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### Traveling together alone and alone together

*Mobility and potential exposure to diversity*

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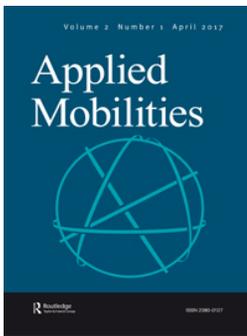
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# Travelling together alone and alone together: mobility and potential exposure to diversity

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## ABSTRACT

Quantity and quality of social relations correlate with our happiness and physical health. Our (feeling of) connectedness also matters for the efficacy and functioning of communities and societies as a whole. Different mobility practices offer different conditions for being exposed to other people and the environment. Such exposure influences a sense of being connected to places, communities and societies. In transport planning practice and research, these relations are slowly getting attention. In this paper, we develop an analytical framework that offers a comprehensive understanding on if and how one's experiences of being on the move influence the ability of an individual to develop a sense of connectedness. We develop hypotheses about these possible relations, that link literatures from mobilities research and sociology to advance transport planning research and practice. First, we discuss how the experiences of being mobile using different transport modes set different stages for the potential exposure to a diversity of socio-spatial environments. Second, we translate this into an analytical framework for understanding the relationships between connectedness and using different mobility modes. In the final part of the paper, we illustrate this by operationalising a number of potential indicators of connectedness (as dependent variables).

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## 1. Introduction

The quantity and quality of our social relations correlates not only with our happiness but also with our physical health. New insights from lifelogging research suggest that people who are more socially connected to family, to friends, to communities are happier, healthier and live longer (Waldinger et al. 2014). Our (feeling of) connectedness also relates to the efficacy and functioning of communities and societies as a whole, for instance, by taking away destructive prejudices between groups (Dovidio, Gaertner, and Kawakami 2003). In this paper, we map how different mobility practices offer different conditions for being exposed to other people and environments and relate this exposure to the sense of being

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connected to places or communities. From this, it follows that differences in potential exposure is an important characteristic of mobility and needs to play a role in transport planning and research, which is not yet widely recognised. In mainstream transport planning, mobility is often seen as an enabler of connectivity, understood in economic terms rather than as an activity that brings about connectedness.

Travelling by car, using public transport, walking and cycling seem to offer radically different levels of interaction potential, especially with people outside one's own social network and with the physical environment. This exposure potentially affects the level to which we feel connected to a certain place and society. Several studies indicate such relations for specific transportation modes: for walking and walkability (i.e. Boniface et al. 2015; Leyden 2003; Lund 2002; Middleton 2016; Wood, Frank, and Giles-Corti 2010) for public transport (i.e. Currie and Stanley 2008) or for the car (i.e. Lutz and Fernandez 2010; Mattisson, Håkansson, and Jakobsson 2015; Putnam 2000; Urry 2004). Yet, there is no comprehensive framework that offers an *overall* understanding to researchers and practitioners in the field of transport planning (from policy-making to engineering). Such a framework should help them explore how different ways of moving relate to the feeling of connectedness to place and society. Although currently present in sociological debates, such dimensions are underappreciated in academic and societal debates in which transport problems and solutions are sought. In this paper, we pursue bridging this gap and strengthening the role of this debate in the field of transport planning.

We first review the literature on societal effects of mobility, drawing on debates in sociology, mobilities research and urban theory. We develop this discussion by further zooming in on the relationships between mobility practices, connectedness and exposure to social and spatial diversity. We then unravel how the characteristics of different mobility modes provide different conditions for exposure to spatial and social diversity. We discuss the implications of our argument for transport planning research and practice, proposing an operationalisation of potential indicators of connectedness.

## 2. Effects of mobility

There are ongoing academic debates about the relations that different types of mobility<sup>1</sup> have with all kinds of societal issues. Although some contributions touch upon the issue of connectedness between people, they seldom explicitly target the impact of mobility on such relational qualities.

