Urban mobility systems in a comparative perspective — A Research Field between Governance, Urban Form and Travel Behaviour

1. Introduction: the opportunities and challenges of urban mobility

It is a widely accepted view that transport-related problems and challenges become especially apparent in urban contexts. This assessment is intuitively plausible insofar that the sheer mass of moving people and goods in these urban settings leads to problems such as congestion and pollution. The same is true for corresponding innovations and political responses. If they are successful, they are able to affect many people at once in short time and, therefore, attract a lot of attention in transport policy, planning and research.

Hence, not surprisingly the analysis of urban mobility is one of the most continuous and most popular strands of research within transport and mobility studies. Especially, the link between urban form and transport has been captured in numerous ways and consequently, is a central reference point in many studies including the three books under review. Thompson’s (1977) typology ranging from full motorisation to traffic limitation as well as the concept of the three D’s – density, diversity and design – introduced by Cervero and Rockelmann (1997) are just two prominent concepts, which inspired the discussion on interdependences between land use and transport both, theoretically and empirically (Ewing and Cervero, 2010). This view has been partly challenged by studies identifying socioeconomic indicators such as income levels, work schedules, fuel prices and transit fares as critical for urban transport (Dargay et al., 2007; Wegener and Fürst, 1999; Santos et al., 2013; Vanoutrive, 2015). Another popular approach is the categorization of cities by the dominant mode of transport, by labelling them as transit metropolises (Cervero, 1998), cities of cyclists (Gössling, 2013) and car dependent cities (Newman and Kenworthy, 1989).

Work based on these rather objective and ‘hard’ characteristics is increasingly challenged by studies using rather ‘soft’ concepts such as attitudes (Anable, 2005) and mobility styles (Lanzendörfer, 2002). In this view subjective characteristics such as preferences for a specific mode of transport or a particular neighbourhood type to live in are able to influence not only individual travel patterns but also whole urban mobility systems. The city-level may be affected, e.g. by the development of social norms and political representation. Studies attempting to capture these soft factors on a city or neighbourhood level sometimes use indicators such as the voting behaviour of an urban population (Rietveld and Daniel, 2004), the mode choice of people living in the same neighbourhood (Goetzke, 2008), the preferences for certain neighbourhood and transport characteristics (Cao et al., 2007) as well as the satisfaction with those items (Klinger et al., 2013; Scheiner and Holz-Rau, 2013).

Methodologically, most studies of urban mobility are based on a comparative approach, a historical analysis or a combination of both. Indicator-based city comparisons are among the most influential and most cited studies, often referring to urban form, infrastructural supply and socioeconomics (Newman and Kenworthy, 1989). However, comparative approaches are often criticised by referring to several methodological and epistemological pitfalls. Schwanen (2002) points out that especially the international comparability of cities might be limited since they relate to various tempo-spatial contexts, including different city definitions and data collection methods. Furthermore, quantitative city comparisons have been questioned insofar as they tend to overestimate the distinctiveness of cities by neglecting their interrelatedness, e.g. through travelling policies (McCann, 2011) as well as their embeddedness in political projects such as sustainability (Banister, 2008).

In my view, two aspects of urban mobility research need more discussion. First, there is an ongoing debate about the relative importance of factors influencing urban mobility. With respect to the mentioned dichotomy of objective and subjective indicators, some authors call for “more constraints, less preferences” (Wegener, 2013) in analysing and modelling urban transport, whereas others note that “every survey must have attitudinal questions, preferably many of them” (Patricia Mokhtarian, recorded according to ITS, 2013). Second, there is still no consensus regarding the likelihood of a transition towards more sustainable urban mobility systems and the efficiency of specific planning and policy tools. Just recently, common beliefs and expectation in favour of an implementation of more sustainable urban transport systems are challenged by more sceptical and differentiated views, concluding that “there is still a long way to go toward urban mobility that is genuinely environmentally sustainable” (Schwanen, 2015: 7105).

