SOME PERSONAL THOUGHTS ABOUT
RISK AND SAFETY IN TRAFFIC

SUMMARY

Main topics of the following contribution are:

- The characteristics of the traffic system
- The aims of the person when travelling
- Risk on a societal and personal Level
- The process of accident occurrence (its stochastic quality)
- Behavioural modification as a consequence of a system change
- What can be done?

1. INTRODUCTION

Modern road traffic is a system in which millions of cars move and meet with a speed difference of 100-200 km per hour, separated by only a few meters from each other. Moreover, those machines of big mass and power are not at all strictly separated from the human living areas and from those members of the community, namely pedestrians, playing children, etc. who actually do not take part in road traffic. On the one hand, our modern life is very much interwoven with car traffic, on the other, traffic means one of the major everyday risks of accident injury or death on a societal level. Traffic safety researchers and experts have the task to study this negative side effect of the system and eliminate or at least decrease accident risks. As road traffic is a technical system built in order to fulfil human needs and controlled (on several levels) by human beings, contributions from both technical and human sciences are needed in order to optimise its way of functioning.

Technical development is based on a mechanistic — deterministic model of the universe and, in fact, that is the most common scientific paradigm within all branches of sciences, including psychology. There is, therefore, an expectation towards representatives of human sciences to present a mechanistic — deterministic model of human beings as users of technical systems, in our case as traffic participants. This model then could be combined with the model of the traffic system and serve to predict its unwanted side effects and show possible ways of eliminating them. It is true that some elements of the human behaviour can be predicted more or less exactly within the frame of such models, but not human behaviour in general. The old deterministic model of the universe is questioned recently even by some natural sciences. Psychology has never been able to build a wide ranging general model of human behaviour or psychological functioning on a mechanistic — deterministic base.
What can we, psychologists, do then without a well proven paradigm of human behaviour in a world of technics that needs some knowledge and prediction of human behaviour?

2. THE CONCEPT OF PERSONAL KNOWLEDGE

Michael POLANYI’s concept of ‘personal knowledge’ (POLANYI, 1958) gave me an insight of a possible contribution to the solving of the problem mentioned above. POLANYI rejects the statement of scientific detachment and states that all knowing is personal knowing — participation through indwelling. A meaningful model of the universe or of human beings can not be set by integrating more and more factual knowledge into a detached mechanistic model. Personal, tacit assessments and evaluations are required at every step in the acquisition of knowledge, even scientific knowledge. He states: “I regard knowing as an active comprehension of the things known, an action that requires skill. Skilful knowing and doing is performed by subordinating a set of particulars, as clues or tools, to the shaping of a skilful achievement, whether practical or theoretical. We may then be said to become ‘subsidiary aware’ of these particulars within our ‘focal awareness’ of the coherent entity that we achieve. Clues and tools are things used as such and not observed in themselves.” In this system “there are three centres of tacit knowledge: first the subsidiary particulars; second, the focal target; and third the knobbier who links the first to the second. We can then say that the knobbier integrates the subsidiaries to a focal target.”

In the case of a psychologist working as traffic safety expert, subsidiaries are both his or her direct experiences regarding human beings in— and outside traffic situations and all theories and psychological knowledge that he or she has accumulated through studies and work in his profession. All those are available in a subsidiary way when traffic safety problems are in the focus of his awareness.

3. SOME PERSONAL STATEMENTS ABOUT HUMAN BEINGS AS TRAFFIC PARTICIPANTS

Tacit knowledge — exactly because its tacit components, the subsidiaries, are essentially unspecifiable — is always richer than what can be expressed by words. It can, however, be tried to be outlined as a personal knowledge, a personal integration of cognitive and sensory experiences focused on an object. As POLANYI said: “Such integration cannot be replaced by any explicit mechanical procedure. In the first place, even though one can paraphrase the cognitive content of an integration, the sensory quality which conveys this content cannot be made explicit. It can only be lived, can only be dwelt in.” A cognitive integration of personal knowledge can, however, be formulated, even if it cannot necessarily be proved by formal logical methods.
1 try to formulate some statements about human beings as traffic participants that mean a basic personal knowledge for me when 1 concentrate on traffic safety problems.

3.1 Unsafety in traffic is caused by us not by them

It is an old hypothesis in traffic safety that a specific group of people is 'accident prone', i.e. is responsible for a disproportionately high number of traffic accidents. Statistical studies have shown that there is a low probability that the hypothesis is true, and accident proneness as explanation of accidents can not be found very often recently in the scientific literature. Still it seems that the majority of the traffic experts share the common illusion of the community of traffic participants, i.e. that 'accidents happen with others not with me'. The illusion originates from a basic characteristics of traffic accidents, i.e. that accidents are very rare from an individual's point of view. Even if road traffic is one of the major everyday risks on a societal level, the average driver in the highly developed countries would have to drive for several thousand years before he gets killed or he kills another person (RUMAR 1988).

