RESEARCH FOR TRANSPORT POLICY

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ABSTRACT: *Transport policy research is carried out by a number of research organisations in Australia and significant resources are expended in their efforts. This paper reviews some recent ideas on the development of transport policy research and investigates the effectiveness of and problems encountered in undertaking such research. It is in three parts: suggestions on the content of transport policy research; a report on recent contributions to the role of and alternative approaches to transport research; and a review of the functions of existing and envisaged transport research organisations in Australia. The paper reports on and draws from the proceedings of a panel session to the XVIIth TRF on "Research for Transport Legislation".*

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Derek Scrafton

1. INTRODUCTION

The function of transport research is to enable development of transport technology and operational practices (technical and scientific research) and to provide the necessary information for governments and politicians to enable them to formulate policies and make decisions objectively (policy research). Much transport research being carried out is technical and scientific (e.g. soil mechanics and aerodynamics) but an increasing amount is in economics, environmental studies, regional planning etc., and is geared to the development of transport policy.

If politicians, managers and decision-makers are to be aware of the transport options available and to be able to predict accurately the consequences of implementing a particular policy or introducing a particular hardware onto the transport market, then transport policy research would seem to be necessary. There must be, for example, a thorough understanding of the transport market - of people's needs, desires and behaviour.

Transport research in Australia is undertaken in or sponsored by a range of universities, government departments and agencies, intergovernmental bodies, consultant firms and other private organisations. Significant resources are expended in this effort. As examples, the annual cost of the Commonwealth Bureau of Roads (CBR) in 1975/6 was approximately $1.7m, and that of the Australian Road Research Board (ARRB) approximately $2.5m. The establishment of a body similar to ARRB to undertake railway research has been approved on the apparent assumption that its benefits will exceed its costs.

The purpose of this paper is to review some recent ideas on the development of transport policy research and problems in undertaking such research. It investigates the relevance of existing and potential transport policy research in Australia. Is the research effective in providing a sound base for changes in transport policy? Are we doing useful research? How much of our research is supportive, predictable and biassed? How far are clients influencing research findings? Should transport research be integrated with economic, environmental or regional science research?

The paper is in three parts:- a look at the content of transport policy research; a report on recent contributions to the role of and alternate approaches to transport research[1]; and a review of the functions of existing and envisaged transport research organisations in Australia. It is presented in the hope that the Australian Transport Research Forum (ATRF) will develop constructive ideas on which the Australian transport research community can build in the immediate future. The examples quoted refer mainly to land transport, because of the author's limited experience. The debate will be enriched by contributions from other modes.

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1. Reporting particularly on the papers and discussion by a panel at the XVIIth Transportation Research Forum (TRF) on 'Research for Transport Legislation'. See: Barber (1976); Cunningham (1976); Ferguson (1976); O'Donahoe (1976); Roberts (1976); Susman (1976).

2 THE CONTENT OF POLICY RESEARCH

Roberts (1976) sets the 'middle ground that can be denominated by policy research' as lying somewhere in a continuum between basic premises (including political judgments and value systems) and specific operating decisions. Using this definition, there should be no shortage of subject matter for transport policy researchers, as the range of problems and potential developments involving or affecting transport is very wide. In his opening address to the 1976 ARRB Conference in Perth, the Executive Director of the U.S. Transportation Research Board (TRB) mentioned that preparing a list of 150 high priority issues in transport had proved relatively easy. The Executive Committee of the TRB (1976) classified and summarised a similar list into 'The Ten Most Critical Issues in Transportation'. Most of the topics, though based on U.S. experience, have some relevance to the Australian scene: financing requirements; energy efficiency; intergovernmental responsibility; transport system performance; effects of regulation; improvement of existing transport facilities; the interaction of transport, land use and city form; transport and the environment; transport safety; and maintenance.

The provision of finance for transport is a very important topic to Australians, but one on which published research is limited. It may be that much excellent work has been undertaken but never released. The financial requirements of transport as against those of housing, education or health requires detailed research and data before we in transport can understand our status and establish our case in and to the community. There is an urgent need for research into the way in which finances should be allocated to the various sections of the economy. We need a better understanding of the make-up of the economy to be able to appreciate fully the factors influencing each policy arena and to be able to predict the consequences of any allocation decision.

