

Changes In The Transport Environment Over Twenty Years

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ABSTRACT

Transport policy development during the period from the late 1960's to the late 1980's coincided with many other changes in the Australian political and economic environment. By the end of the the period the expertise available and the issues concerned had changed substantially. There had been a steady rise in the visibility and contribution of the Australian research community to the international community, and the transport policies of Australia moved towards greater deregulation of organisations and policy. The intellectual and physical isolation of Australia diminished sharply over this period, and the level of professional and expertise interchange with other countries grew very rapidly. By the end of the period the containerisation revolution in shipping had virtually run its course, and air had become the 'standard' mode for long distance movements of both passengers and (non-bulk) freight.

This paper explores some of the changes in transport policy, research and implementation and the influence of the changing environment over this period, which coincides with the 20 years of existence of the Monash transport group, which has contributed to these changes through direct involvement and a flow of graduates. Many of the shifts in the policy and organisational environment for transport over the last 20 years have been traced as part of the courses given by this group.

INTRODUCTION

Progress, far from consisting in change, depends on retentiveness...Those who cannot remember the past are condemned to fulfil it.....Santayana (1905).

The policy and political environment within which transport operates has altered a great deal in 20 years, yet much has remained obstinately unaltered. The expectations of the community towards universities have changed. The period from 1969 to 1989 has seen Australia change as much as, if not more than, many other countries in terms of transport and traffic techniques and policies. The span of the Monash transport group has covered the steady integration of different organisations concerned with transport, a large change in the public service culture which administers much of it, and a massive alteration in the levels of usage of transport by individuals.

Several of the major changes include:

- Australia is now much closer to the rest of the world in all sorts of ways
- The lack of data in 1969 had turned into a torrent by 1989, but has not yet realised a similar level of usable information.

- Organisational patterns have largely followed the information flows that have been created
- The public now demands a higher level of accountability of its agencies, and greater access to data and information
- There are few if any easy magic bullets left unused in the traffic, safety and transport armouries, although much that is known has not yet been fully applied.

The scenario for research and its impact is one which requires an understanding of the slow permeation of new ideas through professional groups, let alone into the public consciousness. These lead times are usually of the order of a decade, and often significantly longer. The issues perceived by research workers, practising professionals, politicians and the public have a series of leads and lags that seem clearer from a 20 year retrospective. The ability to respond at once (and the ability to change course almost equally quickly) had been a capacity reserved almost alone for the politician.

Practitioners responding to immediate and incremental needs usually leave a legacy of their actions which remains on the ground

for a significant time afterwards. Ideally they should also be projecting their expectations into the future, and tracking the need and scale of responses accordingly. In the field of transport policy, this has come to mean forecasting the likely levels of traffic, land use, vehicles and the social and environmental impacts. The links between the strategic planning of land use and transport have grown, as has the need to pay close attention to demographic and economic indicators and changes.

The most encouraging point from the last 20 years is that such a standpoint has now begun to be recognised as being of practical value (long after we have all fallen over many of the trip wires of predicted, predictable and expected issues that were not recognised in time). The rise in interest in strategic and corporate planning in the 1980's has contributed to this.

The most discouraging point from the last 20 years is that many of the 'new' and 'hot' 'emergent' issues (automatic vehicle identification, road pricing and tolls, maintenance economics, road information systems, capacity management, image identification, demand management, land use monitoring) are precisely the issues being agitated over by research workers 20 years ago, to little or no avail at the time.

An obvious moral is that operational and policy workers should set the parameters of their searches to look back at least 10 and probably 20 years in the past research literature when looking into the research work that might be available to them for use when an issue blows up. This might sound surprising, but a review by Lay (1989) emphasised the same decade-long lags across a broader front of roads and traffic issues, and specific examples abound today. A current example is the use of image processing to characterise road surfaces for treatment, which showed exactly the same necessity to look backwards many years for the most useful resources - even from within the research area alone (Wigan 1985).

Some issues are cyclic in their level of importance in the public eye. For example, environmental concerns and fuel conservation have recently been sharing a ten year cycle. Like so much of history: 'What experience and history teach is this - that people and governments never have learned anything from history, or acted on principles deduced from it'. Hegel (1793). Many of the organisations involved in both operational and research aspects of transport in Australia could do well to take note of this, as

many of the issues of immediate concern have previously been examined quite effectively. Although the circumstances under which previous investigations had been carried out may have often changed a great deal, this is not always the case.