A large part of the debate focuses on systemic issues: what is the role of mobility in society as a whole and – from the planning and policy perspective – how should we measure its performance? The mainstream idea in transport planning is that mobility is purely instrumental, a derived activity undertaken for the sake of getting from A to B. This thinking is deeply solidified in planning practices in different ways: through transportation models that frame mobility as a “disutility” (i.e. something to minimise where possible); through algorithms that simplify mobility decisions into “generalized cost function” (including items relating to travel time, costs and comfort); and through evaluation frameworks that put “travel time savings” central in assessing impacts of policies and interventions (Aldred 2015; Banister 2008; Meyer and Miller 2000; Næss et al. 2013; Vigar 2013; Willson 2001).

The idea that travelling can also have intrinsic positive value is increasingly acknowledged in academic debates in the transport planning field, inspired by the growing mobilities

scholarship (see e.g. Lyons and Urry 2005): “Under some circumstances, travel is desired for its own sake” (Mokhtarian and Salomon 2001, 685). Where people have a maximum travel time that they find acceptable, they also seem to require a minimum amount of daily travelling: to a certain distance people experience an intrinsic utility of travelling (Milakis et al. 2015, 77).

Zooming out from the discussion on mobility as travel time, there are also discussions on expanding the purpose of the mobility system to other systemic effects. Such effects include accessibility (e.g. Ferreira and Batey 2007; Silva et al. 2012), social exclusion (e.g. Cass, Shove, and Urry 2005; Lucas 2012; Preston and Rajé 2007), equity (e.g. Martens 2012) or carbon emissions (e.g. Givoni and Banister 2013).

Next to these discussions on the systems level, there is also increasing empirical evidence for individual impacts of mobility: “Increased attention is paid to the connections of mobility [...] with well-being and quality of life” (Nordbakke and Schwanen 2014, 104). Examples of these are weight loss, cardiorespiratory fitness and general increase of life expectancy (e.g. Boniface et al. 2015; Cohen, Boniface, and Watkins 2014; De Hartog et al. 2010; Fishman, Schepers, and Kamphuis 2015; Götschi, Garrard, and Giles-Corti 2015; Watkins and Mindell 2010). For instance, Melis et al. (2015, 14898) recently found that “good accessibility to public transport [...] could contribute to reduced risk of depression, especially for women and elderly, by increasing opportunities to move around and have an active social life”.

What remains under-addressed in this discussion are potential effects of mobility on *relational qualities*: what do different mobility practices do for the quality of relations *between* people as well as between them and their surroundings. Users of a particular mobility mode interact in different ways with social and spatial environments through which they travel. Does the potential quantity and quality of these interactions contribute to their (perceived) feeling of being related, or even connected, to places and communities? We aim to unpack this through turning to literatures on mobility practices, connectedness and exposure to diversity.

### 3. Mobility practices and exposure to spatial and social diversity

The “new mobilities” paradigm and the emergence of “mobilities research” as an interdisciplinary field provide us with important *conceptual understanding* of relational qualities of mobility practices (see Adey 2010; Cresswell 2006, 2010; Sheller and Urry 2006). Through daily mobility, we socialise or seek solitude, negotiate our identity and perform a range of social roles; through mobility we may contest power relationships and claim our rights to participate in society or may be excluded and ignored. The embodied nature of mobilities and their sensorial and affective dimensions are central in people’s mobility choices and experiences (i.e. Bissell 2010; Jensen 2010; Larsen 2014; Middleton 2010, 2011; Sheller 2004; Spinney 2006).

This research has begun revalorising travel time and mobility experiences in their sensory, emotional and social richness as opposed to a more traditional perception of mobility as a derived demand and neutral experience that “costs” time. This has been aptly summarised by Laurier et al. (2008, 19): “Regardless of who is with us, travel time is time spent; it is not time savoured, hated, shared, enjoyed or recollected”.

The social dimension of mobility choices is increasingly acknowledged, challenging the utilitarian view in mainstream transport planning that such choices are “individualistic and

disconnected” (Goetzke et al. 2015, 724). Several studies take social networks (i.e. friends or family members) into account as an explanatory variable (i.e. Jensen, Sheller, and Wind 2014; Rubin 2015; Rubin, Mulder, and Bertolini 2014). Van Acker, van Wee, and Witlox (2010) summarise these studies in a conceptual framework in which all mobility choices are made in a social and spatial environment.