In order to assist the allocation process, the transport researcher must achieve a rational basis on which the various modes of transport can be compared. There are no suitable criteria at present for such a comparison to be made, and the argument can therefore be sustained that because so many dollars have been invested in one mode of transport, similar amounts should be invested in another, when the opposite argument may be equally valid. The policy implications and benefits of such research will be significant in predicting the effects of a decision or decisions on allocation between modes of transport, between private and public transport, and between and within regions and States. The question arises: how appropriate and valid are the allocation formulae at present in use by governments?

The clarification and changes in responsibilities of various governments are major problem areas in Australian transport, as they are in almost any subject area in a federal nation, and provide sources for valuable research work which can contribute to the determination of policy. A researcher should not be deterred by the fact that the subject matter is vague and tends to shift its ground; research in the area will be part of and contribute to a long-term effort to improve the nation's transport. It may be that much good research in the past has not been made available either to decision-makers or to other researchers. It is not inconceivable that the results of truly effective research have sometimes been regarded as constituting a threat to existing policies (see Pressman & Wildavsky 1974).

Australia is a laboratory for research on the effect of regulation (including non-regulation) on transport. There is scope for enquiry into how existing regulations are affecting the industry, the market and society in general. The two-airline policy provides a major subject, so does the effect on other modes of regulation to protect State railway systems. Regulation has advantages and disadvantages, but should only be used as a tool of transport policy if its consequences are clearly understood. Further, we must try to determine to what extent regulation is unwritten yet still practised. On a broader scale we in transport should be looking at the nature of our contribution to the development of a scenario in which the freedom of the individual is eroded and development is inhibited. There is cause for concern by the way in which our transport controls, rules and regulations are developed with little regard for their impact.

Improving the existing transport system with "low-cost" solutions constitutes a subject area where researchers are making progress (Hooper 1975) but the translation into practice is relatively slow. A review of the reasons for this is required. The Commonwealth Bureau of Roads (1975) recommended a MITORS program as an improvement on MITERS yet the proposed change was not adopted by State or Federal Governments. The negative response may be due to the indeterminate character of intergovernmental relations noted above, or because the intermodality of transport is an illusory objective. Whatever the reason, it illustrates the low value that policy-makers and operators put on policy research. One way for Australia to build on overseas experience with "low-cost" solutions to transport problems will be to understand more accurately the effectiveness of such solutions. There has been a swing away from major freeway and rapid transit projects towards traffic management, para-transit etc., partly because of the high cost and difficulty of constructing the former. Research into the performance of these alternative solutions is a continuing requirement.

A review of experience in working with transport planners and policy advisers suggests that we are only paying lip-service to the important subjects of transport/land use/city form interrelationships[2], related non-transport solutions to transport problems, and transport and the environment. One approach to more productive and effective policies in these areas lies in increasing the research effort into the development of improved transport system performance criteria, one of the critical areas identified by TRB. These criteria should be developed for the system as a whole, not just for one or two modes. 'Previous efforts to identify performance criteria and associated data requirements, have produced results for some aspects of transportation, but coordinated overall efforts are still lacking' (TRB 1976).

In notes prepared for the ARRB Road Transport Planning Committee on "Directions for Future Transport Planning Research", D.J. Delaney, the Chairman of the Committee outlined his ideas on a range of topics in groupings which have implications for all transport modes: accessibility; urban development; and institutional, legal and legislative considerations. The similarity between these groupings and those of the TRB seems to point to areas where we should be concentrating our research efforts.

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2. There are some exceptions to this generalisation e.g. the research by Maunsell & Partners (1975) for the Cities Commission.

Detailed consideration of specific projects for transport policy research is beyond the scope of this paper However, I draw the attention of ATRF members to a few specific overseas developments which could be followed up by similar research here in Australia

As a result of his experience as Chief Counsel to the Sub-committee on Administrative Practice & Procedure of the U.S. Senate Committee on the Judiciary, Thomas M. Susman (1976) lists two dozen specific questions in air, truck and postal transportation. Examples are: what has been the failure rate among commuter airlines; what is the effect of regulation on innovation; how do carriers arrive at a rate; what degree of truck underloading occurs? The fact that the answers to such basic and important questions are not known is disturbing, as governments and others see fit to make and implement policy in these areas. If nobody knows the answer to such significant questions, the transport business is operating in an incomplete policy framework, even in a policy vacuum.

