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TRANSIT-ORIENTED DEVELOPMENT IN IRAN CHALLENGES AND SOLUTIONS

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FROM RAIL-ORIENTED TO AUTOMOBILE-ORIENTED URBAN DEVELOPMENT AND BACK

100 YEARS OF PARADIGM CHANGE AND TRANSPORT
POLICY IN BERLIN

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ABSTRACT

Transport and its side effects are major problems in rapidly growing cities. Car traffic dominates these cities and pollutes the environment without being able to sufficiently secure the mobility of the urban population and goods. A paradigm shift in urban and transport policy will be necessary to change this situation. In spite of its different development dynamics, Berlin is an interesting example to discuss development strategies for rapidly growing cities because in the course of more than 100 years, a twofold paradigm shift has occurred in the city both conceptually and practically: Berlin has shifted from a city dominated by rail traffic to an automobile-oriented city, and has then gradually transformed back into a city in which an intertwined system of public and non-motorized individual means of transport secures the mobility of the urban population. The interdependencies on the conceptual level between urban planning and transport policies as well as on a practical level between urban structures and transport systems can be studied using the example of Berlin. Experiences with the implementation of automobile-oriented planning and the special conditions in the first decade after reunification led to protests, reflection, and a revision of the transport policy. A strategically designed process of integrated planning has brought about a trend reversal, and steered the development of transport in the direction of clearly formulated sustainability-oriented objectives. In this process, the reintegration of transport and spatial planning and a reorganization of institutional structures at the administrative level was of particular importance. Compact, rail-oriented settlement structures like in the metropolitan region of Berlin make it easier to dispense with automobiles than sprawled structures. The residual role that qualitatively improved automobiles will take in the cities of the future will have to be determined by research and practice. What is certain is that an attractive public transport system should form the backbone of urban transport services.

KEYWORDS

Transport management, urban transportation history, transportation and land use, public transportation, Berlin

1 INTRODUCTION: THE BERLIN EXAMPLE

The states of traffic in the rapidly-growing cities of emerging economies are strikingly similar: Be it in Lagos, Tehran, Cairo, Beijing, or Sao Paolo - cars clog up the city, including freeways, streets, and squares. Public transport systems exist, but they are caught up in traffic jams, are pushed into the ground and cannot keep up with the rapid growth of the city.

The downside of individual traffic-driven urbanization are the mega-jams that occur in a permanent and unwinnable race between the construction of new freeways and further increasing motorization. Air and noise pollution are far beyond levels that are harmful to health and economic activity, and for pedestrians and cyclists, public streets and squares are often only available at the risk of one's life. Under the car-oriented transportation system, not only does the quality of cities, as a habitat for many millions of people, suffer severely, but also the mobility of large groups of people is restricted: an alternative to personal car use is often missing in suburbs and urban peripheries, and people without automobiles are "prisoners" of public transport or depend on the often inadequate offers of the informal transport sector, especially if they are disabled, which hinders their participation in city life. Nowadays, work and education often require mobility over large distances.

The outlined problems and the growing understanding of the interrelatedness between petroleum combustion and climate change, between motorization, suburbanization and mobility deficits, and the finite nature of fossil fuel reservoirs have brought about a rethink at least among experts and international organizations that has been under way for some time (Habitat III, 2015). Moreover, interesting examples of redirections of the urban and transport policy can be seen in all parts of the world, although they are still exceptions in a "mainstream" characterized by automobile dominance. Calling for a clear change in policy is easier than implementing it.

What is needed, however, is a paradigm shift from a policy that merely responds to demands driven by the increasing number of cars to a policy that actively seeks to influence the type of traffic that is demanded. One of the most important approaches to do so is a city development strategy focused primarily on public transport and including the supplementing pedestrian and bicycle traffic ("Transit-Oriented Development"). A prioritization of these modes of transport means placing the theme of accessibility on the center stage of planning, rethinking land uses and distances, which also requires tight cooperation and interaction between urban planning and transport planning.

What insights can a review of the developments in Berlin contribute to this topic? Compared to the major cities in Asia, Latin America and Africa, the German capital with about 4.3 million inhabitants in the metropolitan area is only a medium-sized city, currently growing by approximately 50 000 inhabitants per year, and the economic and institutional conditions of the urban and transport development are also hardly comparable. Berlin is interesting as a city that exemplifies the reciprocal influences of spatial urban development and traffic system development over a period of more than 100 years since the times of industrialization. Berlin not only invented and put to use means of mass transport, but also experienced the traffic effects of different urban concepts (and urban visions).

