

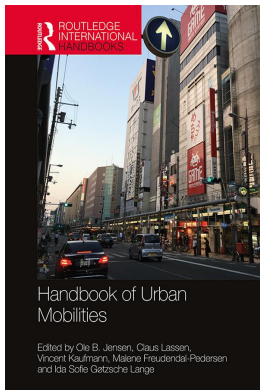
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3

NETWORKS, FLOWS AND THE CITY OF AUTOMOBILITIES

Sven Kesselring

Cities have always been the product of many different flows. Therefore, it is quite a commonplace saying that they are more what flows through them than what is within them. In the global age, flows of capital, energy, labor power, vehicles, tourists, freight, information, data, waste etc. have become the shaping elements of cities, their identities, economic power, their position on a global political scale, within global labor markets and their meaning in the global cultural economy. It is more the question of how cities are connected, how accessible they are and who and what flows in and out of the urban space than what has settled within their buildings and scapes. In other words, multiple movements constitute and mark windows of opportunity for people, businesses, art and culture and the social, economic and cultural networks within these cities. The networks of people, organizations, companies, stakeholders, socio-political, socio-economic and socio-cultural players and initiatives generate a city's mobility capital. But at the same time, the massivity and sometimes even violence of flows threaten urban societies and environments. They can overstretch and overload their systems and capacities to manage movements. In European cities, for example, the daily amount of road traffic is pushing them to the edge when the daily convoy heads out of the city for work while the centers are being hit by constant flows of commuters, cars, train travelers and even air travelers. People commuting into Los Angeles i.e. spend more than 100 hours per year in congestion.

Today, every modern city wants to attract travelers, capital and a huge diversity of products, groceries and all kinds of artifacts. But too many people, goods and resources traveling the city's streets, railways, rivers and airspaces can challenge urban systems to their limits, intervene in public spaces and threaten the quality of life for those living there, seeking recreation, secure spaces, fresh air, peaceful places for children, leisure activities etc.

In this sense, urban formations, agglomerations and megacities in particular have a quite ambivalent relationship with movement and mobility. As German sociologist Georg Simmel clearly spotted at the beginning of the 20th century, both movement and mobility are at the core of what we consider to be urban. Urbanity as a social phenomenon is a very specific form of social life in (often bigger) cities where mobility, speed and social indifference play a key role in how people live, interact, work together and have conflicts. It is an urban form of life that is significantly different from the lives of people in the countryside (Siebel

1998). People living in ‘metropolises’ (Simmel 1903) cultivate and often also suffer from anonymity; they live in socially complex situations of constant change and mobility where they do not know most of the people around them and who populate urban spaces, buildings, parks and the cities’ facilities.

Even early forms of urbanization were built on flows. Settlements were located at ports, intersections, crossroads, or later around railway terminals where international trade and travel routes often met (Benevolo 1980; Braudel 1977). In this sense, mobility has been at the core of the urban fabric even though other flows such as capital or digital mobilities have increasingly gained relevance in history (Pflieger and Castells 2008; Rodrigue, Comtois, and Slack 2005: 171 ff.). Research on the connectivities and accessibilities of cities shows that traffic flows are closely connected to capital flows and the movements of labor power across the globe. Urban sociologists, such as Saskia Sassen (1991) and Neil Brenner (2004), argue from a standpoint of political economy and would always prioritize capital flows over all others, and physical mobility in particular. But seen from a sociology that aims for a deeper understanding of what shapes and structures modern worlds, it needs to be taken into account that not only capital but also the materialization of economic structures within physical flows shape and challenge modern societies and economies. Offshoring, for instance, is not only a matter of cross-border capital transactions, it is at the same time strongly linked and driven by travel routes and connections, the mobility of labor and digital infrastructures and networks (see Bryson and Daniels 2007; Urry 2014).

The work of social and economic geographers like Peter Taylor decipher the intermingling of different flows with the impact of forming the urban fabric and the positioning of cities on a global scale. The illustration in Figure 3.1 shows how the positions of cities on a global scale can be reconstructed based on aeromobilities, namely flows of travelers within a global network of airline connections.

The current discussions on ‘airport cities’, strongly driven by concepts and ideas such as Karsarda’s aerotropolis, the ‘aviopolis’ and the ‘Zwischenstadt’ (Cities without cities) (Conway 1954; Fuller and Harley 2005; Kasarda and Lindsay 2011; Sieverts 2003), mark another phase in the process of modernizing the city. Global infrastructures connect ‘spaces of territoriality’ with ‘spaces of globalization’ (Brenner 2004) and the urban becomes the connecting interface where the city’s materialities, technologies and its stakeholders’ networks become embedded in a global social, political and cultural metastructure (Kesselring 2009).

