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Autonomous mobility justice in the situated Finnish context: A Foucauldian perspective on technology, power, and morality

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ABSTRACT

Arguably the most powerful artifact of the 20th century, the private car brought profound spatial, social, and cultural changes, as well as wide-ranging mobility justice implications. Autonomous mobility technologies, with the power to supplant part or all of the action of the driver by collecting and processing large quantities of fine grained data, promise to shift power away from users to engineers and create new important spatial and social implications for mobility justice, of which little are known. This research draws from Foucauldian conceptualizations adapted for the study of geographies of power to investigate how autonomous mobility technology may diagram spatial rationalities and moralities into the built environment. To that effect, it draws from 30 interviews of intermediaries in Finland—a country actively pursuing a transition to automated and shared mobility as part of an ICT-driven innovation policy. Examining autonomous mobility through a Foucauldian lens helps highlight the complex power relations it affords—in terms of changes in social structure and infrastructure, and social justice. By shedding light on how technology may structure the built environment, the Foucauldian perspective shows itself to be a valuable tool for planning and policymaking, providing insight into how autonomous mobility (in)justice may be assembled.

1. Introduction

The private car brought spatial, social and cultural changes that have had social justice implications—creating winners and losers in the process, and making it the most powerful artefact of the 20th century—more powerful than the computer even [1]. Self-driving vehicles (SDVs) represent a vision of transport technology that has arisen from the information technology market and is set to shape transport in ways bigger than the car [2]. With a smart mobility sector thought to be worth 1.0–1.5 trillion USD by 2025 [3], automotive companies such as Ford are rebranding themselves as “mobility businesses”. Like auto-mobility, the emergence of autonomous mobility comes with promises of the technological sublime. Anthropologist Bonnie Nardi argues “data is reified, made a magic object, dematerialized, ... without conflicts or interests” [4(p.24),5], its magic giving complete technological control over urban parameters, resulting in an exalted relationship between man and machine removed from dangers and risks [6]. But beyond the sublime, there are many unknowns about its social and mobility justice implications [7].

While a body of knowledge on the potential implications of autonomous mobility is emerging, many of the research perspectives focus on

the systemic impact of the technology. For example, one perspective is centered around how the computing algorithms and data gathering capabilities of autonomous mobility technology will increasingly link spatiality and behavior [8]. Autonomous mobility may be kilometers driven [9], with increased distance travelled [10,11], number of trips and fuel consumption [13]. It may reduce the cost of commuting whilst increasing travel distances and city size [14,15], increase population movements to larger urban centres [16], and increase central land rents. Autonomous mobility may decrease public transport use and active mobility share [13,17,18] and require new traffic flow measures and government regulation (e.g. road pricing) to govern emissions, travel demand and congestion [18,20,21] at city, regional or state level [10]. In contrast, an emerging humanist perspective considers mobility, and its infrastructure, as a social phenomenon that has “culture, lived experience, and meanings” [7]. Mobility infrastructure creates social structure [22] and results in levels of mobility justice [7]. In that perspective, research indicates autonomous mobility may bring about spatial changes, including speed conflicts and incompatibility with pedestrianized environments [24,25], and (gendered) concerns about safety inside and outside the vehicle [26]. Moreover, autonomous mobility technology may reproduce the gendered and racialized nature

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of the technological systems behind automobility [6], and even cause gendered and racialized technologies to proliferate [27]. Alternatively, it may, under certain circumstances, redefine masculinities associated with mobility for a gender rebalancing [28].