Three of the many major long-term trends offer a pertinent basis for discussion:

- The regulatory, fiscal and social environments for transport use and provision
- The areas where changes have been most apparent:
- The influence of the changes on transport research and policy areas

TRANSPORT

In the late 60's the major part of road authority budgets was still dedicated to construction. The Ministries of Transport were not particularly active and the roads, railways and airways were operated by strong organisations holding most of the technical skills for operations and review internally. The only Chair in Transport in Australia (at the University of NSW) was one of the first set up in the British Commonwealth, and the first School of Transportation - and remains the only one in Australia some decades later. The training efforts by NSW had a major impact and helped materially to establish a local Australian and New Zealand base for traffic skills, and gave new momentum to the formation and growth of a continuing indigenous Australian contribution to traffic research and development.

By the early 1970's there was a need for a more broadly based traffic and transport course and for a training centre additional to that in NSW. Monash university set up a coursework Masters in Victoria in response to this broadly perceived need for post-graduate training, with support from the Royal Automobile Club of Victoria and other sources in the private and public sector. The broadly-based review of the needs for such a course led directly to sustained involvement from ARRB in particular and the professionals in the field in general.

A novel feature of this course arising from this method of establishment was a real concern for the effectiveness of the students in their operational roles. A special course on transport policy and the professional was introduced (Wigan and Ogden 1981, 1986) to assist Masters students to re-evaluate their own skills and perspectives and align them more closely with their working and social environments. Emphasising the links between management, social

responsibility and responsiveness and technical skills development may be expected to have their influence in the next 20 years, when the problems will change and the breadth of perception and background required will increase considerably.

A trend towards economic auditing and evaluation took hold in the early part of the period, but was less visible than a widespread concern for deregulation and corporate restructuring of publicly-owned transport systems by the end of the 1980's. An annual Australian series of Transport Research Forum meetings began in 1975. These provided a closely focussed public platform for policy and transport economic debate, modelled on the successful pattern previously established in the USA and Europe. Just as in these continents, the Australian TRF meetings consistently attracted both researchers and high level policy and administrative representatives. The systematic influx of economic analysis into roads and transport became very much more apparent as a result.

The general trend to draw training and experience from the USA still prevailed twenty years ago, but the flow had reversed in many cases by the end of the 1980's, when the new US Highway Capacity Manual made extensive use of Australian rural road and intersection capacity research and experience. A widespread (but not universal) reliance on imported methods for traffic control was also reversed with the SIDRA intersection design package (Akcelik 1987) and the SCAT (Lowrie 1982) area traffic control systems gaining substantial export markets and usage. The international visibility of Australian transport research was not very high at the start of this era - but was very visible by the end of it.

Road safety began the period in a mood to implement measures with major impacts, but by the end of the period the easily-identified options had been implemented, and broader balances of different goals had to be accounted for. The growth of safety organisations to independence and strength has now been followed by decline and reabsorption. The imminent arrival of widespread automatic vehicle identification and detection has just begun (in 1989) to raise questions of enforcement, privacy and capacity management as a unitary issue: one that will grow in importance and complicate safety measures if not dealt with very soon.

Over the period the interests of road users and their mobility have steadily grown in visibility and importance to the policy

process, and added a further set of factors required to be balanced in implementation measures. The big wins of seat belts, alcohol limits and protective helmets are going to be harder to find in future, and safety will continue to be treated as a genuinely important but not free-standing set of issues. Vehicle regulations have also decreased in importance, as part of the same trends, and closer focus on specific types of vehicles and devices has become easier to handle as information flows have become cheaper to obtain.

In 1969, the Australian road and rail systems were firmly administered in tight technical organisations with a high degree of independence and self-determination. Neither systems were as independent by 1989. Australian National Railway (ANR) had been formed from several components including parts of various State systems. ANR's growth and turnaround to profit was the result of the smaller States ceding their lines to ANR when the offer was made by the Commonwealth to take them over: an offer that is no longer open. The ARRDO organisation was set up in the late-1970's as a national cooperative railway research and development organisation (with articles of association closely modelled on those of the ARRB), flowered briefly but faded away within a decade without having really found a sustainable role.

Traffic and traffic management moved a very long way in the period: at the beginning roundabouts - and even area traffic control systems - were suspect in many (but not all) quarters but by the end both were understood, regarded as essential tools and their application was nearly universal. The last decade has also witnessed a shift from creating road capacity to widespread community support for active measures to limit the performance of much of what capacity is already in place: a trend that will continue to become a major and broadly based strategic issue in the 1990s.

