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THROUGH THE LOOKING GLASS - SOME REFLECTIONS ON TRANSPORT
RESEARCH IN THE 1980's

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The relevance, direction and extent of transport research has been questioned both overseas and in Australia. Finite goals are necessary at National, State, organisational and establishment level so that priority and relevance of research can be determined, projects of low benefit may be terminated and available resources may be more effectively allocated. Observations on the Transport Planning and Research Programme in Australia show that resources are fragmented and that there is need for new initiatives which will place more emphasis on research in preferred directions. Possible initiatives are suggested.

The views expressed in this paper are those of the author and do not necessarily reflect those of the Commonwealth Department of Transport.

THROUGH THE LOOKING GLASS - SOME REFLECTIONS
ON TRANSPORT RESEARCH IN THE 1980's

"Would you tell me, please, which way I ought to go from here?"

"That depends a good deal on where you want to get to", said the Cat.

"I don't much care where" said Alice.

"Then it doesn't matter which way you go", said the Cat.

"... so long as I get somewhere", Alice added in explanation.

Alice in Wonderland.

INTRODUCTION

The direction and relevance of transport research and the degree to which it aids the development of policy or leads to more effective solutions to transport problems are matters which cause concern at international, national, state and institutional levels. However, at all levels there are competing priorities which determine in the long run the flow of resources available for research.

In providing comment on a review of transport research for the Australian Science and Technology Council and at an earlier session of this forum Dr Stuart Joy (Joy 1977) expressed the view that Australia could purchase off-shore such transport technology research as it needed. Indeed he was of the opinion that Australian needs for research in transport were slight. I contest this and submit that such a view ignores the benefits that we can reap from research and that we must have research competence and resources addressed to finding adaptive and innovative solutions to transport problems: There is an undeniable need for things to be looked at through the eye of the researcher - the questioning mind must exist to ask "What, how, when, where and why".

At the same time we must make sure that research resources are not devoted to seeking greater and greater sophistication in the solution of yesterday's problems.

GOALS AND DEFINITIONS

In reviewing the transport research scene in Australia it is first necessary to establish some benchmarks. This is exemplified by

Alice's dilemma at the commencement of this paper. It is not sufficient that we wish to "get somewhere" or that we "don't much care where". In this the Cat recognised the need for stated goals and the way to progress to those goals. Goals which could provide a benchmark to judge one's progress and, if necessary, to adjust these as new information, changed circumstances and current relevance varied.

Are we as wise as the Cat? Has each authority, organisation or person represented at this Forum, all of whom presumably have some concern for transport research and its relevance, set down goals against which performance and progress can be judged and which can be continually examined to ensure that the goals are still relevant.

Further, how many of the authorities represented here can claim that each senior executive in his organisation has a clear understanding of the goals of the organisation? I am of course not speaking of the "Golden words" with which every policy statement is garnished and which, by definition, are all things to all men. "More, safer and efficient transport" etc, goes little way to setting finite goals against which priorities can be developed.

I suggest that a majority will be like Alice and be hoping to get "somewhere" and that the findings in the particular projects occupying them will fit the pattern of future needs.

In this paper I propose setting some definitions, looking at some attempts at establishing a future scenario, at attempts to establish research priorities and then to examine some Australian transport research programs. I will not necessarily provide answers but I hope that during discussion at this Forum some new directions may emerge.

Future Scenarios

In 1977 in connexion with the administration of the Commonwealth Transport Research and Planning (TPR) program only the representatives of one State admitted to having an overall plan, then looking forward several years, which looked at urban transport to ensure that various modes each met an appropriate part of the total urban public transport task. With this exception there was little doubt that the TPR program could be no more than a number of individual and unrelated projects.

I expect you have all read with care the scenario for roads in Australia and New Zealand by Dr Max Lay (Lay 1979). This provides in summary 25 predictions of likely change in the future: already some of those predictions (resulting from changing fuel prices) have been proven correct. It is against such background that the Australian Road Research Board (ARRB) three year program is refined to a current one year program. It provides a mechanism for new projects to be introduced and for projects of lower benefit or relevance to be terminated. The processes of program development (Lay 1980) provide a model for corporate planning. Similarly, in the case of Australian Railway Research and Development Organisation (ARRDO) objectives and the future program are developed in the document Progress and Prospects (ARRDO 1979).

