

**This is the author version of an article published as:**

**King, Mark J. (2000) The role of social science theory and methodology in the understanding and improvement of road safety in Asia. In Proceedings International Conference on Traffic and Transport Psychology, Berne, Switzerland.**

**Copyright 2000 (please consult author)**

**Accessed from <http://eprints.qut.edu.au>**

# **THE ROLE OF SOCIAL SCIENCE THEORY AND METHODOLOGY IN THE UNDERSTANDING AND IMPROVEMENT OF ROAD SAFETY IN ASIA**

**Mark J. King**  
**B.Sc. (Hons.), M.B.A.**

**PhD Scholar**  
**Centre for Accident Research and Road Safety – Queensland (CARRS-Q)**  
**Queensland University of Technology**

## **ABSTRACT**

Standard approaches to the understanding and improvement of road safety in motorised countries have been developed over several decades. They have been based on theoretical and methodological approaches which have also been developed in motorised countries, the majority of which have European social and political institutions and cultural heritages. There is some evidence that these standard approaches to road user behaviour do not always transfer readily to less motorised countries. This may be due to inadequacies in social science theories and methodologies when they are applied in a non-European context. Alternatively, the theoretical basis for the road safety interventions used may not have been reinterpreted in the new context, because a particular interpretation of the theory applies generally to motorised countries, and has thus become implicit. In addition, methodologies employed to determine the behavioural features of the local context, such as potential road user interaction with new road safety interventions, may be underutilised or inappropriate for the task. This paper describes research undertaken to explore these alternative explanations, discusses the implications of the findings, and makes recommendations for future research and practice.

## INTRODUCTION AND RATIONALE

Highly motorised countries such as those in Western Europe, U.S.A., Canada, Japan, Australia and New Zealand have had several decades of experience in developing approaches to understanding and improving of road safety<sup>1</sup>. The theoretical and methodological approaches which underpin these approaches were also developed in motorised countries, and it is argued that they reflect the European social and political institutions and cultural factors which were current at the time<sup>2</sup>. Consistent with broader trends in the transfer of knowledge and expertise, road safety standards, programs, knowledge and practices have been both implicitly and explicitly transferred to less motorised countries.

Less motorised countries have road safety problems which differ from those of highly motorised countries, for example the following characteristics distinguish less motorised countries in South East Asia compared with Australia, a highly motorised country in the same region<sup>1,3</sup>:

- road fatality rates per kilometre of road 2.5-85 times as high as Australia;
- road fatality rates per registered vehicle 2-20 times as high as Australia;
- road fatality rates per population from one-fifth of Australia's, to almost double; and
- a different vehicle mix, with motorcycles and their derivatives, bicycles and their derivatives, and pedestrians making up a larger proportion of traffic.

The process of motorisation also differs that in highly motorised countries<sup>1</sup>, so that it should not be altogether surprising if the impact of Western road safety knowledge and expertise on road safety in less motorised countries is somewhat muted. There is limited evidence that this is the case, in particular a study of secondary sources conducted by the author which focused on the application of engineering measures to improve road user safety in Asia<sup>4</sup>.

Several cases were cited where engineering measures introduced in order to improve road user safety failed to achieve this objective. These failures were attributed to the existence of implicit assumptions about the nature of the road user behaviour problem, and about how road users would react to the implementation of the engineering measure. These assumptions have become implicit because they hold almost universally in Western settings, but they were not necessarily valid in Asia in the settings considered. For example, right angle crashes at unsignalised intersections are routinely addressed in highly motorised countries through the installation of traffic signals. However, this is only effective because drivers generally stop for red signals. In many Asian settings this does not occur, or occurs to a more limited extent, and the crash problem may persist or even be exacerbated.

This finding, together with other discussion and commentary on transfer of Western road safety knowledge and expertise to Asia<sup>2,5,6</sup>, suggest that the standard "toolkit" approach to transfer of road safety knowledge and expertise, reflected in the Asian Development Bank Road Safety Guidelines for Asian and Pacific Region<sup>3</sup>, is not sufficient to guarantee improvement in road user behaviour.

Shortfalls in the success of transfer may be due to inadequacies in social science theories and methodologies when they are applied in a non-European context. Alternatively, the theoretical basis for the road safety interventions used may be sound but require reinterpretation in the new context. For example, many measures implicitly assume a link between the passing of legislation and police enforcement of it, based on a Western model which is not shared by many Asian countries<sup>2</sup>.

