2.

How and Why - The Development of Mobility

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2.1 Social change leading to changed mobility

The development of a region (or a country) is tightly related to changes in the communication and transportation sectors. Economic, political and social factors affect both the total volume of passenger transportation and its different modes. At the same time, the functioning of a modern society puts heavy demands on the ability of individuals to be mobile.

Throughout the post-war period, personal mobility increased very fast in comparatively prosperous countries such as Denmark, Finland, Germany and Sweden while mobility in eastern Europe, e.g. Estonia, Lithuania, Latvia, Poland and Russia, remained at a lower level. However, during the 1990s, increasing growth is also taking place in those eastern European countries while a tendency towards stagnation is evident in the first group of countries.

By and large these tendencies reflect historic connections between economic growth and spatial interaction. We know from experience that growing incomes mean increasing demands on mobility, not least on car-ownership. Mobility and transport are mainly a demand derived from a society's general rise in welfare. Being able to travel has gained a firm position in the hierarchy of needs and priorities of individuals, households and firms in most countries and cultures. The side effects of this process are manifold. One material effect is that, at least in motorized countries, half the energy used by households is related to trips and travel.

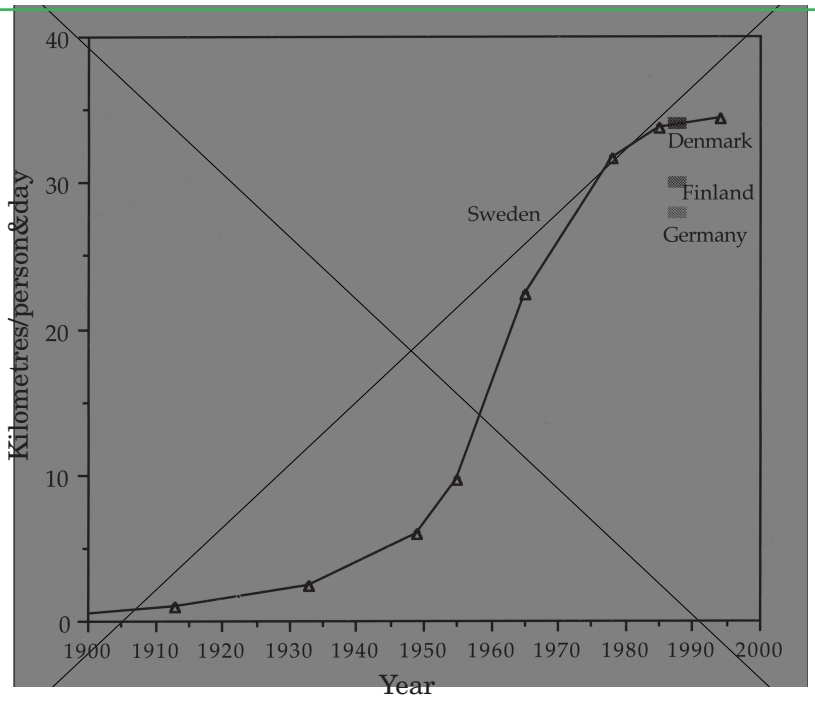

Figure 2.1. The development of domestic mobility (average travelled distance per person and day) in Sweden 1900-1994. Comparison with the mobility level of Denmark, Finland and Germany. Sources: Vilhelmson (1990), Krantz&Vilhelmson (1996), Salomon et al (1993).

2.2 Mobility trends and features

The fast increase in mobility in the affluent countries of Europe during the period 1950 -1996, can be illustrated by five main tendencies:

- longer distances covered by each trip;
- rapid growth of travel by car and air;
- increased importance of leisure-time activities;
- spatially more complex travel patterns;
- diffusion of mobility from a few groups to the broad majority of the population.

Mobility development in one of the countries of the Baltic Sea region – Sweden – may be traced back to beginning of this century (Fig. 2.1). Around 1900 the average distance travelled was roughly one kilometre per person and day. In the 1950s mobility grew fast and increased to an average of more than ten kilometres a day. Today it amounts to 35 kilometres per individual for the total population. So, during this century the capacity of people to cover distances and interact with other places has increased by about 35 times!