Partly because of the financial problems over the past few years in some United States railroads, the establishment of Amtrak and Conrail, and their combined impacts, State Departments of Transportation in the U.S. have increased their role and capabilities in rail planning and research. If a national rail system is to be established in Australia, which seems likely in the next twenty years or so, the States will have to reconsider and reorient their railway research. A paper by the Secretary of Pennsylvania Department of Transportation on Statewide Rail Planning (Kinstlinger 1976) outlines areas for fruitful study which have application in Australia. Recent North American experience demonstrates the frailty of the theory that the rail mode can survive its current problems and "come again" based on the carriage of bulk commodities (see Shedd 1976).

Transport pricing is a subject to which researchers apply themselves from time to time in Australia, in both urban and non-urban contexts. There has been some recent research on pricing non-urban transport (Affleck 1976), but most progress has been made in the urban area e.g. the discussion at a meeting held in May 1976 at Easton, Md., makes a major contribution to urban transport pricing research. The papers, to be published as a TRB Special Report, should form a standard against which existing Australian urban transport pricing policies can be measured.

Translating pricing into the hard fact of transit deficits is obviously important, yet it is an area somewhat neglected in Australia. It is unfortunate that governments and their transport agencies seem to be pursuing different paths, partly because their objectives are not precise. If research into rising deficits seems to some to be a waste of resources, the excellent work carried out by the New York State Department of Transportation refutes such arguments - the findings of a recent project produced results to show that 'Transit operating costs ... are projected to double during the next five years', 'Increases in fares appear to be counter-productive....' and 'Transit deficits are likely to continue rising....' (Hartgen & Howe 1976). The N.Y. research has obvious application to Australian cities.

To conclude this section on possible subject matter, two general comments should be noted. There is no shortage of research topics but the danger is that some research that ought to be done is not being done. Social Technology Systems Inc. (1970) observed such a lack in South Australia and explained that it was mainly due to the existence of too many single-mode departments and agencies with narrow objectives[3]. Despite the establishment of a State DoT Transport Planning Division, some of the needed research is still not being done (Affleck 1975).

More recently G.G. O'Donahoe of Harbridge House Inc noted the 'absence of research...which is addressed to real points of concern on many issues' (O'Donahoe 1976) and quoted the example of the large amount of research 'directed at dramatizing how expensive rail passenger service is'. That it is expensive is obvious, 'what is largely needed (is) research that relates the cost to the benefit claimed by its supporters'.

Along the same lines Richard Barber, a former Assistant Secretary for Policy and International Affairs in the U.S. Department of Transportation, stated

> 'the significant issues of today concern whether the correct problems are being researched, the match between the demands of the legislative process and the requirements of the research process is reasonable, and the quality of the research is adequate' (Barber 1976).

These statements by O'Donahoe and Barber apply equally to Australia and lead me to review the policy research process and its institutional framework in this country.

3. APPROACHES TO TRANSPORT POLICY RESEARCH

'Unless the policy-maker can rely upon the evidence for change, the only incentive for change is political' states Paul Cunningham, Staff Counsel to the U.S. Senate Commerce Committee in presenting a case for less advocacy research and more research which better addresses policy issues which themselves are more clearly defined. He notes that 'too much research...concerned with transport policy is directed at questions that don't need to be answered or can't yet be answered because more basic work has not been done' (Cunningham 1976), partly because researchers seem to want to be public policy advocates and partly because those responsible for policy formulation are not doing their job well.