2. Moving towards sustainability? Evidence from research, policy and practice of urban mobility

All three books offer insights into an overwhelming variety of inspiring case studies of urban mobility by using innovative theoretical and methodological approaches. Given the heterogeneity of cities analysed, one focus of this review is the way in which this diversity is addressed and comparability is produced.

2.1. Perspective 1 — path dependent diversity of urban mobility systems

The volume Megacity Mobility Culture — How Cities Move on in a Diverse World, edited by the BMW-funded thinktank Ifmo — Institute
for Mobility Research, is based on the results of a two-year research pro-
gramme including nine postdoctoral fellowships. The research project
was integrative in many ways. First, its conceptual reference point is
the holistic concept of urban mobility cultures (Götz and Deffner,
2009), which aims to combine the objective and subjective dimensions
of urban mobility as introduced in the previous section. Furthermore,
the book includes, both, comparative and historical as well as quantita-
tive and qualitative analyses of urban mobility. The nine case studies
are framed by a state-of-the-art article on urbanity and transport by Philipp
Rode and a cluster analysis, based on the Millenium Cities Database for
Sustainable Transport (Kenworthy and Laube, 2001), identifying six city
groups each representing a specific Megacity Mobility Culture ranging
from Paratransit Cities to Auto Cities. The framework is completed by
two reflective chapters on the appropriateness of the mobility culture
concept for the analysis of megacities (Chapter 13 and Epilogue). An
impressive example of the benefits of combining a historical and a compara-
tive perspective is the chapter on Beijing, illustrating its rapid
transition from a Non-Motorized City to a Traffic-Saturated City and,
respectively, a Transit City. In this respect, the collection of papers cap-
tures both, the diversity of urban mobility patterns and the historical
path-dependencies, e.g. caused by political framings (Berlin, Beijing)
or practices of influential actors (Atlanta, Gauteng).

Furthermore, the volume demonstrates that the mobility culture
approach inspires experimental and unconventional analyses of place-
specific norms and collective routines. This creative approach is
exemplified, e.g. by Swapna Ann Wilson’s interpretation of the roadside
culture in Ahmedabad, including the co-presence of age-old transport
modes such as carts and bike-rickshaws and modern means of transport
such as metro and BRT, as specific version of the shared space concept
(p.67). Another example for a creative organization of urban transport
far beyond e-ticketing and strict timetables is the complex system of
hand signals used by taxi drivers in Gauteng (South Africa) (p. 118).
Even if the integration of these soft factors is not (yet) done in a system-
atic and comprehensive manner, this collection of explorative case
studies shows the enormous potential of integrative concepts such as
urban mobility culture, which are there to bridge divides such as
material-symbolic or agency-structure.

Last but not least, the case studies are convincing insofar that they
are able to reveal the individual character of each megacity. Interest ing-
ly, in most of the cases, this is done not only by identifying homogenous
structures within a city, an attribute cultural approaches are often
criticised for (Mitchell, 1995), but by analysing specific tensions within
urban mobility configurations. A typical contradiction is the unequal
access to efficient and fast transport modes, e.g. along lines of wealth
(Sao Paulo, Gauteng, Los Angeles) or race (Atlanta), often as a result of
unfair political representation (impressively shown for Atlanta). Other
paradoxes are the co-temporality of centralising and decentralising
forces regarding city and transport planning in Berlin after the German
re-unification. Similarly, Ivo Wengraf shows that the immense transport
challenges London is facing are responded to using rather superficial
interventions such as subsidising electric vehicles “without a change
to either the ways of moving within the city or the ways of understand-
going those movements.” (p. 207) This cleavage between ambition and
reality seems to be characteristic for many cities, as also shown by the
next book under review.

