

THE PURITY OF TRANSPORT RESEARCH

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ABSTRACT:

In line with the theme "Real Solutions to Real Transport Problems" this final paper attempts to evaluate previous ATRF's in terms of the extent to which they have contributed to "Real Solutions".

Specifically it examines the research presented in the various papers over the last three years, together with the other benefits which flow from meetings of this kind, and discusses the effectiveness of the ATRF with the aim of pointing out future directions for the forum.

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INTRODUCTION

The Australian Transport Research Forum held its first meeting in 1975 in Sydney and has met each year since then. It was established to provide "a meeting ground for all interested in discussing current transport problems and issues, without restriction or limitation by profession, experience, qualifications or seniority." (Scrafton 1977). Each meeting has been sponsored by a different government transport agency and the venue rotates with the sponsoring agency.

The Forums to date have been well attended which can be considered a measure of their success in satisfying a demand in the transport area. However, the 1978 Organizing Committee felt that there may be room for improvement in the organization, format and scope of the Forum and that some measure of the effectiveness of the papers presented to date would be desirable. This paper then attempts to measure the effectiveness of the Forum itself and of the research reported in the papers presented at previous ATRF's.

Although the name Australian Transport Research Forum suggests that the organization is concerned with transport research, many of the papers presented to date have not been pure research papers. This to a large extent has been intentional, as the Organizing Committees have striven to include papers from transport operators and planners as well as researchers to encourage communication between all people involved in the transport business. In fact the theme of the Adelaide Meeting in 1976 of "Transport Research, Planning and Operations" specifically addressed the inter-relationship, and as a consequence the majority of papers were not pure research.

To date the number of people from private industry and/or transport operation areas contributing to the Forum has not been great. In 1977 22% of participants represented private industry and transport operators. 22% of authors from the 1975, 1976 and 1977 Forums represented those areas of the transport business, approximately 70% of whom were from government transport operators. (Table 1)

The theme of this current Forum "Real Solutions to Real Transport Problems" reflects the feeling of the 1978 Organizing Committee that transport research in general and the ATRF in particular should be able to present transport operators with solutions to their problems in providing transport services.

* The authors wish to acknowledge the assistance of Mr. G.E. Bettison, Senior Transport Planner, Office of The Director General of Transport (W.A.) in preparation of this paper.

TABLE 1 : AUTHORS AND PARTICIPANTS AT ATRF'S

Organization	Authors			Participants
	1975	1976	1977	1977
Government	8 (32)	14 (38)	15 (38)	85 (50)
- research bodies	7	4	9	28
- other	1	10	6	57
Consultants	7 (28)	6 (16)	9 (23)	32 (19)
Operators	2 (8)	12 (32)	3 (8)	24 (14)
- government	2	11	2	17
- private	0	1	1	7
Academic	8 (32)	4 (11)	8 (21)	16 (9)
Private Industry	0 (0)	1 (3)	4 (10)	13 (8)
TOTAL	25	37	39	170

(1) Numbers in brackets are percentages.

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Investigations can sometimes be classed as pure research. The following definition (Taplin 1975) of transport research shows the breadth of the area:

"- investigation of improved or novel methods of assessing the merit of transport investments or operations strategies;

- significant additions to factual knowledge of the nature of behaviour of existing transport systems, including knowledge about behaviour of transport users;
 - assessment of the likely form or behaviour of transport systems made available by improved technology;
 - development of new techniques and equipment for performing specific transport tasks;
 - development of new approaches for managing or regulating transport operations."

In contrast transport planning can be considered as the application of standard techniques to a transportation problem. It may contain some element of transport research e.g. an increase in the knowledge of the behaviour of users of the transport systems or an improvement in the evaluation technique used, however transport planning is not strictly pure research.

Transport research can be broadly broken down into two categories: technical/scientific research and policy research. The results of the former category are much easier to define i.e. either the improved technique was found or not. Many papers presented have been concerned with policy research e.g. criteria for pricing and investment decisions. It is not possible to be as definitive about the results of policy research as it may have little or no effect on decision-making for some time.

In summary although this is a Research Forum the organizers have not been solely concerned with the reporting of transport research. Further, because of the nature of research, itself, and the nature of the decision-making process the results of research may not be evident for some time.

With this background the main aims of the paper are now addressed. The method chosen was the circulation of two questionnaires: one to all persons who have presented papers at the previous three Forums (Authors' questionnaire) and one to all persons who attended the 1977 Forum in Melbourne (Participants' questionnaire).