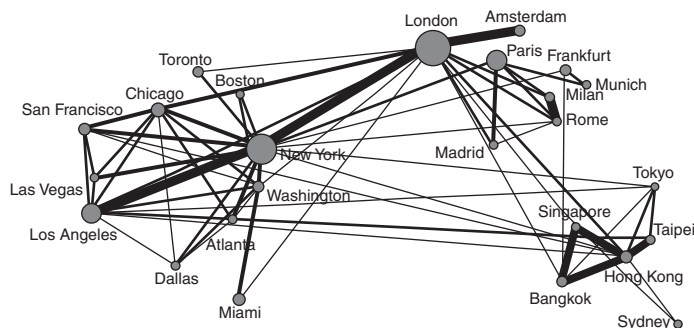


Figure 3.1 Positions of cities on a global scale reconstructed based on aeromobilities.

Source: Derudder and Witlox 2005: 2384

Besides humans, architecture and infrastructure, it is the car, 'the quintessential manufactured object ... within 20th century capitalism' (Urry 2004), which has shaped urban spaces by far the most. Endless flows of automobiles enter and leave city spaces worldwide day in day out. Between 2005 and 2015 the number of automobiles worldwide increased from about 1.1 billion to more than 1.3 billion. Cars appear in all conceivable forms, colors and speeds. Packed with more and more technology, increasingly connected through GPS and intelligent transportation systems, and equipped with functional transport-related software and tools as well as those mainly there for entertainment, pleasure and killing time.

Today, Tesla's new electric car models are much more similar to space shuttle cockpits than reminiscent of the origins of the technological artifact itself. It does not have much in common with the famous Benz Patent-Motorwagen no. 3 used by Berta Benz in 1888 for her glorious first 'long distance ride' of 66 miles from Mannheim to Pforzheim in Germany. Even Henry Ford's Model T, colloquially named the Tin Lizzie, shows little resemblance to contemporary cars and even less with cars projected for future use controlled through 5G networks and without any possibility to intervene as a driver.

Nevertheless, since Le Corbusier, the godfather of modern urban planning, proclaimed urban spaces need to be rebuilt for automobiles in 1933 to let them pass through like projectiles (see Hilpert 1978), car-oriented planning has taken over almost all over the world. Paradoxically, German architect Hans Bernhard Reichow's publication 'Die autogerechte Stadt' (The car-oriented city) framed a new era of planning for the car after World War II and in many European cities. Originally, Reichow promoted what he called 'The art of organic building' (Reichow and Baukunst 1949) and even criticized car-oriented architecture in the aftermath of Le Corbusier's work and writing. Instead, he wanted an architecture based on organic and biological principles and in many ways similar to Ebenezer Howard's ideas of the human-scale garden city. The idea of the city as a body reaches from the early beginnings of town and city planning to early modern adaptations of 18th century planning based on William Harvey's medical theories of the blood circulatory and the respiratory system as the foundation of every existence to the contemporary theories of metabolic cycles. Cities are still built on the 'dream of traffic flow' and vehicles sliding through the urban body like blood through arteries and veins. The idea of seamless mobility, of flows of people, goods and vehicles through the city space without interruption, is one of the roots of the far-reaching transformations and problems of modern cities:

Today, as the desire to move freely has triumphed over the sensory claims of the space through which the body moves, the modern mobile individual has suffered a kind of tactile crisis: motion has helped desensitize the body. This general principle we now see realized in cities given over to the claims of traffic and rapid individual movement, cities filled with neutral spaces, cities which have succumbed to the dominant value of circulation.

(Sennett 1994: 256)

Materialities and structurations

Many flows have had significant impacts on the urban form. But the adaptation, rebuilding and redesign of cities towards a high level of efficiency, comfort and usability for the car and its different purposes, the reconstruction of public spaces and the hierarchization of mobility modes and the prioritization of the automobile in built environments has made the most important and durable imprint on urban life and its materialities. In many ways, urban

spaces have become manifestations and materializations of the modern concept of automobility today. As sociologist Günter Burkart puts it, modern life today is built on automobilism as a 'normative complex' that relates to a certain lifestyle, which is characterized by the capacity to move and the opportunity to move in an individually motorized way. For Burkart, social mobility and the capacity to move in an individualized-motorized way are interlinked. This is also what Dennis and Urry (2009b) mean when they describe the rise of a 'post-car system' but still based on the capacity of individuals to move freely and independently.