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3. Footnote 9, p.4 of the Urban Land Institute's 1975 report on Management & Control of Growth describes the same problem in the planning and management of development: "Tunnel vision and dogged pursuit of singular agency-defined objectives can be severely disruptive to the effectiveness of a managed growth system. Programs for the construction of utilities, for example, can be either useful or counter-productive to the containment of development." (Scott, Brower & Miner 1975)

Given the need for transport policy research and assuming some of the issues canvassed above will be tackled, one can see a number of research approaches developing and a danger that they could polarise into advocacy research e.g. if a motoring organisation believes the work of government researchers is not presenting its members' case fairly in relation to other road or land users or other modes of transport, the organisation might wish to develop its own research capability or sponsor a university or consultant to undertake research on behalf of its members. Similarly, if a nation is seen to be over-protective of one or a small group of regular air carriers, a researcher seeking to make his name in public policy might develop and present a strong case for increased competition amongst domestic and international air charters.

There is a good deal of advocacy technical research which affects transport policy e.g. in the vehicle area (internal combustion autos vs electric cars vs steam cars) and in transit modes (trams vs trains vs buses) most of which lacks objectivity and which can be extremely biassed. The advocacy approach is one technique in developing transport policy, but 'there must be something to debate (and) some body of intelligence to sustain the argument' (Cunningham 1976).

Barber (1976) focusses attention on some of the current problems associated with transport research as an adjunct to the preparation of legislation. He described the tension which exists between the user or sponsor seeking "results-oriented" research and the researcher's tendency 'to want to build elaborate theoretical models and study problems forever' and stressed that the "results" approach can be dangerous if complex problems are over-simplified then legislated. Barber's recommendation, one with which it is easy to concur but which is difficult to implement, is that researchers must be prepared to disagree with their sponsors. Too often the lack of background information and research forces individuals and organisations into the position of having to make simplifying assumptions which may or may not be valid, in order to achieve "results". The credibility of the research organisation ultimately suffers. The sensitivity of the relationship of the researcher to his policy-advising or decision-making client must be understood and defined for each piece of work.

From the resources viewpoint, Barber points out that many transport issues require contributions from practitioners of economics, technology and law 'that severely tests the capacity of most researchers and research organisations'. Potential results that can be observed in Australia are the tendency of research organisations to limit the scope of their work and results given out 'without any explanation of their shortcomings', which has the same impact (and credibility) as advocacy research - it can be and is effectively used to maintain levels of funding to one mode of transport. This resources problem is one reason why so little progress is made in facing up to issues which cover more than one policy area, such as transport and environment or transport and housing.

Another constraint to potentially valuable research is the presence of conflict on a supervising committee or board, to the extent that it is expedient to set aside topics of relevance rather than tackle them. This could also account for the limited amount of published transport research in Australia other than data support for transport planning.

For any one researcher, deciding which approach to take, given his personal and institutional constraint, is undoubtedly difficult. One is always aware of such chastening comments as James Cutt's description of the economist 'whose role has become simply to dress up political decisions in acceptable technical language' as 'little more than a highly paid kept man or technical flunkey' The relationship of adviser to politician is such that one has to be very close to the other. Indeed to be relevant, research, particularly economic analysis, 'must be defined in a political context'. In his John Murtagh Crossan lecture at the University of Queensland in 1975, Professor Cutt sets out some alternative analytical techniques and administrative arrangements to assist the relationship between 'Economists, Policy Analysts and Government' (Cutt 1976).

The difficulty of economic advisers influencing policy is also the subject of a paper by Professor Peacock of York University who observes 'the role of the economist as the impartial, cautious, technical observer always appealing to the evidence, cuts little ice with politicians and administrators thirsting for action. The economic adviser's dilemma is therefore to maintain credibility' (Peacock 1977). These comments can be applied to other research fields. If an organisation chooses to define its role as providing the sort of advice to a government that it wants to hear, then it has to accept the corollary that its credibility will be limited. Sometimes organisations can take on such a role by default, particularly if a decision-maker insists on being given material to "dress up" a decision he has already made, which in turn means he wants it fairly quickly, whether or not sound research information is available. In this situation, speed and results become more important criteria than rigour.

Returning to the TRF panel, O'Donahoe (1976) is critical of the quality of transport research and the reputation of researchers. His impression of most advocacy research is that:

> 'much of this material is read (by the staff, seldom by the principals) and some factual content extracted, but that it is largely discounted in terms of influencing legislative decisions (and) is of limited "real" use in major policy areas. The more shrill the tone, the more discounted the results, but even reasoned, calm analyses are subject to this discount'.