However, these environments do not only explain mobility practices but also interact with them (e.g. Urry 2007). Being a social and embodied practice, mobility in part influences the sense of being connected to people and places through which an individual travels. In order to grasp the relational qualities of mobilities, we deepen this notion of being exposed to social and spatial diversity and how it might relate to (the feeling) of connectedness.

When we travel through a place, our spatial cognition develops a mental map of that place and the connections it has internally and externally. As Sennett (2006, 3) states “the act of passage [through different territories] is how we know the city as a whole”. Van Duppen and Spierings further articulate that “our sensory body allows us to see, hear, smell, taste, and feel the city and its features” (2013, 235). We use our ears to hear the soundscape (i.e. Bild et al. 2016; Raimbault and Dubois 2005), our body to experience the physical sensescape (i.e. Degen and Rose 2012) and our noses to smell the coffee (Van Duppen and Spierings 2013, 239). All these multisensory physical experiences, and the fact that we share them with others in time and space, contribute to our level of understanding of our spatial surroundings. Through embodied mobile engagement such passive physical realities are transformed into active “taskscape” (Ingold 2000). These are “always mediated” through “the full weight of the ensemble of things, bodies, technologies, sounds, visual clues, buildings and more” (Amin 2012, Chap. 3, section 4). When our bodies are used, this even leads to an understanding of the spatial environment that is stored in the body – a kinaesthetic map of one’s city (Day 2016; Larsen 2014).

These taskscape cannot be simplified as being only physical or spatial. Leaving your door, you enter the public realm, where you are exposed to “social relations going beyond our own circle of friendships, and of family and professional relations” (Bianchini and Schwengel 1991, 229). As Hajer and Reijndorp (2001, 12) pose, this “is the place where society is formed”. We are “linked-in-motion”, negotiating our way through spaces, forming “mobile agoras” or incessantly changing mobile public spaces (Jensen 2008). Travelling provides you with “the strange” which “leads to questions and undermines familiar tradition, it serves to elevate reason to ultimate significance” (Jacobs 1961, 238).

Yet, in transport planning discussions, such insights have been studied as characteristics of places, such as streets and squares (e.g. Gehl 2011), neighbourhoods (e.g. Jacobs 1961; Montgomery 2013), and passenger interchanges (e.g. Bertolini 2006), rather than as characteristics of mobility practices – as acts of moving *through* and *between* such places.

#### 4. Exposure to diversity and sense of connectedness

There has been heated sociological debate on whether and upon what conditions such encounters with the strange have a positive or negative impact on the feeling of connectedness (and through that social cohesion, trust and tolerance amongst different societal groups). While empirical research has provided varying answers (e.g. Blokland and Van Eijk 2010; Laurence 2011; Letki 2008; Oliver and Wong 2003), new theorisations of “social capital”, living with difference and connectedness have been developed to reinvent the whole

dilemma altogether (i.e. Amin 2012; Portes and Vickstrom 2011). In the light of this, we would like to offer two points to justify our emphasis on the relationship between the two.

Firstly, these empirical discussions have largely focused on the residential domain, while exploring the domain of mobility may reveal new facets of this relationship between diversity and connectedness. This proposition is made by Boterman and Musterd (2016, 104), who also maintain that while “exposure to diversity” does not necessarily lead to a greater sense of connectedness amongst people, “non-exposure to diversity – in other words: cocooning – will, in our view, almost certainly block opportunities to come closer to each other”. In a similar vein, Ash Amin (2012) has recently pointed out that “while interpretations have varied, the sense that the prosaics of co-presence have profound effects on what strangers make of each other has not” (Chap. 3, section 1, para 1). Adjoining these arguments, we aim to advance the extension of the debate into the realm of mobility practices.

A second reflection we want to make here is that we do not romanticise social interactions of people on the move as necessarily leading to social cohesion and an increase in one’s social capital. Research has demonstrated how spaces of interaction on the move can become arenas for conflict and tensions (Bissell 2010; Middleton 2016) and how they may reinforce existing differences between social groups (Butcher 2011; Wilson 2011). Yet, the same studies still see these transitory interactions as potentially expanding people’s capacities to engage with difference and develop new social sensibilities. We, furthermore, draw on a broad understanding of mobile socialities, inspired by Bissell (2010), as a whole range of verbal and non-verbal communication, as the affective and embodied experience of being co-present on the move. In other words, being appreciative of somebody moving slightly to accommodate you in a packed train, briefly smiling to a fellow cyclist or getting irritated with somebody’s loud conversation all shape our perceptions of places and communities we are part of.

