committed not to justice but to *justesse*, i.e. circumstantial appropriateness or fittingness. Its 'non-normative ethics' (Puig de la Bellacasa 2012, 211) acknowledge moral ambiguity and the open-endedness: "'Good and bad" are never settled in the logic of care' (Mol 2008, 87). Instead, '[...] care seeks to lighten what is heavy, and even if it fails it keeps on trying. Such, then, is what failure calls for in an ethics, or should we say an ethos, of care: try again, try something a bit different, be attentive' (Mol, Moser, and Pols 2010, 13).

Care is 'an ongoing process' (Mol 2008, 21). As it implies long term, ongoing commitment (Denis and Pontille 2015), care is slow and enacts a temporality at odds with a progressive drive for futurity (Puig de la Bellacasa 2015; Damamme and Paperman 2009). It hence stands to reason that regimes of engagement distinguish themselves in their temporality, i.e. in their rhythms of coordination. While Boltanski acknowledges that his account of justification remains largely oblivious to questions of time (2012, 10), competent actors time their appeals to orders of worth with great skill, and orders of worth can be argued to entrain distinct temporalities.⁶ Moral work is caught up in time, too.

Limited insight

One wall of Alex's office is entirely covered by a large, fitted closet. It contains workwear for rainy days, safety jackets and safety boots, helmets, coffee mugs, various keys and smaller tools, soccer

merchandise, handbooks, instruction manuals, trade journals and, above all, numerous worn black files with requests for proposals, orders, contracts, construction plans of traffic lights, documentation of their software components, summaries of service operations, electricity billings ... some of which must be more than twenty years old, most of which had been stored away before Alex took over this office a couple of years ago. I have never seen him opening the cabinet door in the room's corner. And when he finally does open it, I am stunned. Two yellowed, worn sheets of cheap paper are taped to the door's inside, a dated telephone list and a photocopy with a quote set in Blackletter:

Es ist dem Untertanen untersagt, den Maßstab seiner beschränkten Einsicht an die Handlungen der Obrigkeit anzulegen. Kurfürst Friedrich Wilhelm v. Brandenburg⁷

Subjects are enjoined from applying the measure of their limited insight to the actions of authorities. Friedrich Wilhelm, Elector of Brandenburg. (translated by the author)

When I point at the paper, Alex shrugs: Yes, that's old', indicating that one of his predecessors had put it up. He rips off the telephone list but the quote remains at its place. My puzzlement turns into indignation, then into puzzlement again. Hidden inside a closet, the trench between now and then transforms what once must have been a sharp interdiction into an ironic commentary, ripe with dry humor and detached matter-of-factness: *It's always been like that, and it's not like that anymore*. But if it is a commentary, to whom does it refer? (fieldnotes, 21 April 2016).

The quotation, ascribed to a 'sovereign', speaks of 'subjects' and 'authorities'. It invokes a hierarchy of subordination that aligns with a hierarchy of knowledge. The privilege of power, here, comes with the privilege of 'insight'. The limitation of insights that subjects suffer is a result of their inferior position within the hierarchy of authority. Removed from the authorities, they are unable to familiarize themselves with the matters at stake – matters extending far beyond subject's personal concerns. The quotation, hence, is about positionality and its qualification. It recognizes subjects' positionality, if only to dismiss them as unqualified and denounce their critique.

As it invokes hierarchy as a measure for the (dis-)qualification of people, the quotation mobilizes what Boltanski and Thévenot (1999, 2006) have characterized as the domestic order of worth. In a domestic order of worth, authority reigns – the authority of a father, a king, a patron, or a sovereign 'who sacrifices himself for his subjects' (1999, 370). The domestic order of worth cherishes paternalism and conceives of relations in terms of hierarchy and dependency. It views persons as inseparable 'from his/her belonging to a body, a family, a lineage, an estate' and evaluates them with regard to their 'place in the network of dependencies from which this person draws his own authority' (1999, 370). In the domestic order, people are worthy as part of a hierarchy and they may distinguish themselves not by means of competition or esteem, but by 'the elective choice [of superiors] that make someone stand out from the ranks' (Boltanski and Thévenot 2006, 165). Subordinates must offer their views frankly but avoid opposing their superiors – they deliver input without pushing their arguments all too hard. And they stay put. The domestic order of worth is suspicious of mobility; it perceives travelers and foreigners, climbers and dropouts as less worthy beings (168).