2.2. Perspective 2 – lessons to change the world from best practice
case studies

The worldwide collection of best practices, arranged by UN Habitat
(2013) with the support of well-known external consultants such as
Robert Cervero and David Banister, follows the 5-year action agenda
set by the UN Secretary–General Ban Ki-moon in 2012 including
sustainable urban mobility as a goal (vii). In pursuing this objective,
the volume clearly represents a practice-oriented perspective by identi-
fying critical challenges of urban transport such as congestion or
unequal access to transport infrastructure and presenting successful
projects and strategies from all over the world. The format is extremely
reader-friendly and well-structured, e.g. by including various features
such as marginal notes, text boxes and consistently designed figures.
In this respect, this is an enormously rich and inspiring collection of
numerous well-documented best practices for urban transport solu-
tions. Again, the authors draw on examples from cities located in both,
the Global South and the Global North, sometimes with surprising
results, e.g. regarding social equality and transport: “In some developed
countries, it may even be possible to learn from the experience of some
developing countries, where the urban poor are supported by the exis-
tence of cheap (mostly informal) transport solutions.” (p. 126). From
my point of view, the book would have benefited from more of these
reflections, e.g. a chapter problematizing the interdependencies and
contradictions between both arenas.

The volume follows a classical structure in many ways: Chapter five
on mobility and urban form is the self-declared centrepiece of this book
(p. 13) by promoting access instead of growth as the central paradigm
of urban mobility, aligned by chapters on the sustainable triad of eco-

conic, environmental and social objectives. Other key chapters deal
with urban freight transport and the governance of urban transport. It
is striking that the chapters are pervaded by the notion of a cleavage
between ambition and reality of urban transport planning and a lack
of public acceptability (e.g. p. 126, 150). I wonder, if a stronger emphasis
on subjective dimensions of urban mobility, e.g. by including behaviour
patterns and lifestyles could help to understand or even diminish this
gap between claiming and implementing ambitious planning goals.
This is supported by the call for a more holistic way of thinking
in urban mobility planning including, for instance, transparent and
accountable decision-making, continuous participation and a better un-
derstanding of regulatory and institutional frameworks (p. 193, 198).
Nonetheless, so-called soft measures such as travel demand manage-
ment or tailored awareness campaigns are rather underrepresented in
the UN Habitat volume.

2.3. Perspective 3 – long way to go – how to reach sustainable urban
transport?

The metropolitan case studies presented by Hickman and Banister
(2014) as part of their well-established work on transport and sustain-
ability are basically framed by two approaches, a political one and a
methodological one.

From a political point of view the climate change mitigation debate
is the central reference. The authors show in an impressive and convinc-
ing way, what the target to limit the global warming to 2 °C by 2050 ac-
tually means for the organization of urban mobility in cities worldwide
(Chapter 1). According to Stern (2009) the average CO2 emission must
not exceed 2 tonnes per capita to reach this objective. Given the current
level of 25% of all carbon emissions originate from the transport
sector this means adaptations of transport-related CO2-consumption
ranging from a reduction of 95% in car-dependent cities such as
Auckland (Chapter 7) to a maximum increase of 200% in cities with a
currently low level of motorized transport such as Delhi (Chapter 5).
This line of reasoning is especially illustrative, because it reveals
the huge challenges at a local level showing that e.g. London is far from
a sufficient reduction level even though quite restrictive mea-
sures such as the London congestion charge have been introduced
(Chapter 3, p. 109). The manifold reasons for this mismatch between
ambition and reality are discussed throughout the publication,
e.g. suburbanisation processes, exemplified for Oxfordshire (Chapter 4)
or the high amount of long-distance travel conducted especially by
urban populations, for instance by low-cost carriers, which at least
partly contributes to the carbon footprint of the city travellers live
in (Chapter 3, p. 133).

