

16. INTERACTION BETWEEN CYCLISTS AND CAR DRIVERS. WHICH ROLE COULD TECHNOLOGY PLAY?

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16.1. FRAME OF REFERENCE OF OUR RESEARCH

This contribution refers to a study on conflicts between cyclists and car-drivers in commission of the municipal administration of Vienna. It continues a series on multidisciplinary studies on perception, attitudes and behaviour of cyclists. For the last proceedings of our meeting at Vienna I reported about our analysis of pedestrian-cyclist-interactions (SCHMIDT 1991b). Correcting my announcement from one year ago: these results are published in "Werkstattberichte" by the Department of town planning of the city of Vienna (RISSER et al. 1992).

The topic "interaction between cyclists and other traffic participants" becomes more and more important because of in general still growing environmental impact of our present traffic system. The extensive use of cars in the Western industrialised countries produces as well global as regional and local problems. Substituting as much as possible individual mobility by car with individual mobility by cycle could contribute to the coping with the following global environmental impact:

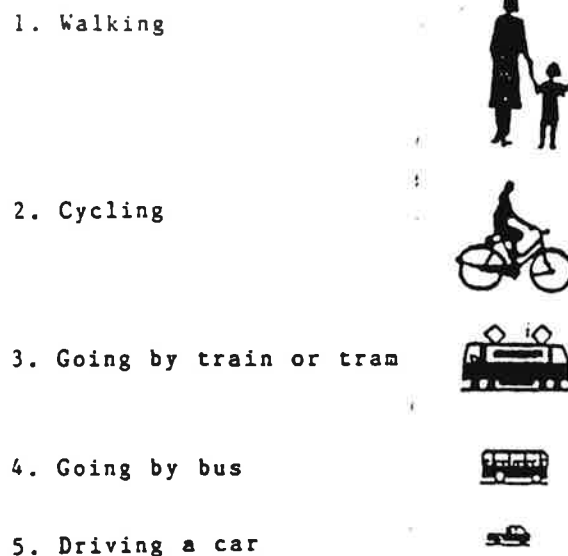
- * energy consumption
- * CO₂-concentration
- * ozon near the surface

Promotion of cycling could furthermore help to diminish severe regional and local traffic problems like

- * accidents
- * noise
- * congestion
- * parking problems
- * air pollution.

These traffic related problems make it inevitable necessary, to search for other accepted forms of individual mobility instead of car-use. To visualize in brief what I mean, I shall present you one of my favorite illustrations, which shows the hierarchy of the social and ecological desirability of different modes of traffic participation (SCHMIDT 1988).

Figure 1 Hierarchy of the social and ecological desirability of different modes of traffic participation



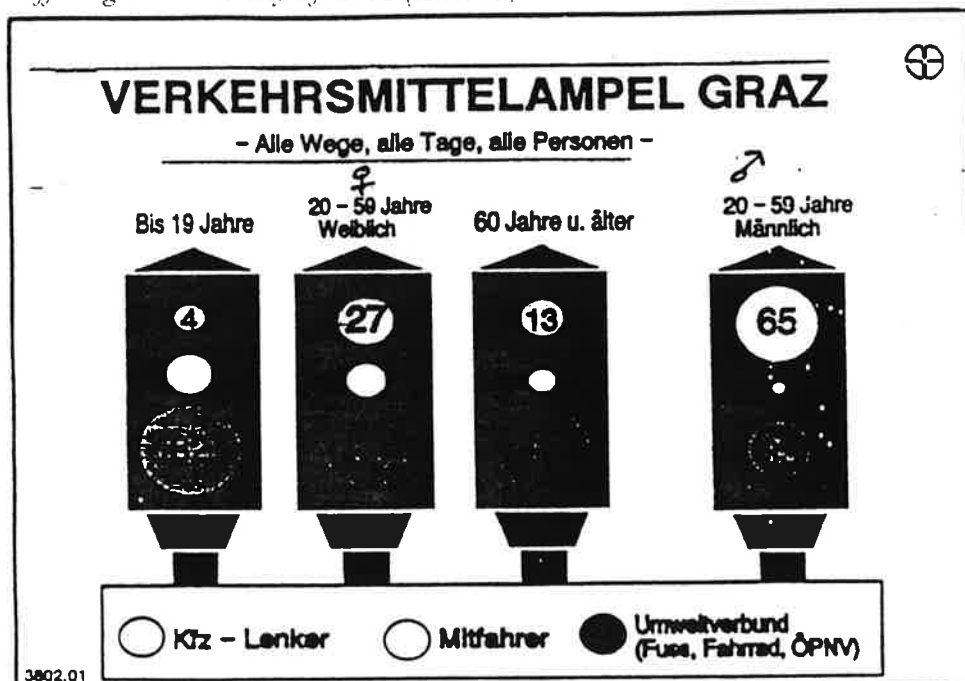
You can observe, that this illustration is manipulated in several respects:

- * the only recognizable persons are female
- * the car is very tiny compared with mighty pedestrians and cyclists
- * pedestrians and cyclists are above the car.