The destruction of the Second World War and the long-standing division of the city were the backdrop of the extensive experiments with new concepts for town and transport planning. In spite of a comparatively smaller role of the automobile in the "capital of the GDR" compared to West Berlin, the administrations of both parts of the city maintained the plan of a shared main road network for the entire city on the basis of the early post-war plans¹. Since about the turn of the millennium, Berlin has tried to bring forth the paradigm shift to sustainable urban- and transport policy, including the approach of Transit-Oriented

¹ Official consultations at the administrative level have been documented even in the "Cold War"-period (Kalender 2012, p.408)

Development. The experiences and the lessons that can be drawn from the developments in Berlin are likely to be of interest also for the major cities of the global south.

2 URBAN AND TRANSPORT DEVELOPMENT IN BERLIN IN THE ERA OF CHANGE IN TRAFFIC SYSTEMS AND MODELS

2.1 THE "GOLDEN AGE" FOR PUBLIC TRANSPORTATION: FROM THE BEGINNING OF INDUSTRIALIZATION UNTIL THE FIRST WORLD WAR

Transport within cities has played a role in Europe only since around 200 years ago, because only then cities (as a result of the proliferation of carriages and carts) started to exceed the dimension of walking distances (the main reference of this section are Kutter, 2005 and 2015). Until the nineteenth century, Berlin was a mid-sized residential city with a very limited urban area. This changed rapidly with the development of the industrial city. Between 1870 and 1920, the city population increased from around 0.8 to 3.8 million inhabitants, spread in a diameter of approximately 35km. This was made possible by the introduction of largely rail-based means of mass transport: first the tram (and bus), then the subway and the electric "commuter rail" (later "S-Bahn"). The emerging spatial zoning of the city into residential areas and industrial areas resulted in larger distances between homes and jobs, which could only be overcome by new public transport systems. On the other hand, the establishment of such infrastructure was the prerequisite of any urban expansion, since public transportation over long distances virtually had a monopoly. In a surprisingly short time, a comprehensive and tightly-knit network of trams, a wider-meshed network of subway lines and a radial S-Bahn system were created in Berlin to connect the city and surrounding areas. The city expansion and its spatial structure were defined by the availability of public transport infrastructure. Today, the star-shaped regional settlement pattern along the S-Bahn axes, which essentially originated at the beginning of the last century, can still clearly be seen (Fig. 1).



Fig. 1 Metropolitan settlement star 2016: radial railway network characterizes the settlement structure

In a sense, this created a balance between the built structure and the system of public transport in the beginning of the 20th century, a state which is today occasionally seen as a vision for integrating settlements and traffic development under the name of TOD concept. This state is built, however, on the premise of a monopoly of public transport, which is no longer available in its old form.

2.2 EMERGENCE AND DOMINANCE OF MOTORIZED INDIVIDUAL TRANSPORT: FROM THE BEGINNING OF THE 20TH CENTURY TO THE POST-WAR PERIOD

There were two different causes leading to radical changes during the next decades, which reinforced and supported each other: The first lies in a revolutionary change of the guiding principles of urban planning. The experience of living conditions of the "Wilhelminian times" in speculatively built, highly compressed and unhealthy neighborhoods in Berlin (and similar in many European industrial cities) led to the concept of much less dense and less mixed-function urban structures, loosened by green spaces. The new planning paradigm culminated in the "Athens Charter" of 1933, an urban manifest with universal ambition and impact. A significant urban expansion, and thus the increase in movements and distances was inevitably connected with these new planning principles.

After the First World War and the large housing shortage in Berlin, the new model with large residential settlement projects was implemented mainly in urban peripheral areas (Fig. 2).

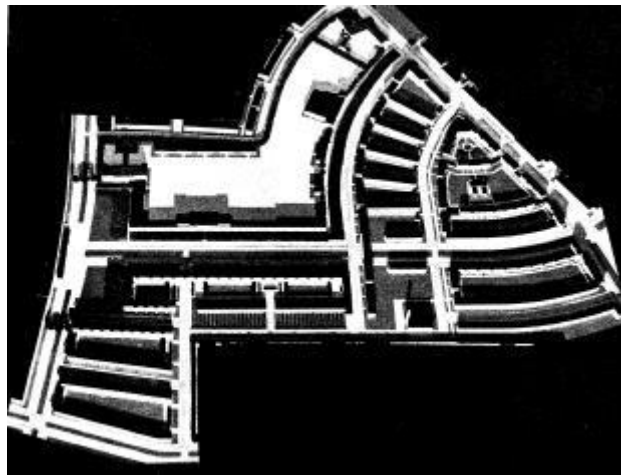


Fig. 2 Famous "White City" in Berlin- Reinickendorf: typical settlement from the 1920s
(housing monostructure, low density, green spaces)

