1 Learning mobility

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Abstract

In this chapter, we take a social constructivist approach to mobility poverty. We argue that, for an in-depth understanding of the phenomenon, it is crucial to investigate the contentious relationship of *mobilities* and *immobilities*. Whether, when and how people decide to move, or to stay immobile, is a complex process. In this chapter, we highlight the aspect of *learning* how to be mobile and at the same time point to the factors that limit the learning process. With such an approach, we lay the groundwork for a better understanding of unmet mobility needs along with the interrelation between realised and unrealised mobilities.

Introduction: realised and unrealised mobility – a social constructivist approach

This and the following chapter seek to depart from a classical account of transport disadvantage focusing on material poverty in order to arrive at a more complex understanding of inequality, disadvantage and injustice, which we subsume under the concept of *mobility poverty*. This considers the increasing variability of lifestyles, attitudes, opinions and values, how they play out on a micro-societal level as well as within the same social stratum, ultimately how this constellation of factors affects people's mobility. We argue that mobility poverty is not only about a lack or shortage of actual movement. It is about the conditions that presuppose actual realised movement such as individual factors that create a desire, motivation and need to be mobile. Furthermore, mobility poverty is not only about differentiated mobility but also about the liberty to move or not move, or the decision to be mobile or stay immobile.

In this vein, the arguments presented here will allow us to (i) better understand the *conjunction between mobility and immobility* and (ii) to identify the *gap between realised and unrealised mobility,* which leads to an investigation of *unmet mobility needs*.

What exactly is our aim by highlighting the gap between realised and unrealised mobility? This is not immediately self-evident, but, for some social groups, this gap is more apparent and can be identified more easily. For

example, this gap can be immediately grasped when studying the mobility of the elderly: both anecdotic evidence and research indicate that there are lower levels of mobility activity than people actually desire. Mostly, mobility is desired to foster social relationships and conduct leisure activities, but also to maintain social reputation and access social resources (Hjorthol 2013, 1194). This desire increases with age. It could also be shown that, with increasing age, meeting basic needs like shopping receive wider significance for a person's well-being. For example, this boils down to personal assurance to be independent and in control of one's life, the possibility to meet friends, or just the positive feeling of being out of the house, "on the road" or among people (Hjorthol 2013, 1203–1206). Conversely, the desire for mobility among the elderly often remains unrealised due to inadequate transport options, limited financial means and physical constraints. In addition, often elderly people are reluctant to rely on support from friends and relatives to meet their mobility demands due to internalised norms of self-reliance and independence, hence mobility remains unrealised (Schwanen, Banister, and Bowling 2012, 1320; Ziegler and Schwanen 2011, 777).

In many other cases, the exploration of this mobility gap poses a challenge, which is also eventually a methodological challenge. Research on mobility requirements often relies on the observation of travel that actually takes place. Traditionally with quantitative methods, and increasingly with qualitative or mixed-method approaches, travel behaviour and travel patterns are explored through surveys, travel diaries, GPS tracking, focus groups and in-depth interviews. Although such studies deliver important results on mobility behaviour and patterns and provide a strong basis for transport modelling and demand forecasting, the deeper-lying norms and attitudes of individuals towards their spatial movement often remain hidden. While many studies differentiate between various trip purposes, they do not explore the more fine-grained motivations for being mobile or immobile in one or another way, and thus miss blocked desires (Nordbakke and Schwanen 2015, 1130–1131; Pereira, Schwanen, and Banister 2017, 177).

The definition and identification of mobility desires and unrealised mobility needs could potentially have a strong impact on policy formulation. The way in which mobility needs are defined depends on who participates in the political or agenda setting process. A participative and inclusive process is crucial for the policies and solutions developed. This means that those who do not have access to political decision-making – or are not adequately represented – may not have the chance to express their mobility needs. Especially in the case of socially disadvantaged groups, new policies or solutions often do not address those specific needs or, worse, policies can even further hamper the ability to participate in social life (see e.g. Lucas 2006, 806; Rajé 2007, 66).

In order to analyse the gap between realised and unrealised mobility, and identify unmet mobility needs, we take a social constructivist approach.

Indeed, individual motivations and needs to be im/mobile are socially constructed: the "desire" or "necessity" to move is highly discretional according to social and cultural context. What seems indispensable to one

person may be mundane to another. The motivation to move, as well as the ability to move, is closely linked to social norms, values, experiences and socially embedded expectations.

When analysing the gap between realised and unrealised mobility, it becomes necessary to differentiate *individual mobility needs and aptitudes* on the one hand and the notion of *unequal mobilities* and *mobility justice* on the other hand, keeping in mind that for us this goes beyond debates about the distribution of accessibility levels. While these are by no means mutually exclusive approaches, different strands of investigation put varying emphasis on each of them, resulting in different conclusions about what is necessary to achieve what is called a "good" and meaningful life, and subsequent recommendation for policy and technological solutions.

In this chapter, we begin with scrutinising how individual mobility motivations, needs and desires are developed in a setting of established social and cultural norms, values, experiences and socially embedded expectations. While navigating social and cultural settings, *mobility is learnt by individuals in a complex and long-lasting process.* In this learning process, individual mobility aptitudes and skills are established, which enable individuals in their decisions of whether to move or not in quite different ways.