This research therefore further elaborates Sheller's approach to mobility justice [7] by applying it in the realm of autonomous mobility, with the intention of raising awareness of potential autonomous mobility injustices that this transition may bring. Drawing from Kellerman's concept of autonomous mobility space, where technology, users and space entertain power relations with each other, this research examines how this emerging technology might reshape the very fabric of cities and societies in powerful ways—diagramming shifting relations of power, rationalities and moralities in spaces and built environments. To that end, it uses a Foucauldian theoretical frame adapted for geographies of power to examine aspects of structural power this emerging mobility system may bring to the built environment, and its implications for mobility justice. The empirical method draws from transitions theory. It utilizes a qualitative approach of semi-structured interviews ($n = 31$) to reveal concerns raised by intermediaries involved in or affected by the Finnish transition to autonomous mobility [29] and interpret them through a Foucauldian lens. The theoretical nature of this approach may bring forth to the attention of urban planners and policymakers critical questions on the reshaping of space by the emergence of autonomous mobility, and its implications for social justice, bringing new understanding of the implications of Finnish innovation policy.

This paper is structured as follows. The next section introduces the Foucauldian conceptualization of modern power, and how autonomous mobility justice can be conceptualized through that lens. Section 3 introduces the theoretical frame behind the choice of empirical setting (sociotechnical transitions theory, intermediaries) and research methods (semi-structured interviews and thematic coding) used for the gathering of data used to illustrate this study. Section 4 presents illustrative spatial rationalities of government and moralities that emerged in the course of empirical work. The paper ends with concluding thoughts, the purpose of which is not to provide definite answers on the potential social justice implications of autonomous mobility, but to increase understanding of the usefulness to planners and policymakers of using a Foucauldian theoretical lens for critical envisioning and evaluating potential futures.

2. Foucauldian conceptualization of power and autonomous mobility

Foucault's conceptualization of power is firmly grounded in the modern political concept of society and the rise of capitalism [30]. The Industrial Revolution, he argued, driven by new energy inputs and developments in Western scientific thought, brought a fundamental shift in social relations and the government of society [31]. Populations were to be managed to live to serve capital. Government, therefore, became about managing populations [32] and producing truths [33].

This modern form of power uses tools termed “apparatuses” of power (“dispositifs” in French, plural form) to enable “the conduct of conduct”, or governmentality [34]. It is associated with infrastructures, technologies, but also the rise of the professions and specialized expertise—with experts embedded in the bureaucracy of power defining apparatuses as part of regimes of truth. Moreover, apparatuses target and function at both individual and population level, consisting of intervention and regulatory controls [31, p. 490] to define “the normal” and “the abnormal” [35]. They serve to produce individual “docile bodies” (anatomy-politics), (or in this case of mobility, “docile mobile bodies”), and to manage, or govern, them as a population (the “species-body”). Governmentality embodies relations of power, reflecting the “regimes of truth” of those who govern—the rationalities and moralities of government.

In his conceptualization of modern power, Foucault regarded the

organization and production of space as a historically important tool for producing and governing subjects, spawning a Foucauldian research tradition in planning and geography. Historically, driven by reform and progress, modern built environments have been designed to afford and promote a set of desirable conducts, helped by the use of new technologies in large technical systems [33]. In other words, built environments materially-embodiment logics of spatial and environmental causality—in the words of Margot Huxley, “healthy bodies and compliant minds would be produced, fostered and sustained if only their surroundings could be made well-ordered, sanitary, pleasant and beautiful.” [33] As an example, the 19th century city layout reflects Cartesian efficiency, whilst modern mobility infrastructure reflects the individualistic values associated with the automobile. In other words, space and environment are put to work in rationalities of government. Therefore built environments have discursive materiality and morality [33–36], producing regimes of truth. These regimes of truth are constitutive of spatial and mobility (in)justice [7]—with regard to, for example, gender, color, nationality, age, sexuality, differential abilities.

As an emerging infrastructure, autonomous mobility technology effectively shifts relations of power between users, technology and space [37]. It does so by creating a new mobility regime; namely a system “of disciplining and channeling movements and mobility by way of principles, norms, and rules,” [38] [p. 20], shaping movement, space, behavior, and conduct to maximize benefits and minimize costs. Automation both minimizes or removes the need for human action to make and monitor driving decisions in many environments [39–42], and shifts power from users to the engineers [37]. While users determine the destination, activate (and deactivate) the mobility process and decide operation timing, engineers gain dominance over time and space resources, human resource cost savings, and increased production volumes [37], in a form of Taylorization [43]. Moreover, aggregated data from multiple sources is used to constitute populations of users in the biopolitical sense, socially sorting them using AI, to generate statistical, rather than causal truths about users, turning them into docile “data entities” to be optimized for politics and profit [44–46] in a form of heteromation [47–49]. In effect, in Foucauldian terms, the technology of autonomous mobility gives engineers the power to craft a governmentality of space, creating and implementing a raft of governmental rationalities, which may be accompanied by moralities inscribed in space—a form of structural power.

