

Land-use, lifestyle and transport

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1. SYNOPSIS

Increasing mileage in transport is a growing problem. Traditional policies of transport engineering can't do much about it. Integrated measures (based on public-awareness) are necessary.

2. ABSTRACT

There are technological possibilities to reduce the negative consequences of transport. But this can only solve parts of the problem. The amount of mobility in the "modern" energy-intensive countries as such is a reason for many negative developments: The amount of space for motorways and roads destroys the possibilities for urban life, congestion and aggression are inevitable companions of distance-intensive lifestyles. And: All technological progress can be compensated by behavioural changes of the people. The paper shows that even a change in mode-split not necessarily leads to a reduction of emissions.

To look at mobility means to inspect two trends more closely: The changes in lifestyle and the changes in the settlement-patterns. Specialisation of jobs and more differentiated schools lead to changes in the lifestyle beginning with the education of children, who get to distant schools by car or bus and have friends at distant locations. Large shopping-malls outside of the traditional urban centres attract customers by cheap prices-while the traditional urban centres and (specially in Europe) the nearby shops in the living quarters decline. The distance-intensive settlement-structure at the end forces people to a more distance-intensive lifestyle. The ongoing process to longer distances increasingly contributes to environmental problems. The "enquete-commission" on climate change of the German "Bundestag" (parliament) calculates, that half of the increase in CO₂-emissions by transport is caused by the change in settlement-structures. But not only the increasing amount of transport with many negative consequences (as for instance air-toxics and traffic jams) is a result of this process, the urban culture is often replaced by aggression and violence in areas of low density.

3. INTRODUCTION

The problem of the transport-sector in many forecasts and studies on the future energy-use is totally neglected.

There are two obvious answers to the question, why such an important source of CO₂-emissions (in Europe approximately 20-25% of the emissions are caused by cars, trains, aeroplanes and ships, in the U.S. it is about 30%) that even is steadily increasing, is dealt with so inadequately.

- 1) The first reason is the complex and interdisciplinary nature of the transport-problem. It is not only a technological problem and it is not only an economical problem: The growing amount of transport is a result of an interrelated process that has its basis in the development of land-use on the one side and the lifestyle of the modern industrialised countries on the other side.¹ Both of these, land-use and lifestyle, at a first glance seem to be hard to influence.
- 2) There is no easy administrative solution for the transportation-problem. One of the proposals mostly discussed is an increase in fuel-tax. But even the influence of the price of petrol on the transportation-system is for many members of the administration difficult to foresee in its consequences. More complex relationships, as for instance the increasing distances of trips caused by lower densities and a decline of the traditional urban centres don't fit into administrative structures at all.

4. DISTANCE-INTENSIVE LIFESTYLE AND DISTANCE-INTENSIVE INFRASTRUCTURE

The chances to change settlement-structures towards higher densities and shorter distances are not too good in the industrialised countries . There is still the opposite trend.² People have got accustomed to a distance-intensive infrastructure: Two main elements are the single family home with a large garden and the large supermarkets. New and integrated approaches between regional-science and transport-engineering have to be developed. In Europe concepts for a "city with short distances" are still at the beginning.

The behaviour of the people is corresponding to the development of the infrastructure: It can be shown statistically, that every year the average distance of the daily trips increases. But there are a lot of differences, groups of the population behave in different ways: Some groups travel a lot more and further than others. The experience of the U.S.³ makes clear, that the chances to change the behaviour of people with respect to transport are definitely higher in Europe. A lot of city-dwellers in Europe still live without a car. The city of Bremen (Germany) is building a new part of a suburb only for people, who don't possess a car. This example shows, that the possibility to influence behaviour obviously decreases with growing motorisation and distance-intensity of lifestyles.

But are there really reasons for changing the ways and circumstances we live in? The ongoing process to more distance-intensive settlement patterns once surely led to an increasing quality of life. But the larger amount of transport obviously as well reduces quality of life by the emissions of air-toxics, by the risk of accidents and the destruction of urban atmosphere.