Participants	
1977	
8)	85 (50)
28	
57	
3)	32 (19)
)	24 (14)
17	
7	
L)	16 (9)
)	13 (8)
170	

The authors' questionnaire was aimed at determining what had prompted the research, whether it had been successful and whether as a result of the Forum the research had been improved or used by other persons. The participants' questionnaire was aimed at determining whether the research reported was useful and whether aspects other than the papers were of use to participants. In the next two sections of the paper the results of the analysis of the two questionnaires are given and in the last section conclusions are drawn and some recommendations are made on the future direction the ATRF could take.

ANALYSIS OF PARTICIPANTS QUESTIONNAIRES

A copy of the questionnaire distributed to the participants of the 1977 Forum is contained in Appendix 1. Of the 170 persons who attended the 1977 Forum, 11 could not answer the questionnaire for various reasons (did not actually attend, away on extended leave etc.) thus giving a population of 159. 60 usable questionnaires (38%) were returned and analysed. The analysis must be treated with caution because of the relatively poor response rate. If anything the poor response is probably due to those who did not get much from the ATRF, so this bias should be kept in mind.

Twenty seven papers were presented and respondents reported that they had read an average of thirteen papers once; a further three papers had been read more than once giving an average of sixteen papers out of a possible twenty seven read by the respondents.

The next question asked participants to rate the papers read on a five point scale (excellent, good, poor, fair, forget). The order of the average ratings was:

"forget"	6 papers
"good"	5.8 papers
"fair"	4.7 papers
"excellent"	1.2 papers
"poor"	1.2 papers

Participants were then asked whether the papers bore any relation to their work: in a general sense most papers would be related to the work of people in the transport business, although in a specific sense this may not be true. For example the papers on "transport and energy" would be of general interest to most people although there would be very few people working in this specific area. The answers given to this question tended to reflect this difference in interpretation with a wide spread of responses ranging from zero to twenty seven

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papers categorized as related to work.

Another question asked participants to rate papers according to their usefulness in their work. A scale of four values was given: "very useful", "a little", "no use", and "perhaps later". Some respondents commented that a value between "very useful" and "a little" should have been provided: in fact the number of papers rated "a little" was twice as high as the next most popular value on the scale. The order of the average ratings was:

"a little"	6 papers
"perhaps later"	3 papers
"no use"	2.7 papers
"very useful"	2.2 papers

The questionnaire was then directed at determining what aspects apart from the papers were useful to participants. Four aspects were listed in the questionnaire and they were rated in the following order by respondents:

- Contacts with other persons/groups
- General updating on recent work in transport
- Discussion on papers presented
- Query authors on papers

In the questionnaire the word "Contacts" was printed as "Contracts": this was commented on by five respondents who all interpreted it as "Contacts". Other responses indicate that this was the common interpretation, so it seems fair to assume that results were not distorted by the misprint.

The response to this question showed that 65% ranked "contact with other persons/groups" as the most important facet of the ATRF; and a further 17% ranked it second in order of importance. 65% ranked "general updating on recent work in transport" either first or second in order of importance. "Discussion on papers," and "query authors on papers" were ranked most important by only 17% of respondents.

A category "Other (please specify)" was also included in the question on other aspects of the Forum and nine respondents made use of it. The comments covered such things as "Development of new initiative and approaches", "Sensing research pulse", "Break from office routine" and "Assess consultants". Some respondents also mentioned "Small group discussions" although these have not formed any part of the formal proceedings of Forums to date.

Of the 60 participants questionnaires analysed 43 contained additional general comments on the existing organization of the Forum and ways to improve it. The comments made fell broadly into three areas: presentation of papers, scope of material and administration. Only the most commonly made comments are included in the discussion below.

Presentation of Papers. Most respondents commenting on the format of the Forum felt it could be improved either by the holding of workshop sessions or by allowing more time for discussion on the papers presented. It was suggested that more discussion would be forthcoming if the papers were presented to smaller groups, papers were distributed well before the Forum and fewer papers were presented. A small number of respondents mentioned that the standard of papers themselves could be improved. Some of these points are being incorporated into the format of the 1978 ATRF.

Scope of Material. Several respondents thought that more operators should attend and that more operator-related material (i.e. more practical) should be presented at the Forum. This of course has been an aim of the Forum since its inception with personal approaches being made to operators to present papers, attend the Forum and contribute to its organization. However, it will probably continue to be one area where there will always be room for improvement. It was suggested that the theme of the Forum be adhered to more strictly by the papers and that participants be reminded of the theme and how the papers relate to it. As noted in the introduction although a theme has been selected for each Forum the papers have generally only been loosely related to it.