The next section draws from transitions theory to outline the autonomous mobility actor ecology in Finland, as well as the qualitative approach taken to investigate those potential governmental rationalities what governmental rationalities and moralities may arise.

3. Research design

From a sociotechnical transitions perspective, Finnish innovation policy has sought to leverage its ICT and telecom landscape, and marshal the country's research and innovation, finance, government institutions and many more towards the creation of an ecology of actors across autonomous, shared, and electromobility [29].

This paper therefore utilizes an empirical approach common in transitions research involving typologies of intermediaries [50–56]. Thirty thematic research interviews involving 31 respondents were carried out (12 female, 19 male, one interview involved two respondents), where respondents were intermediaries drawn from a broad ecology of 23 institutions from the public, private and civil society sectors involved with and touched by the emergence of autonomous mobility technology in Finland.

Interviews were conducted over the course of late 2016 to early 2017. The majority (26) of the interviews were conducted face-to-face, two interviews were conducted over the phone, one interview over Skype, and one by email. Thirty of the respondents were located in Finland in the Helsinki capital region and one outside Finland. Judgement sampling was used, consisting of a list of key and specialized

Table 1.
Respondents and their affiliations.

Organizational field	Respondent affiliation	Number of respondents
Regional and local government	Local government authority	2
	Regional government authority	1
	Regional development agency	1
	Regional transport authority	3
	Material and energy efficiency agency	1
National government	Finnish government ministry	1
	Governmental agency 1	2
	Governmental agency 2	1
Finnish public authority independent from executive branch	Public authority for children's rights	1
Private sector	Public authority for privacy rights	1
	Autonomous mobility consultancy	1
	Finnish smart mobility start-up 1	1
	Finnish smart mobility start-up 2	1
	Public transport operator	1
	IT services company	1
	Sustainability innovation consultancy	1
	Representative body for road traffic	1
Traffic Association Research	University 1	2
	University 2	2
Civil society	National government research organization	2
	Umbrella organization of citizen neighbourhood associations	1
	Representative body for disabled people	1
	Election candidate, political party	1
	Curator, Robotics exhibition	1

respondents, supplemented by snowball sampling to complement the intermediary ecology. Table 1 shows their organizational positions.

The sample size was deemed sufficient when no new material or respondents were forthcoming. Some limitations in the sampling occurred—more respondents from special groups and other, non-capital, cities were wished for, but it proved impossible to find willing respondents from these institutions during the empirical research period. All interviews were transcribed and a thematic analysis [57] was performed of the transcripts, allowing themes to emerge from the data. Coding was performed using ATLAS.ti software (versions 7 and 8). To make sense of the data, an emergent coding scheme was used, as suggested by Braun and Clarke, and Lofland et al. [57,58].

The theoretical framework in this paper emerged as part of an abductive process between the themes that emerged from the coding and theories of geographies of power in a hermeneutic cycle. This paper considers the aspects of structural power implied by some of the respondent narratives, and uses the latter to provide illustrative empirical material for the Foucauldian framework developed here. The empirics revealed other aspects of power, such as dominance and hidden transcripts of resistance, but these are not included here (see [29]). As abductive reasoning, by logically inferring a plausible conclusion from the most likely explanation, does not require positive verification in sense-making, this research does not aim for positivist verification.

The next section presents the themes that emerged and resonate with the theoretical discussion above as spatial rationalities of government and moralities of autonomous mobility and their implications for mobility justice in Finland.