Most modern cities of today have been built to accommodate the car and its needs instead of taking into account what Danish architect Jan Gehl calls the 'human scale' as a principle for sustainable development (Gehl 2010; Max-Neef 1991). Since Le Corbusier and others published the so-called Charta of Athens in the late 1920s, the complexities of human needs and human mobilities disappeared little by little from most planning concepts. Instead, predict-and-provide planning replaced neighborhood-oriented development concepts and those based on the tacit knowledge of planners, architects, local community advocates etc. Expert planning and technocratic knowledge became predominant and increasingly shaped the cities and their social, cultural and ecological environments. Munich, for instance, a city in the south of Germany with almost 1.5 million people, has never been car-centered in the same way as urban agglomerations such as Los Angeles, Tokyo and São Paulo or the rising megacities in Asia like Delhi, Mumbai, Shanghai and the like. But nevertheless, concepts were still discussed in Munich in 1993 on how to transport as many cars as possible into the city center. For this comparably small city with little more than 300 square kilometers, there have been plans to build seven ring roads around the center to guarantee a perfect traffic flow in the streets in and out of the city.

Car producers, urban planners, city politicians and civil societies agree that the limits of growth in car ownership have been reached in many Western countries. Market expansion is taking place somewhere else, i.e. in Asia and mainly in China. But the 'dream of traffic flow' (Schmucki 2001) looks significantly different to the one of the early 20th century engineers and planners. The 'social explosivity' (Beck 1988) of automobility's unintended side effects has left its traces also in the anticipated business models of the future.

Even in China, a country with an aggressive modernization concept and an almost unscrupulous relation to constructing material, technological and infrastructural networks through grown urban and social structures we can see indicators for recognizing the relevance and need to design sustainable urban and mobilities futures. While China's official modernization doctrine aims to build 'a new silk road' to the West, literally overland and oversea, the country's attempts to become the world market leader in electric mobility also hinges on the ecological situation in the cities and the fact that the air in many places is highly toxic with fine dust and other carbon emissions from gas and diesel.

System of automobility

When John Urry published the seminal article 'The system of automobility' in 2004, he pointed out the complexities and cultural embeddedness of the automobile system within modern societies and economies. With his sociological interpretation of the systemic and networked character of automobilism, Urry analyzed automobility as a social phenomenon in the first place, connected and intermingled with almost every sphere of modern human existence. It is not just a material object and entity or an industrial complex where the car itself is one element among many others (including the producing industry and suppliers). Instead, with reference to Niklas Luhmann's social theory, he deciphered the automobile 'as

a self-organizing autopoietic, non-linear system that spreads worldwide, and includes cars, car-drivers, roads, petroleum supplies and many novel objects, technologies and signs'. Furthermore, he argued that '[t]he system generates the preconditions for its own self-expansion' (Urry 2004: 27).

In line with Urry, the system of automobility comprises at least six components (Figure 3.2); some of them not directly related to the economic and engineering aspects of the car and other vehicles based on automobile technology such as trucks, auto rickshaws (tuk-tuks) and many more.

The automobile is firstly the iconic manufactured object of the 20th century. Not by coincidence, Antonio Gramsci (1992) coined this phase of industrialization the 'Fordist era' that led to the 'Fordist city' (Harvey 1990). Later on the term Toyotism has been used to describe the manufacturing process but at the same time its social structuration grounded in standardization, efficiency and lean management. Starting from early Taylorist production concepts, Henry Ford's invention of the assembly line had lasting impacts on modes of production but also on societies themselves. The ideas of flexibility, individuality, speed and all-time availability had an enormous structuring effect on modern lives, work and production, the built environments of urban as well as rural spaces and the mobility and time regimes of people, companies and whole nations. In the early 20th century planners, architects and engineers created a 'city machine' (Knie and Marz 1997) as part of the 'industrialization of time and space' (Giedion 1948; Schivelbusch 1979). It changed the character of the 'organized modernity' at its core and of people's professional and social lives. Charlie Chaplin's famous movie 'Modern Times' (1936) with the iconic scene of him getting sucked in from the assembly line to the machine stands for the outreach of a Fordist production system and its comprehensive and peremptory rationalization and functional differentiation of all spheres of life, of 'system and life world' (Habermas).

Secondly, the system of automobility rests on a specific capitalist mode of consumption. The car is still the second largest investment after housing in many people's budgets. It was Ford's declared goal that workers in his company should also be the buyers of the final product. This is one of the reasons why the so-called Tin Lizzie was designed as a multifunctional technology, also enabled to drive a washing machine and many other compatible tools and devices for more convenience in people's households.