It was also commented that the Forum could generate research by identifying problems which require further study: these problems could be raised by particular operators, planners or administrators or be generated within workshop sessions.

Administration. There were several comments on the duration of the Forum with no particular period of time being favoured: durations suggested ranged from two to five days. This suggests the conclusive statement that ATRF should be at least as long as in the past. Comments on the location of the Forum were inconclusive: some favouring the existing rotation and some the south eastern states only. A small number suggested that the Australian Forum should be broadened by inviting transport people from New Zealand to attend and by establishing closer links with the U.S. and Canadian Forums.

Conclusions. An average of sixteen papers of the twenty seven presented at the Melbourne ATRF were read by the 60 respondents to this questionnaire.

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Of the papers read, participants reported that they had forgotten, on average, six of them. The restricted time allowed for discussion of papers may have contributed to the 'forgetting'. In the general comments more time for discussion was requested, along with more workshop sessions: both of these would be expected to have the effect of making participants remember the contents of the papers more clearly.

The rating of the papers, both on their contribution to transport research and their usefulness to work seems to indicate that there is room for improvement in the standard of papers presented. To make a definitive statement on this however it would be necessary to compare the ratings of the Forum papers with ratings of papers at other conferences. The overall standard may be improved if less papers were selected for presentation and stricter refereeing was undertaken.

Contacts with other people received the highest rating in the question on other aspects of the Forum. As mentioned above this may indicate that more free time would be appreciated. This year with the three day Forum there will be more time available for participants to renew and make new contacts with other people. The second most important other aspect of the Forum was the general updating on transport matters which is provided by the Forum. Plenary sessions with the more general papers enable this to be achieved.

The overall view of the Forum seems to be that it is doing a good job: most comments and criticisms made were constructive and should be borne in mind by the 1979 Organizing Committee along with any reactions to the overall format of the 3 day Forum for 1978.

ANALYSIS OF AUTHORS' QUESTIONNAIRES

A copy of the questionnaire which was distributed to authors of papers presented at the three ATRF's to date (1975, 1976 & 1977) is contained in appendix 2. A total of 101 questionnaires were distributed, covering 69 papers. Responses were received from a total of 52 authors covering 45 papers.

The papers were analysed on the basis of the content of the paper as well as the information contained in the questionnaires, with the aim of categorizing them firstly on the basis of "pure" research or applied research. Obviously this is a difficult decision in some cases, but the criterion was generally whether the research had been aimed at some practical outcome or application, or whether the authors realized that their work would be an input into further research.

The questionnaire in fact asked "was the research undertaken to solve some practical problem?" Many respondents interpreted "practical problem" to cover "not having a theoretical model to handle a particular task" and labelled papers which produced such models as "practical". In this analysis such papers have been categorized "applied" only if the model was developed for immediate application to a

particular task, e.g. in the evaluation of a project, and, in fact, many of the models developed came into this category. Where models were developed as part of a continuing interest in that area, and with no particular application in mind, the papers were labelled as "pure research".

The third major category used was "Reviews" which describes papers which were not research as such, but described some facets of the state of the art. Table 2 shows this classification.

TABLE 2: CATEGORIES OF PAPERS

	1975	1976	1977	TOTAL
'Pure ' Research	5	2	4	11
Applied Research				
Successful	-	3	1	4
Partially Successful	1	1	3	5
Used as input to another study	1	2	3	6
Unsuccessful	1	1	2	4
No result yet	1	3	1	5
Reviews				
Policy	-	3	1	4
Operator	-	3	-	3
Planning	-	1	2	3
	9	19	17	45

The criterion for success was not whether the research was good or not, but simply whether the recommendations or results of the research had been substantially followed by the decision-maker.

Before judging the ATRF papers the authors of this review must point out two obvious facts: firstly that only 45 of the total of 69 papers presented are being discussed and secondly, that their judgements as to success etc. may be wrong. However, the point is not to judge individual projects or people, but rather to try to be in a position to make broad statements about the overall contents of the ATRF.

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Pure Research

A total of 11 of the 45 papers surveyed were classified as pure research, in as much as they were not aimed at a real transport problem. These papers were classified in a negative way: that is, the authors were not working to provide a practical solution to some real planning or management problem, nor were they presenting a review of existing policies or practices. They present research which will have no immediate application, but which will provide further knowledge for transport researchers and practitioners in their continuing work. For example, several papers analysed transport patterns with a view to explaining their determinants, while some others analytically examined in a general way alternative pricing strategies. Five of the eleven papers in this category were presented by academics.