O'Donahoe goes on to point out that Government Departments can also be discounted if they are seen as 'ideologically committed on many issues'. How many of us in the Forum can claim to work for an organisation or part of that organisation that is clear of such criticism? The failure to electrify the suburban railways in South Australia was partly due to such ideological commitment and its spin-offs. He ends his comments on a constructive note:

> '...all experience frustration in the course of providing research for transportation legislation. And they always will. But the entire process would be made more productive if all of the research community took a more realistic view of the real need for honest transportation research directed at impacts of legislative proposals, searching for answers rather than support of pre-determined ideological positions' (O'Donahoe 1976).

The search for answers in Australia can be aided by clear definition of the problems to be researched, by more direction in the topics we choose to research, by closer attention being given to the character of our criteria and analytical techniques[4], by continually seeking to improve our transport planning processes[5], and by considering the role and nature of our research institutions. I would like to spend some time reviewing the latter i.e. the organisational framework in which most ATRF members work.

4. RESEARCH ORGANISATION IN AUSTRALIA

It is not possible to describe every university, college, government department, research organisation etc. undertaking transport research or everyone undertaking engineering, economics, planning or other research work which might affect transport policy. I therefore must apologise in advance and explain that no priority is accorded those that are (or are not) used as examples in this review.

Universities and Colleges are a major source of transport research. In Australia several schools of economics undertake work in transport e.g. University of Queensland, Monash University and, more recently, the University of Western Australia and Macquarie University. The University of New South Wales has a strong School of Transportation and Traffic Engineering and at Adelaide University one specialisation is the application of operations research to transport problems.

A current talking point is the potential for a centre of excellence for transport education in Australia at which presumably research could be undertaken. Experience in Europe and North America shows that one single centre is not necessarily desirable and that several universities and colleges should be encouraged to develop transport courses and undertake research. These centres can be established to take account of political factors such as the desirability of spreading the research geographically and by subject. Similarly, the concept of an independent policy research unit along the lines of (or combined with) national scientific and industrial organisations has been canvassed from time to time, particularly overseas, but seems to gain only limited support, partly because of the difficulty of feeding its findings and recommendations into the decision-making process.

O'Donahoe (1976) spells out one problem with the academic community and the journals:

> 'These are read and influence legislative decisions. They suffer frequently, however, from a failure to cover all the bases. A study directed at "where we should be" that does not address..."the pains of how we get there" has limited appeal. Often the most difficult aspects of legislative issues are the side impacts rather than the desirability of the goal.'

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4. As described by Cutt (1976) and Delaney (und.).

5. See, for example, Hanson & Lockwood (1976) and Schneider & Rock (1976).

He also highlighted the difficulty the academic has in remaining objective, or more importantly, in being seen to be objective. Once one becomes the "expert" in a field, any submissions or evidence border on advocacy O'Donahoe sees the young researchers as an important stimulus for research programs: 'It is a good thing we have a fresh crop of untainted wizards coming along'!

Universities and colleges have a role in transport policy research, partly because of the great benefit of usually not facing severe time constraints to their research. However, they need to have a clear definition of that role and a perception of the problems facing practitioners University staff should avoid becoming isolated from current problems and be encouraged and prepared to forge links between their research and the community. Such a move should permit the universities to attract and retain qualified and experienced staff and discourage a drift to government and consulting. Immediate transport policy tasks which I feel could be well passed to the academic community, are the testing of theory and the development of analytical tools. When I arrived in South Australia in the early 70s, I sensed an enthusiasm for transport research in Australian universities; we have been slow to capitalise on that enthusiasm.

It is difficult to determine the extent to which Consultants undertake transport policy research or the potential for them to do more in Australia Obviously the time constraints in their contracts plus the clients' requirements for tangible results, make it difficult for consultants to undertake policy research, except as a "spare time" activity. Innovative work such as that by Nicholas Clark & Associates (1976), Loder & Bayly (1976) and P.G. Pak-Poy & Associates (1973) demonstrate the contribution that can be made by consultants, even if it has to be developed by reference to more than one specific project. The latter approach does seem an unfair requirement and perhaps more transport policy research can be routed to consultants, particularly in such areas as mathematical modelling and social issues relating to transport.