The domestic order of worth values loyalty, respect, restraint, gratefulness, discretion, clemency, and dignity. It locates knowledge in 'examples, cases, especially anecdotes in which exemplary behavior on the part of appreciated persons is identified and offered as a model' – forms of evidence that the domestic order perceives as general but are considered 'forms of the particular in the industrial or civic worlds' (Boltanski and Thévenot 2006, 176). As a consequence, the domestic order of worth is 'weakly equipped with instruments for acting from a distance' – in contrast to the civic order of worth, it does not rely upon 'the objectivity of rules detached from persons' or 'mechanisms of representation' (164). In fact, it takes issue with anonymity and standardization, qualities that in turn are highly valued in the civic or industrial order of worth, respectively (168, 243).

The quotation then, taped discretely to the backside of a seldom-opened closet door, sensitizes to the issues of hierarchy and dependency in the relationships that municipal traffic engineers entertain to other people – bosses and colleagues, politicians and citizens. Invoking the domestic order of

worth, the quotation offers a way of (dis-)qualifying these people as more or less worthy, more or less competent, more or less legitimated in offering critique and putting their oar in. The quotation offers a way to keep criticism at bay and ironize unwanted involvement. It can be read as a commentary upon the mayor whose 'political' decisions have to be accepted even when, off the records, they are deemed not sensible from a 'technical' point of view. It applies, too, to intrusive colleagues and annoyed citizens whose complaints are criticized for failing to see the bigger picture or having any idea at all how complex the timing of rush hour traffic really is. What is more, the quotation can be taken to commend relationships beyond any measure (of 'insight'): If subjects refrained from 'measuring' the performance of authorities, subjects and authorities might find a way to recognize one another differently – recognizing one another in their limited capacities and particular circumstances. (What it would mean to do so is a question I explore further below.)

For good reason, however, the quotation remains behind closed doors most of the time. It conveys an outlook that does not sit well with today's visions of civic equality, civic participation, civil service, and transparent, effective public management. It is thinking in the closet – not a principle that would tacitly underlie everything that traffic engineers do but a sentiment, a motif that waits to be mobilized, discretely, in specific situations.

Truncating worth

One morning in April 2016 Alex tells me about a call he received. A citizen complained to him that that traffic lights would jam rush hour traffic at a radial road in the suburbs if people requested pedestrian crossing several times in a row. The traffic lights in question are a small installation, solely built for the purpose of interrupting steady traffic to allow pedestrians to cross the road. 'Ten minutes he said [he was waiting]', Alex recalls, 'and [demanded] that pedestrians are to wait'. Alex makes a face. He apparently believes ten minutes to be an exaggeration and is not inclined to change the algorithm of this installation. We will drive out there anyway after breakfast break.

As we are approaching the traffic lights at about 10 o'clock, the road suddenly jams in front of us. Alex is getting a bit nervous: 'Why are they slowing down so much here?' As it turns out, a long car hauler is slowly turning off the road, maneuvering into a small industrial compound. After the truck has left the road, we quickly reach the traffic light in question. We pull in on a sidewalk, get off and walk over to the grey box that hosts the operating controls, including a tiny greenish display, and paper documentation for the traffic light. 'With these old installations', he tells me, 'we don't have any documentation at the office'. He leafs through the paper, scanning pale print on sheets with foxing stains. He then decides to change programs, switching from P2 to P3 for the rush hour. P3 has a longer cycle, i.e. the algorithm takes now longer to run through a complete cycle of green phases for all directions. This increases the minimum time between pedestrian crossings (and may ease the flow of motorized traffic). And he re-programs the traffic lights so that they switch on earlier in the morning, also on weekends (which may now stop motorized traffic at times when it hasn't been stopped before). He makes a note of these changes on the stained paper, telling me: '[The people of this town] would prefer no traffic lights at all, but then everyone wants to have one – preferably switched off during nights'. The way in which he says this to me suggests that 'everyone' includes the caller whose complaint led us out here – and whose complaint he addresses ambivalently, increasing the time span between possible pedestrian crossings but also increasing the time span in which pedestrian crossings can be requested at all (fieldnotes, 14 April 2016).

Complaints are a form of public critique. They decry injustices (Boltanski 2012). Still, to issue complaints perceived legitimate is not straightforward. Complaints must seek to frame the relations between complainant, complained and the 'complained-to' in general terms. To this end, complaints rely upon generalization and 'desingularization' (Boltanski 2012, 191ff.), dexterously appealing to notions of equivalence that are widely shared. When the caller complained about pedestrian crossings at that radial road, he implied that pedestrians would take more time than they are due. The emailer, in turn, that called upon town hall to 'do something for pedestrians' suggested that the city

would not treat all participants in traffic equally – a critique that appeals to civic worth, worth bestowed equally upon all citizens.