But realize, that this illustration is still more fair than the every day manipulation in the opposite direction: here the car is mentioned and not ignored, like it is often done with that mode of traffic participation, which is especially the domain of female road users: walking.

I mentioned sexual differences in modes of traffic participation. The following illustration shows data for daily mobility, that are more or less typical for different Western European towns. It stems from a study in the Austrian city of Graz.

Figure 2 "Traffic light" in the city of Graz (Austria)



Referring to motives of traffic participation in general and especially for certain target groups it must be taken into account, that especially for the to-day's main users of private cars, males between twenty and sixty years, independence and enjoyment of the ride are leading motives of traffic participation (SCHMIDT 1991a).

Resuming the results of several studies on the motives of traffic participation the following three categories can be considered as generally important for most target groups and most opportunities:

- * independence
- * comfort
- * time saving

The following motives are in general of secondary importance, but for certain target groups and certain purposes they can dominate the choice of traffic mode:

- * costs
- * safety
- * environmental protection
- * enjoyment.

These motives are much more likely to be satisfied by individual modes of traffic transportation than by public transport systems, that are mainly discussed in connection with effects to change the modal split. From a psychological point of view reducing mobility by private cars in our towns without provoking reactance (e.g., the foundation of car-driver-parties) could partly be done by promoting cycling as an every day mode of transportation.

16.2. THE DESIGN OF OUR STUDY ON INTERACTIONS BETWEEN CYCLISTS AND CAR DRIVERS

Referring to the above reflections our purpose was to observe cyclists-driver interactions on different types of roads, which allow fast cycling.

We had three experimental conditions ("technology"):

- * mixed traffic with maximum speed of 50 km/h
- * mixed traffic with maximum speed of 30 km/h
- * cycle-lanes.

The design of our study included the following methods:

- * review of the literature, especially on cycle-lanes
- * group discussions
- * behavioral observation
- * traffic-conflict-technique (TCT)
- * personal interviews on the traffic sites.

16.3. GROUP DISCUSSIONS ABOUT CYCLIST AND CAR DRIVER INTERACTIONS IN TRAFFIC

Now I want to present some results from the second part of our study, the group discussions about cyclist and car driver interactions in traffic.

We chose this method, because we wanted to explore the subjective perception of the behaviour of the different road user groups. Mainly we were interested in the influence of kind and duration of personal experience in this different role of traffic participation on perception of conflicts and especially on the attribution of certain attitudes guiding the behaviour of the others.

On the following list you can see the typical emotion provoking behaviors mentioned.

Emotion provoking behaviors of cyclists and car drivers

- * passing on the right side
- * close following
- * ignoring traffic rules
- * going in front of the cue
- * lane changing
- * turning right
- * turning left

Our hypothesis, that one's own experience with the role of the other traffic participants leads to fewer conflicts and to less attribution of negative motives to the other group was confirmed especially for the car drivers. If they had personal experience with cycling, they had more understanding and sympathy for cyclists. The attribution of unpleasant motives to car drivers by the cyclists was less dependant from the fact, that the cyclist himself was a car driver sometimes.

Feelings concerning the own mode of traffic participation were explicitly mentioned especially by the cyclists. Both groups mentioned different feelings concerning the interaction with the other group. The following list gives an impression of the mixture of positive and negative feelings in connection with the interaction between cyclists and drivers:

Feelings concerning cyclist-driver interaction

- * fear
- * anger
- * surprise
- * triumph
- * saving losing time
- * freedom
- * independence

- * being privileged/disadvantaged

One of the important results was, that negative emotions between these two groups of traffic participants were dominating. There was a lot of misunderstanding of intentions and behavior of the other group, far more than we could find in our former study between pedestrians and cyclists.

We identified different reasons for that:

- * the difficulty to communicate with each other
- * the higher speeds
- * the probability of dangerous accidents
- * the missing experience with the other transportation mode.

As a sort of proof for the latter we took the fact, that the highest tolerance for driver behavior as well as for cyclist behavior was expressed by the statements of those members in our group discussions, who practise actually driving as well as cycling.