Operators of transport services have potential to undertake transport research, yet it is patchily developed e.g. in Canada the railway groups (CN and CP) have well-established research organisations, but only the biggest trucking companies undertake research, while across the border the American Trucking Association is a major producer of advocacy research In Australia it seems the airline companies are the main transport companies which undertake research into their operations and market that directly influences policy, much of it presumably not published for commercial security reasons. There are other transport-related organisations which show an ambitious approach to policy research e.g. Shell.

Market research should be important to operators e.g. records of passenger movements and forecasts of demand, yet many operating organisations seem to consider research to be unproductive. This may be the correct commercial attitude but until we know much more about the characteristics of the transport market, operators will have difficulty in tailoring their service to demand.

Interest Groups represent a wide range of community and special purpose interests from road associations and professional institutions (e.g. Australian Automobile Association, Australian Electric Vehicle Association, and the chartered institutions) to enthusiast groups and local resident action committees They usually have limited resources and/or limited objectives and do not have much time to enunciate their views on policy, occasionally being forced to mount protest actions in order to gain time to prepare their case

Such bodies should contribute to transport policy research. If they are not given access to existing expertise and the planning process, then they can only influence policy through advocacy and will do so. However, in order to contribute to the process they must be prepared to move away from their narrow objectives. For example, if the bus, tram and rail enthusiasts are to influence policy, they need to understand and respect one anothers' cases. Similarly, a professional institution has to be prepared to examine critically its own members' roles, not merely publish irate editorials about consumers, governments and planners prejudicing their producer or supplier interests - even when they cost the community millions of dollars a year.

The community must be actively involved in transport research work to ensure we are addressing the right problems and producing acceptable solutions. The role of the interest groups is still emerging but the signs are encouraging. The influence of the Bicycle Institute in Victoria and its counterparts in other Australian states in bicycle planning practice is significant. In the wider scene, the rise of public interest research institutions is partly a reaction to strong producer interests. As an example, the Public Interest Economics Research Foundation concentrates its efforts on the following objectives:

> 'decrease disparities in the distribution of income, wealth and economic power; increase economic efficiency and consumer sovereignty; decrease discrimination; internalise external costs or eliminate or compensate for them; reduce concentration of economic and political power' (Ferguson 1976).

To those who are threatened by such research, public interest might mean causes such as conservation, environment, the under-privileged, civil rights, peace etc. But these interests are fundamental to our way of life - to try to disengage them from transport policy development might be convenient but could lead to erroneous results, some of which will manifest themselves in another form at a later date e.g. the impact of freeways or supersonic aircraft. Public interest research should be encouraged so that community viewpoints will be accorded the credibility they require and deserve.

Governments continue to initiate, sponsor and carry out transport policy research, yet their roles have never been clearly defined, partly because the objectives of governments in transport are equally vague and undefined. In Australia the transport research role of the Commonwealth Government is undergoing continuous review, as seen in the recent merger of the Bureau of Transport Economics (BTE) and the Commonwealth Bureau of Roads (CBR). Cooke (1976) outlined a possible role for the Commonwealth Government in coordinating transport research to ensure efficient use of resources. Such a role could involve a further merging of some of the research organisations drawing on the federal government for financial and staff support.

Other levels of government have parallel or complementary research tasks. State main roads agencies and local government bodies provide data for the Australian Roads Survey, while preparation of a 1976 unpublished report on the effects of federalism on future Commonwealth transport legislation involved a task force of senior officers of Commonwealth and State Government departments.

In a statement before the U.S. House of Representatives Committee on Aviation & Transportation Research & Development, H.L. Michael (1976) warned of some of the dangers in federal agencies engaging directly in road and road transport research and stressed the need for such research to be complementary to that being carried out in state and local agencies. Professor Michael's view that 'The major function of the federal agency (is) to coordinate the

highway research which uses federal funds and guide a total program toward national objectives' applies in varying degrees to all modes of transport and, even more importantly, to the complete system and to inter-modal transport policies. Similarly, state and local governments must resist the temptation to respond to the crisis atmosphere which surrounds transport in the capital cities and "do something" at the expense of adequately researching the underlying issues such as the interdependent relationships of the transport market (Halpern 1976).