In order to analyse these concepts, we scrutinise:

The role of social networks and the significance of being mobile for social purposes.

The concept of motility in order to shed light on enabling and disabling factors of mobility.

Then, turning more concretely towards the aspect of "learning", we focus on the role of socialisation and the process of "learning mobility".

Fourth, the process of obtaining travel know-how and spatial knowledge will be elaborated.

Lastly, the gap between realised and unrealised mobility will be illustrated by the example of virtual mobilities.

Mobilities and social networks

Especially for groups that are considered vulnerable, the primary attention of decision makers and practitioners is often on securing the basic and formal needs of everyday life: employment, education, health care. However, such a model

> rests on a definition of what excluded people should want or need and obscures the role that social networks play in maintaining a 'good life' and in structuring the meaning of inclusion and participation. […] This is difficult to achieve, but one method is to focus upon 'blocked desire', especially when people cannot meet what they take to be important obligations of co-presence.
>
> (Cass, Shove, and Urry 2005, 551)

Hence, the importance of maintaining social networks for vulnerable social groups and the associated necessities to be mobile need further scrutiny.

The role of social networks for maintaining a "good life" and the associated need for mobility has been widely discussed. John Urry and other scholars (Urry 2007; Urry and Grieco 2011) have described in detail the significance and even primacy of social relations for maintaining a meaningful life in a networked society:

> What seems important in contemporary life are overlapping and intersecting social networks – in leisure, friendship, family life as well as in work and organizations. And these networks appear to demand intermittent travel, such travel being crucial to forming and sustaining such networks produced through 'moments of co-presence'.
>
> (Cass, Shove, and Urry 2005, 545)

This leads us to conceive that social relations for some groups – especially elderly and mobility-impaired people in rural areas with inadequate public transport – are a prerequisite for being mobile, while mobility of these individuals again reinforces the ability for co-presence and hence the stability of social ties (Jansuwan, Christensen, and Chen 2013 for low-income groups; Lovejoy and Handy 2011 for migrants in the United States; Pyer and Tucker 2014 for young people with disability; Rajé 2007 for poor elderly people; Rittner and Kirk 1995). It has also been shown that different socially constructed needs can be in conflict with each other: many older people are reluctant to rely on support from friends and relatives to meet their mobility demands due to internalised norms of self-reliance and independence, with the effect that especially the elderly tend not to participate in social and cultural life if they would need assistance with transportation from friends and relatives (or technical devices) (Schwanen, Banister, and Bowling 2012, 1320; Ziegler and Schwanen 2011, 777). The same attitudes have also been described for members of immigrant communities in the United States (Lovejoy and Handy 2011, 255).

However, it is important to understand both the inclusionary *and* exclusionary effects of social networks, and that the networked society is a society of inclusions and exclusions at the same time. The exclusionary effects of social networks and the resulting mobility disadvantage will be more thoroughly investigated in Chapter 2.

Motility as a key element: individual capabilities and preferences

In order to identify unrealised mobility needs and estimate the gap between actual travel and latent mobility needs, the concept of *motility* can be employed (Figure 1.1). "Motility can be defined as how an individual or group

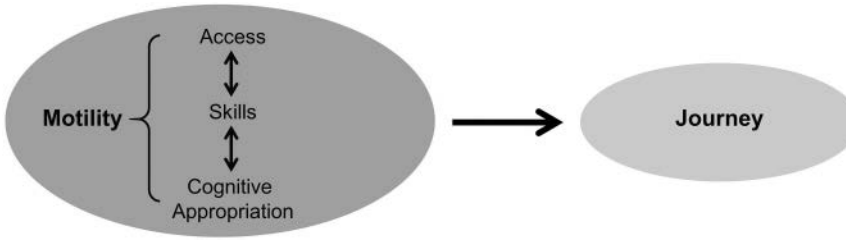

Figure 1.1 The motility approach.
Source: Authors, adapted from De Witte and Macharis (2010), based on Flamm and Kaufmann 2006; Kaufmann, Bergman, and Joye 2004.

takes possession of the realm of possibilities for mobility and builds on it to develop personal projects" (Flamm and Kaufmann 2006, 168). Furthermore, motility can be described "as the way in which entities [persons] access and appropriate the capacity for socio-spatial mobility according to their circumstances" (Kaufmann, Bergman, and Joye 2004, 750).

Motility hence analyses the *potential* of and *capacity* for movement. The study of potential movement reveals further insights into people's mobility as well as into its wider spatial and social consequences (Kaufmann, Bergman, and Joye 2004, 749). The motility approach allows us to grasp a better understanding of the *contextuality* of mobility challenges. It also allows us to analyse and explain how increased travel options do not result in more freedom and mobility for all; this lets us understand that individuals use these options in different ways. In other words, the motility approach provides a useful concept to analyse mobility poverty empirically.