Thirdly, Urry considers the system of automobility 'an extraordinarily powerful complex constituted through technical and social interlinkages with other industries' (Urry 2004: 26). It comprises an overwhelming variety of 'car parts and accessories; petrol refining and

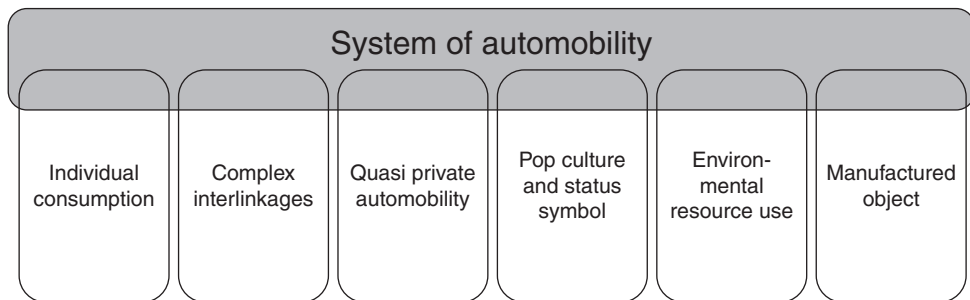


Figure 3.2 System of automobility.

Source: Illustration by the author

distribution; road-building and maintenance; hotels, roadside service areas and motels; car sales and repair workshops; suburban house building; retailing and leisure complexes; advertising and marketing; urban design and planning' (Urry 2004, 26).

In the fourth place, Urry considered automobility a form of a 'quasi-private mobility', based on the social construction of being individually mobile. Automobility has been the epitome of the individualized society and represents the fiction of deciding individually about one's spatial as well as social mobility (Berger 1996). In fact, automobility is increasingly part of a large-scale technological system associated with terms like 'intelligent transport systems', 'car-to-infrastructure communication', 'automated driving' etc. (Freudental-Pedersen, Kesselring, and Servou 2019) today. In the 'age of digital modernity' (Canzler and Knie 2016) the room for maneuver for individual decisions in car-based traffic is massively decreasing. In fact there has never been much drivers' freedom and individuality but under the rising mobility regime of automatization and fine-grained traffic control systems they are vanishing almost completely. In a multimodal mobility system of quasi-private, private and public modes of transport, the differences and boundaries are becoming fluid, if not 'liquid', to apply Zygmunt Bauman's term. This has serious disruptive effects on the industry's business models since the freedom of choice is one of the basic taken-for-granted, mostly unreflected assumptions of the advantages of the car against other modes of transport.

Finally, the car has been part of the 'script' of popular culture in many ways. As an element of conspicuous consumption, it has been part of constituting people's identities and their communication of social status, economic success and prestige (Daniel 2001). In other words:

The car is more than just a mode of transport, technical device or artifact, which one can use for the purpose of social actions. The car is an essential part of a modern way of life.

(Burkart 1994: 220)¹

The car has become a 'second skin of social meaning' (Sachs 1981) for the modern mobile human being. Popular culture such as art, literature and music are saturated with automobiles as iconic artifacts of the 20th century. Just to give some examples: Jack Kerouac's classic novel *On the Road* (Kerouac 1957); Roy Lichtenstein's pop art painting *In the Car* from 1963, sold for 16.2 million USD at Christie's; British rock band Queen's song 'I'm in love with my car' (1972) or The Who's gasoline-drunken 'Going Mobile' on the album *Who's Next* from 1971. Road movies from *Easy Rider* in 1969 to *Thelma and Louise* (1991) and the dystopian *Mad Max II* movie with its quest for gasoline and its Heathcote-Williams-like 'Autogeddon' aesthetics are all – be it utopian or dystopian – indicators for how deep automobilities have been rooted in modern popular culture (Flink 1975; Sachs 1992).

Urry names the car 'the single most important cause of environmental resource-use' (2004: 26). Not only do an automobile's emissions have to be counted here but the whole life circle from its conceptual development to the final re-entry into resource use as scrap. Urry considers the whole complex 'scale of material, space and power used in the manufacture of cars, roads and car-only environments, and in coping with the material, air quality, medical, social, ozone, visual, aural, spatial and temporal pollution of global automobility' (2004: 26).

The reason why the system of automobility gets so much attention here is: it has become the essential artifact that structures modern urban lives, communities, sociability and interaction, in general. Mobility, together with communication and the organization of

proximity (housing, meeting, community, celebrating etc.), is the fundamental socio-spatial activity constituting 'community and society' (Tönnies 1957).