The civic order of worth bases its notion of common good on ‘the authority of a majestic and impartial Sovereign placed above private interests’ (Boltanski and Thévenot 2006, 107 f.). Yet sovereignty here is disembodied, created ‘by the convergence of human wills that comes about when citizens give up their singularity and distance themselves from their private interests to take only the common good into account’ (108). Civic worth is ascribed to the state of being ‘detached from the bonds of personal dependence’ (186). In this vein, individual persons are perceived as ‘slaves of their own particular interests and condemned to powerlessness;’ they become worthy as delegates, members, and spokespersons (191) who ‘make themselves the expression of a general will’ (187). Collectives, in turn, distinguish themselves as worthy in terms of vigilant control of procedure, formality, legality and their ‘tireless struggle’ for a collective cause (190).

Against this backdrop, Alex’s reaction to complaints appears double-edged. On the one hand, he does himself refer to groups of people, such as ‘pedestrians’, and speaks in his explanations to me of ‘everyone’. He cares for the safety of participants in traffic (physical integrity being a constitutional entitlement) and is concerned about ‘bossing them around’. He juggles the conflicting needs and wishes of ‘pedestrians’ and other groups – i.e. of ‘everyone’, of *all* participants in traffic – and tries to translate their ambiguous will into unambiguous traffic signaling. On the other hand, he shies away from grand justifications. He keeps complaints at *a personal level* and frames complainants as individuals, plain and equal. He handles complaints as dialogic, not data-driven. His reaction to complaints is about recognition, not efficiency. When he changes the timing of red and green phases, he calculates appropriate waiting times – calculations that Alex makes in situ and based on his local knowledge. He shrugs off the contradictory character of what ‘everyone’ seems to want and dedicates himself to small changes, working from one contestable compromise to the next.

Good complaining means crafting a case of collective concern. Complainants unable to do so are easily discredited as grumblers, moaners, or fault-finders that put self-interest before collective good. Their complaints are met with indignation and ridicule, deemed undesirable and illegitimate. As I have observed, Alex and his colleagues take issue with complainants that claim certain privileges – complainants with public standing, local politicians, and colleagues. In particular, complaints and suggestions from inside town hall but outside the department are quickly perceived as intrusive, as are mandates to investigate specific traffic solutions that are issued by local politicians. Especially politicians’ repeated plea for more roundabouts are ill-received by Alex and his colleagues. Roundabouts, as Alex has explained to me multiple times, are substantially less efficient than signalized crossroads because their capacity for hourly throughput of motorized vehicles is significantly lower. So, when Alex and a colleague draft a response to one of the parliamentary groups’ suggestion to have a roundabout at a busy intersection in the city center, it is clear that they will reject this suggestion. However, they spend several hours analyzing the traffic situation at the intersection, looking for ways to improve traffic flow, and carefully draft a detailed reply. Alex suggests implementing an algorithm with a longer cycle, switching from 90 to 120 seconds, even though this solution ‘would smash our progressive signal’. – ‘No, we don’t do that’, replies his colleague. But Alex is still considering the idea: ‘I could check it, but I would need more time’. – ‘Ok, but that’, his colleague says, ‘we don’t write into our reply. That’s too silly for me. They make a request, and we change that? No, we won’t mention that’. Yet they should, the colleague concedes, invest more effort into examining alternative traffic solutions (fieldnotes, date blinded).

On another occasion, Alex struggles to answer an email complaint issued by the owner of an advertising agency, a business located in one of the city center’s narrow side streets that opens into a main road, a couple of meters ahead of a busy intersection. The intersection has recently been re-designed, and it is now rather inconvenient to filter into main road traffic, both for the advertiser and employees of the local newspaper whose offices are located in the side street, too. The newspaper, Alex tells me, has already taken up the issue and criticized traffic planning: ‘You do get the impression’, he comments with subdued indignation, ‘that some are more worth than others ...

but I shouldn't say that'. When Alex finishes his email to the complaining advertiser, he closes on a conciliatory note: 'But we continue to observe the situation'. Nothing will be changed any time soon (fieldnotes, 19 May 2016).