Kaufmann and his team identified three interrelated groups of factors that define the potential to be mobile:

- **Access**: This describes the range of possible mobilities according to place, time and other contextual constraints. Access varies according to the options that are available and the *conditions* under which these options can be used. The options entail the available means of transportation and communication, as well as the range of services and goods available at a given time. The conditions refer to constraints in accessibility of the *options*, e.g. distance, cost, need to carry heavy loads. Spatial distribution of people and infrastructure, spatial and transport policies and the socio-economic position of individuals, households and groups are paramount to analyse access.
- **Skills**: This describes capabilities and competencies required in order to use mobility options. This includes acquired knowledge and organisational capacity in order to plan activities. Three aspects are central: physical ability to move from one place to another under given

circumstances; acquired skills that relate to the rules and regulations of movement (e.g. driving licence and parking permits); and organisational skills to plan and coordinate activities, including the acquisition of information and the above mentioned required abilities and skills.

- **Cognitive appropriation**: This describes the personal evaluation of available mobility options in relation to personal aspirations, plans and projects and acquired skills. This aspect most importantly considers *how* and *why* people make mobility decisions – how people consider certain options, deem them more or less appropriate for themselves and ultimately select specific options. It also considers how people evaluate their own skills and decisions. How and why people make use of available options (or not) has to do with personal needs, projects, personal aspirations, plans and so on. These needs and aspirations are interrelated with prior experiences, personal values, norms, habits, attitudes and strategies (Flamm and Kaufmann 2006, 169; Kaufmann 2011, 41–44; Kaufmann, Bergman, and Joye 2004, 750).

In studying mobility needs with the motility approach, it is possible to identify the deeper-lying elements that influence mobility or immobility behaviour, originating from various parameters. With the increasing disappearance of generally accepted organising principles and the heterogeneity of norms and values in recent times of transformation, it is important to consider how people make sense of this heterogeneity and put it into mobility practice.

Scholars in the field of mobility and transport have subsequently widened their analysis of mobility needs and patterns by including the *potential* for movement. Cresswell and Uteng for example point out that "by mobility we mean not only geographic movement but also the potential for undertaking movements (motility) as it is lived and experienced – movement and motility plus meaning plus power" (Cresswell and Uteng 2008, 2). Canzler, Kaufmann and Kesselring define mobility

> as a *change* of condition by targeting three dimensions: movements, networks and motility. […] Movements refer to strictly a geographic dimension. […] Networks can be defined as the framework of movements; [they] delineate the field of conceptualized possibilities. […] Motility is how an individual or groups endorses the field of movement possibilities and uses them.
>
> (Canzler, Kaufmann, and Kesselring 2008, 2–3, emphasis in original)

The role of socialisation

Socialisation is one of the important formative processes that shape people's attitudes and behaviours. How individuals are integrated in society over

different stages of their lives influences individuals' learning experience and formation of social roles. Personal experiences and social norms are internalised and developed into personal norms that ultimately guide behaviour. Factors typically significant for socialisation are family members, especially parents, friends, peers, colleagues, but also institutions such as schools and the media. Socialisation can be defined as "the adoption of a group's (typical) behaviours, opinions and values by an individual so that thus an individual capable of social acting emerges" (Tully and Baier 2011, 195; cited in Scheiner 2017, 392).

Socialisation is naturally also a key factor in shaping individuals' mobility needs and routines. Such processes influence the travel mode choices of people and impact on how they adapt their mobility behaviour to changing external circumstances. Research on socialisation shows that mobility behaviour is impacted at an early age by primary socialisation relating to parental and family mobility and secondary socialisation in later life by mobility education in school, by mobility behaviour of peers and cliques in adolescence and by partners (see e.g. Kroesen 2015, 492–493, 501–502). Hence, *socialisation processes are most formative in childhood and adolescence, but they are not limited to this.*

Moving to our field of analysis, travel behaviour can change over the whole life course, although changes are slower in later life (Scheiner 2017, 393). Focusing on automobility, studies show that "pro car" attitudes in car-owning households are transferred to the children, who themselves develop positive attitudes towards cars (on this issue, see also Chapter 9 of this volume). Other research suggests that the media reinforces a desire for car ownership and usage as children embrace knowledge of and desire for particular types of cars and their associated lifestyles, though the media is not the main or sole cause of how children's travel attitudes and choices develop (Baslington 2008, 109). For teenagers, having access to different mobility options is crucial for independence from family support. Thus, having experienced and being familiar with different forms of transport can enlarge the activity space and help foster social relationships (Tully and Baier 2011, 195–198).

Conversely, reduced or highly limited exposure to transport facilities creates barriers to access those mobility systems and thus leads to reduced mobility in young age (and later to lower perceived transport needs). This environment drives constraints in mobility, which can significantly impede access to education, job opportunities, leisure and social opportunities. On a different angle, *travel patterns are characterised by routines and habits* and this can lead to transport mode "decisions" *which may NOT follow "rational" choice and decision-making for the best available option*. This seems trivial, but too often it is not part of a policy maker's mindset.

We can thus state that observed travel behaviour and travel patterns can differ from the real travel needs of people. Early socialisation with cars can contribute to forced car ownership because other available options that are cheaper may be out of sight for individuals.