This development, of course, has affected the life-styles and daily activity patterns of most people, such as where they live, work, shop and spend their leisure time, as well as the structures of cities and land-use in general. However, the ability to be mobile is not evenly distributed

Car History

The motor car was invented in 1886 in Germany. The first cars looked like motorized three-wheeled bicycles or horseless carriages. They were mostly used by rich people as a kind of toy. The speed of the new vehicle attracted the interest of many people. Special cars were developed for car-racing which became popular around 1900. This picture is a reproduction of the oldest picture and text advertising a car (1888).


Patentirt in allen Industriestaaten!

Neu! Praktisch!

Patent-Motorwagen

mit Gasbetrieb durch Petroleum, Benzin, Naphta etc.

Patent-Motorwagen mit abnehmbarem Halbverdeck und Spritzleder.

BENZ & Co.

Rheinische Gasmotoren-Fabrik

MANNHEIM.

Neue Fabrik: Waldhofstrasse.

During the first early decades of the 1900s the car became a symbol for modernity. In the USA cars were on the roads in an increasing number after the First World War. In Europe many people desired to be owners of the new modern vehicles but only a minority could afford them in the twenties and thirties.

The idea of a car for everybody was launched by the Nazi leader Adolf Hitler in the early 1930s. Das Volksauto was intended to bridge the gap between classes of the German Herrenvolk. A small number of the first Volkswagen cars was produced before the Second World War. At the same time, the Soviet regime declared itself proud to be using more lorries than cars. The use of the cars that existed was a privilege for the political

In the 1950s the American car industry found a market for cars that appealed more to the psychological needs of consumers than to purely functional aspects. The vehicles were loaded with symbolic meanings such as freedom, mobility, expansion and prestige. The increasing number of big cars began to create problems in densely populated areas. In the middle of the 1960s the inappropriate safety of the cars of the day was demonstrated by Ralph Nader in the book Unsafe at any speed (1965). (Photo: Lennart Gagnefjord)

The energy crisis of the 1970s gave birth to the compact car. It was necessary to increase the efficiency of the specific energy used by the car. This gave the Japanese car industry a comparative advantage, as they had been developing such cars for some time already. The pollution associated with increasing car use now also came into focus. The new Green movement began to look upon cars as a big threat to the natural environ-

The cars of the 1990s cause much less pollution than older cars. Still, the total emissions of cars worldwide are unsustainable. Emissions of carbon dioxide are particularly unacceptable in the long run. Increased energy efficiency, partly achieved through an aerodynamic shape, is counterbalanced by the tendency of certain consumers to prefer cars with extremely powerful engines.

over the population. For instance, middle-aged *men* travel on average no less than 60 kilometres per day. We can also observe that in recent years mobility has not grown as fast as before, probably because of a general economic stagnation.

From these facts we can also learn that the mobility levels of Denmark, Finland and Germany (and inherently the development processes) are similar to those of Sweden. Regrettably, no comprehensive mobility indicators concerning the situation in the eastern Baltic region are available. Considering other European countries on the same economic level, we can assume that average mobility is 10 –15 kilometres a day. This implies a tremendous potential for mobility growth in the years to come, if the economic and political situation will allow it and if the values and preferences of the population are similar to those of other countries.

However, mobility ought to be measured not only as daily distance covered but also as trip-frequency and the amount of time spent on travel. Daily trip-frequency is a crude measure of social interaction, that is, the number of out-of-home activities of a population. Travel time per day reflects the role of transport in the daily time-budget, that is, how much time we can devote to travel considering everything else that has to be done.

Experience of development in most European countries suggests that mobility considered as trip-frequency does not change so much in the long run. This means that people do not travel more often, they travel further away when shopping, going to work, using services, visiting friends and so on. A similar observation applies to the travel-time budget: People do not devote more time to travel. They are travelling faster.

This leads on to the second main trend of mobility change; shifts in ways of travelling (modal choice). In short, there has been very quick growth of the fast means of travelling – especially the car but also the aeroplane. Almost the total growth of mobility in Sweden since the beginning of the 1950s can be explained by increased car-use and, since the 1970s, by intensified use of air transport.

At the same time, the relative importance of slower modes is decreasing. This mainly concerns urban/regional public transport by bus and train and, of course, trips made by foot. On the other hand, measures to counter- balance this trend are sometimes locally successful: high-speed trains, urban bike tracks, underground trains in larger cities. However, the key element in the competition between different modes of transport (besides price) is speed. If people have the opportunity to choose, they generally use the fastest mode of transportation.