The second cause was the first gradual, in the 1920s progressive development of motorized individual transport in Berlin. It is very interesting that this development was anticipated by urban planners already when it was still difficult to foresee the future importance of the automobile. In the competition for the development of concepts for the Metropolitan growth area "Greater Berlin", a large-scale ring and radial road network was designed already in 1910 with expressways and arterial roads and even urban road breakthroughs (still predominantly for the horse and cart movement). These conceptual basic elements have been repeatedly taken up, extended, and perfected in many of the later plans². Then, in the "Weimar period", after the First World War, the car experienced its first big boost. The to date most advanced transport technology promised the reduction of mobility constraints to a previously unknown extent by

² The winning concept of the competition "Greater Berlin" by Jansen followed street-oriented concepts in the "Straßenausbauplan (road expansion plan)" 1927, in the "Generalbebauungsplan (general building plan) by Speer 1943, in the "Zehlendorf Plan" 1946, in the "Plan Berlin 1948", the "Flächennutzungsplan (land use plan)" of 1950, and the "Generalstraßenplan (general road network plan)" 1965 (Kalender, 2012).

enabling individual mobility and freedom of accessibility, and spurred the imagination not only of urban and transport planners (Fig. 3). After a visit to the United States in 1924, the head of the department of transport of the Berlin police headquarters encouraged the Berlin traffic "to Americanize and to displace the tram from the center" (Wilhelm Mosle, cited in Kalender, 2012). Eighteen main arterial roads, connected through three rings and other measures are proposed in the plans of the "Haupttiefbauverwaltung" (central civil engineering department) of 1927, which were intended to increase the efficiency of road traffic (Fig. 4). With respect to their fundamental orientation, urban planners differed only very little from traffic engineers, a discipline that emerged at this time. The famous city planner, Martin Wagner, developed the first concepts in 1929 using the U.S. examples for inner-city elevated roads, which planners continued to use for decades³ (Fig. 5).



Fig. 3 City of the future ("rush hour")

The first development plans after the serious damage wrought by the Second World War in Berlin were designed under the impression of the urban concept of "modernity" following the ideas of the Athens charter and entailed a complete reorganization of the city, with a floating network of urban motorways. Public transportation played a very minor role in the planning. Later more pragmatic plans were supported with regard to respecting the still-existing city structure, but the intended transport system still followed the idea of a downright radical infrastructure construction for the (not yet existing!) car traffic: the first land use plan from 1950 foresaw 100 km of grade-separated "rapid streets" and 300 km of "main streets" for the city. Interestingly, the plans were justified with reference to urban planning-arguments ("adjustment of the metropolitan transport network on the insights of modern city construction" (Architektengemeinschaft Tepez/Hunnecke/Block, cited in Kalender 2012 p. 350). Despite the political division of the city after the Second World War, the idea of a network of radial and ring highways was maintained in both parts of the city in the decades following the war. In spite of the different societal systems, the transport policy stance in both East and West was based on the principles of modernity, resulting in quite comparable outputs. However, due to the more abundant financial resources, the plans were implemented to a larger extent in the Western part of the city. Until today, the network of main roads in the Eastern part of Berlin is

³ "It is today already foreseen that, like other world cities, we should have second traffic floors for fast moving cars [...] we have to succeed to, where possible, build grade-separated road crossings on the important traffic points." (Martin Wagner, 1929, cited in Kalender, 2012, pp. 211).

characterized by strong radial highways and weaker tangents. A beltway to bypass the inner city exists only in the Western part. Also the planned expansion of the underground network got stuck in the East, where instead the tramway system was preserved. The division of the city and the walling of West Berlin prevented mass motorization driven by city expansion and suburbanization of the peripheral areas, as was observed in other West German cities in the second half of the century.