In a wider view, every travel behaviour is the outcome of a long process of socialisation. Also, travel needs are – actually – an outcome of how we define ourselves in the large social frame and our ability to use transport systems. Our capacity to drive a car, to know which bus to use or to manage a ride on a train are part of our travel choice and limitation.

If we tackle mobility under this angle, we therefore need to understand how we develop our mobility needs and how we are exposed and socialised to transport systems.

Travel know-how and spatial knowledge

Flamm and Kaufmann (2006, 175–176) point out that, in order to use and master means of transportation, it is crucial to acquire driving and riding know-how for any type of vehicle. Reaching a certain level of know-how is a process of accumulating experience that requires a medium- to long-term learning process. Without mastering means of transportation, individual mobility is severely restricted or impeded.

This may be obvious and most important for individual forms of transport such as car-driving and bicycle usage. Studies show that young car drivers need at least 3,000 kilometres to gain minimal experience of driving an automobile (Pervanchon 1999, 22–24, 83, in Flamm and Kaufmann 2006, 175). However, also the use of collective modes of transport demand experience and sometimes a good understanding and know-how of a certain transport regime so as to make travel possible, convenient and comfortable (Figure 1.2).

While travel experience itself is important, it is even more crucial that a person is also willing to learn from travel experiences. When a positive opinion on a certain transport mode pre-exists, learning can take place and know-how is accumulated. However, *when there is already a negative attitude towards a transport mode, these attitudes are most likely to be confirmed and improvement of the aptitude not likely* (Flamm and Kaufmann 2006, 176).

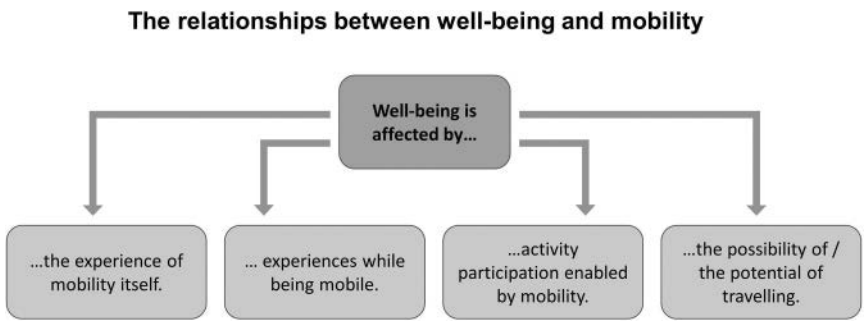

Figure 1.2 The relationships between well-being and mobility.
Source: Authors, adapted from Ferreira et al. 2014, based on Vos et al. 2013.

We know that when users are given a hypothetical choice between a car and public transport travel for daily commuting, car travel is associated with a more satisfactory travel experience and general well-being (Vos et al. 2013, 428).

The picture changes when actual commuting experiences are evaluated. Research results in the United States and Europe show that commuting experiences in public transport – especially train travel – are evaluated more positively than car commuting. In the US case, while commuting, car commuters experienced more stress, anxiety, impatience and less enjoyment than commuters by public transportation (Abou Zeid 2009, 83–87). A study in different European cities revealed that train and metro commuters are more satisfied with the commuting experience than car commuters; however, in this study, bus commuters were the least satisfied (Duarte et al. 2010, 22–23). This means that car usage, e.g. for commuting, is reported positively, although the actual experience may be less satisfactory. It is also important to note the gender difference in gaining travel experience. Even if access to cars and possession of a driving licence is granted, women in partnerships tend to drive less because their male partners drive when they travel together (Ryan, Wretstrand, and Schmidt 2015, 112) or the male partner is the primary user of the vehicle in single-car households (Hjorthol 2008, 206). *Not having enough experience and perceived insecurity in traffic may be the reasons why women more often than men give up driving*; in addition, women stop driving earlier than men while still able to drive (Hjorthol 2013, 1197, 1205).

As stated earlier, riding public transportation also needs to be learned. Passengers in transit are exposed to "the everyday challenges of contemporary urban living and the thrown-togetherness of different bodies" that "can solidify prejudices and antagonisms as much as it can weaken them" (Wilson 2011, 646).

In order to be able to move across space in different modes of transport, knowledge of the area travelled and of the destination are both useful. The degree of spatial competence and familiarity depends on an individual's cognitive map that s/he draws in regard to the environment. "Cognitive mapping is the process of encoding, storing, and manipulating experienced and sensed information that can be spatially referenced […]. Parts of it are needed to solve problems, including decision-making and choice related to travel behaviour" (Golledge and Gärling 2004, 503). This knowledge is influenced by spatial thinking and reasoning; the scope and precision of these cognitive maps may be very different, thus "spatial representations in humans are incomplete and error prone" (Golledge and Gärling 2004, 506). Prior to the existence of navigation systems, spatial knowledge was essential for those using individual modes of transport or offering transport services to others. Famously, London cab drivers earlier had to pass an exam on their geographic understanding of the city to become a licensed cab driver. Apart from the knowledge gained in personal

experiences, assistant tools were limited to maps and personal recommendations of others.