Methodologically all five case studies are analysed through the lens
of scenario technique and multi-criteria-analysis (MCA), which are
both thoughtfully and comprehensively introduced in Chapter 2. On the one hand, the authors address the forecasting problem, i.e. simple quantitative extrapolations following a predict and provide paradigm are often not able to capture policy change and other disruptions of the predicted trend (Marsden and Docherty, 2013). Therefore, they argue for scenario analysis, which envisages a broader spectrum of possible futures, often in a rather qualitative and visualising manner. However, Hickman and Banister acknowledge that in policy contexts, e.g. for legitimizing transport investments, some quantification is needed (p. 86–87). Consequently, they suggest to back-up scenarios with multi-criteria-analysis which they define as “a step forward from using a cost-benefit-analysis (CBA), where the impacts considered are often narrowly defined.” (p. 87). In this respect, the approach, presented by Hickman and Banister, can be interpreted as a suggestion to bridge the quantitative–qualitative divide in transport research (Goetz et al., 2009).

This broad and differentiated view is exemplified by the five case studies, including carefully developed scenarios by identifying relevant uncertainties and drivers of (potential) change such as technological and behavioural dimension for London or the degree of migration as well as environmental awareness of the decision-makers for the booming Chinese city Jinan (Chapter 6). Furthermore, in line with MCA, normative scenarios include policy intervention differentiated by several policy packages (see also Schwanen, 2015) aligned by their potential impact on carbon reducing, which allows policy-makers to foresee the consequences of their decisions.

In sum, Hickman’s and Banister’s approach is particularly helpful in terms of revealing the practical relevance and potential of certain policy measures. Interdependencies of different policy packages are still poorly understood, though, and not yet fully included in the presented scenarios (p. 134 for London). Furthermore, some of the presented scenarios are still dominated by infrastructural and pricing measures whereas soft instruments such as travel demand management are slightly underrepresented. These shortcomings, which the authors are well aware of (p. 134), could be an inspiring starting point for further research.

3. The global perspective — comparability of urban mobility systems

As mentioned, the selection of analysed cities is very diverse in all three books including megacities in developing countries as well as sprawled agglomerations in North America. Thus, given the criticism on conventional city comparisons (Ward, 2010), particular attention is paid to the way in which the authors produce comparability by linking the various case studies to each other. Hickman and Banister (2014) tie the different cities together by applying the scenario approach to each case study. This is persuasive insofar that it allows identifying trends and uncertainties of particular relevance for the city in question by maintaining the general methodological framework. Similarly, the logic of the case studies analysed by the postdocs invited by Ifmo-Institute for Mobility Research (2013) is predefined by the underlying concept of urban mobility cultures. Whereas this rather general theoretical reference enables very different narratives, all case studies have in common that they follow a holistic understanding of urban mobility. On the contrary, the thematic chapters in UN Habitat (2013), even if linked by the paradigms of accessibility and sustainability, are presented in a rather disconnected manner. For instance, the question of whether the organization of urban mobility in developed countries should be regarded as role model or as deterrent example for cities in the Global South is not discussed thoroughly.

In sum, the very different approaches of comparative urban mobility studies are illustrative in terms of the potentials, challenges and drawbacks of their conceptual and methodological framings and will certainly inspire future work on urban mobility.

4. Changeability of urban mobility systems

In the first instance, it has to be noted that all three books under review follow a normative approach by addressing more or less explicitly the need for a transition towards sustainability. This clear positioning is generally appreciated since much transport research tends to neglect the overall picture and political dimension of urban mobility by focusing on modelling details.

However, this seems to be a very difficult and frustrating endeavour. Hickman and Banister point out the huge effort, which is necessary to at least not exceed the current level of global warming and environmental damage. Likewise, the authors of the UN Habitat book report a clear contradiction between ambition and reality of sustainable mobility in many subareas of urban transport planning. Subsequently, the contributors of the ifmo volume show that the development of a fair and sustainable transport system is often hindered by opposing interests, e.g. along lines of class and race, even in developed countries.