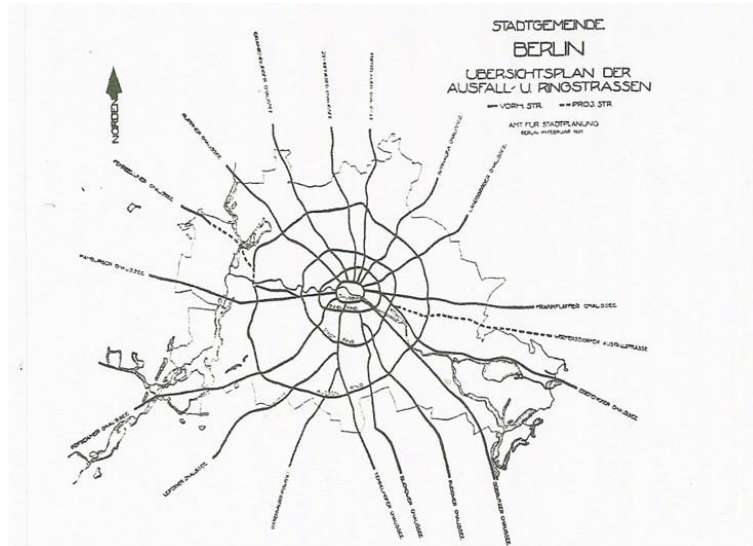


Fig. 4 Schematic road network plan, Berlin city planning office 1929



Fig. 5 Planned urban freeway intersection in central district Kreuzberg, land use plan 1965 (later abandoned)

It is worth emphasizing that in the described development phase, the original balance of the city structure and public transport was radically replaced by a prioritization of individual mobility (in the sense of the mission statement of "car-friendly city"). For the former West Berlin, one can conclude without reservation that the guiding principle of planning was no longer the quality of access by public transport, but the accessibility by the individual automobile. Planning methods and standards imported from the United States

and an increasing autonomy of traffic engineering led to a progressive disintegration of urban and transport planning. In the 60s, even the large housing estate (such as the "Märkisches Viertel") were built without any rail connection.

In East Berlin, individual motorization was lower than in the Western part, and public transport retained greater significance. Nevertheless, also the urban expansions at the eastern outskirts of the city followed the paradigm of a "car-friendly city" with ample space allocated to individual car transport, until the end of the GDR.

2.3 RE-ORIENTATION OF THE TRANSPORT POLICY WITHOUT STRATEGY: THE POST-REUNIFICATION PERIOD FROM 1990 TO 2000

The student riots of the 1960s and 1970s in West Berlin were partly caused by the planning and transport policy of the city government as the students opposed a controversial highway project through the inner city and the destruction of housing. Only in 1981, after elections had brought about a change of government, was the plan to build an urban motorway that would have touched the Western part of the city center abandoned. Also in other parts of West-Germany, the "car-friendly city"-paradigm had increasingly come under fire towards the end of the last century. In response, the last revision of the West Berlin land use plan of 1987 entailed the cancellation of 300 km of additional major roads of the 1965 plan.

The city-wide planning after the fall of the Wall put a clear emphasis on not only restoration and modernization, but also further expansion of public transport rail systems (tram, underground, suburban rail, and regional rail). A large budget was invested in the implementation of this plan in the years to come. In addition, the often interrupted road network was linked again and modernized, albeit without significant capacity-increasing street constructions. Against the background of an expected major growth of the city and its surrounding, the early vision of a public transport-oriented urban (and regional) development was revisited: The stated goal was to shift the modal split significantly in favor of public transport, mainly by directing the settlement growth in the city and the surrounding communities towards the main axes of public transport. However, in the first decade after unification, the efforts to translate this postulated transport policy objective at the urban and regional scale into integrated strategies and concepts were not very successful. A major obstacle was that it took some years to establish new institutions in the unified Berlin and Brandenburg (surrounding Berlin) and its smaller municipalities and communities.