Spatial knowledge is essential for way-finding and successfully reaching destinations. It makes people aware of the time and cost involved. Beyond that, spatial cognition is relevant for the soft factors of travel experiences such as reliability, regularity and comfort. Kevin Lynch analysed how cities are experienced emotionally and thus differently from person to person: naturally, the personal and subjective evaluation of these experiences shapes access to a city's opportunities (Lynch 1960).

This becomes particularly important for perceived levels of safety in traffic and transport in different geographical areas. Incomplete spatial knowledge can lead to negative experiences in transport or can suppress travel needs overall. Kevin Lynch and others argue that it is actually not the knowledge about the cartographic, Euclid space that shapes preferences for movement, but the "sense of place" associated with meaning and characterised by heterogeneity (see e.g. Massey 1994). In Lynch's work, landmarks are such places that are fused with meaning and provide assistance to way-finding. In fact, in parts of the world where detailed, micro-level cartographic information is absent, way-finding instructions usually work via the indication of local landmarks. In navigation and ICT supported systems, such place-based measures are increasingly taken up in experiential and gamification approaches (see e.g. Meurer et al. 2018; Papangelis et al. 2017; Souza e Silva 2017).

The earlier issues can be translated to practical cases and demonstrated, for example, for pedestrians and cyclists. For cyclists and pedestrians, knowledge about the suitability of the cycling infrastructure and coherence of a bicycle network make an important difference in the decision for or against bicycle use. As the benefits of cycling on several levels are regaining attention, city administrations and advocacy groups are circulating more information on these aspects. However, much of the knowledge is acquired by personal experience. For cycling, personal safety is tantamount. Thus, knowledge about accident-prone areas and places is required to deal effectively with safety hazards. Manton et al. show that in this respect the perceived risks can overshadow the actual risks. A focus on perceived risks highlights how gender and cycling experience take effect on different preferences in bicycle usage and also barriers to bicycling for population groups such as the elderly (Manton et al. 2016, 19–20).

Considering the rise of hybrid transport regimes (neither public nor private such as car-pooling), it can be stated that being a *car driver* increases spatial knowledge more than being a *car passenger*. If needed at all, the responsibility for spatial knowledge is left to the driver. With current rising demand for ride-sharing services, spatial cognitive experience and thus opportunities to acquire knowledge are shrinking. It is likely that children's early socialisation with the car and parents' chauffeuring contribute to children not developing a sense of space at all. Interestingly,

prior experience in long-distance travelling, e.g. for tourism purposes, together with exposure to cartographic material contributed positively to the spatial cognition of young children on the macro scale, exhibited by being able to draw a world map (Schmeinck and Thurston 2011, 10–13). In highly mobile societies, where high mobility is associated with status, such an early socialisation with the global scale may be an important element for the development of network capital (Frändberg 2009, 652–653, 663–665).

Realised and unrealised mobility: virtual life and the impact on mobility

In this final subchapter, we turn to "virtual mobilities" to illustrate the conjunction between mobility and immobility on the one hand and the gap between realised and unrealised mobility on the other hand. It will become clear that ICT has completely overthrown former certainties regarding needs, desires and motivations to move or not. However, it will also be shown that, even in times of ICT, motility – the potential to move – is dependent on access, personal aptitudes and skills regarding the use of ICT. Hence the proliferation of ICT in the sphere of mobility results in a complex picture that poses great potentials to alleviate mobility poverty and at the same time adds new challenges to the phenomenon.

Information and communications technology (ICT) has greatly changed contemporary life. ICT tools support the ease of movement through space and virtual mobility has been highlighted as a means to reduce and replace physical mobility. However, virtual proximity has only partially replaced the need for co-presence and the need for corporeal mobility. Face-to-face interaction is still important in the digital and virtual age as it fosters friendship, intimacy and trust: "As communication increases, social networks become dense and provide more and more necessity for face-to-face-meetings. Virtual activities stimulate real activities and interaction" (Kesselring and Vogl 2016, 148).

With recent developments of digitisation and augmentation of communication tools, the range of ways and modes to respond to personal needs has extended substantially. Social relations and networks, but also areas that touch people's basic needs are under deep transformation, most substantially the fields of work, education, health care, supply, access to public services and political participation.

Although these forms have not been taken up equally by all social groups in all geographic areas, there is no doubt that usage and coverage will further increase in the future. It is remarkable how ICT has changed mobility patterns (impacting both the concepts and the practice of transport poverty) and how the diffusion of digitisation in all aspects of life have led to the emergence of new mobility needs, but also raise new questions about individuals' ability to move (or stay).

Research on the impact of ICT on travel behaviour has highlighted at least three effects of ICT on mobility: (i) *modification,* (ii) *substitution* and (iii) *enhancement* or *acceleration* (see e.g. Konrad and Wittowsky 2017, 2).