4. The spatial rationalities of government of autonomous mobility

The empirics revealed several spatial rationalities of government of autonomous mobility that were reminiscent of Huxley's dispositional spatial rationalities. They suggest that the autonomous mobility space is eutaxic, i.e. well ordered, both spatially and temporally. A dispositional spatial rationality utilizes logics of grids of classification to organize “men and things” spatially that are formally problematized as chaotic and uncontrolled, “drawing boundaries and producing order that will foster correct compartments” [33]. Autonomous mobility problematizes spaces and subjects imbued with human disorder as inefficient. In the words of one respondent: “BMW had automated

factories in the 80 s that worked because no humans in the way. If there is humans that is a problem.” (*Senior Official*, Regional Transport Authority). Another respondent put it similarly as a question of algorithms failing in encompassing the human dimensions of the environment. Namely, “if you think about it, everything is algorithms in the system. ... But are these the right programs for this specific site?” [*Partner*, Sustainability Innovation Consultancy]. This dispositional rationality means spaces requiring human negotiation and promoting human interaction as part of mobility may become off limits to the technology. Moreover, automation and the autonomous mobility space may enable the removal of human interaction on the grounds of efficiency and ease of design and operation.

Autonomous mobility is presented as offering a temporal dimension to the control of chaos, serving to problematize travel outside peak hours by “flexitizing” infrastructure. Automation may become a rationality for a new spatiality and temporality of transport networks infrastructure that problematizes fixed infrastructure and non-full use. In implementing this spatiality, one respondent (*Senior Official*, University 1) suggested that “you could develop that kind of flexible infrastructure that can be improved constantly so that you do not make too big investment in a system of stops that cannot be changed afterwards” and “that model of thinking that we could provide the same level of amenities everywhere is not going to work. We should place stops where people are, and these can change during the day too.” The eutaxic, well-ordered space [33], is one where autonomous mobility is only offered in place and time where there is a sufficient demand for it, in this case privileging peak hours.

Moreover, another respondent (*Principal Advisor*, Governmental Agency 2) highlighted speed as having politics, with a slow speed linked to more democracy. A third respondent (*Curator*, Robotics Exhibition) equates the slowness of a driverless shuttle as meaning it is not a proper form of motorized transport, or at least a completely different self-driving vehicle from, say, a private vehicle, which is much more about the driving relationship between driver and car through speed: “This is actually ‘not traffic’. It is an elevator going horizontally in my opinion.” (*Curator*, Robotics Exhibition). The politics of speed are not new [59,60], but automation may make speed a desirable in the dispositional rationality that privileges efficiency, privileging the well-spiced, with “not-speed” being undesirable and therefore not provided.

This view echoes the concern by Blyth et al. [2] that geographies of

accessibility could arise—suggesting spatial and temporal inequalities to mobility justice and reflecting localized rationalities of government. In other words, the algorithms of autonomous mobility technologies may be the 21st century equivalent of the low-flying New York underpasses designed by urban planner Robert Moses to restrict bus access (whose ridership was typically poorer, and black) to the nicer parts of Long Island state park—creating complex mobility injustices for multiple groups of users [61].

Moreover, a dispositional rationality of government that privileges efficiency contrasts with one respondent's view that autonomous vehicles do not offer the efficiency of public transport in their use of space—and still carry many of the materialities of automobility, including requirements for space for parking (they still need to be stored somewhere), and move less people in time and space (lower capacity). In other words, this represents an inefficiency that may compound the mobility injustices of the afore-mentioned dispositional rationality of government. Likewise, one respondent worried about the impact on modal share of autonomous mobility and the resulting impact on the built environment, in terms of sustainability or in terms of its materiality.

