

## MICHAEL ANTHONY PETER TAYLOR

### Current Position

1996- Professor of Transport Planning and Director, Transport Systems Centre, University of South Australia

### Qualifications

Bachelor of Engineering; BE(Hons-I), Monash University, 1970  
Master of Engineering Science; MEngSc, Monash University, 1973  
Doctor of Philosophy; PhD, Monash University, 1977

### Academic and Professional Memberships

Fellow, Institution of Engineers, Australia  
Fellow, Institute of Transportation Engineers (USA)  
Fellow, Chartered Institute of Logistics and Transport (UK)  
Member, Australian Institute of Traffic Planning and Management  
Associate Fellow, Australian College of Road Safety

### Employment History

1994-6 Professor of Civil Engineering and Director, Transport Systems Centre, University of South Australia  
1991-4 Professor and Head of Civil Engineering and Director, Transport Systems Centre, University of South Australia  
1989-91 Reader, Department of Civil Engineering, Monash University  
1984-88 Senior Lecturer, Department of Civil Engineering, Monash University  
1979-84 Senior Research Scientist, CSIRO Division of Building Research  
1978-9 Consultant, OECD Road Research Programme  
1976-8 Research Scientist, CSIRO Division of Building Research  
1973-6 Senior Tutor, Department of Civil Engineering, Monash University  
1971-3 Engineer, Country Roads Board of Victoria

### Selected Publications 1995-2004

Taylor, M A P (ed) (2004). Special issue on 'Intelligent transport systems: emerging technologies and methods in transportation and traffic'. *Transportation Research C* 12 (3-4), pp.167-320.  
Taylor, M A P and Ampt, E S (2003). Travelling smarter down under: policies for voluntary travel behaviour change in Australia. *Transport Policy* 10 (3), pp.165-177.  
Taylor, M A P (ed) (2002). *Transportation and Traffic Theory in the 21st Century*. (Elsevier-Pergamon: Oxford).  
Taylor, M A P (2001). Intelligent transport systems. In Button, K J and Hensher, D A (eds). *Handbook of Transport Systems and Traffic Control*. (Elsevier-Pergamon: Oxford), pp.461-475.  
Taylor, M A P, Bonsall, P W and Young, W (2000). *Understanding Traffic Systems: Data, Analysis and Presentation* (2nd ed). (Ashgate: Aldershot).  
Chambers, L D and Taylor, M A P (1999). *Strategic Planning: Processes, Tools and Outcomes*. (Ashgate: Aldershot)  
Klungboonkrong, P and Taylor, M A P (1998). A microcomputer-based system for multicriteria environmental impact evaluation of urban road networks. *Computers, Environment and Urban Systems* 22 (5), pp.425-446.  
Affum, J K and Taylor, M A P (1997). SELATM: a GIS based program for evaluating the safety benefits of local area traffic management schemes. *Transportation Planning and Technology* 21 (1), pp.93-119.  
Taylor, M A P (1996). Incorporating environmental planning decisions in transport planning: a modelling framework. In Hayashi, Y and Roy, J R (eds). *Transport, Land Use and the Environment*. (Kluwer: Dordrecht), pp.337-358.  
Zito, R, D'Este, G M and Taylor, M A P (1995). Global positioning systems in the time domain: how useful a tool for intelligent vehicle-highway systems? *Transportation Research C* 3C (4), pp.193-209.  
Professor Taylor is the author of more than 320 papers and articles, 16 books and six software packages (including the *TrafikPlan* package for dense network modelling)

### Academic and professional prizes

Engineering Excellence Award for *TrafikPlan/MULATM*, Institution of Engineers, Australia, 1989

### Board Memberships

Institution of Engineers, Australia – Immediate Past Chair, National Committee on Transport  
International Advisory Committee for the International Symposia on Transportation and Traffic Theory  
World Conference on Transport Research Scientific Committee  
International Association for Travel Behaviour Research Scientific Committee  
Board, Eastern Asia Society for Transportation Studies  
International Advisory Committee for the International Symposia on Transportation Network Reliability  
Editorial Boards, *Transportation*, *Journal of Advanced Transportation*, *Journal of Transport Policy*, *Transportmetrica*  
Editor, *Transport Engineering in Australia*.