It is interesting to note that in nine of the eleven cases the authors are continuing their research in the area they discussed, though in only two cases has that further work been published at this stage. In eight cases the authors reported that they knew of other people who were using the results of the work reported.

Applied Research

Only four of the 24 applied research papers surveyed were labelled as a successful application of research. One paper dealt with rationalization of air services and involved the development and application of new government policy. The other three broadly involved the development and application of models, two in the fields of bus scheduling and one in pedestrian planning.

In looking for reasons for the success of these papers it is worthwhile noting the response one author gave to the question, 'What factors affected the application of your research?' The answer was, 'None which were unexpected, since political and institutional factors were embraced by the research.' And this not in a simple project, but one where implementation depended on the involvement of both federal and state governments, as well as private operators!

This was the only paper involving policy categorized as successfully applied research, as the other three included in this group were of a more technical nature, but they were not classified as operations research or planning since development of new techniques was involved. Again, however, a comment from one author is appropriate: "The development of this model was in response to a real problem - lack of cheap, fast land-use models. It is not pure research and has never been viewed independent of the real world. The ATRF should be far more responsive to solutions and techniques evolved during projects or by the industry." In fact, this paper was ranked by participants in the top 30% of papers presented, both in terms of contribution to research and usefulness to work.

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A further five papers were classified "partially successful" applications of research, where some but not all of the recommendations were implemented. One of these was a large-scale planning exercise and, of course, had institutional/political/public acceptance problems. Of the other four papers, one involved a complex policy issue, to which the research was some input, but where it was difficult for the authors to assess its impact. The other projects have all been implemented to some extent, but fell foul of political/institutional problems.

Six papers were classified as inputs to other studies. Two of these developed cost models which were used in further evaluation work. Another involved the development of an evaluation technique applicable to bikeways, which was later used in a comprehensive study. Five of them could be classified as successful, in that they provided important information which was used in larger studies or continuing work in the relevant area. In general the research in this category was not directly applicable to a 'real transport problem', but certainly was an indispensable, if indirect, part of a 'real solution'.

Four papers have been classified as unsuccessful research, where 'unsuccessful' has been defined to mean either research which produced no positive conclusions or whose recommendations were not implemented in any way. It is difficult, of course, to label any research as unsuccessful for even negative results may be very worthwhile and any reported research may have stimulated or assisted other researchers in some way. Two papers, which have been classified as unsuccessful, discussed research which set out to explain the determinants of some phenomenon but ended up without any reasonable explanation.

Two other papers, however, presented work which was intended to have been applied and would have produced a change in transport operations, except that the recommendations were not implemented in any way, due to political or institutional constraints.

Five other papers were classified as "no result yet". Two were planning studies and one an evaluation for which no decisions have as yet been made. One paper reported the development and testing of a planning technique, but as the work had been carried out by an academic working alone it had not been used by any planning authority.

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Review

Eleven papers were classified as reviews, four concerned with policy, three with operations and three with planning.

The four policy review papers treated matters such as future avenues for research work or provided general critiques of present transport planning and policy development procedures. Such papers represent part of the ongoing work of the authors to influence the directions of transport policy in Australia. It is interesting that the 1977 paper in this category was ranked by respondents to the participants questionnaire in the top three papers, both in terms of usefulness and contribution to research.

Three papers were classified as operator reviews, in that public transport operators reported on some facet of their operations. Two of these in particular would, no doubt, be regarded by the operators concerned as real solutions to real problems, but they would not regard them as research, in that they were more a description of how a real problem was handled, and little analysis was involved. Their solutions, of course, are of widespread interest to other operators as also to policy formulators and advisors, pointing out once again the dilemma between 'research' and 'real solutions'.

Finally, three papers were classed as planning reviews as they presented a description of a planning exercise in two cases and the application of an established planning technique in the other. Again, while not research, the ATRF does provide an opportunity to publicize such matters.

Conclusions

More than half the papers analysed from the three ATRF's reported the results of the application of research to a real transport problem, falling within the description offered by this year's theme. Of these 24 papers, however, only four were classified as successful, in terms of having had their recommendations implemented, although another six were used as inputs into larger studies. One obvious point emerging from an analysis of the questionnaires on these 24 papers is that the successful research incorporated and worked within the operative political, institutional and financial constraints. On the other hand, many of the unsuccessful studies blamed these factors for non-implementation. Some typical comments were "economics of operations are of secondary importance (to government)", "possibly politically unacceptable", "perhaps X should have excluded our looking at any politically dubious options", "institutional inability to think laterally".