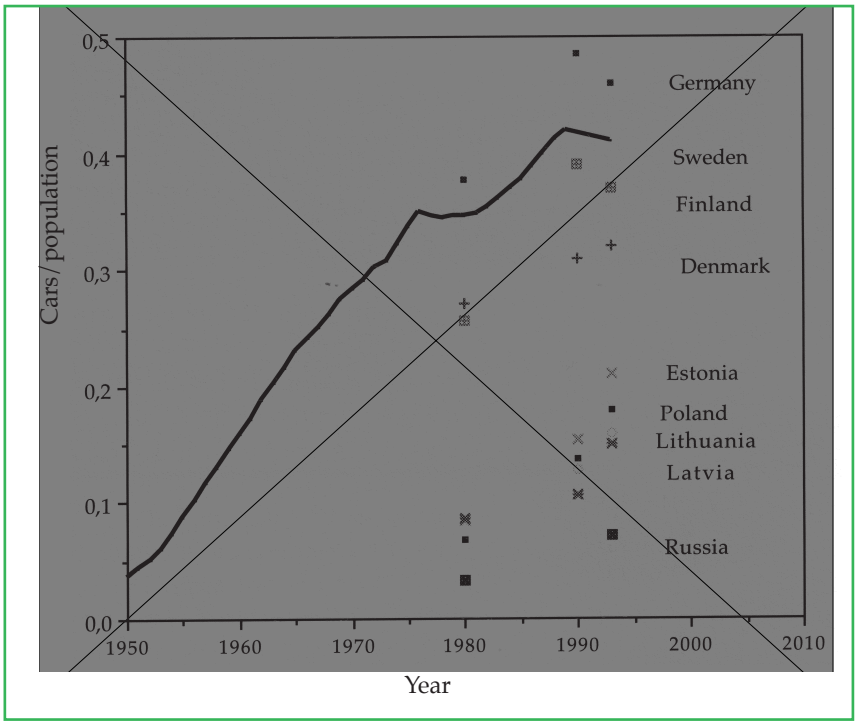

Figure 2.2. Car-ownership in the countries of the Baltic Sea region.
Sources: Statistical Yearbook of Sweden, UN Annual Bulletin of Transport Statistics.

Fig 2.3 Car density in the Baltic region in 1994. Cars per capita. Russia 0.07; Latvia, Lithuania 0.17; Poland 0.19; Estonia, 0.21; Denmark 0.33; Finland 0. 38; Sweden 0.41 and Germany 0.46. (based on Fig 2.2).

2.3 Suburbanization of society, services and life

The third main feature of mobility growth is the increased importance of free time or leisure activities generating travel. Travel is seldom an end in itself; people travel to certain activities – to work, shops, education, child-care, services, friends – in different places. For a long period, commuting between home and work was the main purpose of travel and structured the flows of traffic into regular patterns in time and space. But, during recent decades, at least in the more wealthy states of Europe, the highest growth rates are observed for leisure trips (visiting friends and relatives or other social/recreational activities). These trips, conducted during the 'free' time of the day, now account for between one-third and one-half of the number of trips and the daily distance covered. So changes in the location of home and work, or the suburbanization of city life, is only a minor part of the evolving mobility pattern.

This aspect is closely related to a fourth trend – or consequence – of developing mobility: increased geographical distribution of activities and the growing complexity of spatial relations. After a first wave of suburbanization, spatially concentrated, close to old city centres and well served by public transportation, new patterns have emerged. A second wave has meant an increased attraction for low-density areas – rural places, small towns, outer suburbs – for housing. At the same time, there has been a suburbanization of jobs, stores, services such as hospital and leisure facilities. This has induced new and more complex spatial relations in travel which are not easily served by public transportation. Traffic within and especially between suburbs (tangential trips) has increased while the old pattern of regular trips from suburbs to city centres (radial trips) has stagnated. Conurbations also attract commuters from increasingly larger areas.

A last significant feature of mobility development to be mentioned here is the spread of mobile life-styles from few to many segments of the population and to different social groups and households. This includes aspects of age and gender. The mobility of the elderly increases by the simple fact that the first generation of car-owners is now reaching old-age. The entrance of women into the labour market during recent decades has of course increased their demand for travel. But the most important factor by far is that in the last 50 years, in the wealthy countries, almost 80 percent of all household have been able to buy a car.