There is no clear and unambiguous picture on the question of whether virtual mobility generally reduces, maintains or increases physical mobility today and in the future. The three effects of ICT are not mutually exclusive; even on the individual level, it cannot be clearly assessed whether a person is moving more or less due to ICT (Mokhtarian, Salomon, and Handy 2006, 278). As regards the benefits of ICT, it is often generally argued that digital tools in combination with mobile communication technologies can increase activity while travelling and decrease resistance to physical movement. ICT usage allows us to make travel time productive or more attractive. This effect of ICT on mobility has been called the *modifying* dimension of ICT (Tully and Alfaraz 2017, 11). Using ICT and satellite navigation reduces not only travel times but also travel time uncertainties, discomfort and the need to plan in advance (Ben-Elia and Avineri 2015, 370; van Wee 2016, 10–11).

What is more important for the analysis of mobility poverty is that, for those familiar with these technologies, *the burden of physical movement can potentially be diminished and this familiarity may even alleviate some of the disadvantages that social groups experience while being mobile*. For example, this may be the case for physically impaired people: due to real-time and location-based information systems on barrier-free facilities, travel is becoming easier or is indeed made possible in the first place. However, for those with low digital aptitude, these technologies and services are out of reach. As usage is becoming more widespread and the norm, people with less digital aptitude face challenges. Many researchers argue that virtual mobility decreases the need for physical mobility, thus it *substitutes* travel. E-shopping, e-learning and teleworking can replace the need for physical presence and hence reduce travel. In social relationships, ICT tools such as messaging and internet telephony can create a sense of proximity between people who are physically divided and thus decrease the need for physical meetings and travel (Konrad and Wittowsky 2017, 2). The relationship between mobility and immobility is therefore recalibrated. A person's motility becomes more strongly associated with a person's ability to navigate ICT systems.

Besides access to ICTs, there is another aspect that needs to be highlighted: the growing need for co-presence despite increased telework. This need for co-presence can increase the burden of mobility.

Tele- and homeworking respond to individualised and complex arrangements and are likely to increase. There is a trend of entrepreneurial co-living in Europe, especially in Scandinavian countries, where entrepreneurs live, work and socialise under the same roof (Rogel 2013; Valva 2014); such living and working arrangements reduce the need for travel and require robust digital infrastructure and uninterrupted connectivity. On the other hand, in many respects, *virtual mobility produces more travel and thus accelerates or enhances mobility*. As already pointed out, social relations and networks can

be maintained via a wide array of communication tools. However, in order to maintain and secure relationships, moments of co-presence are more important than ever.

Thus, with growing networks and distances, *the need for physical mobility to nurture these networks and fulfil social obligations is also increasing*. Elliott and Urry have highlighted the changing nature of tourist-type travel in this regard. Visiting friends and relatives involving middle and long-distance travelling has become a substantial part of leisure travel (Elliott and Urry 2010, 53–57). As touched upon earlier, despite growing ICT penetration, or precisely because of that, there is evidence that business travel is likely to increase and not decrease. A study in France showed that high trip frequency and demand in business travel above 80 km is no longer restricted to persons with a high income and work responsibility, such as executives, but also intermediary professionals (Aguiléra and Proulhac 2015, 34). This supports the observation that long-distance travel is increasingly becoming a prerequisite in contemporary employment and disadvantages those who are not able to conduct physical travel frequently. The aspect of mobility burden will be investigated more thoroughly in Chapter 2.

References

Abou Zeid, Maya. 2009. "Measuring and modeling activity and travel well-being." Massachusetts Institute of Technology. https://its.mit.edu/sites/default/files/documents/PhD%20Thesis_Maya%20Abou-Zeid.pdf, accessed on 19 March 2020.

Aguiléra, Anne, and Laurent Proulhac. 2015. "Socio-occupational and geographical determinants of the frequency of long-distance business travel in France." In *Journal of Transport Geography* 43: 28–35. https://doi.org/10.1016/j.jtrangeo.2015.01.004.

Baslington, Hazel. 2008. "Travel socialization: A social theory of travel mode behavior." In *International Journal of Sustainable Transportation* 2 (2): 91–114. https://doi.org/10.1080/15568310601187193.

Ben-Elia, Eran, and Erel Avineri. 2015. "Response to travel information: A behavioural review." In *Transport Reviews* 35 (3): 352–377. https://doi:10.1080/01441647.2015.1015471.

Canzler, Weert, Vincent Kaufmann, and Sven Kesselring. 2008. "Tracing mobilities: An introduction." In *Tracing Mobilities: Towards a Cosmopolitan Perspective*, edited by Weert Canzler, Vincent Kaufmann and Sven Kesselring, 1–10. Aldershot: Ashgate.

Cass, Noel, Elizabeth Shove, and John Urry. 2005. "Social exclusion, mobility and access." In *The Sociological Review* 53 (3): 539–555. https://doi.org/10.1111/j.1467-954X.2005.00565.x.

Cresswell, Tim, and Tanu P. Uteng. 2008. "Gendered mobilities: Towards an holistic understanding." In *Gendered Mobilities,* edited by Tanu P. Uteng and Tim Cresswell, 1–12. Aldershot: Ashgate.