Public and political perceptions of the importance of road-related problems have also followed a cyclic path. This has not been limited to the rural, urban and arterial road systems themselves: the attention paid to freight terminals has also followed the same path. The Department of Urban and Regional Development (DURD) held meetings to address the issue of ports servicing around 1976, but the most recent review of the roles of transport and roads in servicing of the waterside transfer facilities and their operation has only just reported. The road system itself had a strong advocate in the Commonwealth Bureau of Roads, which

moved through a complete cycle from foundation, establishment of a sound and credible base, operational and political success, to advocacy and abolition well within the 20 years.

National planning for roads was built up to a near-census of road projects and assets in Australia by the Commonwealth Bureau of Roads, and methods for systematically considering policies for expenditure were tested by them at an early stage. Such broadly-based information resources are still rare in roads and transport, and the NAASRA Roads Study in the early 1980's produced both a political furore (and little advance in immediate funding) with its recommendations - but the Technical Reports have supplied the basic information engine to drive both the State and Commonwealth road funding and resource considerations ever since. This study also revealed for the first time just how large a role Local Government had in overall road expenditure. It was clearly simply a matter of time before a more systematic and regular method of monitoring expenditures, performance and needs of the road infrastructure would be put in place.

At the very end of the period this occurred, and a widespread commitment to Pavement and Road Information and Management Systems emerged - and provision of this category of information had even been taken up as a funding requirement by the Commonwealth in 1989. The steady shift in the ground rules for the funding of roads, road users and the management of the system has been driven by both the move from construction to maintenance as a priority, and by the information flows and economic and corporate re-evaluations that such information flows encourage.

The application of measurement, monitoring and analysis to urban planning as a whole was stirring 20 years ago, but this slow growing plant has yet to come to full flower. The genesis of many of the major land use and transport models lies in the late 1960's, and it has taken nearly the full 20 years for them to reach a measure of application and assessment. Over the last 20 years the urban planners have paid little serious attention to the integration of urban planning and transport provision, but slowly external pressures have begun to tie together the projections and consequences of the assumptions for the one with the outcomes predicted for the other. The use of both transport planning models and strategic physical planning projections, iterated one by one against each other, was seriously used for the first time in Sydney only

in the last few years, for the major strategic plan for Sydney into the next century (Department of Planning, NSW 1988). The technical issues had long been recognised, but had not been sufficiently widely communicated or accepted. There was a period of nearly a decade when the value of strategic transport planning was very much in question throughout most of Australia, and when the cost of the data required to know what was going on was seen to be unjustified. This was a period during which many government organisations lost much of their numerate skilled manpower resources for this task.

The realisation that the potential for incurring expensive planning errors could be reduced or at least minimised by this process is a recent development indeed. The first audit of the value of strategic transport information that attempted to deduce or define fiscal measures appropriate to such information was also done at the end of the period (Wigan 1990).

Maintenance was not recognised for some time as the growing and sapping load that it was beginning to become even by 1969. The underpinning of forward planning is data and information, and the reconciliation of projections with outcomes on a fairly continuous basis. If the data is missing, then the information cannot be extracted in time, and if the information does not exist then the recognition of major changes as they emerge can be long delayed. The steady rise in importance of road maintenance was becoming possible to discern in public statistics as early as the late 1960's, but was not really reacted to until a broader realisation of the scale and rising impact of these changes emerged from the NAASRA Road Study - which also highlighted the significance of Local Government expenditures on the road system. An issue that will drive infrastructure debates in the next period - the 1990's - will be the similar needs for reconstruction from water and other areas where the end of the economic life of large sections of these other Australian infrastructure systems are beginning to be reached, and this was recognised towards the end of the 1980's.

The political environment for roads in particular has changed substantially. The Local Government Authorities (LGAs) as agents of the State Road Authorities (SRAs) have often added to SRA road funds from Grants Commission, rates and other sources, but the recognition of the scale of this expenditure was delayed until the early 1980s. A movement from sealing low volume local roads to permitting many to revert to formed

roads is now also occurring, as resources for local roads are more closely matched to their utilisation. Pavement and Road Information and Management systems have a dual role at the local level: first to capture the information not previously recorded in a systematic manner; second to provide a cumulative basis for more closely focussed review of the effectiveness of road expenditures.

