

CRITERIA FOR “GOOD” TRAFFIC

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Introduction

The ideas presented in this paper were to a large part developed in conjunction with the work in the PROMETHEUS Safety-group. Chaloupka and Risser 1993 (on behalf of the Austrian Research Fund) should produce a concept for the evaluation of new technology with adequate weight on human needs and interests. One main idea: The fact well known to sociologists that very often different interests of different groups have to be considered, and that different groups interests tend to be contradictory rather frequently should be respected, if the frequently-quoted „human factors” should be taken into account more fully and more carefully in all work in connection with traffic.

Theoretical framework of the research

The theoretical framework presented here deals critically with the factors that steer road safety work, from a psychological and social-scientific perspective. Arguments lead to the conclusion that to-day’s practice makes that the probability for an erroneous weighting of different population groups needs and interests increases - simply because too little is known about these needs and interests.

At the same time, everybody who makes decisions that are relevant for the public does so (at least overtly) with the goal to contribute to the public’s well-being.

Summary 1 shows the possible structure of the factors which (should) govern studies - not only traffic psychological - in connection with road traffic problems and be part of an iterative process, and which often are neglected:

Summary 1: Motives for measures in connection with road traffic

| | | |
|-----------------------------|---|---|
| A: „VECTORS” | motives: | motives for measures |
| | requirements: interests, needs | assumption or establishment of requirements, particular needs, legitimate interests |
| B: MEASURES: | | |
| new roads | new equipment | modification of existing roads and equipment |
| C: CONSEQUENCES, „SUCCESS”: | | |
| | REACTIONS AT THE „OVER BEHAVIOUR” LEVEL | SATISFACTION, DIS-SATISFACTION, FRUSTRATION, FEAR |

Variables A

The variables and aspects listed in section A of summary 1 have been called „vectors” in analogy to the term „vector” in physics, which describes a force and its direction. This can be understood as follows in connection with the present discussion: The justification (= force) employed and the direction chosen by those persons or groups who are authorised to, or in a position to, prepare or achieve alterations or innovations in road traffic depends on the motives that are proved, assumed or presented as relevant (the motives for personal decisions are frequently justified by the decision-makers with the motive of social need).

„Interests” focus on objects and on activities that (will) make it easier to fulfil ones needs (in the future) - to learn, to play, to have social contacts, to be successful in business, etc., etc..

The concepts of **„needs”** focuses on those objects and activities that are necessary for individuals and/or the society to survive (and it can be added: under acceptable conditions). Both „interests” and „needs” have the power of **motives**, i.e. they have the power to motivate people to be active in some way (including complaints about a situation, and the like).

The term „requirements” is very complex. In road traffic it covers, roughly speaking, „needs” and „interests”, which are to some extent used as sub-categories of “requirement”. But authorities tend to use „requirement” as a technical term that reflects something absolute. Two examples will serve to illustrate the meanings of the mentioned terms:

- Example 1: When an authority has established the „requirement” for a new road, this is very often justified by the argument that other roads are full and that the strain should be taken off them by the new road. The authority’s motive is a requirement they have identified and they tend to treat like “one plus one is two”..
- Example 2: The introduction of new technologies – at any rate in connection with DRIVE and PROMETHEUS – is justified, somewhat tongue in cheek, as follows: road users have difficulty in coping with a certain demand which the „modern” traffic makes on them. They should therefore be supported by electronic assistance. The assumption is made that such equipment fulfils the safety requirements of the society (= the authorities must be in favour of it) and the drivers’ interests (= the purchasers must be in favour of it.) A requirement is thus created. “Car drivers do not keep long enough headway, so we develop a headway-control function” and “we suppose that they want such a function and that they will use it to keep proper headways”

The employment of the word „requirement” underlines the objective aspect of the motive side, thus: people “buy” (accept) something, or would buy it, because they need it. Why they need it, or what the consequences would be if the “desire to buy” were not satisfied, is treated as secondary. Plenty of modern market thinking is contained in this approach: when the production of a good has not taken place with the assistance of illegal behaviour (theft, deception, etc.) and does not suggest or encourage illegal behaviour, and as long as the good is not itself illegal (e.g., forged bank notes), anything can be produced and offered for sale that the customer will buy (= for which a requirement exists). [It has to be added: Goods are produced to make money. However, it will

be difficult to identify anybody who will make money by supporting pedestrian friendly policies. Such areas are usually covered by the authorities].

„Needs” and „interests” refer more to the subjective aspects of a requirement, and more to the values linked to them, as will be shown in the next section.