These points deal with the *changing* of behaviour. In addition, methodologies employed to *understand* the influences on behavioural features in the local context, such as potential road user interaction with new road safety interventions, may be underutilised or inappropriate for the task.

The purpose of this paper is to describe pilot research undertaken to explore these alternative explanations, to discuss the implications of the findings, and to make recommendations for future research and practice.

## **METHOD**

A review of road safety literature published on Asia to determine the social science theories and methodologies employed. Publications on road safety in Asia were collected and examined. To some extent it was an opportunity sample based on studies readily available to the author in a strict timeframe. The majority of the 68 studies reviewed were published between 1995 and 1999, and a large proportion were conference papers.

The following information was sought:

- the social science theoretical perspective adopted in approaching road safety transfer; and
- the kind of social science methodology used.

As it was a pilot study, the categories for responses were not strictly defined prior to assessment of the studies, but were developed as part of the literature review process. There was also no attempt to establish a baseline comparison by examining the social science theory and methodology content of, for example, Australian studies on Australian road safety.

As an additional exercise, these studies and a number of others were examined for mentions of any factors which had (or could have) impacted on the success of road safety interventions.

## **RESULTS**

With respect to theory, it was recorded whether a theoretical perspective on behaviour was used, or whether the need for such a perspective was recognised. For methodology, the kinds of broad social science methodologies used were recorded. The results of the review are presented in Table 1.

**Table 1: Use of social science theory and methodology in a sample of road safety studies in Asia (n = 68)**

Theory	Theoretical perspectives on behaviour	0
	Recognised need to understand road user behaviour	7
Methodology	Marketing approach	3
	Simple social science methods (questionnaires, observed behaviour)	3
	Ethnographic methods	2
	Community development approach	1

There was a clear and surprising lack of theoretical approaches to the achievement of road safety outcomes through the transfer process, at least where social science theory was concerned. However, there was a tendency for the studies to use ‘naive theory’, that is, to make common sense or popular generalisations about road user behaviour. Social science methodologies were slightly less uncommon than social science theories.

The review of the factors which influenced road safety transfer effectiveness identified the following categories of factors:

- *institutional*, e.g. legislative and decision-making systems, role of police, relationship between central and regional governments, etc.;
- *economic*, e.g. distribution of wealth, relative costs of transport modes, use of development funds for road-building, etc.; and
- *social and cultural*, e.g. social stratification, values, involvement of poorer and disenfranchised people in problem identification and treatment.

## DISCUSSION

Taken together with the evidence that some Western road safety knowledge has proven ineffective in making road user behaviour safer, the lack of the use social science theory and methodology in studies of road safety in Asia suggests that the utilisation of appropriate social science theory and methodology would enhance the road safety impacts of the transfer process. The question is, what kind of social science theory and methodology?

A useful framework for addressing this question was found in Neuman<sup>7</sup>, who distinguished the following three social science approaches:

- *positivism*, which assumes an objective world in which findings can be replicated and apply generally; this is the dominant approach across science and engineering, but does not accommodate institutional factors well, and is unsuited to dealing with social and cultural factors;
- *interpretive social science*, which deals with social and individual meaning systems; it has a clear applicability to social and cultural factors, and some institutional factors; and
- *critical social science*, an action research model with Marxist influences, aimed at changing the situation which is being studied, through the understanding and involvement of the actors.

Much work in road safety falls into the positivist area. *Psychology* (and hence *traffic psychology*) can be both positivist and interpretive, but because it tends to focus on individual behaviour, it takes the cultural context for granted rather than factoring it in<sup>8</sup>.

*Anthropology* falls into the interpretive category, and is therefore useful in addressing social, cultural and some institutional factors. Almost from its inception, anthropology has dealt with the issues involved when outsiders collect information in a different culture, making it well suited to application to the study and implementation of road safety across cultures. Furthermore, an additional benefit is that the data collected through an anthropological approach would seem amenable to use in positivist and critical social science frameworks. The subdiscipline of *medical anthropology* may offer the best promise in this area, as it has a long history of application to practical problems involved in the transfer of health knowledge and technology to non-Western societies<sup>9</sup>.

A social science theory approach to road safety which incorporates institutional, political and economic factors is, almost by definition, going to be macroscopic. An example of this applies in the area of economic development, where a number of existing theories provide a context within which the transfer of knowledge and technology can be understood. They include<sup>8</sup> *modernization theory*, *Frank's dependency theory*, the *cultural template model of innovation* and *world systems theory*. All are linked with particular intellectual and political perspectives which make them controversial.