Autonomous mobility may bring another form of discipline over certain groups tied to the removal of the driver, and its impact on different groups of users, especially vulnerable users, including women, children, and users with disabilities. Referring to children's mobilities, one respondent was concerned with the discipline of unruly behavior, alluring to a rationality of electronic surveillance attached to the absence of the driver: “[H]ow to have a self-driving vehicle for school transport for kids, do you need a camera inside the vehicle to be able to see who is standing on their head or whatever?” (*Partner*, Sustainability Innovation Consultancy). Another respondent reported that autonomous mobility technology, through the removal of drivers, could mean women could face new risks in the built environment, both inside and outside the vehicle, including alcohol-fueled antisocial behavior and the threat of sexual assault [29]—effectively generating a gendered, patriarchal geography.

Moreover, the same respondent contrasts this with a narrative of territory and security established by private ownership of the car, frequently associated with male values and leisure pursuits (the cabin), and which is compared to a third home. Namely:

But I think that in Finland it is like a self-esteem thing. ... The car is really a territory, that is why people so strongly identify with it, and I call it the third home. In Finland, we have the home, then the cabin, then the car. (*Representative*, *Umbrella Organization of Citizen Neighbourhood Associations*)

Autonomous mobility create spatial rationalities of gender, safety and surveillance. It may allow men to imagine themselves as helpers and problem solvers for the vulnerable (women, children, and the elderly) [28], while surveillance would be the mark of a more authoritarian technology. In contrast with preindustrial times, when women were active occupiers and users of street space [62], women today frequently face injustices in the design of public space and mobility. Namely women are unsafe in public spaces at night, reliant on public transport as priced out of private transport, further disadvantaged by the Euclidean design of space favouring the car, and, if accompanied by children, are frequently unwelcome in public spaces altogether [63]. Cars engender the social submission of women in public space—in terms of who they injure, who they are affordable to, and their advertising [64]. Autonomous automobility may reproduce the gendered and racialized nature of the technological systems behind automobility [3,24].

Another spatial rationality is one where autonomous mobility, through the removal of the driver and the shift of the dominance over the vehicle to another group of humans at a remote location, could effectively create spaces where mobility is inaccessible to disabled people. This disabled respondent voiced concern at the usability of a

driverless vehicle for people with a wide range of disabilities, reporting that the driver plays an integral social function in achieving the usability. In her words: “There is also a high percentage of people with disabilities who have difficulties observing or being on the lookout for silent cars or self-driving cars.” (*Senior Official*, Representative Body for Disabled People). The driver offers user control for the passenger with disabilities, for:

In my opinion, I would call it a driverless car. I would refer to it as something that is out of [human] control. ... That is for many people a loss of their ability to be in control while driving and while using the car. That is an important facet of independent living, if you have lost your self-determination, your independence, in some areas of life if you can then rehabilitate yourself, or use technical aid to regain some of that, for example through specific instruments. ... In my view, if you are self-driving, you would have to be able to make reasonable decisions about where you are going. Are you able to orient yourself in your environment? I have some doubts that these machines can do that. (*Senior Official*, Representative Body for Disabled People)

5. Moralities

While the previous section considered spatial rationalities, this section considers how moralities are inscribed in the built environment to reflect and promote certain values. To that end, it focuses on a specific group in Finland—namely users with disabilities—and the material from one intermediary in particular, a senior representative for a national body representing people with disabilities, as an interesting case study [65]. The findings suggest that the introduction of autonomous mobility systems in Finland may reinforce existing moralities regarding disability and transport.

As Finnish public transport users with disabilities face technical barriers accessing public transport, Finnish law dictates that local government must provide an alternative transport service adapted for users with disabilities, for example an adapted taxi service. The organization and access to this mobility service by disabled users, however, is in the words of this respondent, designed to prevent use: “[T]he service has been streamlined so extensively so as to be more in line with the level of service in public transport, it has become basically impossible for someone that has a mobility disability to get around”. (*Senior Official*, Representative Body for Disabled People). This suggests that while the transport service was originally designed to remedy disability as an impairment, an underlying morality has changed it into an apparatus for discrimination where disability is a stigma of the abnormal. This finding matters, as while there are many different definitions of disability, one anthropological perspective sees the difference between impairment and disability as a sociocultural rather than a physical one. Thus defined, disability can involve stigma, limination and discrimination [66,67],.