De Witte, Astrid, and Cathy Macharis. 2010. "Commuting to Brussels: How attractive is "free" public transport?" In *Brussels Studies.* Collection générale, n° 37. https://doi.org/10.4000/brussels.755

Duarte, André, Camila Garcia, Grigoris Giannarakis, Susana Limão, Amalia Polydoropoulou, and Nikolaos Litinas. 2010. "New approaches in transportation planning: Happiness and transport economics." In *NETNOMICS: Economic Research and Electronic Networking* 11 (1): 5–32.

Elliott, Anthony, and John Urry. 2010. *Mobile Lives.* New York: Routledge.

Ferreira, Antonio, Luca Bertolini, Petter Næss, and Greg Marsden. 2014. *Immobility as well-being. Creating alternatives to pro-mobility discourses*. Presentation at the Royal Geographical Society (RGS) Annual International Conference, 27–29 August 2014. https://www.slideshare.net/ITSLeeds/immobility-as-wellbeing creating-alternatives-to-promobility-discourses, accessed 10 March 2018

Flamm, Michael, and Vincent Kaufmann. 2006. "Operationalising the concept of motility: A qualitative study." In *Mobilities* 1 (2): 167–189. https://doi.org/10.1080/17450100600726563.

Frändberg, Lotta. 2009. "How normal is travelling abroad? Differences in transnational mobility between groups of young Swedes." In *Environment and Planning A* 41 (3): 649–667. https://doi.org/10.1068/a40234.

Golledge, Reginald G., and Tommy Gärling. 2004. "Cognitive maps and urban travel." In *Handbook of Transport Geography and Spatial Systems*, 501–512: Emerald Group Publishing Limited. https://doi.org/10.1108/9781615832538-028.

Hjorthol, Randi. 2008. "Daily mobility of men and women – A barometer of gender equality?" In *Gendered Mobilities,* edited by Tanu P. Uteng and Tim Cresswell, 193–210. Aldershot: Ashgate.

Hjorthol, Randi. 2013. "Transport resources, mobility and unmet transport needs in old age." In *Ageing & Society* 33: 1190–1211. https://doi.org/10.1017/S0144686X12000517.

Jansuwan, Sarawut, Keith M. Christensen, and Anthony Chen. 2013. "Assessing the transportation needs of low-mobility individuals: Case study of a small urban community in Utah." In *Journal of Urban Planning and Development* 139 (2): 104–114. https://doi.org/10.1061/(ASCE)UP.1943-5444.0000142.

Kaufmann, Vincent. 2011. *Rethinking the City: Urban Dynamics and Motility.* Lausanne: EPFL Press.

Kaufmann, Vincent, Manfred M. Bergman, and Dominique Joye. 2004. "Motility: Mobility as capital." In *International Journal of Urban and Regional Research* 28 (4): 745–756. https://doi.org/10.1111/j.0309-1317.2004.00549.x.

Kesselring, Sven, and Gerlinde Vogl. 2016. "'…Travelling, where the opponents are': Business travel and the social impacts of the new mobilities regimes." In *International Business Travel in the Global Economy*, edited by Ben Derudder and Frank Witlox, 145–162. London and New York: Routledge.

Konrad, Kathrin, and Dirk Wittowsky. 2017. "Virtual mobility and travel behavior of young people – Connections of two dimensions of mobility." In *Research in Transportation Economics* 68: 11–17. https://doi:10.1016/j.retrec.2017.11.002.

Kroesen, Maarten. 2015. "Do partners influence each other's travel patterns? A new approach to study the role of social norms." In *Transportation Research Part A: Policy and Practice* 78: 489–505. https://doi.org/10.1016/j.tra.2015.06.015.

Lovejoy, Kristin, and Susan Handy. 2011. "Social networks as a source of private-vehicle transportation: The practice of getting rides and borrowing vehicles among Mexican immigrants in California." In *Transportation Research Part A: Policy and Practice* 45 (4): 248–257. https://doi.org/10.1016/j.tra.2011.01.007.

Lucas, Karen. 2006. "Providing transport for social inclusion within a framework for environmental justice in the UK." In *Transportation Research Part A: Policy and Practice* 40 (10): 801–809. https://doi.org/10.1016/j.tra.2005.12.005.

Lynch, Kevin. 1960. *The Image of the City*. Cambridge, MA and London: MIT Press.

Manton, Richard, Henrike Rau, Frances Fahy, Jerome Sheahan, and Eoghan Clifford. 2016. "Using mental mapping to unpack perceived cycling risk." In *Accident; Analysis and Prevention* 88: 138–149. https://doi.org/10.1016/j.aap.2015.12.017.

Massey, Doreen. 1994. *Space, Place, and Gender.* Minneapolis: University of Minnesota Press.

Meurer, Johanna, Martin Stein, David Randall, and Volker Wulf. 2018. "Designing for way-finding practices – A study about elderly people's mobility." In *International Journal of Human-Computer Studies* 115: 40–51. https://doi.org/10.1016/j.ijhcs.2018.01.008.

Mokhtarian, Patricia L., Ilan Salomon, and Susan L. Handy. 2006. "The impacts of ICT on leisure activities and travel: A conceptual exploration." In *Transportation* 33 (3): 263–289. https://doi.org/10.1007/s11116-005-2305-6.