This is an obvious point, but the fact that it is shown up so clearly in a range of areas by so many papers points to several questions. Firstly, what is the aim of the research? The aim may not be just to find an acceptable solution, for it could be to point out to decisions-makers the cost of accepting less than optimal solutions, or to nibble away at conventions and current practices, acknowledging little hope of immediate success. Both of these, of course are most important aims. But if the aim is to solve a problem (a "real solution") then the papers analysed show that in the 24 cases presented this was only done successfully in four cases which worked explicitly within existing constraints. In contrast, many of the researchers surveyed obtained optimal solutions, but complained of the lack of political, institutional or public acceptance when their results were not accepted. A second question, therefore, is "were those who undertook the research aware of the operative constraints?" A priori it might be postulated that consultants or academics would tend to be less aware of institutional/political constraints than would be those working in government. However, the table below together with a detailed analysis of the papers and the questionnaires shows that it is not possible to attribute success or lack of it to a particular category of researcher.

TABLE 3: APPLIED RESEARCH PAPERS

	Govt.	Consult	Uni.	Private	Total
Successful	2	1	1	-	4
Partially successful	1	3	1	-	5
Used as input to another study	5	1	-	-	6
Unsuccessful	1	-	1	2	4
No result yet	2	2	1	-	5
TOTAL	11	7	4	2	24

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Nevertheless, it is clear from an analysis of responses to questionnaires that many researchers, whether government, consultant or academic, did not clearly understand during their research the institutional and political constraints which would limit the implementation of their results and which, in fact, meant that they did not find "real solutions" to their problems.

GENERAL CONCLUSIONS

The ATRF provides an opportunity for those involved in transport operations and research in Australia to meet in order to discuss the results of their research, and for other purposes.

The papers provide a focus, in that researchers can present the results of their work and all those participating can learn, through the papers presented, of the range of work being undertaken, and discuss this with the authors and with others.

However, the responses to the participants questionnaire suggest that the papers, at least in the past, have really played a minor role. Those who responded to the 1977 participants questionnaire thought, on average, that only seven of the 27 papers could be called excellent or very good and that an average of only 2.2 would be very useful in their work. The fact that only 38% of participants responded to this questionnaire suggests that the value of the papers to those who attend the ATRF may be even less than the above figures reflect.

Further, these questionnaires revealed that by far the majority of participants felt that meeting other people involved in transport and generally keeping themselves up to date in transport were the most important facets of the forum. A minority saw the papers as being more important.

This suggests that the ATRF may be more effective if it concentrated less on the formal presentation of papers, but rather realized that most participants attend primarily to meet other people and to up-date themselves on the range of work being undertaken. Certainly, the formal presentation of papers assists in this second aim, but informal methods, perhaps "paper fairs", may be more effective.

The theme for this year's ATRF "Real Solutions to Real Transport Problems" reflects the fear of the organizing committee that transport research may become too pure, and unrelated to the real problems of transport in Australia.

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-	6
2	4
-	5
2	24

The authors questionnaire looked at this question in terms of the results of the work described at previous ATRF's. A moment's thought, however, will point out the dilemma tied up in this theme : that real solutions to real problems are usually achieved by the application of established techniques, and this can not be called "research".

However, analysis of the papers presented at past ATRF's shows that only one quarter would be classified as pure research, while over a half were classified as applied research, aimed at solving a particular problem. In fact some involved considerable theoretical work in building models, and would have been classified as pure research, except that the work was actually used to derive real answers to practical problems in other studies.

It is important to point out that a large number of papers presented applied research which was not implemented by decision makers, mainly because the researchers did not take sufficient notice of political or institutional constraints. This may seem to be stressing a point which is obvious and trite, but the fact that a large number of ATRF researchers complained of it only after the results of their research had failed to be implemented points out that it is a lesson which is not easily learnt.

REFERENCES

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APPENDIX 1 : PARTICIPANTS' QUESTIONNAIRE

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Please tick the appropriate boxes for all papers:
N.B. If you do not remember anything about the papers, please tick the "forget" box and return the questionnaire.