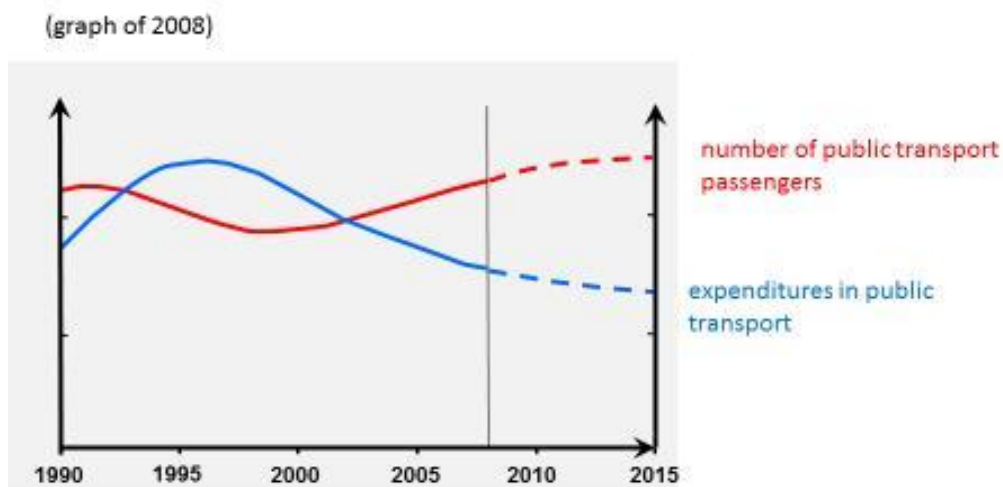


Fig. 6 Investment in public transport and transport demand (decade after reunification)

Taking stock after 10 years the results were sobering when compared to the stated objectives: Despite massive investments in the public transport system, public transit use had decreased significantly (Fig. 6), car mobility and at the same time traffic jams and the problems associated with the traffic (congestion, accidents, air pollution, noise) had increased. Quality of life in the affected districts had become worse, which resulted in declining attractiveness. How could this happen? The most important reason was rapid "catching-up-motorization" in the former East Berlin and the surrounding communities to the level of the former West German communities, thereby enabling or facilitating migration of those Berliners interested in self-development into the neighborhoods not covered by public transport but enjoying low land prices. These conditions forced car-oriented lifestyles.

Because overarching regional planning and controlling institutions were largely missing in the first years, such suburbanization was not initially slowed down. But also within Berlin, measures to reduce an important incentive to the use of cars in the city center were lacking. A generous supply of free public parking and many new parking lots in private parking blocks and underground garages had encouraged private automobile use for trips to the city center.

2.4 START OF STRATEGICALLY-BASED AND INTEGRATED SPATIAL AND TRAFFIC DEVELOPMENT AFTER 2000

In the year 2000, regional elections resulted in a government change that was accompanied by a change in organization of the senate departments (Berlin state ministries). A crucial prerequisite for a better coordination and integration of urban, transport (and environmental planning) was the institutional integration of previously separate departments. The merging of urban planning and transport has remained since then.

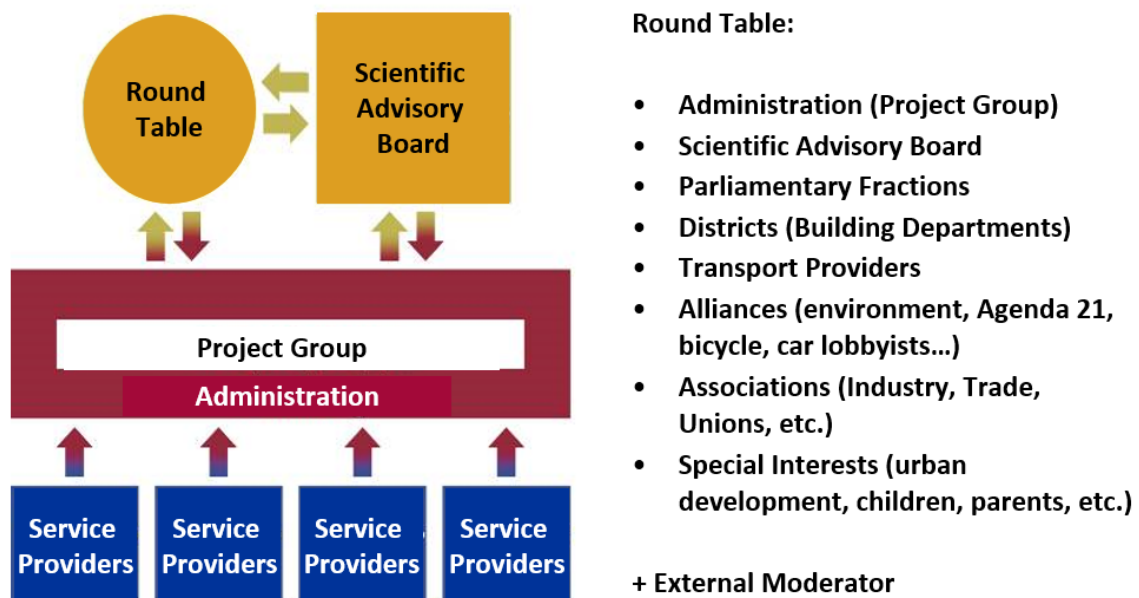


Fig. 7 Comprehensive urban transport strategy: consultative working process

Against the background of the clear failure to achieve the set urban policy objectives in the first decade after reunification, the new city government called on the administration to develop an integrated transport strategy, to be put up for discussion. This assignment was carried out over a period of approximately two years, and the plan was approved in 2003. Since then, the so-called "urban development plan for transport"

has been implemented and its effects and the achievement of objectives observed and evaluated. In 2011, a first revision and adjustment on the level of important measures was carried out⁴, and currently the strong population growth of recent years is a reason for a further revision of the plan.