As well as being physically excluded from using mainstream public transport, limited in using the adapted mobility service, people with disabilities may be excluded from emergency rescues. This respondent reports what happened when she volunteered to take part in a rescue training exercise, namely:

“I was politely told to not be one of the experiment persons, because I posed a difficult circumstance with my electric chair. ... My wheelchair and I were two hundred kilos and that was too much for the experiment, as you need four or five people to carry it. They made life easier for themselves by excluding me from the exercise. (*Senior Official*, Representative Body for Disabled People)

The rescue exercise is not the mobility (i.e. movement from A to B itself), but rather a social setting, in which the assemblage of the respondent and her wheelchair were subjectified as abnormal as a passenger. And while this response refers to conventional public transport,

and not direct response to an experience on autonomous mobility, the absence of a driver may reinforce moralities of abnormality of disability in autonomous mobility space.

As well as a morality evidenced in the rescue exercise, morality is inscribed in the design of the booking system used for the transport service. Users with disabilities, who by law are allowed publicly subsidized adapted transport, are required to confess their use of transport in order to establish their worthiness to use it. This respondent describes the process, including checking expenses, using time and resources checking, and communicating a morality of “acceptable” travel choices:

My transport is reliant on a publicly subsidized system for disabled people. I have to give some information in order to ensure the integrity of the system so that it is not abused but it still gives me the creeps that somebody (asks us to check). I'll give you an example: two years ago they ... asked for all of the receipts for three months and to explain every trip, where you went, was it a work trip, was it a service trip, etc. The trips are very controlled. You get an x number of (work) trips and an x number of leisure trips and they force you to follow certain rules and use them correctly. That is why I am a little bit skeptical about systems where you give your data. I am currently living under this system and I do not quite like it. (*Senior Official*, Representative Body for Disabled People)

In Foucauldian terms, the system has confessional power, linking values of morality, worthiness, and salvation to the transport system. Confessional power, argues Foucault, originates from the Christian ideology imbuing the history of Western thought. It is about establishing one's worthiness to receive something—originally religious redemption; but extended by Foucault to mean worthiness to have a good (via the market), or in this case transport and all the freedom and social benefits associated with it. Such confessional power is not new in Finland. During the severe Finnish recession that followed the collapse of the Soviet Union in the 1990s, church-operated food banks required unemployed users to show deservedness of welfare through work if able-bodied [68].

Furthermore, this respondent referred to the provision being “Calvinistic” (the respondent's choice of word) in its frowning on using subsidized travel for “frivolous purposes”, including trips to pubs, gay night clubs, one-night stands, and generally anything outside what is prescribed as acceptable for a user with disabilities. Namely, in her own words: “If you use a trip to go to a pub, for example, that is a little bit frowned upon, because you are not supposed to use funds for frivolous purposes.” (*Senior Official*, Representative Body for Disabled People). This indicates that users with disabilities face, in the design of the system, moral obligations in their transport to atone for their disabilities. They are the “abnormal” who face discipline and punishment.

Nine trips per month, two trips per week. It was hinted that you can go to church on Sunday and shop at the apothecary on Monday. It is a very Calvinist idea, [...]. To change this, you must demonstrate that you have certain needs [and that] those needs should be met. (*Senior Official*, Representative Body for Disabled People)

The moralities inscribed in the system have implications for the social life of disabled people—meaning that in practice their travel choices are not private, and certain traits or behaviors are socially criminalized. This respondent mentions for instance the system being used to critique those who use the service to go to a gay bar or have one night stands [29]—a state of affairs consistent with the body of literature on the policing of normal and abnormal sexualities [69]. Moreover, autonomous mobility technology may not just affect mobility justice, but other forms of social justice, suggesting that the technologies involved shape society in myriad ways. In this quote, the respondent is very sensitive to the idea of privacy:

It limits my autonomy. If I go to a gay bar in Helsinki, people will

know. People in the system who are taking my order, the drivers and assistants, who know my privacy. Privacy is basically thrown out the window. Even though there are strict guidelines about maintaining client confidentiality, it does not actually hold in the real world. I am very sensitive to the idea that somebody would know at all times where I am and where I am going, and how I have used the system. I am not saying that I would be doing criminal with my time, but it somehow gives you the idea of potentially doing something criminal with your time. I use the word criminal in the sense that you are abusing the system, when the system is made up so that your abuses will be seen normally. (*Senior Official*, Representative Body for Disabled People)

Moreover, the respondent was aware of the governmentality at play and its potential consequences, and suggested another morality and rationality of government—the use of public money. In her words:

(As an activist), I have been involved in campaigns in countries where going to a gay bar is close to illegal. It is not totally legal or accepted by the majority of society. ... Of course, I understand that you need to validate the use of public money. But why do my actions have to be frowned upon as someone not using public funding correctly? (*Senior Official*, Representative Body for Disabled People)

To sum up this section, several moralities were found to underpin the provision of transport in this separate population group. These included moralities of efficiency, worthiness of using public funds, worthiness of accident rescue (and life), worthiness of social life amongst others.

The Foucauldian conceptualization of power helps understand there is a complex social justice dimension to planning for autonomous mobility. The impact on, and mechanisms behind the social justice of autonomous mobility technology are more complex than technology narratives suggest. Namely, apparatuses of power are interconnected, sometimes in unseen ways, and are sometimes invisible at the street level. Therefore, being able to see the connectivities of apparatuses of power, and the rationalities that drive them, is the most valuable knowledge for planners and policymakers to have.

6. Concluding thoughts

This paper set out to understand the mobility justice implications of the transition to autonomous mobility in Finland by considering issues of structural power brought by this emerging technology. To do so, it examined conceptualizations of power put forth by French philosopher Michel Foucault and adapted by geographers of power and planners to the study of the built environment. It focused on the importance of space as a tool for government, examining the potential spatial rationalities of government and moralities inscribed in the built environment by the emerging technologies of autonomous mobility. A founding premise of the enquiry was that autonomous mobility technology redistributes power away from users and towards engineers, who craft rationalities of government through the technology. These potential rationalities were explored by means of a series of interviews with Finnish intermediaries in or concerned by the transition.

The research revealed that autonomous mobility may bring a number of spatial rationalities of government, and perpetuate existing moralities inscribed in the provision of mobility. The rationalities facilitated by the technology may comprise dispositional spatial rationalities and temporal spatial rationalities of government, in the form of where and when services are provided. Moreover, the research found that autonomous mobility technology may bring gendered and authoritarian spatial rationalities, and may promote moralities of worthiness and redemption in the treatment of those considered less deserving of mobility. This research suggests that autonomous mobility may negatively impact mobility justice through its structural power over the spatial, the temporal and the social.

The findings suggest that a Foucauldian lens is useful in understanding the mobility justice implications of sociotechnical transitions—in this case autonomous mobility—in the built environment. It showed its usefulness in connecting the different impacts of a socio-technical transition, including how autonomous mobility injustices may be locked in space and built environment. Moreover, the Foucauldian approach worked well with the concept of mobility justice, highlighting social justice concerns that a traditional transport justice approach, based on accessibility, would not.

Clearly, this topic is worth investigating further. With its limitations, this paper could not provide any definite answers, and neither was it intended to do so. Rather its role was to raise awareness and critical questions with regard to theoretical grounding for future research to understand the mechanisms of power underpinning digital infrastructure in the built environment. The findings in this paper have theoretical relevance for planners and policy makers in gaining insights on the potential implications of autonomous mobility, helping them understand, acknowledge and envision how, as digital technology becomes increasingly embedded in built environment infrastructure, it reshapes built environments to lock-in injustice in seemingly benign ways. Moreover, it helps them plan built environments in ways that are humanist and just, using appropriate technologies.

Declaration of Competing Interest

No conflicts of interests that the author is aware of.

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