Paper	Papers you read		Rating as a contribution to transport research					Is paper related to your work?	How useful was/will be paper in your work?			
	Once	More than Once	Exc	Good	Fair	Poor	Forget		Very	A little	No use	Perhaps later
Research for Transport Policy												
Planning for Change												
Forecasting Car Ownership												
Analysis of Historical Vehicle Scrapping and Survival Patterns 1950-1976												
Integrated Demand-Responsive Urban Passenger and Freight Transport												
Transport Implications of Customer Response to Physical Distribution Service												
A Review of Transport Systems Management Applied to Truck Operations												
Bus Priority Planning in Adelaide												
Bicycle Facilities for Australian Capital Cities												
Australian Inter-City Motor Coach Transport - Who Watches Over the Best Interest of the Passenger?												
Analysis of the Operations of the Railway Network Between Sydney-Melbourne-Adelaide												
Family Expenditure Survey Data and Their Reference to Transport Planning												
The Legacy of the Long Short Term: 1855-1955												
The Pedestrian Network in the Adelaide Core Area												
The Implications of Reducing Design Standards for Proposed Expressways												
Land-Use/Transport Interaction Modelling with Transtep												
Application of a Local Area Traffic Model in an Inner Suburb of Melbourne												
Limited Area Traffic Analysis												
The Application of Consumer Behaviour Theory to Public Transport Marketing												
Attitudinal Measures in Models of Mode Choice												

Please tick the appropriate boxes for all papers:

Paper	Papers you read		Rating as a contribution to transport research					Is paper related to your work?	How useful was/will be paper in your work?			
	Once	More than Once	Exc	Good	Fair	Poor	Forget		Very	A little	No Use	Perhaps later
Patronage Estimation for Street Public Transport												
Ports and Urban Systems: Framework and Research Needs in Resolution of Port Generated Conflicts												
Traffic Management Policies at a Major Airport												
Social and Community Issues in Port Development												
The Multi-Objective Approach to Port Planning: A New Mix of Economic and Environmental Issues?												
Australia's Energy Options in the Transport Sector												
Some Possible Implications of Rising Petroleum Fuel Prices for Road Transport												

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Apart from the papers, other aspects of the A.T.R.F. are helpful to those attending. Please rank these in order of importance to you from 1 (most important) to 5 (least important).

- | | | | |
|-------------------------------------|--------------------------|----------------------------------------------|--------------------------|
| Contracts with other persons/groups | <input type="checkbox"/> | Query authors on papers | <input type="checkbox"/> |
| Discussion on papers presented | <input type="checkbox"/> | General updating on recent work in transport | <input type="checkbox"/> |
| Other (please specify) | <input type="checkbox"/> | | |
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Do you favour any changes to the format of the Australian Transport Research Forum? (e.g. presentation of papers, scope of material, number and type of attendees, duration, location, timing etc.)

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APPENDIX 2 : AUTHORS' QUESTIONNAIRE

1. Name
2. Present Employer
3. Address
4. Phone
5. Title of A.T.R.F. Paper
6. Who was your employer while you were doing the research for the paper.
7. What was your position then?
8. Was this research carried out as part of your normal workload?
9. Who instigated this research? One of your superiors
Yourself
Other?(please specify under)
10. Please outline the consequences of this research? (i.e. what was done as a result of it?)
11. Was the research undertaken to help solve some practical problem?

If Yes, please answer questions on page 2
If No, please answer questions on page 3

Skip this section if you answered "NO" to Q. 11.

12. What sort of practical outcome did you expect to result from your research?
13. Who was responsible for the implementation of the results of your research?
14. Has there been any practical outcome yet, as a result of your research?

If No, answer Q. 15, If yes, answer Q. 16
15. If not, why not?
16. If there has been some practical outcome, in what ways did this outcome differ from the results/recommendations of the research?
17. What factors affected the application of your research? (Political/Institutional etc.)
18. In retrospect, in what ways could your research have been improved?
19. What do you consider would have been the affects of these improvements?
20. Any other comments?

Authors' questionnaire (cont.)

21. Was your reported research part of your continuing work in the specific topic concerned, or was it a special project?
22. Do you know of anyone else who has used the research as part of his own work?
If Yes, please give details.
23. Have you since done further work which builds on the research in this paper?
24. Was this further work undertaken:
on your own initiative.
at the request of a superior.
at the request of a client.
25. Has this further work been published?
Where?
26. Do you see research in this area having some practical outcome in the near future (i.e. within 5 years).
If Yes, in what way?
27. What motivated you (or your superior/client) to undertake this research?