Within the TPR program some States are addressing the future. Examples are Western Australian project WDG75/5 (WDG75/5) and South Australian project SP78/4 (SP78/4). These embrace respectively, the formulation of transport strategies for Perth in the year 2000 and the assumption of several scenarios in SA in 2010 with the development of possible paths leading to these. Other projects look at corporate aims of transport organisations.

Definitions

It is now necessary to introduce two definitions and I use those developed in the TPR program (TPR 1977)

Research means an investigation or experiment aimed at the discovery and interpretation of facts, revision of accepted theories in the light of new facts or of determining means for the practical application of such new or revised theories.

Planning means the establishment of goals, policies, or procedures or defining the development of means for their achievement.

RESEARCH PRIORITIES

With the establishment of goals it is possible to determine relative research needs. Cafferty and King (1980) note that "lacking specific direction and without an indication of assessment of relative research needs nearly any project could be included in the broad areas identified for funding by the (US) Department of Transportation". This, as will be illustrated later is much the picture in the TPR program.

The mere listing of research needs is of little value unless effort is put into ranking these. Probably the most developed process at this time is that by Graeb, Hood and Heathington (1980) who applied a Delphi technique analysis to listing of priority research needs which were prepared by expert groups. They conclude however that "it would seem prudent for research administrators to recognise the strengths and weaknesses of the various techniques that can be used for setting research priorities".

Overseas Research Priorities

The difficulties of program development in international organisations such as ECMT and OECD where national positions must be preserved are well recognised. The processes of establishing a consensus view on transport or other issues often results in far from effective decisions - this is so well recognised that it spawned the term "harmonisation". Thus although a consensus view is not achieved the views may possibly be "harmonised" to resolve conflicts in policy or national stance.

The Science Research Council (SRC) in UK through its Transport Sub-Committee has identified the need for adequate research (Ogden 1980)

and has issued a statement on research priorities which includes the need for "critical examination of the interaction between research and policy making". Finally the SRC noted that "the quality, relevance and communication of research must also be called into question".

In 1976 the US Transportation Research Board first issued their "Ten Most Critical Issues in Transportation" as seen by TRB's Council members and Committee Chairman. This has been successively updated and has, by iteration, produced a base against which the resources devoted to these issues can be judged. (Transportation Research News 1976, 1978, 1979).

Australian Research Inventories

In Australia, recognition of the need for proper examination of alternative transport solution and for investigation prior to major investment assumed finite form with the introduction of the Transport Planning and Research program in 1974⁽¹⁾. Now in its seventh year, the TPR program and its effectiveness warrant critical examination.

In the same period Australia has seen a proliferation of surveys of research including those by the National Committee on Transportation of I.E. Aust.⁽²⁾, ASTEC⁽³⁾, Senate Sub-Committee⁽⁴⁾ and of sectors within the transport field. These are symptomatic of the problem - people want to know what is going on; they want more effective communication. Whether those bodies realise or, indeed, have the competence to determine the relevance of what is going on is of course another question. The manner in which they could improve the position is limited by constitutional responsibilities, by the bureaucratic system and by the lack of established goals.

Those of us who are concerned with establishing a healthy and sound research environment must overcome these limits. Let us not be foolish enough to say "but if we had more funds we could do more effective research". We must see and demonstrate that available resources are directed to areas with the greatest potential pay off - and we must demonstrate and publicise whenever possible the value of the results of research. In this the researcher fails dismally and cannot understand why funds are reduced or denied to him.

Priority Issues

As has been said earlier in this paper we firstly need established goals. It is then possible to establish what are the priority issues facing Transport in Australia for which research is necessary to provide policy guidance; knowing that, we can determine what is being done to this end and we can also look into re-allocation of available resources. Finally, if we believe additional resources

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- 1 Transport (Planning and Research) Act 1974
Urban Public Transport (Research and Planning Act 1974
Transport Planning and Research (Financial Assistance) Act 1977
 - 2 Institution of Engineers Australia
 - 3 The Australian Science and Technology Council
 - 4 Senate Sub-Committee on Industrial R & D in Australia

to be necessary we must mount a sound argument for their provision.