Alex seems to resent situations in which 'some are worth more than others', an attitude that also transpires in the way he handles a complaint by the city's Department for Economic Promotion a couple of weeks later. An employee from the department suggests re-programming traffic lights at an intersection that connects a business park with a radial road, making it easier for vehicles to exit the business park. The installation is old and Alex has no documentation on it. He therefore calls a colleague at the regional authorities, inquiring whether the installation could be equipped with traffic sensors: '... well, in principle I just need the information, the traffic lights can do it, or it cannot ... I'm happy with the information: the technology can do, or it cannot ... our Department for Economic Promotion tries to make its mark, that's my allegation at least'. But as the colleague is unable to provide any details about the installation, they both decide to leave its programming as it is (fieldnotes, 2 June 2016).

During the summer, the city has to close parts of its express highway for urgent and long-planned maintenance work, a situation that disrupts traffic flows throughout town and demands long detours. Since Alex is on parental leave, I am shadowing Michael, team leader of traffic planning and stand-in for Alex through his morning on a day in July. Michael is alert and busy. A new phase of construction, along with new route deviations for commuter traffic, has caused a major traffic jam this morning. Before lunch, he meets his superior, the head of department, to recap all changes in traffic lights that have been made to diminish congestion. The head of department appears relatively relaxed and satisfied with the changes made, but a pinch of agitation must have remained when she, at the very end of their conversation, mentions: 'Speaking of this construction site, I received an in-house smarty-pants suggestion. Excellent. An email. I'm reading it to you ... *"Unfortunately, as a commuter I am also affected by the highway closing ... Basically, the alternative routing works well but would it be an idea to close [a specific] highway exit to create space for"* ... Now, I'm writing this guy then that my commuting would be affected, if this exit was to be closed' (fieldnotes, date blinded).

Time and again, subjects try to 'apply the measure of their limited insight' to affairs beyond their purview. When the complainant speaks 'as a commuter' and presents himself as spokesperson for collective interests, the head of department refuses him this status. She 'dis'-qualifies him and invalidates his claim for collective worth by characterizing his claim as an arrogation, biased and unjust. Because his suggestion, as she so pointedly retorts, would affect *her* commuting. In this manner, she re-frames the question of alternative route deviations as a matter of balancing the incompatible needs of individual commuters, a matter that cannot be decided by relying upon the 'limited insight' of individuals outside her department.

Faced with suggestions deemed intrusive, municipal traffic engineers often diagnose a lack of expertise: The originators of such suggestions (be they colleagues from other departments, politicians, citizens, or media representatives) would not be familiar with the complexity of the matter. That traffic engineers resort to such critique is hardly surprising. Note, however, the subtler critique that municipal traffic engineers formulate when they accuse complainants of false spokespersonship: It is inappropriate to 'make its mark' or imply being 'more worth than others' when pushing for solutions that benefit some at the expense of others. As Boltanski and Thévenot (2006) argue, spokespersonship – i.e. the aggregation of individuals in a body politic that qualifies for 'more' worth than plain individuals alone – is highly valued in the civic order of worth. The accusation of *false* spokespersonship, thus, applies the measure of civic worth, yet applies it in a way that disqualify claims for collective worth at the same time. In his work, Alex and his colleagues endorse the notion that managing urban traffic is a matter of doing justice to individual, equal citizens. Civic worth, here is cherished but *truncated* at the same time.

With all of the undesirable complaints presented, municipal traffic engineers react in a way that turns privilege into a liability. Neither the civic privilege of democratic representation (elected local politicians), of public voice (media), of functional representation (Department for Economic Promotion) nor the domestic privilege of proximity (colleague-commuter) are held in high regard.

In contrast, privilege is made the very object of critique. The ethos that transpires here is noble: As no one is more important than anyone else, municipal traffic engineers need to defend their professional sphere of influence, fend off imbalances and parochialism, and remain above the argy-bargy of conflicting interests. To this end, they may resort to truncating others' claims for collective worth. Cutting civic worth short, municipal engineers 'relativize' and singularize complaints in order to keep their scope of action (Boltanski and Thévenot 2006, 32).⁸ When they do so, they defend *their* scope of action as the space where the wants and wills of individual citizens are equitably re-conciliated.