Additionally, the role of urban form is seen as critical in initiating more sustainable travel patterns throughout all three contributions, most prominently in the UN Habitat volume. The impact of spatial structures is increasingly debated, though. This is partly acknowledged, e.g. by Hickman and Banister when referring briefly to the concept of residential self-selection (p.39), which basically says that not urban form but residential choice and underlying preferences are crucial for determining everyday travel behaviour (van Wee, 2009). Nonetheless, other criticism of this “urban form euphoria of transportation research” (Scheiner and Holz-Rau, 2007: 487–488) are rather underrepresented. For instance, the question if a densification of the urban fabric attracts especially highly mobile lifestyle groups and therefore, “may foster rebound effects that offset or even outweigh the benefits of short distances by facilitating long-distance travel” (Holz-Rau et al., 2014; 503), e.g. for weekly business trips. This example illustrates that it is worth to analyse the behavioural dimension of urban mobility in more detail in order to understand if and how planning strategies will be accepted.

This is by no means to say that built environment and infrastructure supply do not matter for urban transport planning, but that these features are best understood as interrelated to the behaviour, perceptions and attitudes of a city’s population. Therefore, the claim for holistic concepts in transport-related research (Curl and Davison, 2014) and education (Ferreira et al., 2013) is clearly justified. In this respect, the ifmo-Institute for Mobility Research (2013) volume is the most progressive from the three publications under review, since it aims to integrate structural and behavioural as well as material and symbolic components of urban mobility, even if in a rather experimental and explorative way.

5. What’s next? — Inspiring future work

The three books discuss the opportunities for and particularly the problems and challenges with urban mobility worldwide. They identify trajectories, lock-ins and breakthroughs on the way to a more sustainable future. In doing so, however, objective indicators such as urban form and socioeconomics are still dominating the analysis and evaluation of urban transport systems. In this regard, the three publications inspire a more holistic view on urban transport, which takes the preferences and behaviour patterns of a city’s inhabitants more into account. This could be done not only in an explorative way, but also with a systematic, maybe even quantitative and continuous approach. Whereas in other research fields such as economics, surveys based on subjective perceptions and evaluations are well established (see Ifo, 2015 for the Ifo Business Climate Index based on subjective perceptions of entrepreneurs), in transport studies this kind of assessment exists only for specific modes of transport such as the ADFC cycling index (ADFC, 2014) or the public transport barometer (TNS Infratest, 2015). A systematic assessment of the overall “urban mobility climate” or “urban mobility culture” in various international cities is, to my best knowledge, still required.
From the perspective of policy and practice this corresponds with the need for more people-centred planning strategies such as travel demand management (Enoch, 2012). Even if not at the centre of the analyses, this kind of soft planning tools is considered as relevant in the books under review (e.g. Hickman and Banister, 2014: 131–132, UN Habitat, 2013:193). Taken as a starting point this could inspire a systematic and comparative study of travel demand management approaches in cities around the globe.

Additionally, on a conceptual level we do not yet fully understand how the subjective and individual elements interact with more objective and material components of urban mobility (Klingner et al., 2013; Scheiner and Holz-Rau, 2007). We also know only little on how transitions of urban transport systems and the diffusion of innovation generally work (Geels, 2002). Therefore, attempts of theorizing urban mobility in a holistic and long-term perspective need to be continued and deepened.

Last but not least, the books under review illustrate that global trends and overarching objectives such as urbanization or sustainable development may lead to very different consequences, given the specific local circumstances. However, the interrelatedness of cities has been neglected so far. Aspects such as the successful or failed inter-city transfer of transport policies (McCann, 2011) or the (un)suitability of particular cities as role models for others are worth scrutinizing in more detail in future studies of urban mobility. In sum, the reviewed publications are rich, thoughtful and comprehensive collections of conceptual, creative methods and a clear commitment to sustainable urban mobility. They are inspiring in the sense that they evoke numerous theoretical, empirical and methodological reflections on how to understand and change urban mobility now and in the future.

References


Dargay, J., Gately, D., Sommer, M., 2007. Vehicle ownership and income growth, urban transport systems and the diffusion of innovation generally work (Geels, 2002). Therefore, attempts of theorizing urban mobility in a holistic and long-term perspective need to be continued and deepened.