It can be argued that any one level of government should stick to policy research in its own jurisdictional sphere e.g. the Commonwealth would concentrate on air transport and interstate transport such as national roads Such an approach fails to acknowledge the interdependencies between governmental transport policy activities and does not allow for the need for one area of government to analyse the impacts of policies formulated by another.

The constraints under which government departments and agencies have to work tend to reduce the capability to undertake wide-ranging research on major issues. Time constraints, short-term priority tasks, lack of basic data, limits on staff capable of developing or working with analytical tools; unwillingness to spell out shortcomings and assumptions (on value of time, elasticity of demand etc.) tend to limit government research to ad hoc single-project analysis related to immediate government requests at the expense of long-term prediction and evaluation. As noted above, the problems of allocating resources within the economy and within particular sectors of the economy are fundamental to transport policy and need to be tackled. The establishment of a new strategic planning and resource allocation group within Commonwealth DoT should permit such work to be done and relieve some of the workload of BTE.

Intergovernmental Bodies such as ARRB, OECD, ECMT, NATO and UN agencies are also active in transport research, but the extent to which such bodies can undertake transport policy research is limited by their charters which in some cases require an accent on results-oriented research projects or on technical work to specifically avoid research on policy issues. Because such bodies are required to report through what is usually a strongly hierarchically structured board or management, perhaps responsible to several member governments, the scope of the research, the way the centre works and the sort of projects it gets involved in tend to be imposed from above or subject to considerable review by the sponsors. Developing innovative research programs and establishing and maintaining professional credibility in such circumstances is difficult and it is a credit to the staff of many such organisations that they manage to do so.

In reviewing transport policy in universities and colleges, the concepts of centres of excellence and independent research agencies were introduced. An independent centre which is able to apply the benefits of the academic community to important policy problems which tend to be low priority with researchers in government or intergovernmental organisations (because of time and organisational pressure constraints mentioned above), might be preferable to organisations affiliated to either universities or government. I favour such a "Transport Research Institute" but only if it is backed by a long-term commitment, as the damage caused by withdrawal of sponsorship and winding down of the centre would cause harm to the research community in general and perpetuate the current situation in which needed transport policy research is not being undertaken.

5. SUMMARY & SOME RECOMMENDATIONS

In this paper an attempt has been made to summarise the research needs for transport policy in its institutional context. Delaney emphasised that 'to establish and continually revise our research priorities in Australia, is a research project itself' that must take account of two major constraints: the financial resources available and the interests and abilities of the researchers. Researchers and policy-makers must determine what the transport system is trying to achieve and at what cost.

Of the many issues highlighted above as possible research topics, three policy areas which are receiving only limited attention in Australia at the present time but which will be increasingly important are: prospects for and impacts of regulatory reform, transport pricing and the use of non-transport solutions to so-called transport problems. Each of these subject areas is large and within them a number of socio-economic components lend themselves to analysis e.g. the significance of the distributional effects of policy changes, the transition paths and their costs (see Susman 1976).

Among the many subjects which can be usefully pursued immediately to build on existing material and hopefully put us in a better position to advise on transport policy are: the transport modes and their interactions; the characteristics, behaviour, needs, and desires of the community our system is supposed to serve; the inter-relationship between land use, employment, commerce and transport; the reaction of the transport market to alternative transport and non-transport policies; and the technology available and the options available to solve existing transport problems.

The development of suitable analytical and predictive tools to enable the transport market to be studied, to evaluate alternative policies and their impact on the community, is also necessary. These tools must be capable of assisting the continuous monitoring of policies before, during and after implementation. Analysis must be recognised as one stage in the dynamic policy process which has 'as its objectives the provision of improved information for decision-makers and the tentative definition of social improvement' (Cutt 1976). Policy researchers must not contribute to their own difficulties by 'viewing analysis as a panacea'.