Settlement patterns have changed radically with this dramatic increase in our action radius: increasing distances lead to a transport-intensive action radius. For a long time we have been experiencing the way in which not only the cities but also rural areas have been redeveloped so that nearly everyone feels compelled to get a car - businesses look for cheap land on the city outskirts, public offices jostle with other public offices in the city centre, and take up urban living space, houses shoot up along the main roads and supermarkets stretch out over green fields. Villages have been absorbed by the growth of towns and cities, and destinations which were previously in the neighbourhood have moved into an increasingly wide radius. Whether we are going shopping, visiting friends or going to work, we have to travel further, for the corner shop has disappeared, our friends have moved to the satellite town, and the firm is on the other side of city. And isn't everything concentrated, centralised and rationalised! Shopping centres and middle schools, administration reforms and community health centres, industrial estates and leisure parks, these have all diluted life in the local environment and moved it to places further away. Where people's action space explodes like this, spatial relationships are turned on their head - places further away are more attractive than the immediate locality, the neighbourhood forfeits its importance.

It is obvious that the advantages of the accessibility of distant areas from a certain stage are diminishing and that the disadvantages are increasing. There are many indications that in the industrialised countries quality of life is even more reduced by more distance-intensive lifestyle than it is increased.

The net result of individual decisions, which seemed so rational to individuals faced with the constraints of a transport-intensive way of life, is collectively irrational. Whoever insists simply on the freedom of the individual in this situation is like the manager of a cinema which has just burst into flames, who shouts at the panic-stricken audience that they will have to find their own way out as best they can.

It is time to establish a new policy of freedom, directed against the regimentation of the car-based society, which affects car-owners and non-owners alike. But such a new freedom can only be achieved at a medium level, in a society with slower speeds and shorter travelling distances .

5. MODES OF TRANSPORT AND DISTANCE-INTENSIVE LIFESTYLE

There are only two transport modes which will not have any unfavourable effects on the environment and which will put new life into the local areas:

to walk and to ride a bicycle.

These are 'typical' modes of the European cities and they are still contributing very much to the 'urban milieu', particularly as far as the southern regions of Europe are concerned. This fact is of special distinctness when we are comparing this type of city with the North American townships, very spacious areas and not-frequented. Although Europeans do not like cities like Los Angeles, they are at least continuously moving towards a form of settlement with very long distances, despite an increase in bicycle traffic.

It is of course true that bicycle riding experienced a substantial growth, but this increase obviously came at the expense of walking, and as a whole we can even say that the number of walk trips and cycle trips in Germany (what could be typical for Europe) decreased.

The mean distances for the trips undertaken by the population in the Federal Republic of Germany have also increased during the same period of time. The mean length of one trip in the Federal Republik of Germany increased in the run of the 6 years from 1976 to 1982 from 8.8 to 10.3 km (BrÜg 1985, p. 60). The so-called 'euphoria to bicycle' realized by many people can in no case be judged as an only positive development in view of these facts. The structure of the settlements in the Federal Republic of Germany is tending more and more towards longer distances and we can say that our cities are becoming 'diffuse settlements'. The bicycle is obviously for many people a means of overcoming this development when the distances are becoming too long.

The increased use of the bicycle fundamentally substituted the walks of shorter distances and that the influence on the growth of the motorcar traffic was very low.

Investigating the function of the public transport for the urban planning, we will find some constructive effects: the rail-bound public transport in particular and also the transportation by buses should be given priority from ecological points of view, and that in contrast to the motorcar, because the mentioned means of transport do not need so much energy and space.

But even the public transport has contributed to extend the distances more and more. In Europe there was a general drive to increase the speeds in the public transport, for this purpose many stops have been cancelled. The modern intercity- express- lines in Germany have much fewer stops than the tradititonal lines of express - trains. Hence many citizens have to cover long distances to reach the next stop, in general it is often easier to reach another city 100 miles away with a modern high-speed train than a destination at the outskirts of the own city, just 8 miles away.⁴

The main driving force towards the distance-intensive lifestyle definitely is the automobile. Table 2 shows a comparison between the behaviour of persons, who own a car and those who don't.

This table shows from data in Germany that in similar situations people who own a car travel further. So car-ownership definitely supports the trend towards increasing distances.

A policy to influence the modes of transport, this is shown by these facts, helps to reduce environmental damage. But there is an urgent need to an integrated approach of transport engineering and regional science, that is tackling the problem of increasing distances. Otherwise all progress that may be gained by a change in mode-split is offset by the trend to increased distances.