The first stage of this process was to reduce the aversion to such systems in the regions which is where the data is created and must be captured, and on which the full weight of the quality of that material generally depends. This has slowly been achieved, and such information is now seen to be of value to the regional offices, and helps them exercise their responsibility for the parts of the system under their control. Insufficient time has yet elapsed to build on these first foundations: the time span of such detailed work, production and condition records needs to be many years yet before the full management control can be exerted. This time will arrive at the same time that the Federal requirement for pavement management systems (PMS) records in support of roads grants comes into full effect.

This flow of data has already begun to change the accountability and power balance between organisations and parts of organisations, and the ability to carry out cost reduction investigations (often called operational research) grows with it. The rise in economic assessment concerns will draw upon this source, and an accelerating interest in this variation of road and transport research and investigations may be expected to follow. This is one of the major changes in the policy environment over the last 20 years: the ability to access aspects of productivity in road and transport system has moved from the limits of possibility to a central and public concern of the organisations involved.

Road financing has moved strongly towards central consolidated revenue on all fronts, and the tied financial resources of the 1960's are becoming very rare. The earmarked Federal fuel tax levies applied as the 'Bicentenary road funding initiative' were quickly watered down by inflation, but toll roads and other forms of revenue raising are once again on the active agenda. The biggest change has been in the taxation of road vehicle usage, where a fuel tax surcharge was initially applied by the Federal Government as a specific earmarked road construction purpose (Bicentennial Road Fund), but later became absorbed into general revenue. The moves to alter the charges for

road freight movements foundered for some time as a result of a major industrial action by the truck owners, leaving fuel tax surcharges an inviting route to follow. The States have also dipped further into this low-elasticity source of revenue. Petrol licence fees in one state and fuel surcharges in another are following similar paths. However, as an example of a regularly repeated cycle of initially earmarked levy ending up in general revenue, general revenue appears to be gaining even earlier than before.

The organisational cycle has moved so that the treatment of roads and road users is once more the province of combined traffic and roads organisations after a brief period when independent authorities for various aspects of road and traffic responsibilities were in place. The relative decline in public transport in the overall transport task, allied to an increase in the substantial subsidised deficits run by these operations, led to the rise in the importance of accounting and economic leadership in transport authorities as a whole. The peak body for the road lobby (the Automobile Association of Australia [AAA]) is now concerned about a more broadly based evaluation of road proposals, regulation and funding. The increasing attention being now paid to truck and car cost recovery has already changed the 1960's situation through a more widespread usage of tolls and other measures for redistributing the costs of road usage. These and other measures have significantly increased the feasibility and desirability of some form of electronic pricing system for road usage in the 1990's.

The suburbanisation of congestion has been a consequence of fleeing outer suburbs and low densities, not sufficiently followed by the development of infrastructure and jobs. The outer suburbs have also been getting greater quality of land use preparation (at the cost of the middle and maturing, shrinking, suburbs): this steady transfer from the middle band of cities to the outer ring has now been recognised, and the introduction of user pays costs with better attribution may help to accelerate the changes in city structure now occurring.

Considering some of the changes in organisations involved in transport provides one of the best methods of demonstrating the alterations that have taken place. It was only in the last half of the period that the Ministries of Transport became strongly interested in transport, and particularly public transport. Previously the road construction area held most of the resources and interest, and it was only in the last twenty years

that a shift to road maintenance and management displaced a heavily -construction oriented approach.

The modes most affected in the last two decades have been private road transport, public road transport, airways and railways. the changes to shipping have been less marked, although signs of the coastal fleet coming back into favour have begun to appear at the end of the 80's, as union agreements and relative wages have weakened. The major problems with the ports remained at the end of the 1980's as they did at the beginning: much discussion, an aging workforce but beyond that comparatively little action.

This dyke is just beginning to break, and major changes in shipping and ports can be expected in the 1990's. Shipping has always been treated as a specialist mode, and has not been well served academically, although the Australian Maritime College was set up during the period. Roads and road traffic have been well served over the period by a number of academic bodies, feeding a steady stream of graduates, mainly into public bodies. The traffic orientation of the NSW University Transport school altered as the School became a Department; the Melbourne University transport group became less numerous and visible; the University of Queensland maintained a steady contribution from the management and engineering departments and a strong transport economics centre had developed at Macquarie University by the end of the period (after the brief spark of a Transport economics Chair at the University of Tasmania, held for five years by J H E Taplin), and was clearly in close touch with the many issues of the late 1980's that required a powerful economic input. Much of the academic work in transport and traffic gained a focus in Melbourne with cooperation between Melbourne and Monash Universities, and drew upon staff from the ARRB and other transport organisations in Victoria. The Director General of South Australia has maintained support for a professorial fellow and often other research workers at the Adelaide universities, but this has not yet created an independent and viable transport focus for teaching and research.