2.4 To own a car

This leads to the basic question of what factors make mobility increase as soon as the opportunity for it exists. It is of course a question with many answers. From the individual´s point of view, it ranges from inner needs and wants to outer cir-cumstances and restrictions. Four main factors will be touched upon briefly here, namely, economy and car-ownership, perceptions of welfare and mobility, spatial patterns of location and the standard of public transportation.

As we have already said, the most important reasons for mobility growth (and decline) are of an economic character. Experiences from most countries show that by far the most important factor in explaining the mobility level of a region is car-ownership. In countries like Denmark, Germany, Finland and Sweden, the car accounts for 70 to 80 per cent of the total daily distance of passenger travel and car-ownership is largely influenced by the income of the household. Other things affecting this are, of course, the cost of buying and then keeping and using the car. Particular levels of political control, taxes and charges such as import duties and taxes on fuel and vehicles, influence demand in different countries

Facts on car-ownership in the states around the Baltic Sea are shown in Figures 2.2 and 2.3. As the case of Sweden shows, car-ownership grew steadily from a very low level at the end of the

Second World War until the economic recession and increases in fuel-prices following the oil crises in the 1970s. Afterwards, growth again took place until the present economic stagnation began in about 1990.

Figure 2.2 also shows that levels and developments in Germany, Finland and Denmark are very much the same as in Sweden. In the eastern Baltic region there has a been notable rise in car-ownership during the 1990s. This is, of course, caused by changes in the political control of private transportation and by growing incomes, at least in some parts of the population. Accordingly, it is reasonable to assume that trends in mobility growth will gradually follow the same patterns as in the western countries. There is a latent demand.

Is there a saturation level in car-ownership? It is hard to give a straightforward answer to this question. In Sweden there is now on average one car per household and that may seem a plausible point of balance. However, in the United States, this number was already reached in the 1950s. (Today there are almost 0.7 cars per person in the US. which means that there is more than one car per licence-holder!) But economic determinants, such as the price of petrol, and the structure of cities, value systems and culture are different. In Europe as well there are clear signs that the car is regarded as a source of individual mobility rather than a commodity related to the household in general. This individualization of car-ownership and use is certainly a possible driving-force towards further mobility expansion in the wealthier nations of the Baltic Sea region.

2.5 Why is a high level of mobility so popular?

What about the fundamental inner driving-forces of mobility? From the perspective of the individual, fast means of transportation (by car, air or high-speed trains) expands the daily activity-space. Freedom of choice is widened, at least in the short run, by the ability to reach more distant workplaces, residential areas, service locations, leisure facilities, stores and shopping-centres. Higher travel-speed makes it possible to arrange complex daily activity-schemes, that is, being able to do several things at many different locations during one day. Besides the practical benefits of being able to move fast, certain values and symbols are probably attributed to the means of mobility. To many people the car means status, power, freedom, strength and modernity.

However, the factors explaining mobility are not only linked to the individual and his/her choice of transport modes according to individual resources and perceptions of welfare. Other important forces are connected to the world outside, not least the geographical structure of a region or a city. Regions with high densities of population and settlements tend to have fewer cars per capita and thus lower mobility levels than regions that are sparsely populated and with dispersed settlement patterns. At the same time, the tendency for cities and activities to spread out over large areas is a result of the increased mobility of the population.

Another important factor – at least in densely populated areas – is the standard of public transportation. Areas served by public transportation of high quality – high frequency, high speed, well-integrated routes and networks that are secure and comfortable and reasonably priced – have proportionally lower car-ownership levels. If public transportation cannot live up to such relatively high standards it runs the risk of entering a vicious circle. More people turn to the car leaving public transport to a diminishing group of people who, for various reasons, cannot use other modes – the so-called 'captive riders' of the old, the young and women.

Mobility has become a key factor in the modern community and is also frequently regarded as a fundamental value and an indicator of wealth and welfare. But mobility has two faces. It is a positive welfare component giving people increased access to many facilities because of advanced transportation technology. On the other hand, we are now becoming aware of many negative consequences of increased geographical movement: a tremendous consumption of fossil fuels, unacceptable changes in the physical environment, injuries, and death caused by traffic accidents and intolerable consequences for cities and urban life. These negative effects call for a careful and integrated view regarding the future development of mobility and the use of transportation technology in any society.