The key reason that the plan has now been effective over a longer period of time as the fundamental strategy of integrated transport policy is that the process of planning is broad and consultative, that is, it is organized with the involvement of the important transport policy actors and stakeholders in the city (Fig. 7). Transport policy requires a high degree of continuity due to the duration of maturation of many measures from conception to implementation. To ensure this continuity, a comprehensive analysis of the causes of the failure of previous plans and of the expected framework of planning, including the financial resources expected to be available, preceded the planning (Kunst, 2007).

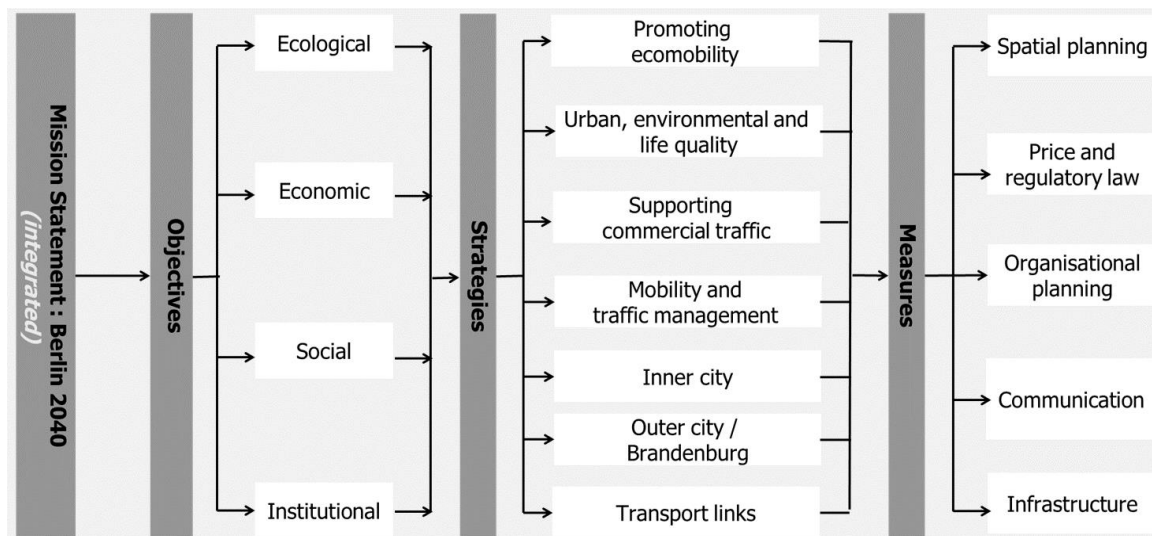


Fig. 8 System diagram of urban transport strategy: from vision to measures

The main planning objectives have been formulated as: Assurance of mobility for all groups in the population (and the economy) while at the same time limiting transport growth, prioritization of public transport and the "basic mobility" on foot and by bicycle, and a substantial relief of the urban environment from the impacts of transport. The differentiated objectives represent the spectrum of "sustainability" and were as far as possible backed up by specific values for the intended targets in order to allow for a clear feedback on whether or not the goals have been reached. The concept itself consists of a network of more than 100 measures from various different fields of action. It was important not only to include the traditional measures of transport infrastructure development, but also to take into account cross relations with urban planning through measures aimed at reducing the creation of traffic. Moreover, measures aimed at supporting public transportation were consistently linked to measures limiting the individual car use (in particular through parking policy). To facilitate comprehensibility and application, the overall strategy was divided into thematically distinct sub-strategies (Fig. 8). Alternative versions of the overall concept underwent an ex-ante effect analysis by means of a model-based analysis, and the most effective combination of measures was ultimately selected.

⁴ In this context, it is worth mentioning that the greatest conflict in the Senate's revision was the intention to extend the Western bypass highway into the East in order to relieve the inner city of congestion. The decision in favor of the project would almost have broken the governing coalition.