The common illusion mentioned above has serious consequences for road user behaviour in general. It means that people make decisions during driving without the feeling that they are taking risk, when in fact their decision is risky. An observation made by SUNMALA (SUMMALA et al. 1988) revealed plausibly that traffic safety experts, as drivers, behave in a similar way. The driving speeds of Finnish road safety experts were measured when they were approaching a hotel where a national meeting on road safety was arranged. This time the topic of the meeting was speed and safety. The results have shown that experts' speeds were clearly faster than those of other traffic participants - including those who had travelled approximately similar distances during their trip. SUMMALA's conclusion from the observation is that the knowledge of safe driving does not guarantee safe driving.

I would like to stress another conclusion that can be drawn from SUMMALA's observation, namely that traffic safety experts share the illusion of the common driver that unsafety is caused by others. It does not only mean that they expose themselves to risks in a similar way as the general population. It means also that, when they focus on traffic safety problems, they have in their minds a tacit knowledge of 'others' who behave in an unsafe way and cause unsafety in traffic. By so doing they lose all the tacit knowledge in their professional work which might have been provided by their everyday experiences as drivers or other kind of traffic participants who are endangered by their own common behaviour in traffic.

To accept the fact that our common behaviour has elements of risk which might lead to accidents in case of some coincidence of factors, could be a similar shift of thinking as was the one initiated by FREUD in psychopathology when he revealed that the
difference between pathologic and normal psychological functioning is only quantitative not qualitative in nature.

3.2 Risk in itself is generally not attractive for people

It is a basic observation on the traffic safety field that modifications of the traffic environment, which were meant to improve safety, had very often less than expected safety effect. The theory of risk homeostasis offered an explanation for the experts saying that the temporal accident rate, i.e. per time unit of aggregate road user exposure, was the output of a closed-loop control process in which the population target level of risk operated as the one and only reference input. The accident rate was defined as a sum of the cross-products of the frequency of accidents and their severity (WILDE 1985). Although risk homeostasis theory refers first of all to an aggregate level, the theory is mentioned very often as an explanation of behaviour on the individual level also. WILDE’s model assumes that the level of accepted subjective risk is a more or less stable personal parameter, but does not suggest, as many traffic safety experts imply when they use the expression ‘risk compensation’, that people seek after keeping a definite risk level quite independent of the gains that they achieve by it.

Risk is an essential part of human life on many different levels. Risk is usually the price of some gain against which it is weighted. A child must risk falling down if he wants to learn to walk. Success can be attained usually by risking also failure in many different areas of human experience. This is true also for traffic. Risk taking cannot be understood by itself, there is always some gain behind the risk and that should be understood if one wants to understand and influence behaviour, in this case road user behaviour.

3.3 Accidents are very often really ‘accidents’

The English word ‘accident’ expresses something about the common understanding of the causation of those unwanted events that happen ‘by accident’. The expert approach is usually to analyse accident processes and find out what ‘caused’ them, what was the preceding event, error, etc. that lead to the accident and without which the accident would not happen. The problems of such an analysis in case of traffic accidents are well known, and the difficulty lies not only in the fact that accidents cannot be directly observed and therefore our information about them is always incomplete. According to my understanding, the problem lies deeper than that. It is impossible to divide traffic actions into two well separated groups: defective ones which cause accidents and error-free ones which exclude accidents. The traffic system, with all kinds of traffic participants, is too complex and it is extremely difficult to define a solid limit between correct and incorrect behaviour. There are, of course, clearly incorrect, erroneous and dangerous actions, but the majority of actions, though safe enough in most of the situations, might be risky or even dangerous in some of them.
which occur very infrequently. That means also that a driver behaviour which would be prepared to diminish accident probability to almost zero (e.g. would be even prepared to avoid running over a drunkard who is laying on the motorway at night) would cost too much both for the driver and for the society. Generally accepted driver behaviour which people learn by their own experiences and by imitating each other, contains elements which might contribute to accidents ‘by accident’ if the situation and the partner’s action produce an unexpected constellation. The legal process, when an accident happens, tries to fine a ‘causing agent’ and by that a ‘cause’. The question of ‘cause’ from the researcher’s point of view is not so simple.

REFERENCES

SUMMALA il. et al. 1988, Liikenneturvallisuusasiantuntijat ajavat kovaa (Road safety experts drive fast), Reports 15:1988, University of ilelsinki, Traffic Research Unit