## 5. Exposure to social and spatial diversity through different mobility modes

Boterman and Musterd (2016) discuss exposure to social diversity within transport modes focusing on the diversity of a population of a specific transport system and using statistical data on gender, income and ethnicity. They do not investigate mechanisms that influence potential for interaction and do not conceptualise a mobile practice as an embodied experience in a wider spatial and social taskscape. Below we develop hypotheses on these elements.

The potential exposure to diversity on the move can be influenced by the individual user to a large extent. One could wear sunglasses, headphones, work on a laptop or read a newspaper to influence interaction potential. The discussion below therefore addresses a *potential range* of interaction offered by each mode.

### 5.1. Driving a car

The private (motorised) automobile is the predominant norm and mode of transportation for people in many cities. It can be both convenient for those living in low-density urban sprawl, as well as appealing for those with an attraction for private transportation. In its current form, driving a car requires active attention and participation by the user in order to ensure safety of themselves and others.

The caveat of cars is that they primarily offer solitary<sup>2</sup> mobility experiences in which social interaction amongst users, beyond those inside the same vehicle, is limited to brief encounters through the reflective glass of a car windshield or windows. Such separation limits the contact and sensory potential of its users. Sensations of the “outside world” risk being lost within the capsule of the automobile (Slovenko 2001). This relative isolation might strengthen individualistic attitudes that are often attributed to car driving, leading to the possible relenting of social responsibilities and mannerisms by the drivers themselves. Bauman even goes as far as stating that “automobility fosters individuality, competition, rejection of collective responsibility, aggressiveness, and domination by way of movement, speed, and escape” (Bauman 2000, 12). However, some authors are also critical towards this notion of cars as merely a capsule, and argue that while there is an isolation of some senses there is an enhancement of other senses, such as that of acceleration (Jensen 2013; Vannini, Bissell, and Jensen 2016). Yet, these enhanced senses are not per se relevant for interaction potential.

It has been argued that long commutes by car have a strong negative impact on social capital (Besser, Marcus, and Frumkin 2008; Freund and Martin 2007; Putnam 2000). Whereas, the car extends the possible range of one’s own social network, this suggests that the very experience of being on the move in a car provides for a relatively low potential exposure to diversity.

The same paradox applies for spatial interaction: car drivers are capable of exploring large spatial areas that may be difficult to reach otherwise. However, the sensory interaction with the spatial environment *during* travelling (which is our focus here) is dismal. Sheller and Urry (2000, 747) state that inside a car “[t]he sights, sounds, tastes, temperatures and smells of the city are reduced to the two-dimensional view through the car windscreen”. Any interaction beyond the visual, is mainly limited to the origin and destination, with rare in-between interaction between driver and surrounding environments (e.g. when they are stopped at traffic lights or sitting in traffic).

A car driver has to actively engage with his/her surroundings for navigation and tactical traffic decision-making, which only offers social and spatial interaction to a limited degree. The introduction of navigation devices, the externalisation through traffic signs and road design and the possible rise of the self-driving car can have negative influences on this external sensory experience. Conversely, the car also facilitates social interaction internally in the vehicle if there are multiple passengers (Laurier et al. 2008). This type of social capital must be expected to enhance with rise of self-driving cars (Laurier and Dant 2012). The focus of our argument is however on the potential exposure to the outside, the spatial and social environment through which we travel.