The size, scope and costs of adequate data bases will continue to require the attention of the transport research community. The need for operators and government to obtain basic information on the transport system and its market opens up a range of research topics about which only limited published information is available. Despite the fact that transport policy research is carried out in Australia by the organisations listed above and similar bodies, when a politician, investigating committee or decision-maker looks to these organisations, the specific information required is not necessarily available.

The pursuit of national, federal or statewide "transport policies" per se will be far less profitable. Each component of the transport system, aided by the research community, should seek to better understand its market and its capabilities and from such work I suggest the policies will evolve in such a form that they can be influenced only marginally by political and ideological factors.

The procedures for coordinating and disseminating transport research in Australia are in the melting pot and will continue to evolve and become clearer in the near future. Governments, through the Australian Transport Advisory Council, should be prepared to strengthen the coordinating role as a trade-off for increased financial support. Australia already has bases on which to build stronger research committees and coordinating bodies and any new establishment should be welded onto or at the expense of an existing organisation. Increasing the number of committees or agencies is not desirable. Our resources are too thinly spread to envisage a multitude of boards, centres of excellence, government agencies and university researchers expending their efforts in duplication and committee meetings. Transport research should be a cooperative effort of all the interested parties welded, encouraged and funded from a central focus. I suggest the Commonwealth should be that focus, with the 'states and local agencies maintaining direction and authority' (Michael 1976).

There are several avenues for the dissemination of transport policy research: occasional papers, government reports, the professional and learned journals, regular meetings such as ARRB and ATRF and seminars on particular topics. The medium chosen to outline and explain the results of transport policy research is to some extent governed by the subject matter, the academic rigour, the need for discussion and so on. The ATRF was established for researchers, planners and policy advisers to get together informally to report progress on current research and transport planning. Some journals tend to cater to modal interests, others to specific technical, academic and professional matters. The market for published material in Australia is limited and we may have to rely and direct our emphasis to a greater extent than elsewhere on one-off reports, symposia proceedings and occasional publications e g from the BTE and universities. In addition, advisers should keep in mind that the daily press, radio and TV are significant in promoting and canvassing transport policies and probably do as much to bring about change and improvement in transport services than do transport researchers, planners and managers.

Finally, transport policy researchers and advisers should be prepared to broaden their horizons by more travel to investigate at first-hand, and by reading in the literature, the nature and problems of overseas transport policies. Too often Australians do not comprehend fully overseas developments and tend to accept them uncritically. The tendency to eight-week long "shop-window" visits overseas unfortunately seems to foster such views. As an example, those who would encourage European-style LRT on a technical basis seem unaware of and unwilling to face the implications for labour involved in switching from suburban rail. Similarly, the proponents of busways must appreciate the critical role of the design of the vehicle which is to operate on the new infrastructure. I believe that the cost of a visit overseas can be justified by the knowledge gained, insights absorbed and simple mental re-invigoration by a frank discussion and critical review with those involved in developments of relevance to the Australian scene.

6. CONCLUSIONS

I have selected and commented on some important developments and critical problems in the field of transport policy research. Several questions and interesting problems are thrown up, but few "answers" are immediately apparent. The following conclusions summarise what seem to be the significant elements in transport policy at the present time; all are true to some extent in Australia.

(a) There is a need for transport policy research, if politicians are to be advised.

(b) Honesty and relevance are qualities the politician should expect from his advisers.

(c) Quasi-government agencies, authorities, commissions and boards tend to create as many problems as they solve, because of their vague relationships to government.

(d) There is a strong bias in transport policy to retention of the status quo, which needs to be corrected. The advocate for "no change" should have to justify his position as much as does the recommendation for "change".

(e) The concept of a national transport policy is elusive. At best it will consist of a set of generalisations or principles that are not particularly helpful. Cutt's appeal for a 'problem oriented view... explicitly linked to the budgetting process in a multi-year framework...' requires consideration.

(f) The development of a coherent program of transport policy research making best use of the research community in Australia is itself a high priority project.

Transport policy development will continue to be difficult if politicians, planners and managers prefer to support the myths rather than the realities of transport. Researchers do have a key role, if only, as Meyer puts it 'to avoid adding to the confusion'.

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