Here follow some definitions from dictionaries and university literature:

- *motive*: the shortest definition, that nevertheless seems complete, is to be found in Witte (1989). According to him motives represent „the emotional responses with respect to the combination of situational indication stimulus and inner state”.
- *needs*: these represent the - more or less reflected - wish to produce a particular inner or outer state.
- *interests*: the term describes the wish to produce a particular inner or outer state, as defined under „needs”, but at a more strategic level. The aspect of the intellectual consideration of the advantages and disadvantages of particular courses of action, particular results and the methods to achieve these results is more heavily emphasised here. It is not always possible to distinguish in detail between the two terms.

Variables B

The variables in section B include all kinds of innovations, changes and additions from the local to the international level, in all areas of the system society-[human being]-machine-road (see e.g. Tofote 1992).

The measures which will be of interest for all colleagues working with traffic safety are, e.g., those planned and tested in the 4th Framework programme of the EU.

Variables C

The variables in section C include the consequences of measures at the psychological and social level: satisfaction, dissatisfaction, frustration and similar reactions and their meaning for visible behaviour (overt behaviour), which is relevant for the social system road traffic. What problems can be created when a young person is very satisfied with a product, and uses this product with all his youthful enthusiasm, is well-known to every road safety expert if the word „product” is replaced by the words „motor vehicle”.

When discussing those factors included under the general heading „consequences”, one should perhaps mention again that these should also be regarded as vectors. A high degree of satisfaction with the product „motor vehicle”, for example, with all new equipment and with the available infrastructure is the precondition for the further or even increased use of this product. This then generally creates something which is measured or identified as a requirement.

Analogously, a low degree of satisfaction when walking, due to lacks of safety and comfort, due to communication problems with car drivers, etc. (see Praschl et. al. 1994), will have a low use of the „product” as a consequence.

The importance of psychological and social scientific research on road traffic

It is important to regard summary 1 as a course of action, since satisfactory and promising measures can only be derived from an unambiguous identification and description of the vectors. This is also true for the field of evaluation: our knowledge about the motives, interests and needs of various groups and individuals and the degree of their satisfaction with or frustration by various measures can be improved by a careful evaluation of measures.

Problems on the vector side

Which are the problems contained in the process displayed in summary 1 that make traffic psychological studies and research necessary? These problems are depicted in a very general form, by means of selected examples, in summary 2, and will be discussed below.

Summary 2: Problems on the “vector” side. Selected examples

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| REQUIREMENTS: |
| RELATIVELY OFTEN SIMPLY ASSUMED, USUALLY TECHNICALLY” JUSTIFIED AND NOT FURTHER QUESTIONED: |
| CLASSIC MISTAKE: REQUIREMENTS WHICH ARISE SOLELY DUE TO THE LACK OF ALTERNATIVES ARE OFTEN NOT RECOGNISED |
| REQUIREMENTS, INTERESTS AND NEEDS ARE GENERALLY NOT AS UNIFORM AS THEY ARE REPRESENTED TO BE |
| INTERPERSONAL CONTRADICTIONS/CONFLICTS (ALSO BETWEEN GROUPS) - QUESTIONS OF POWER AND OF REPRESENTATION ARE IMPORTANT HERE; WHO GETS THEIR WAY |
| INTRAPERSONAL CONFLICTS/CONTRADICTIONS ARE OFTEN NOT RECOGNISED - THERE ARE DIFFERENT WISHES WITHIN ONE AND THE SAME PERSON OR GROUP |

There is very often a lack of satisfactory collection of information on the vector side. The requirements for particular measures, as can be seen in summary 2, are frequently simply assumed.

Two examples:

- a) Traffic authorities, which enjoy no direct financial benefits (income) by basing the introduction of their measures on comprehensive motive research, often “forget” this. In the place of such research traditional assumptions are repeatedly employed as vectors: [full roads] = [signal that new roads are needed] or: [no pedestrians visible] = [nobody wants to walk anyway]
- b) Particularly in connection with new equipment another example has to be repeated: this refers to the assumption that road users require new equipment in order to be able (at last?) to cope

with particular tasks correctly and safely (e.g., “obstacle detection” where in parenthesis “pedestrian detection by night, on rural roads” is often added without saying).