## 5.2. Riding transit

Public transport has similar cocoon-like features as the car but it allows the individual to be even less connected with his/her spatial surroundings beyond the visual (e.g. no active driving required). As a result, users can focus their attention on other personal or social activities. Obviously, the passive way of travelling also opens the potential to look at the passing landscape; according to a recent study of the Dutch Railways, around 40% of train passengers do this (Warffemius, de Bruyn, and van Hagen 2016). Transit offers a high potential for interaction in this way, but a windshield is always in between and senses other than vision are less involved. Still, compared to a car using public transportation may involve a wider

range of activities and mundane events that provide opportunities for interaction with unfamiliar people or environments (e.g. through walking to stations, waiting, changing lines). Furthermore, some argued that being a passenger is far from being an entirely “passive” and isolated experience, and more attention needs to be paid to socialities and spatialities of “passenger” (Adey, Bissell, and Laurier 2011; Adey et al. 2012; Bissell 2010).

Different forms of transit offer different potentials. A metro, by definition under the ground, might be the most spatially disconnected way of travelling. A traveller on a train, metro or bus can develop a limited understanding of spatial organisation on a city or regional level through station names and destinations of lines (if these are used). Maps that support navigation are often deliberately distorted or are used inadequately: for instance, the Legible London study has famously revealed that people use London underground map to navigate the city which leads to false beliefs about distances and directions (TfL 2007). The ability for users to engage with their surroundings in public transit are therefore restricted to the limits and confines of space and design of the transit route and stops.

Depending on the type of public transportation passengers are equally positioned in a space of flow as well as a space of place (Castells 1996), which allows them to utilise some of the social bonding mechanisms that are typically found in public spaces. Within a bus, tram, metro or train, travellers are exposed to social diversity and, in the words of Wilson (2011, 646), to “the everyday challenges of contemporary urban living and the throwntogetherness of different bodies”. Much in line with the debate on whether exposure to social diversity is always producing social harmony and exchange between different groups, she maintains that this experience “can solidify prejudices and antagonisms as much as it can weaken them” (ibid.). Yet, the potential for social interactions and exposure for diversity might be the highest of all modes. Especially, when depth is taken into account. Depending on the set-up of the seating and the level of crowdedness, transit offers the potential to engage in deep conversations with “strangers” around you or observe interactions of others, getting a glimpse of social worlds they are unfamiliar with. Given such opportunity, users still mostly prefer to abstain from unsolicited social interaction with strangers. Instead, they prefer to use the time to focus on solitary activities such as work and rest, or immersing themselves into reclusive activities (Ettema et al. 2012; Lyons, Jain, and Holley 2007; Russell et al. 2011) which for some are valued as an escape from the daily rush and an opportunity to pursue activities that have no place at work or at home, such as daydreaming, people watching or reading. Interestingly though, when Epley and Schroeder (2014) actively asked respondents to engage in conversations with fellow passengers, they found that they reported a higher sense of well-being than those who sought solitude. And, this even extended to the strangers with whom they engaged.

### 5.3. Cycling

Bicycling allows the user to explore their spatial surroundings and offers constant opportunity for spontaneous interaction with other users and the surrounding environment. Vivanco observes that the distinctive hybrid between human and bicycle enables and requires “certain things of peoples’ bodies and opening them up to certain kinds of interactions with their environments” (Vivanco 2013, 12). Cyclists continuously, (un)consciously negotiate with others and with their surroundings to prevent collisions or mediate traffic flows (see Jensen 2010). In doing so, they interact with a large number of other road users and objects in

physical space. Cyclists also have a high degree of freedom to traverse and interact with their surrounding environment, given the infrastructure, traffic laws and cultural acceptance.

Cyclists are structurally very open for interaction as all their senses are exposed and they are not visually or physically shielded in any way. Interactions can be positive, neutral, negative and even aggressive. Cycling also offers high potential of being exposed to spatial and social diversity: "Most, if not all, of the multi-sensory cacophony that comprises urban life is out of the control of the cyclist" (Jungnickel and Aldred 2014, 245). The speed of cycling results in a trade-off between the depth of interactions (relatively superficial), and the amount of interactions (high and distributed over a large terrain). By doing so, a cyclist can build a rich and large cognitive "image of the city" (Lynch 1960) and as such develop a rich sense of connectivity. Note again that these are all potentials that the *stage* of cycling offers; individual cyclists can still retract into a personal cocoon, for example, by listening to music with headphones.