Having a 'different' relationship

On a Friday in June 2016, early afternoon, I am sitting next to Alex. We hear his colleagues leaving their desks for an early start into the weekend. Alex, however, remains seated, almost without motion. He is reading a leaflet, sent by a company that is selling push buttons for traffic light poles. Pedestrians use push buttons for requesting green light and/or for requesting a sound signal. Alex is not particularly interested in latest push button models. What catches his eye instead is a note on changing industry standards. From now on, it reads, sound signals must be available to visually impaired pedestrians also throughout the night. Alex decides to write an email to some of his colleagues, informing them about the new standard and mentioning a notoriously busy intersection in the city center – an intersection where sound signals are playing throughout the day but switched off at nights, so as not to disturb the sleep of nearby residents. The signals need to be played at high volume to be discernible over constant traffic noise. And they are played continuously. Push buttons have not been installed because the design of the poles would prevent visually impaired pedestrians from reaching pole-mounted push buttons. (Curiously, all poles at this intersection rest in massive above-ground concrete blocks. When they were erected more than forty years ago, underground engineering must have seemed too expensive an option.)

Would there be a way to keep the sound signals running during nights? The issue keeps bothering Alex. Perhaps, he explains to me, the installation of more and better loudspeakers would allow to decrease the volume, adding: 'Because you can't just say: Blind people only until 9pm'. He continues: 'There is always the question: Why do you do that, just for a minority. But especially if one has adjusted that on one's own and one knows that it is also used, then one has a different relationship to it (fieldnotes, 24 June 2016).

'Why do you do that, just for a minority?' The question reminds of a utilitarian calculus. It recalls that the benefit of the many may outweigh the benefit of the few – or, in a more conciliatory reading, that the benefit of the few possesses less priority, less urgency in times of tight budgets and high workloads for municipal employees. However, Alex speaks of a 'different relationship' that gains significance on a personal, not an abstract plane. Alex accounts for his 'different' relationship threefold, with reference to personal knowledge ('when one knows that'), immediate engagement ('on one's own') and immediate utility ('is also used'), from which he apparently derives a sense of satisfaction.

Alex feels forced to acknowledge that this 'different relationship' is permanently challenged ('there is always the question'), and still his 'different' relationship serves him as a source of professional recognition. His work is recognized, he feels, when he is caring for the needs of participants in traffic who actually rely upon the changes he makes to the design of traffic lights. In fact, it is a relationship of mutual recognition: Alex recognizes their needs; they recognize his work. In his perspective, this relationship of mutual recognition contrasts the relationship that traffic engineers maintain to 'majorities' of participants in traffic. The contrast is particularly pronounced when perceived in terms of the practices through which majorities and minorities make themselves relevant in municipal traffic engineering. Majorities more readily reveal their worth in traffic data, such as, e.g. video counts of vehicles per hour, and intuitive local knowledge about urban traffic flows. The minorities that Alex refers to, however, may be mentioned in engineering guidelines and industry standards (visually impaired pedestrians certainly are). But they really only take shape and acquire worthiness – as minorities on behalf of which Alex takes action – in 'different' relationships.

In framing visually impaired participants in traffic as a 'minority', Alex singularizes them. In emphasizing his immediate involvement, and the satisfaction he derives from it personally, he again engages in a form of relativization – shifting from general to particular (Boltanski and Thévenot 2006, 34). His 'different', singularized relationship can be characterized as *philia* (Boltanski 2012), i.e. a relationship that relies upon reciprocity yet refrains from calculating equivalence in the generalizing terms of justice. For Boltanski, the epitome of *philia* is true friendship. For the case at hand, I suggest to conceive of it as fondness, i.e. a rewarding attachment that pays back those who invest in it. Fondness is always partial. It thrives upon affection, not calculation. In this sense then, fondness relates closely to care: Alex uses his scope of action to care for participants in traffic of whom he assumes to benefit from, and be appreciative of, the incremental infrastructural changes he can effect. When he carefully chooses to *focus his sight*; however, it is only a thin line that distinguishes focused sight from 'limited insight'.

Conclusion

In this paper, I have examined some of the moral and temporal orderings at stake in maintaining public traffic infrastructure. Timing urban mobilities is moral work. It requires evaluation, appreciation, critical assessment, and blocking-off critique – all valuations that are woven into the very texture of municipal engineering practices. These valuations trade worth at varying scales in a moral economy that cultivates a heterogeneous set of values, such as, e.g. efficiency, safety, civic equality, as well as personal involvement.

Drawing upon an ethnographic study, I have focused on how municipal traffic engineers handle civic complaints. With this approach, I have been able to observe how engineers deflate critique and truncate complainants' worth. In singularizing complaints, they keep complainants' requests within narrow bounds. 'Limited insight' allows for fudged compromises in an open-ended process of tinkering and fine-tuning, and it allows for a troubling kind of care.