Table 1. Walking and cycle trips in the Federal Republic of Germany from 1976 to 1982 (share in the modal split)

	1976	1982
Bicycle	8,6	10,2
Walking	33,6	29,8

Source: Bundesminister für Verkehr (1986, 190-91)

6. CONSEQUENCES

A change in the process towards further distances and more trips cannot be reached without the people understanding that it gives them a benefit. So the question of the future of our transport-system is a question about our future lifestyle : Only if people accept a life with less cars as better, we might get their support for a new policy. The acceptance of the so called "modern industrialised lifestyle" obviously is falling,⁵ because its positive sides are dwindling while the negative "side-effects" are growing. This gives some hope that the crisis of this lifestyle leads to a crisis of the traditional role of the motorcar and a public awareness of the necessity of a change in the policy towards it.

Table 2. Average daily number of trips and trip distances according to car ownership

	Car not owned	Car owned	Difference due to car ownership
Number of trips	3,0	4,3	43% more trips
Distance traveled	15,8	30,3	About 92% increase in distance travelled

Another price policy, specially a large increase in gas-tax, obviously is not accepted by the industry and many people who made their life dependend on the use of an automobile. An open discussion of the immense relevance of the energy-use and the other negative effects of growing transport for our future climate and for tomorrows quality of life just seems to start. Unconventional ideas which could lead to a broader support of a new policy are needed.

Very interesting are all proposals, that combine public awareness and the form of the price policy. One basic assumption is that the driver must get a better feeling of the environmental damage he causes with the increase in mileage. This leads to the idea of an increase in the variable costs. The proposed measures of the Drive Plus Plan in the U.S. include the payment of the insurance fee at the gas-station, that means: The insurance fee of the car increases with every mile you travel.

A negative element of all governmental financial measures, how intelligent they might ever be, is that the effects on individual behaviour and the perception of the car (and the distance-intensive lifestyle) are hard to forecast. The same is true for the effects on land-use. More decentralised measures on a local basis in this respect have advantages: If a city or a local firm try to reduce their amount of transport, planning is easier and the possible success can be seen by the citizens. So all the local initiatives for car-sharing or the support of new tram-lines in the U.S. were very interesting. They show that people know, that the environmental consequences of increasing car-traffic are very negative and they give them a possibility to do something practical for a change. This corresponds to the experiences in Europe: Local initiatives are the most hopeful and impressing ways of finding a sustainable future for the transport sector. The interesting plan of the city of Bremen (Germany) to build a part of a new suburb only for people, who don't possess a car (as mentioned above) is such a local initiative. Central governmental incentives for the reduction of the CO₂-emissions of the transport sector will only be successful if they base on local experience and if they give room for local experiments. This is in obvious contradiction to some trends of central governmental initiatives in Europe: There is a tendency to decide even details in the European administration in Brussels and to reduce the flexibility of the local administration, although the theory of "subsidiarity" is used by many politicians.

The problems in the transport-sector, specially in respect to CO₂-emissions cannot be solved by any new foreseeable technology. The necessary change in the trend of growing energy use for driving can only be reached if we stop the trend to a more distance-intensive lifestyle.

ENDNOTES

1. Like in every environmental problem, emission (E) is the product of driving factors e.g. a production or volume factor and the efficiency factor. Transport emissions (E) are the product of mileage (M) and the inverse of car-efficiency (e in miles per gallon):

$$E = M / e$$

with technical measures and improving driving behaviour we can enlarge factor e. By influencing land-use planning, public transport e.g. we can reduce mileage M, which is as well closely related to lifestyle. Taxes could influence both factors.

This rather simplified scheme (it is not complete; it neglects correlations between both factors e and M) shows that positive effects of an efficiency-approach (= influencing e) can be offset by increasing mileage (M), resulting in increasing emissions as we can observe nowadays. Therefore transportation-policy should address all driving factors.

2. According to an analysis of the enquete-commission on the problem of future climate-change of the german parliament ("Bundestag") half of the increase in CO₂- emissions by transport is caused by the change in settlement-structures. This process is assumed to continue with steadily increasing consequences.
3. The lower the density of the population the harder it is to get people to another behaviour, compare Kenworthy/Newman (1989)
4. Compare the criticism of high-speed-trains. e.g. Whitelegg/Holzapfel (1989). Very interesting might as well be that a modern german ICE high-speed-train consumes as much energy per passenger as a motorcar.
5. Compare Sachs (1992, p. 173) and the whole chapter "The Aging of desire."

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