In the half-light between government and private enterprise, the Australian Road Research Board took a strongly academic line for much of the period, establishing a major world reputation and, with the proximity of the Commonwealth Bureau of Roads, Monash and Melbourne Universities, aiding in the focussing of Australian transport research on Melbourne, and the establishment of a sustained international

presence and contribution. This focus influenced the founding of an Australian Railway Research and Development Organisation in Melbourne, but the decade also saw the demise of ARRDO as it failed to find a continuing place in the railway system. Over the same period, Australian National railways grew from a small seed to the currently profitable (and essentially freight) line that it is now. The Federal offer to take over the State railway lines having been taken up by Tasmania and South Australia while the offer was open, and the operational-research oriented WestRail independently followed much the same line, its Commissioner having taken a major role in the founding of ARRDO.

The changes in the social, economic and transport environment of the 1980's have changed the course and modes of operation of many of the public bodies on roads and transport, and these realignments successively influenced major shifts in direction and goals for both the ARRB and universities.

ISSUES

In a short paper only a few points may be discussed to illustrate the shifts over 20 years, and the choice made by the author was to illustrate changing and stable issues in the transport environment, rather than to provide an evaluation of the issues or measures in terms of priorities or economic significance.

Roles of the State and Commonwealth transport agencies

Over the last twenty years, the Commonwealth agencies have moved to a high level of involvement -particularly in roads - then to a steadily decreasing direct involvement. Railways became a Federal issue as Australian National was formed and steadily improved to its present performance levels. The joint State-Commonwealth Australian Railway Research and Development Organisation was formed and disbanded, and the Commonwealth Bureau of Roads faltered and was disbanded, the remains being amalgamated into the Commonwealth Bureau of Transport Economics (BTE), which was formed in the mid 1970's. The BTE was then expanded into the Bureau of Transport and Communication Economics by the end of 1988. The linkages provided by people have been important, and a signal example spanning the whole period of twenty years is J H E Taplin, who was an early Director of the Commonwealth

Bureau of Transport Economics, a Deputy Secretary of the Commonwealth Department of Transport, a Professor of Transport Economics and subsequently the Director General of Transport in Western Australia.

State transport organisations have generally moved more steadily and stably along a path of greater integration. Nearly 50 transport-related organisations could be identified in Victoria in the late 1970's, yet only around a tenth of this number remained by the end of 1989. The general pattern now emerging is one where road construction, operation and management lies within the same organisation, which also encompasses safety and vehicle registration. Not all the smaller States have yet moved to this pattern, but the trend is now well established. Air passenger and freight transport followed a path of progressive amalgamation at both Commonwealth and State levels, but are now moving to devolve into a private hands as deregulation takes its course. The deregulatory climate has grown steadily for some years, and is now affecting road, rail and air transport to different degrees - and the momentum is clearly far from spent. This is a substantial change from the beginning of the period.

The great swing to (and then from) data

The beginning of the period saw a rich range of data sources for personal transport created. This treasure trove was quickly plundered for vehicle flow projections but the mass of information about the manner in which individuals saw, used and reacted to transport, vehicle and roads availability had to wait for many years. It is alarming to realise that after 20 years there are significant areas of the country where this early data still remains the fundamental underpinning for strategic transport planning. The limited efforts applied to updating the strategic information for transport planning were due at least in part to the poor dissemination of the data, the limited use made of it, and certainly the lack of transparency of the understanding of the transport and travel demand systems that it could have been used for.

There is a growing awareness (as part of the corporatisation of the public sector) of the value of information both for strategic planning and for monitoring and adjusting the planning and provision of services and infrastructure. Consequently the acquisition - and this time immediate usage - of such information is once more coming onto the transport and planning agendas.

This has been driven by the twin pressures of the spread of corporate planning (and the concomitant information needs), and the spread of personal and desktop computers in the community. It is now clear that mass information and even the models, if not proprietary, used in public consultation and decision making will have to be made available to those of the public who ask for them. This is already occurring, and will have an increasing effect on the level of public debate and transport policy implementation. The information balance is now swinging in favour of the public, and, as the need to obtain monitoring and planning information is growing within transport organisations, there will soon be considerably more information in existence to be called upon. The costs of handing it out have declined, but the public sensitivities to data security and confidentiality are now on a collision course with this trend. This sensitivity is beginning to affect the range of options available to the transport authorities for managing traffic, improving transport capacity, and reducing the costs of enforcement. These policy issues have been looming for some years (Wigan 1986), and are beginning to have effect.