In navigating public worth, municipal traffic engineering deals with both the 'limited' and the immeasurable, the general and the particular, the common and the individual. They do not reject the personal for the sake of the public but rather relate them to one another – in an effort of 'careful' responsibility (cf. Damamme and Paperman 2009, 22). In municipal management, however, care defies straightforward appraisal. When municipal traffic engineering singularizes and relativizes complaints, civic worth is cut short. In fact, the moral economy of municipal traffic engineers is, crucially, about economizing worth – a parsimony that seems to go together well with professional dedication to the nitty-gritty, the circumstantial, and the piecemeal. Must such dedication come at the price of careful paternalism? Infrastructures are notorious for breeding complacency (Mainwaring, Chang, and Anderson 2004). And indeed, an all too complacent conclusion suggests itself: It is precisely this kind of dedication, this kind of troubling care that helps modifying lay-outs and tinkering with seconds when there is no master plan, no blueprint available to tame conflicting mobilities.

Notes

1. For some history of traffic lights see McShane (1988). While in conventional traffic engineering traffic lights are still key for timing urban mobilities, currently emerging 'smart' traffic engineering may rely on much more sophisticated technologies for 'rhythm-making' (Coletta and Kitchin 2017).
2. For traffic infrastructure, esp. roads, as the subject of ethnographic research in the context of Mobility Studies, see Dalakoglou and Harvey (2012).
3. Names have been changed and places anonymized as far as possible.
4. To a large extent, this paper lives off the work of Boltanski, Thévenot, and other scholars who have contributed to the Sociology of Critique, an approach that has been introduced to the field of Mobility Studies in previous research (see, e.g. Rousseau 2012; Albertsen and Diken 2001; Trémon 2018).

5. Note that Star (1999) characterizes (spatial) 'scaling' as a methodological challenge for ethnographies of infrastructure. The point of this paper, however, is to observe the (moral) scaling that is part of maintaining public infrastructures. Ethnographers may struggle to scale up and down, but traffic engineers do it all the time.
6. For example, the project economy as an order of worth (Boltanski and Chiapello 2005) distinguishes itself from industry as an order of worth in its notion of the 'right time' to begin and end collaboration, to quit one project and board another. Like worth, time is multiple and it therefore relates to people's activities in multiple, also conflicting ways (Zerubavel 1979; Nowotny 1992): Different timings may 'entrain' different activities (Parkes and Thrift 1979; Blue 2017); they offer rhythms that are gladly – half-heartedly, reluctantly, indifferently, loathingly – followed (or resisted).
7. Friedrich Wilhelm lived from 1620 to 1688. The dictum is famous and keeps resurfacing in popular discourses on workplace culture. Whether it is rightfully attributed to Friedrich Wilhelm is a debate beyond the scope of this paper.
8. In fact, Govind Gopakumar (2015) observes how municipal interventions in traffic infrastructure are more easily enforced when local politics are suspended.

Disclosure statement

No potential conflict of interest was reported by the authors.

Funding

The authors received no external funding to conduct this research.