Differences in cycling postures and physical requirements naturally influence the potential for social and spatial interaction. Up-right bicycles ("Dutch style") where the rider sits at a 90-degree angle offer the highest sensory potential. Upright cycling allows the user to continually scan at human eye level and a great distance in front of him and generally encourages a moderate pace ( $\pm 10$ – $15$  km/h). In this posture, it is easy to make eye contact with other road users, to recognise faces, read advertisements, have a conversation and even window shop. Our own preliminary observations in Amsterdam confirmed that most observed activities of cyclists involve social interactions with other users in their environment (Chan 2015, 42). Racing posture, or a 30–40-degree angle forces the cyclist's sight line to focus on the road immediately in front of him/her. In this posture, higher speeds are also encouraged, adding to the difficulty to constantly scan and engage with others and the surroundings.

The opportunity to stop at any given moment and the freedom to navigate the narrowest of streets challenges a cyclist to interact with their spatial surroundings at an explorative level. Socially, groups of cyclists can ride together as a cohesive group; yet they too, have the freedom to stray and find others, or catch up with someone they see on the street. On the other hand, groups can also be (experienced as) exclusive and even aggressive.

#### 5.4. Walking

Walking is the only transport mode that co-evolved with our human bodies and minds (Gehl 2010). Social interaction potential is heightened because of the exposed nature of the pedestrian, allowing for more opportunities for "spontaneous 'bumping into'", as described by Leyden, where such "...brief (seemingly trivial) conversations can help to encourage a sense of trust and a sense of connection between people and the places they live" (Leyden 2003, 1546). One may walk on the street and encounter neighbours or friends, and can easily stop for a quick conversation. Such encounters may also happen on public transport, however, the confined nature of trains and busses may complicate the ability to connect, for instance, if the compartment is full or noisy.

Similarly, walking immerses the pedestrian into the sensescapes of the surrounding physical environment, inviting them to fully "experience place" (Middleton 2010; Wunderlich 2008). While pedestrians have the freedom to use their transport time to engage in many solitary activities (i.e. listening to music, talking on the phone), they are also exposed to their

surrounding environments without restriction. They can read the city like a textured surface.

Spatial interaction potential of pedestrians is high as a result of the freedom to navigate, and partly even control, the physical environment. By exposing all senses, a person develops different distinctive memories and attributes for certain places that he/she traversed. Such experiences can form deep and detailed spatial cognitions and recognitions of a city (Ferreira et al. 2012; Lynch 1960). Being able to ascribe sentiments, or familiarity and awareness of a city (be it good or bad) can heighten cognisance and predictability within given places, in turn leading to higher sense of belonging and ownership. Also, such familiarity is a comforting feature, which is attributed to social trust and respect amongst people and in places (Leyden 2003). Finally, walking allows the opportunity for optional and social encounters, which in turn improves the qualities of the street as a public space (Gehl 2010).

This can be especially true in the case of people who are new to a place. Walking through a neighbourhood to familiarise yourself with the streetscape can be immensely more impactful than driving a car through the same areas. The slower speed of walking allows one to mentally map points of interest and to recognise familiar places and faces. Over time, and with repetition, this may lead to overt interactions that can bring people together and increase a sense of neighbouring.

Although a pedestrian might develop deep relations through recurring interactions on the local, neighbourhood, and especially street level (Jacobs 1961), the number/diversity of interactions is limited due to a confined radius. General studies on walking have demonstrated that density, land use diversity and distance (proximity) to destination are highly correlative with walking trips (Saelens and Handy 2008). This further suggests that the spatial and social interaction potential for walking, though deep and rich, is relatively localised.

## 6. Conclusions and implications for research and transport planning practices

Being connected to people and places means moving around, exploring, using all our senses and interacting with people and environment. Through each mobility mode, we develop a unique way of knowing our social and spatial environments, limited in some respects and rich in others. While both mobilities research and transport planning have engaged with some aspects of these relationships between connectedness, exposure to diversity and mobility, a comprehensive discussion of *being-connected-through-mobility* is underdeveloped. Importantly, this dimension continues to escape mainstream transport planning practice, despite the rich discussions of exposure to social and spatial diversity that developed in research on specific modes of mobility. In this paper, we have reviewed some of these discussions around experiences of driving, riding public transport, cycling and walking, demonstrating how each of these modes differently mediates social and spatial diversity and offers different conditions for exploration, interaction and negotiation of shared (social) space. We have also bridged mobilities research literatures with sociological debates about the exposure to social and spatial diversity, laying the groundwork for engaging transport planning researchers and professionals into this interdisciplinary conversation. In closing the paper, we propose directions forward for this.