A strong and frequent criticism of transport research is that it is increasingly directed at short term needs and "quick fix" solutions. I believe this is symptomatic of the shortage of funds in the present economic climate but its effects can be seen at all levels of research where results are demanded quickly and at minimum cost. Thus in the public and private sector conditions lead to "shooting from the hip" rather than proper investigations of options and alternatives. Could this position be alleviated by terminating work which will provide low benefit?

Future Research Directions Workshop

In an attempt to identify research directions which would meet future needs the Commonwealth Department of Transport arranged a workshop in March 1980. Some twenty Commonwealth and State officers who are concerned with transport research participated and identified the key areas in which they saw the need for research. Following the workshop, they were each invited to edit and further define the Key areas they had identified.

The workshop was considered of value by participants as it represented a conscious effort to look at future needs without constraint.

Because of the particular background of the participants this "think tank" showed a strong bias to planning rather than research but, even so, the spectrum of issues identified extended from basic research to policy research with emphasis on the latter.

It was felt that this initiative could be usefully repeated but that, in such case, the participants should represent a broader spectrum of research interests.

Communication

An important question addressed by the above workshop was whether there was a suitable interchange of information and thinking between transport researchers, transport policy and regulatory people. It was suggested that transfer and interpretation was a management function (policy analysis) and not the prime responsibility of the researcher; nevertheless the researcher must adequately report his results so as to avoid misinterpretation. It was also clear that in many cases feed-back from political or policy levels was far from effective, thus depriving the researcher of important feed-back which could increase the relevance of his research.

A valuable result from the TPR program has been the increasing involvement of authorities and operators who would be affected by results of recommendations arising from the projects. This has several benefits including the more ready acceptance of results and a better understanding of the problems. Quarmby (1978) makes the point that such close working between researchers and operators leads to researchers knowing the practical realities and the operators developing a more systematic and disciplined understanding of their own problems.

TRANSPORT RESEARCH IN AUSTRALIA

During the various reviews of transport research in Australia mentioned earlier in this paper it was evident that the Commonwealth assisted TPR program constituted some 70% of all government sponsored transport planning and research. The TPR program is now in its seventh year and by June 1981 the program will have cost some \$85 million.

The objects of the program as stated by The Minister for Transport are to provide a continuing program of TPR to meet changing national and community needs, to encourage land transport research and to ensure that both research and planning are broadened to cover areas which might not otherwise receive attention (Department of Transport 1980).

Funds are made available to the States for use in planning and research in all areas of land transport including roads, road safety, rail, urban transport, for assistance to the research programs of ARRB and ARRDO and for areas of interface between land transport and other transport modes.

It is possible to examine the TPR program from various viewpoints and to gain some idea of trends in resource allocation.

Modal Split of TPR Program

The percentage of the TPR program devoted to each mode in 1979/80 is given on table 1: Also shown is the modal split for the program in 1974/75 to 1976/77 when assistance applied solely to roads and urban public transport.

It can be seen in table 1 that the increase in rail research (including the creation of ARRDO) has caused a reduction in road related TPR. Discussion with State officers indicates that much road TPR which has been displaced as a result of broadening the program has continued under State roads programs.

TABLE 1
Modal Split of TPR Program
(% of Funds Allocated)

	1974/75 to 1976/77 (TPR74 ⁽¹⁾)	1979/80 (TPR77 ⁽²⁾)
ARRB	18	16
ARRDO	-	4
Road (Planning, Pavements etc)	25	14
Roads Statistics	18	9
Traffic	4	7
Safety	4	6
UPT	16	13
Rail		18
Other (inclu. Multi modal)	15	13

(1) Transport (Planning & Research) Act 1974
(2) Transport Planning & Research (Financial Assistance) Act 1977

Research/Planning Content of Program

In 1974 there was an evident need for increased investigation and planning in all areas of land transport with the possible exception of roads which until then received assistance under the Commonwealth Aid Roads Act 1969.