ORCID

Susann Wagenknecht  <http://orcid.org/0000-0003-0533-9698>

References

- Albertsen, N., and B. Diken. 2001. "Mobility, Justification, and the City." *Nordisk Arkitekturforskning* 14 (1): 12–25.
- Balmer, A. S., J. Calvert, C. Marris, S. Molyneux-Hodgson, E. Frow, M. Kearnes, K. Bulpin, P. Schyfter, A. Mackenzie, and P. Martin. 2015. "Taking Roles in Interdisciplinary Collaborations: Reflections on Working in Post-ELSI Spaces in the UK Synthetic Biology Community." *Science & Technology Studies* 28 (3): 3–25.
- Baszanger, I., and N. Dodier. 1997. "Ethnography: Relating the Part to the Whole." In *Qualitative Analysis: Issues of Theory and Method*, edited by D. Silverman, 8–23. London: Sage.
- Blok, A., and M. L. Meilvang. 2015. "Picturing Urban Green Attachments: Civic Activists Moving between Familiar and Public Engagement in the City." *Sociology* 49 (1): 19–37.
- Blue, S. 2017. "Institutional Rhythms: Combining Practice Theory and Rhythmanalysis to Conceptualise Processes of Institutionalisation." *Time & Society*. doi:10.1177/0961463X17702165.
- Boltanski, L. 2012. *Love and Justice as Competences: Three Essays on the Sociology of Action*. Cambridge: Polity Press.
- Boltanski, L., and E. Chiapello. 2005. *The New Spirit of Capitalism*. London: Verso.
- Boltanski, L., and L. Thévenot. 1999. "The Sociology of Critical Capacity." *European Journal of Social Theory* 2 (3): 359–377. doi:10.1177/136843199002003010.
- Boltanski, L., and L. Thévenot. 2006. *On Justification: Economies of Worth*. Princeton: Princeton University Press.
- Centemeri, L. 2015. "Reframing Problems of Incommensurability in Environmental Conflicts through Pragmatic Sociology: From Value Pluralism to the Plurality of Modes of Engagement with the Environment." *Environmental Values* 24 (3): 299–320. doi:10.3197/096327114X13947900181158.
- Centemeri, L. 2017. "From Public Participation to Place-based Resistance. Environmental Critique and Modes of Valuation in the Struggles against the Expansion of the Malpensa Airport." *Historical Social Research/Historische Sozialforschung* 42 (3): 97–122.
- Coletta, C., and R. Kitchin. 2017. "Algorithmic Governance: Regulating the 'Heartbeat' of a City Using the Internet of Things." *Big Data & Society* 4 (2): 1–16. doi:10.1177/2053951717742418.
- Dalakoglou, D., and P. Harvey. 2012. "Roads and Anthropology: Ethnographic Perspectives on Space, Time and (Im) mobility." *Mobilities* 7 (4): 459–465. doi:10.1080/17450101.2012.718426.
- Damamme, A., and P. Paperman. 2009. "Temps du care et organisation sociale du travail en famille." *Temporalités* 9. doi:10.4000/temporalites.1036.
- Daston, L. 2005. "The Moral Economy of Science." *Osiris* 10: 2–24. doi:10.1086/368740.
- Denis, J., and D. Pontille. 2015. "Material Ordering and the Care of Things." *Science, Technology, & Human Values* 40 (3): 338–367. doi:10.1177/0162243914553129.