### 6.1. Implications for research

Based on the discussion above, we generate four general hypotheses on how different mobility modes generate different potential exposure to spatial and social diversity:

- Increasing (differences in) travel speed leads to fewer and shallower interactions with the social and spatial environment through which we travel;
- Enclosed space during travelling increases social interaction depth inside the vehicle, but limits potential exposure to spatial and social diversity;
- The amount and depth of potential interactions both have a positive relation with exposure to diversity;
- Longer travel time leads to shallower social and spatial interactions, but increases the reach and potential diversity of social and spatial interactions (as also addressed in Mattisson, Håkansson, and Jakobsson 2015).

To allow us to further investigate if such exposure matters, varies and correlates with the feeling of being connected to communities and places, we propose to link these hypotheses with operationalisations of effects on (the feeling of) connectedness such as *sense of community*, *social trust*, *collective efficacy*, *participation* and *aspects of neighbouring* (see e.g. Grootaert et al. 2004; Leyden 2003; Lochner, Kawachi, and Kennedy 1999; Perkins and Long 2002). The four hypotheses already tell us that there is not a single ideal mobility mode from this perspective. Instead, there are several trade-offs to be made.

Existing literature and research that is related to this topic focuses too narrowly on either quantitative outcomes, or only on specific modes of transport. Further research would greatly benefit from examining the multidimensional social effects of travelling in different vehicles – both on the user level and on the level of cities and society.

### 6.2. Implications for travelling and planning

A full and deep understanding of one's spatial and social environment and its diversity is fruitfully supported using a varied palette of mobility modes. Because of the abovementioned trade-offs each mode offers its own strengths and weaknesses in terms of exposure to diversity. Walking and cycling support a highly detailed sensing of place and society ("deep"), while driving and public transport offer social and spatial relations on a larger scale ("broad").

It seems that people already, seemingly unconsciously, make decisions along these lines. As a tourist, this is evident: to familiarise with a strange city walking and cycling is a natural choice in some cities that are designed around these modes of travel, but one truly gets to know a city using as many modes as possible. Whether people take these dimensions of mobility into consideration in their daily lives is under-researched. Although we make all kinds of conscious decisions around the nurturing of our children, it seems that the way in which they are travelling receives only limited attention (Karsten and Felder 2015). It should also be an important element in thinking about the mobility of one's children:

Children do not gain [...] sense of place from the back seat of a car: they may see more, but they learn less. The ultimate shielding of children from this sense of place is found in situations where not only are children transported by car, but they are "entertained" along the way with DVDs played through monitors inside the car. (Freeman and Tranter 2011, 183; although see Laurier et al. 2008 for a discussion of car space as space of parenting)

Again, due to the inherent trade-offs, there is not one mode that offers the ultimate solution. Instead, a rich understanding of the social and spatial context emerges from using many different modes *and* to their full potential.

As Lerner (2015) states:

A more cohesive and sustainable society arises from its public spaces and landmarks, good streets, squares, parks, memorials, theatres and museums. These are a city's "living rooms," where urbanity happens. A human construct by definition, a city is a setting for people to meet. We must shape its future.

Adding this "living room" perspective to the transport policy debate is an important, relevant and often ignored element of policy discussions on mobility interventions. From a transportation policy and practice perspective, this means planning cities for people and places rather than for flow and level of service.

## Notes

1. For the purposes of this paper, by "mobilities" we understand a variety of daily mobilities people routinely perform in order to engage in their regular activities, like going to work, doing shopping, caring for their family members, rather than a full spectrum of human movement across the globe.
2. Here, we refer primarily to solo driving, given that the average occupancy level for private car usage is very low in most countries and the vast majority of travel in cars takes place in solitude. Also, mostly other occupants also belong to the existing network of a driver (limited exposure to diversity).

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