16.4. BEHAVIOURAL DATA AND INTERVIEWS ON CYCLIST-CAR DRIVER INTERACTION

Meanwhile the third, fourth and fifth part of our study have been finished:

- * Conflict observation by following the cyclist similar to the method of BROOKHUIS, CHARGEN & WIERDA, but instead of taking a video we used a phonotape for behavior registration
- * Application of the method of traffic conflict observation on certain sites
- * Interviewing cyclists and car drivers on the traffic site

At the moment the data are analysed. We have so far no final results.

16.5. CONCLUSIONS

Apart from detailed results of our own data from the behavioral analysis and the interviews, some general conclusions can be drawn already from the literature study and the group discussions. If we consider the influence of the vehicle used in traffic participation as a variable of technology, we have to bear in mind technology could influence interactions between road users.

Figure 3 Ringing the bell

But I rang the bell to warn him!

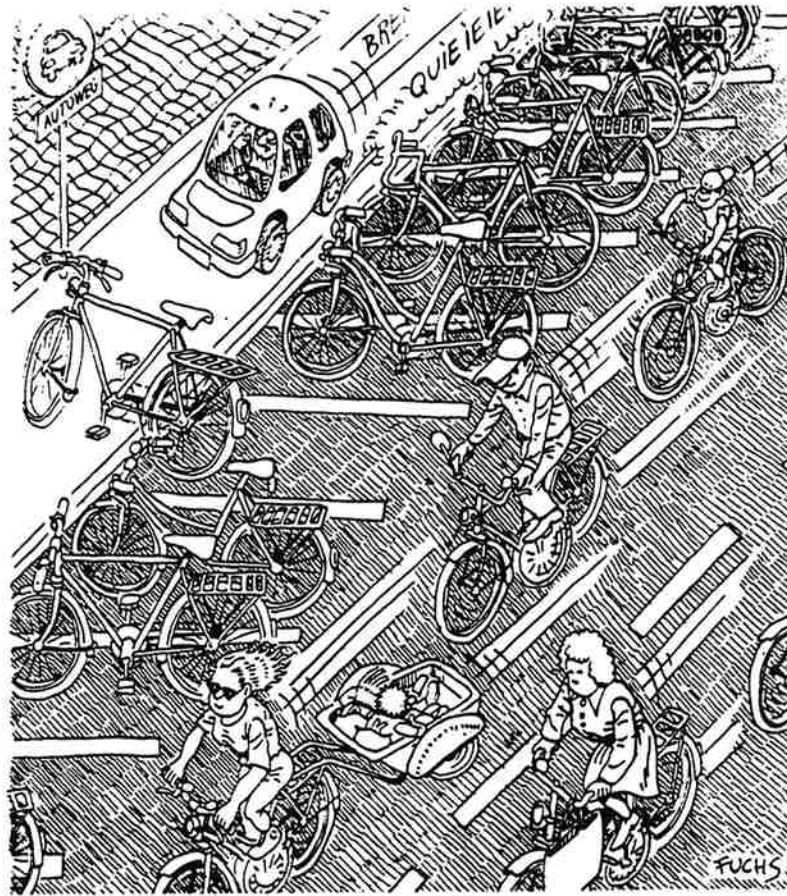


What you can see on the above illustration is the contrary of what we experience nowadays on our roads: instead of cyclists, here, car drivers are in the helpless position and experience neglect by the more powerful group.

I show this to stress one of our conclusions: a change of perspective is necessary, if we wish to reduce conflicts in traffic. That means not only a better understanding of other road user groups. That should also include thinking about a change of the norms and values regulating our everyday traffic behaviour, traffic organisation and traffic policies.

Although Figure 4 is an utopical vision, it stresses a necessary step in the right direction: we have to give more place for those we want to promote and reduce place for those, which are - because of their global, regional and local environmental impact - less desired. Road design should give the preference to non-motorized individual mobility one important consequence being better, and thus conflict reducing, visibility of cyclists for the car drivers.

Figure 4 More-lane cycle-traffic



Furthermore one should bear in mind, that despite of the great influence of technology on road user behaviour one should not forget other conditions of actions (e.g. FIETKAU in SCHMIDT 1988). Technology can help providing a desirable infrastructure, and supporting cyclists' feelings of independence, time saving and also enjoyment.

In supplement to this it is necessary to create incentives for changing travel mode, raising public awareness of the indirect and longterm consequences of different modes of traffic participation. People should be reminded of certain values like ecological consciousness, love of nature and social responsibility, and invite to experiment with new modes of transportation. We are preparing a project, where we use social scientific know-how to promote social and ecologically desirable modes of traffic participation by stimulating environmental learning in companies (LITTIG & SCHMIDT 1991).

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