In the period since 1977 adjustments were made to maintain the level of funds allocated to TPR; at the same time the program has been broadened to cover rail (including ARRDO) and the interface with other modes so that the competition for available funds has increased.

Analysis of the 1979/80 program with the exclusion of ARRB & ARRDO (which by definition are research establishments) indicates that less than 20% of the projects could be considered to have a significant research component, almost 60% relate to specific planning projects, some 20% fall into the category of "experimental development and demonstration" and no more than 4% were concerned with "the establishment of goals or policies" (see earlier definitions). No projects appeared to fall in the fundamental research category as defined. Of the 20% or so with some research content the majority were directed at problems in the immediate future - say one year time frame. Few were directed beyond this.

It appears probable that, as competition for available funds increases, preference is given to short term planning projects many of which presumably continue irrespective of the TPR program. In the present economic climate this could indicate that the TPR is, to a large extent, regarded as an alternative source of funding.

SOME THOUGHTS ON THE FUTURE

The above breakdown of the TPR program gives cause for concern, particularly because of the short headway of many research projects; also at the apparent lack of depth in planning which is constrained in time scale and cost so that the preferred solution must be selected before the pros and cons of others are identified. Are these effects purely the result of funding levels? Do they also pervade the non TPR sector of planning and research?

I have made the case for the establishment of goals so that priorities may be set and resources may be directed more effectively. This should in no way make the researcher an automaton. He has much to contribute both in the practice of research and in the recognition of what needs to be researched; the researcher is a valuable resource and, subject to his application in the appropriate area where the probability of benefit is great he should be left to get on with research.

Do we have sufficient research which is directed to future needs - say five years ahead and beyond? I believe not and that there should be moves to strengthen the transport research capabilities in selected Universities. What should they research? The Science Research Council Transport Sub Committee report on transport

priorities (Ogden 1980) lists appropriate areas which I believe are not receiving attention in Australia on other than an ad-hoc basis. To quote Ogden - "if continuity of research and greater depth and scope of research activity are to be fostered, the development of means whereby such funding is available on a regular and systematic basis is a necessary pre-requisite".

It would be interesting to know if research managers at this forum have provided Universities with lists of research they consider necessary. If so, is there continuing dialogue on these?

It is possible that the newly created ad-hoc Committee of ATAC which is examining the post graduate education needs of senior transport managers may result in one or more centres devoted to post graduate research. This development we must watch with interest.

The possibility of activity within the TPR program to increase communication between those involved in similar projects should not be ignored. Two workshops arranged by the Department of Transport in 1979/80 concerned Computer Scheduling and Research Priorities. In each case these were beneficial in informing and broadening the horizon of those involved in the TPR program.

An area which should be examined is the dialogue between the planner and the researcher to ensure the currency and applicability of data and techniques. I quote a typical example. During studies on the access to the new Brisbane airport estimates of the number of passengers which would arrive by car were needed. Quite reasonably figures applying to the Kingsford Smith Airport Studies at Sydney were used; these turned out to be as used for Tullamarine which had been derived from an earlier Essendon Airport Study. Further examination revealed that these figures were obtained from those used in Washington DC studies early in 1950. Had this anomaly not been discovered we might ask "were these figures applicable to Brisbane in 1980?"

A final comment on possible new initiatives which might improve the balance is for the introduction of a scheme to aid transport R & D along the lines of the National Energy Research Development and Demonstration program (AGPS 1980). Many options on such arrangements are open and at this time the quandary of Alice at the beginning of this paper again comes to mind.

CONCLUSIONS

In this paper I have expressed concern at the process of heading "somewhere" rather than towards declared goals. The establishment of goals allows priorities to be determined and less beneficial projects to be terminated. Revision of goals in the light of new information or changed conditions is a necessary process.

I believe we must endeavour to increase the level of transport research in Australia so that it fully supports planning, experimental development and demonstration.

Attention must be given to increasing post graduate research and to sustaining this as both the researcher and the continuity of research are important national assets.

I believe we need to make more effective use of the TPR assistance program. If it is solely regarded as an alternative source of funds and is absorbed doing that which would be carried out irrespective of TPR assistance then I suggest we are not making the best use of available resources.

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