Nordbakke, Susanne, and Tim Schwanen. 2015. "Transport, unmet activity needs and wellbeing in later life: Exploring the links." In *Transportation* 42 (6): 1129–1151. https://doi.org/10.1007/s11116-014-9558-x.

Papangelis, Konstantinos, Melvin Metzger, Yiyeng Sheng, Hai-Ning Liang, Alan Chamberlain, and Ting Cao. 2017. "Conquering the city: Understanding perceptions of mobility and human territoriality in location-based mobile games." In *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies* 1 (3): 90. https://doi.org/10.1145/3130955.

Pereira, Rafael H. M., Tim Schwanen, and David Banister. 2017. "Distributive justice and equity in transportation." In *Transport Reviews* 37 (2): 170–191. https://doi.org/10.1080/01441647.2016.1257660.

Pyer, Michelle, and Faith Tucker. 2014. "'With us, we, like, physically can't': Transport, mobility and the leisure experiences of teenage wheelchair users." In *Mobilities* 12 (1): 36–52. https://doi.org/10.1080/17450101.2014.970390.

Rajé, Fiona. 2007. "The lived experience of transport structure: An exploration of transport's role in people's lives." In *Mobilities* 2 (1): 51–74. https://doi.org/10.1080/17450100601106260.

Rittner, Barbara, and Alan B. Kirk. 1995. "Health care and public transportation use by poor and frail elderly people." In *Social Work* 40 (3): 365–373. https://doi.org/10.1093/sw/40.3.365.

Rogel, Liat. 2013. "HousingLab: A laboratory for collaborative innovation in urban housing." *Politecnico di Milano*. https://www.politesi.polimi.it/bitstream/10589/82782/1/Rogel_Liat_Dissertation_s.pdf, accessed on 19 March 2020.

Ryan, Jean, Anders Wretstrand, and Steven M. Schmidt. 2015. "Exploring public transport as an element of older persons' mobility: A capability approach perspective." In *Journal of Transport Geography* 48: 105–114. https://doi.org/10.1016/j.jtrangeo.2015.08.016.

Scheiner, Joachim. 2017. "Mobility biographies and mobility socialisation—New approaches to an old research field." In *Life-Oriented Behavioral Research for Urban Policy*, edited by Junyi Zhang, 385–402. Tokyo: Springer Japan.

Schmeinck, Daniela, and Allen Thurston. 2011. "The influence of travel experiences and exposure to cartographic media on the ability of ten-year-old children to

draw cognitive maps of the world." In *Scottish Geographical Journal* 123 (1): 1–15. https://doi.org/10.1080/00369220718737280.

Schwanen, Tim, David Banister, and Ann Bowling. 2012. "Independence and mobility in later life." In *Geoforum* 43 (6): 1313–1322. https://doi.org/10.1016/j.geoforum.2012.04.001.

Souza e Silva, Adriana de. 2017. "Pokémon go as an HRG: Mobility, sociability, and surveillance in hybrid spaces." In *Mobile Media & Communication* 5 (1): 20–23. https://doi.org/10.1177/2050157916676232.

Tully, Claus, and Claudio Alfaraz. 2017. "Youth and mobility: The lifestyle of the new generation as an indicator of a multi-local everyday life." In *Applied Mobilities* 2 (2): 182–198. https://doi.org/10.1080/23800127.2017.1322778.

Tully, Claus, and Dirk Baier. 2011. "Mobilitätssozialisation." In *Verkehrspolitik*, edited by Oliver Schwedes, 195–211. Wiesbaden: Springer. https://doi.org/10.1007/978-3-531-92843-2_10.

Urry, John. 2007. *Mobilities*. Cambridge: Polity.

Urry, John, and Margaret Grieco, eds. 2011. *Mobilities: New Perspectives on Transport and Society*. London and New York: Routledge.

Uteng, Tanu P., and Tim Cresswell, eds. 2008. *Gendered Mobilities.* Aldershot: Ashgate.

Valva, Paul. 2014. "Shared living and sustainability: Emerging trends in the tourism industry." In *Almatourism-Journal of Tourism, Culture and Territorial Development* 5 (3): 1–18. https://doi.org/10.6092/issn.2036-5195/4618.

van Wee, Bert. 2016. "Accessible accessibility research challenges." In *Journal of Transport Geography* 51: 9–16. https://doi.org/10.1016/j.jtrangeo.2015.10.018.

Vos, Jonas de, Tim Schwanen, Veronique van Acker, and Frank Witlox. 2013. "Travel and subjective well-being: A focus on findings, methods and future research needs." In *Transport Reviews* 33 (4): 421–442. https://doi.org/10.1080/01441647.2013.815665.

Wilson, Helen F. 2011. "Passing propinquities in the multicultural city: The everyday encounters of bus passengering." In *Environment and Planning A* 43 (3): 634–649. https://doi.org/10.1068/a43354.

Ziegler, Friederike, and Tim Schwanen. 2011. "'I like to go out to be energised by different people': An exploratory analysis of mobility and wellbeing in later life." In *Ageing & Society* 31 (5): 758–781. https://doi.org/10.1017/S0144686X10000498.