The automobile and its infrastructures, its cultural and emotional geographies, all the systemic relationships of this globally spread system of material and immaterial structures like roads, gas stations, charging systems, production sites, dealer networks, oil pipelines, global supply chains, labor markets, universities around the globe, knowledge hubs and laboratories and so forth, all this is structuring local, regional, national and global flows. Even airports become part of the system, which is the reason why Cidell (2017) describes the hub-and-spoke structures of 'auto-aeromobility' where two seemingly different mobility systems appear clearly connected and intermingled with each other – even mobilities.

Transitions

The automobility system with car producers worldwide as its key players has been extremely stable and almost unchallenged at the latest since the 1950s. Even in its early forms of 'Atlantic automobilism' (Mom 2015), the system has been deployed with a historically unique capacity to persist and outreach to many nations and economies beyond the USA. One of the reasons for its strength and resilience was that it coincided with the far-reaching normative social transformations of individualization (Beck 1994; Weber 1978). The car met 'existing cultural values, needs and social practices to which its use could be adapted. ... With the introduction, ... new cultural uses were discovered and invented.' At the end of the day, the car didn't generate anything completely new but rather its existence and design reinforced 'cultural values, especially individuality and mobility, which were folded into a new value pattern' (Burkart 1994: 220).

In the process of industrialization in the late 19th and early 20th century, the car propelled the 'centrifugal tendencies' of modern individuals to transgress traditional boundaries 'spatially, economically and mentally' (Simmel 1890: 47) and helped them gain upward social mobility. This basic internal social structuration of mobility, flows and traffic is often overseen and underestimated. The transformative power of the car and the whole system of automobility comes exactly from this inner social drive: the car opened up new windows of opportunity that could be used and filled by individuals to have success, to climb the social stratification ladder and to realize their own projects and plans. As such, automobility is a principle almost written into the urban fabric. It is the modern promise of individual freedom, development, success and wealth that makes automobility so strong in urban planning and design. It is the mobility potential, the 'motility' stored and represented in this modern iron cage called automobile that gave people the chance to connect a mode of transport with their individual dreams and hopes for a better, a mobile life.

This is completely convincing and highly plausible in the historical and social context of the early 20th century and after WWII where people wanted and needed to escape from precarious social and economic situations. This also explains the massive energy in the process of 'compressed modernity' that is happening in China these days where 600 million people often moved from poverty to the middle class – a process coined as 'elevator effect' (Beck 1992). But how does this look in saturated societies such as Western European, the US and Australia and some Asian countries?

The fact that an increasing number of adolescent people are opting to acquire their driver's licenses later than the age of 17 or 18 does tell a story. This is (probably) less the effect of rising 'post-material values' (Ronald 1977) but rather of the changing mobility systems young people have access to. There are good reasons to assume that the formerly burning love for the car is in a process of becoming an extinguishing love. The driver's license

statistics tell a story of shifting priorities rather than making a normative statement for sustainable mobility. But on the other hand this clearly shows the direction for policies and sustainable mobility policies in particular. If young people have alternatives at hand other than the privately owned car they seem to take the opportunity to use their budgets for something else and to realize their projects and plans by using other means. At least this is how we can read recent research on mobility styles and decisions and on the new potential of, for instance, sharing mobilities (Canzler and Knie 2016; Freudendal-Pedersen and Kesselring 2018; Rode and da Cruz 2018).

In fact the system of automobility has reached a certain tipping point. We cannot be sure that there will be a system ‘after the car’ (Dennis and Urry 2009a); but quite obviously there won’t be a system of automobility as we know it but rather a system of mobilities, of multimodal and multi-functional modes of transport. Henning Kagermann, the former president of the German National Academy of Science and Engineering (acatech) wrote the future of mobility will be ‘electric, connected and automatized’ (Kagermann 2017). This is very much in line with what is coming from car producers worldwide today. All of them consider the mobility of tomorrow as connected, automatized, shared and electric. But this is not a guarantee that the car will be as much in the center of the new system as it was in the past. So far, we do not know yet, and we have serious problems imagining what exactly will be the impacts of these transformations for cities and regions. But so much can be said with certainty: the future of mobilities has not been as open as it is now – for a very long time. And with this openness of mobility systems also comes a window of opportunity to redesign cities and flows. Many stakeholders are still considering replacing the fossil automobile with a car driven by electric energy or by automated vehicles in individual ownership. But considering a post-fossil and sustainable city most likely means planning, designing and constructing for low and renewable energy, shared and post-carbon mobility beyond the contemporary hegemonial position of the car in contemporary cities.

Note

- 1 Author’s translation from German original.

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