Fig. 9 System of public transport: integrated rail networks in Berlin in 2015 (tram replaced by bus in Western part after World War II)

Repeated analyses of ex-post effects since 2003 show that a clear trend reversal compared to the traffic and settlement development of the first decade after reunification has been reached. Considering the modal split values at the times of representative household surveys in 1998 and 2013, the share of individual car use in the total volume of trips in the city has decreased by more than 10%; this has been made possible by a growth in the modal share of public transport, pedestrian and bike travels. Altogether, today 70% of all urban trips are done by transport modes of the “environmental combination”. Despite a significant population increase, and as a result, transport growth in recent years, the share of car traffic has decreased further. The current target is to enhance the environmental modes of transport so as to limit the share of personal car use to 25% within the next few years. The public transport system consists of five different but integrated networks of public transport modes (Fig. 9.). By fulfilling high standards of accessibility and service quality, the mobility of the Berlin population can be secured without private cars. Promotion of multi- and intermodality plays an important role, i.e. fostering the combination of the different means of public transport and the “active”, non-motorized modes, as well as carsharing. This could expand the reach of rail-based transport and also further increase the freedom of choice among different means of transport.

3 CONCLUSION: FINDINGS FROM BERLIN FOR POST-FOSSIL MOBILITY STRATEGIES

A first and important insight is that the change from car-oriented urban development to a development based on sustainable transportation can succeed. It should be mentioned that the heritage of rail orientation of Berlin's development, reflected in the settlement structure, has undoubtedly facilitated the renewed attention to public transport. Destruction of large parts of the city as a result of the war, the reconstruction

in the spirit of a new paradigm of urban planning and the long lasting division of the city did not wipe out the city's rail-oriented heritage. Cities that have grown as car-oriented cities are much more difficult to reorganize for a public transport development. The second limitation is the duration of the re-orientation process: From the onset of criticism of the "car-friendly city" until a clear policy change, several decades had to go by in Berlin. The learning process took much time and has not yet been completed.

What were the main causes for the (relative) success? I would like to mention the following factors, each of which is important on its own, but which create additional dynamics when working together:

- Firstly, the substantive coordination of settlement and transport development in the city and region by means of coordinated planning and controlling of the implementation of such plans: Despite some shortcomings in implementation, the realization has grown that urban planning is an important factor in traffic generation and the choice of transport mode.
- Secondly, a good public transport system that combines different (in Berlin five) sub-systems with varying efficiency, power, speed, and line network density. The remaining deficits in access can be reduced (and the catchment area increased) by encouraging, in particular, bicycle use. Crucial are high standards in the quality of public transport service and an integrated ticket tariff, giving easy access to all parts of the public transport system
- Thirdly, coordination and integration of transport-effective measures of various types over an extended period of time: Traditional infrastructure for public transport is not enough as long as the topic of parking in the city is not addressed. Traffic management measures must support the quality of bus traffic. Easily accessible and up to date information about the current traffic situation in the city and public transport offers is a prerequisite for the optimization of individual transport modes.
- Fourthly, an appropriate institutional framework: The above-mentioned cooperation in the metropolitan area bridging the regional boundaries was considerably facilitated by the existence of the "joint regional planning agency", a joint authority formed by the states of Berlin and Brandenburg. Moreover, it was a particularly important requirement for development and implementation of an integrated transport strategy in the city to have an institutional integration of the authorities responsible for spatial and transport planning.
- And finally, a clear political will for changing the orientation of urban development and the related transport policy, which of course is in an interplay with the political acceptance of a modified transport policy in the public. In Berlin and other big cities in Germany, a trend of decreasing car dependency, especially in younger people has been visible for several years (Kuhnimhof et al. 2011). The automobile begins to lose its appeal as a status symbol and an "end in itself". To be able to use a car remains important also within a concept of multimodal transport and owning a car does not. These altered perspectives may still characterize only a minority of the urban population, but a minority with political clout: opinionated functional elites with influence on the political representatives of the city.

Berlin has taken a long step towards a public transport-oriented transport policy. In passenger transportation, it is quite possible to live in the city without possessing a car. Nevertheless, the city is still far from reaching the goal of a "post-fossil mobility" and "carbon-free transport". Evidently, the state of a broad monopoly of public transport as in the era of industrialization cannot be restored. The automobile will continue to play a major role in the cities. For the inner city's commercial and freight traffic, the car will remain largely indispensable in the future. In the periphery of Berlin and the edges of the metropolitan region, the quality of the available public transport cannot fully compete with individual cars, despite the

efforts for planning a more compact and rail axis-oriented settlement. Consequently, the traffic patterns of the inhabitants are still more oriented towards personal car use.