In connection with these two examples, one can say that the requirements for new roads or new equipment should not only be investigated technically (in the sense of the employment of research techniques), but also more frequently systematically questioned.

on a): If the roads are constantly full, this can also be a sign that alternatives are lacking, not known, or not accepted well enough.²³ The interesting question is: What do the road users know about (potential) alternatives and under what conditions would they be prepared to make use of them?

on b): Given that particular kinds of traffic behaviour have only changed very slowly up until now, one should not try to avoid the question as to why the road users persist with this behaviour. Which needs or interests are being pursued here? All kinds of measures can only become effective if the behaviour that the suppliers are hoping to achieve on the part of the road users still allows the road users to follow the same interests that they have previously been following, or if the satisfaction of these interests is replaced by the satisfaction of others.

An alternative is that a change produces particular new values: that, in other words, the satisfaction of particular needs (for example the aim of achieving physical sensations with the help of speed, e.g., „sensation seeking”, see Berger, Bliersbach & Dellen 1976) and the pursuit of particular interests (for example a time saving of the order of a few minutes) are no longer regarded as so important but, instead, life quality one can achieve when walking in the city.

From a sociological perspective the following is also well-known: *opinions amongst the population concerning motives are virtually never and to virtually no theme uniform.*

In addition to the individual needs and interests and the extent to which these differ between various individuals and groups, two types of precondition are interesting as preconditions for the development of methodological guidelines for studies and research in traffic psychology and traffic sociology:

Intra-individual contradictions

It has already been said that the needs and interests of groups and individuals are generally not as uniform as they are taken to be when measures are justified. Praschl et al. (1994) and other authors have provided clear evidence for the claim that road users would act more sensibly than is currently customary in some cases, provided that it was guaranteed that „the others” would also act sensibly. Paradoxically, measures that cannot be ignored or avoided by the road users (unavoidable motor vehicle bans, speed limits, etc.) are regarded as good or even demanded by a surprisingly high proportion of the affected groups.

There is also a dialectical relationship between the need for safety and certain „extra motives” (according to Sauli Häkkinen) such as the demonstration of one’s own capabilities, unrestricted movement, the enforcement of one’s claim to power and the like: a larger safety margin makes it

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“Alternatives are lacking” can mean that they are lacking in a physical sense — that they are simply not there -, but also that they are not available in a sufficiently attractive form, etc.

possible to gain greater enjoyment by the experience of these extra motives. Whether this is in the form of a long walk after work, relaxing, „clearing one’s head”, a little shopping, drinking a beer, or in the form of a dynamic or even a relaxed drive home is, depending on how many people choose each of the various alternatives, a great difference.

Which of the alternatives one chooses is not least dependent on the traffic infrastructure (which may for example make walking easy and enjoyable or not), and to what extent, spread over the road network, a dynamic or even a relaxed drive home in one’s ear is in fact possible. The latter makes walking more difficult, even when so many people undertake ear trips at the same time that traffic jams are the consequence.

Inter-individual conflicts

The above makes it clear: the measures desired by one group of road users (take for example confirmed ear drivers, who are well represented in the society: e.g., by clubs, industry) correspond in no way to the wishes of other groups (for examples local residents, cyclists, children and the youth) and can even be in direct opposition to them.

In accordance with the way in which group divisions are chosen, one is concerned with groups with varying political power: one need only compare the difference in social power between adults between 30 and 65, children and the youth, and people over 75.

Industrial companies which sell particular products generally aim at particular groups. When it is possible that the use of these products by the target groups could have a negative effect on the safety and the quality of life of other groups, society generally instigates counter-measures in order to prevent such disadvantages. A risk must however first become apparent. A strong group that feels itself to be disadvantaged will manage to make itself heard with its eau for justice. If the disadvantaged group is one with little social power, however, which has difficulty in making its voice heard (one need only think of the slogan „children have no lobby”), the danger exists that this group will be „forgotten”.

A difference to physics becomes apparent here: if a force is forgotten in a physical experiment, this becomes apparent very quickly. Such „forgetfulness” often has no immediately visible consequences in psychological and social scientific experiments. The expert must assist here, in part by drawing attention to hidden or long-term consequences that could prove to have a negative effect on the whole system. This can be regarded as a moral question, if one wishes.

Problems on the evaluation side

The situation on the evaluation side is not very different to that on the „vector” side: whether measures are effective (which must mean: whether they have the desired consequences) can only really be established when at least two aspects are taken into consideration. a) The desired consequences must be defined and b) one must have methods with which one can establish whether the desired consequences have been achieved.