While none of these economic development perspectives enjoys convincing empirical support<sup>8</sup>, it has been argued that world systems theory (which sees flows of economic and political power as part of a global movement commencing in the 16<sup>th</sup> century) has the potential to be integrated with anthropological theory as an explanatory framework which places cultural meaning systems within an economic development framework. However, the macroscopic elements of world systems theory, which tends to view people and societies as being almost passive would need to be linked down to the social and individual level, by giving people and societies a role in actively responding to global change and influencing their own circumstances instead of being carried passively along in global currents<sup>8</sup>. It appears that this kind of perspective might aid an analysis of political and economic barriers to, or facilitators of, road safety transfer, but without providing information on how best to proceed.

The *injury control approach*, the history and implications of which are discussed in detail by Mohan<sup>2</sup>, is more practically focused and more readily applicable to road safety. It takes economic, social and political factors into account, by explaining the impact (on injury and its prevention) of income differences, the existence and actions of elites, and societal complexity. It also taps into human rights viewpoints and the concept of an ethical civil society, as a way of giving direction and legitimacy to injury control efforts. One caution is that there appears to be a political agenda implicit in the approach, which could make it less acceptable.

The injury control approach mentions the role of the community in injury control. *Community participation approaches*<sup>10</sup> provide a means of mobilising communities to achieve better road safety outcomes through a transfer approach. The approach is rather prescriptive, with little clear theoretical basis, but it might be possible to provide a theoretical rationale using the concept of 'socially distributed knowledge' discussed by Mohan<sup>2</sup>. From the literature reviewed so far, community participation and the concept of social distribution of knowledge do not appear to have been utilised much, let alone evaluated in a road safety context.

## CONCLUSION

The discussion above outlined social science theories and methodologies which could be of benefit in improving the transfer of road safety knowledge and expertise to Asia (and other regions with less motorised countries). With the *caveat* that this was a pilot study and that work is still in progress, a framework has emerged as a basis for understanding and improving the transfer of road safety knowledge and expertise to less motorised countries. This framework involves:

- elements of the theoretical perspectives of world systems theory and the injury control approach to develop a better *understanding of the relationship* between institutional, economic, social and cultural factors and road safety;
- elements of medical anthropology, community participation approaches and the theory of socially distributed knowledge to develop *approaches to implementing* road safety measures more effectively; and
- anthropological *methodology* to supplement traditional road safety methodologies, in order to facilitate an understanding of road user behaviour, assist in the development and implementation of road safety measures, and evaluate their impact.

Further elaboration and refinement of this framework should lead to an approach which can be tested in practice.

## REFERENCES

1. King, M.J. (1999). Transferring road safety knowledge and techniques to South East Asia: Context and challenges. Paper presented at the Conference of Australian Institutes of Transport Research 1999 (CAITR99) Brisbane, December 8-12 1999.
2. Mohan, D. (2000). Injury control and safety promotion: ethics, science and practice. Injury Prevention and Control, eds. D. Mohan and G. Tiwari, London: Taylor and Francis, pp. 1-12.
3. Asian Development Bank (1998). Road Safety Guidelines for Asian and Pacific Region, Asian Development Bank: Manila.
4. King, M.J. (2000). Engineering for safer road use behaviour in Asia, Traffic and Transportation Studies: Proceedings of ICTTS 2000, eds. Kelvin C.P. Wang, Guiping Xiao and Jialun Ji, pp. 963-970, Reston, Virginia: American Society of Civil Engineers.
5. Mohan and Tiwari, G. (1998). Traffic safety in low-income countries: issues and concerns regarding technology transfer from high-income countries. Reflections on the Transfer of Traffic Safety Knowledge to Motorising Nations, Global Safety Trust: Melbourne, pp. 27-56.
6. Campbell, B.J., Knight, P.R. and Johnston, I.R. (1998). Through a kaleidoscope darkly. Reflections on the Transfer of Traffic Safety Knowledge to Motorising Nations, Global Safety Trust: Melbourne, pp. 155-163.
7. Neuman, W.L. (1997). Social Research Methods: Qualitative and Quantitative Approaches, 3<sup>rd</sup> Edition, Allyn and Bacon: Boston.
8. Gross, D.R. (1992). Discovering Anthropology, Mountain View, California: Mayfield
9. Jarolemon, D. 1999. Exploring Medical Anthropology. Needham Heights, Massachusetts: Allyn and Bacon.
10. World Health Organisation (1999). Community participation in local health and sustainable development: a working document on approaches and techniques. Copenhagen, World Health Organisation.