The technological development of the automobile with new engines, more environmentally-friendly fuels, and modern telematics will alleviate some of the major current issues of urban transportation, and will contribute to maintaining a role for cars in the future urban transport. It is, however, not yet clear what role that will be precisely (Kunst, 2014). If the goal is to further replace the automobile in German cities by other modes of transport, a broader policy and behavior change and additional changes to the institutional framework (particularly the tax and land law) will be necessary in order to transform the space and to remodel settlement structures, allowing for a traffic-reduced future.

What is certain, however, is that due to its city-incompatible land consumption, the automobile should only play a very special (and minor) role in the future of fast-growing mega cities if these cities are to be organized efficiently and the goal is to make them attractive as a habitat. Only an attractive public transport system will be able to ensure the mobility of all groups of population.

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IMAGE SOURCES

Picture on the cover page: Author.

Fig. 1: Author.

Fig. 2: Das Neue Berlin: Großstadtprobleme, M.Wagner, A.Behne editors, reprint of 1929 edition, Birkhäuser Verlag Basel, Berlin, Boston 1988.

Fig. 3: By Alexander Leydenfrost (1949), archive of the author.

Fig. 4: Kalender, 2012.

Fig. 5: Köhler et al. 2015.

Fig. 6: Author.

Fig. 7: Author.

Fig. 8: Senate department for urban development and the environment.

Fig. 9: Author.

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Dr. Friedemann Kunst is working as a private consultant for municipalities and international organizations. Until his retirement in 2013, he was head of the department of transport and traffic within the Senate ministry of urban development. He was responsible for planning and the operation of the integrated transport system in the German capital. Friedemann Kunst has studied architecture in Stuttgart and urban and transport planning in Berlin. He is a member of the German Academy for Urban Design and Regional Planning.

GERMAN ABSTRACT

Verkehr und die Folgen des Verkehrs sind eines der großen Probleme schnell wachsender Metropolen. Der Autoverkehr beherrscht die Städte und belastet die Umwelt, ohne ausreichend die Mobilität der Stadtbevölkerung und der Güter sichern zu können. Nur ein Paradigmenwechsel in der Stadt- und Verkehrspolitik ist geeignet, diese Verhältnisse zu verändern. Trotz seiner Lage in Europa und seiner nicht vergleichbaren Entwicklungsdynamik, ist Berlin zur Diskussion von Entwicklungsstrategien für schnell wachsende Metropolen interessant, weil dort im Laufe von etwas mehr als 100 Jahren konzeptionell und praktisch ein zweifacher Paradigmenwechsel vollzogen worden ist: zunächst von einer fast ausschließlich durch den Schienen-ÖPNV geprägten Stadt zu einer automobilorientierten Stadt und dann schrittweise zurück zu einer Stadt, in der die Verkehrsmittel des „Umweltverbundes“ die Mobilität der Stadtbevölkerung sichern. Sowohl die Wechselwirkungen auf der konzeptionellen Ebene der städtebaulichen und verkehrlichen Leitbilder, als auch auf der realen Ebene zwischen Stadtstrukturen und Verkehrssystemen können in Berlin exemplarisch studiert werden. Erfahrungen mit der Umsetzung automobilorientierter Planung und besondere Entwicklungsbedingungen in der ersten Dekade nach der Wiedervereinigung haben zu Protesten, zur Reflexion und zu einer Revision der Planung geführt. Mit einem strategisch angelegten Prozess integrativer Planung ist es gelungen, Trends der Verkehrsentwicklung im Sinne der formulierten Nachhaltigkeits-Ziele umzukehren. Eine besondere Bedeutung hatte die Reintegration von verkehrlicher und räumlicher Planung und die Neuordnung institutioneller Strukturen auf Ebene der Verwaltung als Voraussetzung besserer Kooperation. Der Reorganisationsaufwand, der erforderlich ist, um eine metropolitane Siedlungsstruktur verkehrsrärmer und ÖPNV-affiner zu gestalten, ist abhängig von der jeweiligen Ausgangslage. Kompakte, schienenorientierte Siedlungsstrukturen ermöglichen eine stärkere Zurückdrängung des Automobils als disperse Strukturen. Welche residuale Rolle qualitativ veränderte Automobile künftig in Metropolen übernehmen, ist noch in Forschung und Praxis zu klären. Sicher ist jedoch, dass ein attraktives ÖPNV-System das Rückgrat des städtischen Verkehrsangebotes bilden muss.