Summary 3 shows, in simplified form, which faults are common in relation to evaluation work:

Summary 3: Frequently encountered faults in evaluation

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|---|--|
| a) | FREQUENTLY NO EVALUATION |
| b) | PROBLEMS OF OBJECTIVE EVALUATION |
| c) | FREQUENTLY NO EVALUATION AT THE LEVEL OF ACCEPTANCE |
| Is there a lack of safety or not; which possibilities of giving free rein to irrational tendencies are there? etc. | |
| <ul style="list-style-type: none">• Aspects of acceptance → Effect on behaviour• Acceptance by groups with little social power | |
| d) | LEGITIMACY OF VALUES ASSIGNED IS OFTEN NOT FULLY DISCUSSED |

on a) It is well-known that measures are frequently not evaluated. One must nevertheless emphasise (e.g., in relation to PROMETHEUS and DRIVE), that considerable efforts are indeed being made here to evaluate the consequences of the introduction of new technologies in road traffic. In the course of this evaluation, however, a historically developed lack of ideas of what should be evaluated has become well visible (see on b below).

on b) So-called „objective” evaluation has a major disadvantage, especially in the field of road safety: in order to obtain data that are traditionally regarded as objective, namely accident statistics, one must first wait until accidents occur. It would naturally be desirable, however, to attain an acceptable level of safety before a statistically meaningful number of accidents have taken place. This approach is common in the fields of safety at work, air safety and rail safety. A process of rethinking seems to be taking effect now in the field of road safety in conjunction with the introduction of new technologies: *new equipment has no “accident history”*

At the same time, public opinion has become more critical: accidents which are seen to be related to new equipment in any way could seriously affect the reputation of the motor vehicle industry and its suppliers. One has therefore begun to employ alternatives to accident analysis which were previously not regularly employed for safety evaluation. The difficulty here is that little experience with the employment and particularly with the quantitative evaluation of such methods has so far been gained. Regular use should reduce this problem in the course of time, however.

on c) Another type of evaluation problem is much more closely related to those discussed under vectors above: although there is general agreement that extra motives play an important role in road use with motor vehicles, virtually no research has been carried out on questions such as the extent to which satisfaction with a product can be based on the fact that one can satisfy irrational needs with it. Take for example the case that certain equipment makes it possible to take curves particularly fast. Someone who likes to demonstrate how well they can drive and who discovers that certain preconditions make this possible, will make use of this fact.

The acceptance aspect must also be seen from the point of view of whether someone can be a user of equipment or not. New technologies in the form of equipment for motor vehicles offer vehicle drivers the choice of buying such equipment (or not); the producers will of course carry out marketing activities to influence the desired purchasing pattern.

Unprotected road users are confronted with the new equipment and the related behaviour, however, without being offered a choice unless of course they decide to no longer use the roads in order to avoid a changing situation that they cannot cope with. When one takes into account that between 50% and 90% of the population of the Western and Central European countries live in an urban environment (Fischer Weltalmanach), and that in consequence a large proportion of the traffic activity takes place in modal mix areas, and an even larger proportion begins and ends there, the dimensions of this „being exposed without being asked” become clear.

A perceived lack of safety is identified exclusively on the part of the unprotected road user (Laroche-Reef, Ahrens, and others). Such subjective lack of safety leads to the expectation of avoidance behaviour, for example on the part of senior citizens: one gets into a car, lets oneself be driven, lets the car drive one; or one reduces one's own mobility when one has no access to a car either as a driver or a passenger (or has no driving licence) - which is often the case with older people.

Another aspect of the limited acceptance of particular measures on the part of unprotected road users is the following: in the event that the employment of an item of motor vehicle equipment produces disadvantages for pedestrians, they will presumably attempt to compensate for these disadvantages in some way. Take the case that a certain item of equipment - for example a guidance system in motor vehicles - produces a higher traffic density on side roads that otherwise carry little traffic: if the gaps in time between the passing motor vehicles become too short, because the traffic is too heavy, the pedestrians will become impatient at having to wait so long before they can cross the road. This in its turn will increase the probability that shorter - and consequently riskier time intervals will be chosen, if walking is not given up at all, there.

on d) A last point that should be discussed in connection with evaluation problems is the legitimacy of the assignment of values to particular measures. Many persons - whether experts or not - tend to react to cases of a conflict of interests between various groups in traffic by retreating to the position that the reconciliation of the conflicting interests is a purely political question (and consequently - in brackets - not amenable to scientific analysis). This is not entirely acceptable. In laws, for example, (and even in the constitution) priorities in terms of different values are certainly present. The bodily integrity of the individual is accorded a very important position. One need only consider whether someone is causing a danger to life and limb, and the extent to which others are affected by this, in order to have a method of determining whether a state of affairs in road traffic is acceptable or not.