Shifts to perception rather than provision (demand not capacity)

The biggest change in the environment for roads in particular has been the steady shift in emphasis from construction of full network to the maintenance of the network, which has largely been completed over the period. The types of evaluations applied to road construction have steadily shifted to include the traffic operations that complement the construction, and in some cases can provide an alternative solution. The importance of maintenance expenditures has risen sharply, and road information and pavement management systems are being implemented across Australia, and are setting the scene for more broadly based and better-informed evaluations of prospective operational expenditures.

Traffic information systems have also burgeoned, but transport and personal travel information have not kept up in all cases with the steadily-improving technical ability to understand and apply the user perceptions and need for transport and accessibility. User perceptions of road and transport service levels are now regularly sought, although an adequate range of technical methods for making full and balanced use of these responses has not yet been developed. This emphasis on user perceptions has followed some years after

the development of such techniques for transport and personal choice models, and the integration and treatment of the different forms of evaluation is still changing, but generally in the direction of paying more attention to the user responses and perceptions on a wider basis than solely travel choice.

Road safety

The importance of road safety as an issue has remained on the political and technical agenda. The rate of improvement in the safety performance of the road transport system has tapered off over the period, as most of the 'easy' and readily targeted measures were put in place. The current emphasis requires careful coordination of many measures, and balances between mobility and other socially significant issues to maintain progress. Applying some of the newer technologies has implications that have not yet been fully anticipated. The strong resistance to electronic road pricing and its vehicle tracing aspects helped to ensure that the Hong Kong experiment was not followed by a permanent installation - and also has sent warnings to other countries that any confusion of roles between traffic efficiency, safety and individual tracking is likely to be a major political barrier to successful implementation. Measures that rely on individual identification are an intrinsic part of most of the new technology approaches to traffic enforcement.

The basis for valuing life and accidents has become more important as economic evaluation methods have been required to assess programs in areas previously not related for budgetary purposes. This trend will continue, and the need to ensure that the value attributed to safety measures reflects the community values has already been the cause of major shifts in the formal basis for valuing life and accidents in the UK for project evaluation purposes.

Regulation

The rule making and regulatory aspects of road safety shifted considerably. The formal Australian Design Rules had initially drawn strongly on the philosophy of the US FMVSS (Federal Motor Vehicle Safety Standards), and uniquely Australian rules had led the way for safety belts and anchorages. By the end of the period the FMVSS basis had weakened and the links with Economic Commission (Europe) Working Party 29 had emerged as a more important basis for rule-making. As this working party

is heavily influenced by the ECE and the EEC rule-making systems, it is clear that a shift from the US to Europe in safety rule making was becoming inevitable.

At the beginning of the period transport systems were generally highly regulated, but by the end deregulation policies had become widespread, and had already influenced the transport system significantly. The changes have been sufficient that the legal and economic aspects of deregulation had moved to the centre of the transport policy stage by the end of the 1980's. These changes have already affected airlines, road and rail freight and public passenger transport.

The environment for transport policy and research extends across many fields, and for such a large section of the economy the choice of issues to discuss in a short paper must be very limited and illustrate only a few of the points that could be made. The common outcome of the last 20 years is that both the transport environment and the research contributors have changed, and that the internal resources in Australia have developed roads and transport expertise that is now exported rather than imported, as was the largely the case 20 years ago.

SUMMARY

A steady globalisation of issues in transport and planning has taken place in the last 20 years. Environmental issues, the roles that transport can or should play and the costs that can or cannot be borne, the social balances involved in public transport and its massive capital and revenue support implications, the suburbanisation of congestion and the prevailing mood of combining different forms of infrastructure planning and evaluation to give a vision and a purpose and a social goal to the choices that must be made are all aspects of the transport and urban planning debates in many countries.

These problems are even greater than those of each specialist sub-area of transport or planning taken one by one (as was done in 1969), but the internationalisation of research, development and economic experience has also provided a global basis for collating the imagination, research, operational and social resources to face them. As the issues become more interrelated, we shall need to participate more (nationally and internationally) to be able to draw on and contribute to this broader pool to deal with them.

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