- Dodge, M., and R. Kitchin. 2005. "Code and the Transduction of Space." *Annals of the Association of American Geographers* 95 (1): 162–180. doi:10.1111/j.1467-8306.2005.00454.x.
- Fassin, D. 2009. "Les économies morales revisitées." In *Annales.Histoire, Sciences Sociales* 64 (6): 1237–1266.
- FGSV (Forschungsgesellschaft für Straßen- und Verkehrswesen e.V.). 2015. *Handbuch für die Bemessung von Straßenverkehrsanlagen*. Köln: FGSV-Verlag.
- Gopakumar, G. 2015. "Who Will Decongest Bengaluru? Politics, Infrastructures & Scapes." *Mobilities* 10 (2): 304–325. doi:10.1080/17450101.2013.857944.
- Graham, S., and N. Thrift. 2007. "Out of Order: Understanding Repair and Maintenance." *Theory, Culture & Society* 24 (3): 1–25. doi:10.1177/0263276407075954.
- Harvey, P., and H. Knox. 2012. "The Enchantments of Infrastructure." *Mobilities* 7 (4): 521–536. doi:10.1080/17450101.2012.718935.
- Henke, C. R. 1999. "The Mechanics of Workplace Order: Toward a Sociology of Repair." *Berkeley Journal of Sociology* 44: 55–81.
- Kocksch, L., M. Korn, A. Poller, and S. Wagenknecht. 2018. "Caring for IT Security: Accountabilities, Moralities, and Oscillations in IT Security Practices." *Proceedings of the ACM on Human-Computer Interaction* 2 (CSCW): 92.1–92.20. doi:10.1145/3274361.
- Lafaye, C. 1990. "Situations Tendues Et Sens Ordinaires De La Justice Au Sein D'une Administration Municipale." *Revue française de sociologie* 31 (2): 199–223. doi:10.2307/3322427.
- Lafaye, C., and L. Thévenot. 1993. "Une justification écologique?: Conflits dans l'aménagement de la nature." *Revue française de sociologie* 34 (4): 495–524. doi:10.2307/3321928.
- Lamont, M. 2012. "Toward a Comparative Sociology of Valuation and Evaluation." *Annual Review of Sociology* 38: 201–221. doi:10.1146/annurev-soc-070308-120022.
- Mainwaring, S. D., M. F. Chang, and K. Anderson. 2004. "Infrastructures and Their Discontents: Implications for Ubicomp." In *International Conference on Ubiquitous Computing*, 418–432. Berlin: Springer.
- McShane, C. 1988. "Urban Pathways: The Street and Highway, 1900–1940." In *Technology and the Rise of the Networked City in Europe and America*, edited by J. A. Tarr and G. Dupuy, 67–87. Philadelphia PA: Temple University Press.
- Meilvang, M. L., H. B. Carlsen, and A. Blok. 2018. "Methods of Engagement: On Civic Participation Formats as Composition Devices in Urban Planning." *European Journal of Cultural and Political Sociology* 5 (1–2): 12–41. doi:10.1080/23254823.2018.1452621.
- Mills, C. W. 1959. *The Sociological Imagination*. Oxford: Oxford University Press.
- Mol, A. 2008. *The Logic of Care: Health and the Problem of Patient Choice*. London: Routledge.
- Mol, A., I. Moser, and J. Pols. 2010. "Care: Putting Practice into Theory." In *Care in Practice: On Tinkering in Clinics, Homes and Farms*, edited by A. Mol, I. Moser, and J. Pols, 7–25. Bielefeld: transcript.
- Nowotny, H. 1992. "Time and Social Theory: Towards a Social Theory of Time." *Time and Society* 1 (3): 421–454. doi:10.1177/0961463X92001003006.
- Parkes, D., and N. Thrift. 1979. "Time Spacemakers and Entrainment." *Transactions of the Institute of British Geographers* 4 (3): 353–372. doi:10.2307/622056.
- Potthast, J. 2017. "The Sociology of Conventions and Testing." In *Social Theory Now*, edited by C. Benzecry, M. Krause, and I. A. Reed, 337–360. Chicago: University of Chicago Press.
- Puig de la Bellacasa, M. 2012. "Nothing Comes without Its World: Thinking with Care." *The Sociological Review* 60 (2): 197–216. doi:10.1111/j.1467-954X.2012.02070.x.
- Puig de la Bellacasa, M. 2015. "Making Time for Soil: Technoscientific Futurity and the Pace of Care." *Social Studies of Science* 45 (5): 691–716. doi:10.1177/0306312715599851.
- Roche, M. 2017. "Road Maintenance – Patching A Hole in Mobilities-roading Research: A Case Study of the Longbeach Road Board, Canterbury, New Zealand 1911–1938." *New Zealand Geographer* 37 (2): 119–128. doi:10.1111/nzg.12160.
- Röhl, T. 2019. "Making Failure Public: Communicating Breakdowns of Public Infrastructures." In *Infrastructuring Publics*, edited by M. Korn, W. Reißmann, T. Röhl, and D. Sittler, 207–224. Wiesbaden: Springer VS.
- Rousseau, M. 2012. "Public Mobility as the Defining Feature of the French Post-industrial City." *Theory, Culture & Society* 29 (6): 125–145. doi:10.1177/0263276412454922.
- Sheller, M. 2018. *Mobility Justice: The Politics of Movement in an Age of Extremes*. London: Verso.
- Star, S. L. 1999. "The Ethnography of Infrastructure." *American Behavioral Scientist* 43 (3): 377–391. doi:10.1177/00027649921955326.
- Star, S. L. and K. Ruhleder. 1996. "Steps Toward an Ecology of Infrastructure: Design and Access for Large Information Spaces." *Information systems research*, 7 (1): 111–134.
- Strathern, M. 2004. *Partial Connections*. Updated ed. Oxford: Rowman and Littlefield.
- Struhkamp, R., A. Mol, and T. Swierstra. 2009. "Dealing with In/dependence: Doctoring in Physical Rehabilitation Practice." *Science, Technology, & Human Values* 34 (1): 55–76. doi:10.1177/0162243907312954.
- Thévenot, L. 2002. "Which Road to Follow? The Moral Complexity of an 'Equipped' Humanity." In *Complexities: Social Studies of Knowledge Practices*, edited by J. Law and A. Mol, 53–87. Durham: Duke University Press.
- Thévenot, L. 2007. "The Plurality of Cognitive Formats and Engagements. Moving between the Familiar and the Public." *European Journal of Social Theory* 10 (3): 409–423. doi:10.1177/1368431007080703.

- Trémon, A.-C. 2018. "Sociodicies of (Im)mobility: Moral Evaluations of Stasis, Departure and Return in an Emigrant Village (Shenzhen, China)." *Mobilities* 13 (1): 157–170. doi:10.1080/17450101.2017.1320134.
- Zerubavel, E. 1979. *Patterns of Time in Hospital Life: A Sociological Perspective*. Chicago: University of Chicago Press.