It appears that the attempt is often made to increase safety by persuading or compelling (groups of) road users to relinquish particular advantages for the sake of safety. This must be clearly stated by the authorities in order to make it transparent. Further questions must presumably also be clarified within this context - in terms of basic traffic policy decisions. The following two issues can be seen as central starting points:

1. It appears legitimate to demand that someone should renounce advantages when their *enjoyment of these advantages represents a danger for other* & In the case of protests by car driver representants against traffic limitation measures in densely-settled areas, for example, one must look very closely at the interests that are being defended by the car user side and the interests of other groups that are opposed to these.
2. It appears illegitimate, on the other hand, to demand that someone should renounce advantages *because they would otherwise be endangered by others*. To demand of pedestrians or cyclists that they make wide detours and accept disadvantages in the infrastructure, or even remain at home, simply to be safe, appears to be absurd.

When one has worked for a long time in the field of traffic, one cannot avoid the impression that the demands under a), represented as legitimate, are hardly ever made and even less often achieved, while the mistakes defined under b) are made regularly.

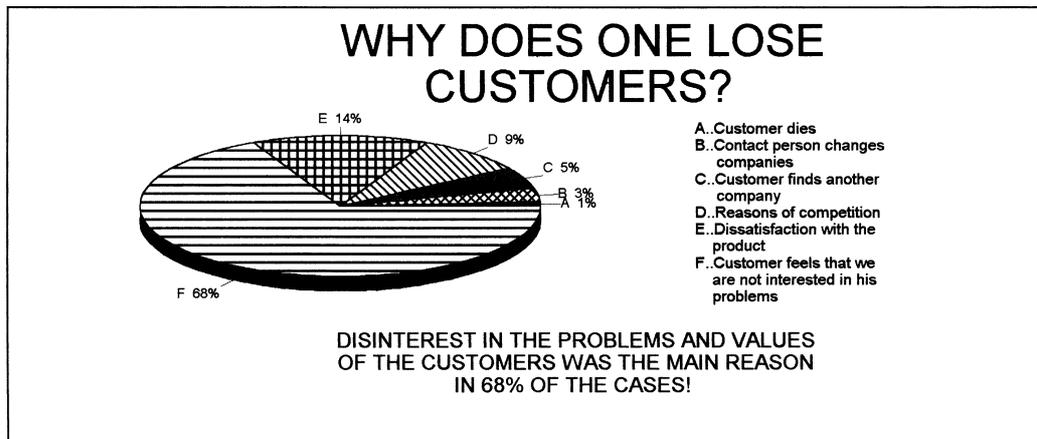
The relationship between vectors and evaluation: An example

The relationship between the vector and the evaluation sides is illustrated by the following diagram, which summarises the results of a study conducted by the Swedish company Asea Brown Boveri. The study was essentially concerned with the identification of what have always been referred to as „vectors” in the present paper. The question asked was: „Why does one lose customers?” A survey was then conducted amongst customers who had changed the company from which they obtained particular goods or services. They were asked to choose from a number of alternatives the one which most nearly applied. The alternatives had been selected on the basis of pre-tests. The most important result (see summary 4): the feeling that „a company” is not interested in the customer’s problems is the main reason why customers change companies. „Problems” in this context means no more than that particular expectations of the customer are not recognised and in consequence not fulfilled.

A result such as that in summary 4 can be very effectively applied to the field of traffic planning: in connection, for example, with the question as to why a partial shift of road traffic to public transport, footpaths and cycle paths is much more difficult to achieve on a voluntary basis than many local government politicians would like to believe. One could learn from the automobile industry here, which has always looked after its customers very well.

It also appears important in this context, in a time of changing values and interests, not to cling to traditional judgements and results uncritically. A high degree of sensibility is essential amongst all persons and institutions who have something to offer in the traffic sector. It is necessary to recognise a change in the customer’s problems as early as possible.

Summary 4: „Why does one lose customers?“



When authorities want to „do something for pedestrians“ they are addressing at least two target groups:

1. those who only walk as much as absolutely necessary, and
2. those who already today have the habit to walk frequently.

It seems reasonable to believe that authorities want to convince those, who do not walk yet, to walk more, and to assure those, who already walk a lot today, that they are doing the right thing (although we have not asked decision makers systematically about this case). They (decision makers) should have Summary 4 in mind.

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