### Higher Research Degree Supervision

Professor Taylor has supervised twelve completed PhD theses and seven research Masters theses, and is currently supervising nine PhD students. He has been an external examiner for 16 PhD theses, from universities in Australia, New Zealand, Hong Kong, India, Sweden, the UK and Singapore.

### Professional Interests

Transport planning and engineering, logistics and transport systems, road safety, intelligent transport systems, computer modelling of engineering systems, traffic simulation modelling, transport network modelling

## Michael A P Taylor – biographical note

Professor Michael A P Taylor is the Professor of Transport Planning and Director of the Transport Systems Centre at the University of South Australia. His principal research and teaching interests lie in traffic systems engineering, transport planning, transport and logistics, road safety, and environmental impact assessment, with interest also in engineering management, systems engineering and operations research, computer modelling, information technology and computer science, and policy and decision-making support systems. He has strong interests in transport network analysis, transport and logistics systems modelling, transport network reliability, transport technology, Intelligent Transport Systems (ITS), and environmental impacts of road traffic (especially air pollution emissions). He has published extensively in all of the above areas, with over 320 papers, book chapters and articles, 16 books (authored or edited), and six software packages to his credit. He is internationally acknowledged as an expert on traffic flow theory, travel behaviour and traffic data collection, travel demand modelling, traffic simulation, public transport evaluation, the environmental impacts of road traffic, and the applications of information technology in transport and logistics planning.

In the period 1994-2004 Professor Taylor has won more than \$2.0 million in research grants from the Australian Research Council and a further \$1.2 million from other government grant schemes and industry.

Professor Taylor has worked in industry, with the Country Roads Board of Victoria, and most recently as an expert consultant to the transport industry at large. His previous position was Reader in Transport Engineering at Monash University. He spent eight years with the CSIRO Division of Building Research, and two years with the Organisation for Economic Cooperation and Development in Paris. In 1997 Professor Taylor chaired Task Group 5 *Transport Logistics* of the Australian Academy of Technological Sciences and Engineering (AATSE) Inquiry into Urban Air Quality in Australia, conducted for the Commonwealth Department of the Environment.

Professor Taylor is a member of the prestigious *International Advisory Committee for the International Symposia on Transportation and Traffic Theory*, the *Scientific Committee of the International Association for Travel Behaviour Research*, the *International Advisory Committee for the International Symposia on Transportation Network Reliability*, and the *International Scientific Committee of the World Conference on Transport Research*. In addition he is a Board Member of the *Eastern Asia Society for Transportation Studies*. Professor Taylor is the editor of the IEAust journal *Transport Engineering in Australia*. He has been a guest editor of the journals *Transport Reviews*, *Journal of Advanced Transportation* and *Transportation Research C*. He also serves as a referee for six international journals. He is the author of the pioneering *TrafikPlan* software package for local area traffic planning. In 1989 Professor Taylor received an Engineering Excellence Award for *TrafikPlan/MULATM*, from the Institution of Engineers, Australia - the first occasion on which such an award was made to an individual, rather than to an organisation. *TrafikPlan* is used at over 110 sites in 12 countries. He has supervised twelve completed PhD dissertations and seven research Masters theses, and is currently supervising nine PhD students.

Professor Taylor has held the following administrative positions at the University of South Australia.

- (Founding) Director, Transport Systems Centre, 1993-
- Head, School of Civil Engineering, 1991-94
- Associate Dean (Research), Faculty of Engineering, 1994-95
- Associate Dean (Research), Faculty of Engineering and the Environment, 1997-99

He has served on many university committees, including the Research Policy Committee, the Division/Faculty Board and Research Management Committee (chair of the Faculty Research Management Committee 1997-99). In 1997 he was a member of the review panel for the University's Equal Opportunities Unit.

**National Competitive Research Grants performance, 1993-2004**  
 [Grants with Professor M A P Taylor named as Chief Investigator]

Period	Grant scheme	Project	Amount (\$000s)
2004-2006	ARC Linkage Project	Multidimensional evaluation of the overall benefits of voluntary travel behaviour change programs	119
2004-2007	ARC Linkage Project	Behavioural responses to transport congestion: peak spreading and the more efficient usage of transport infrastructure	150
2004-05	ARC Discovery	Methodology for assessing the vulnerability of multimodal transport networks and developing remedial measures to safeguard network performance	130
2003-05	ARC Linkage Industry	Traffic microsimulation of ITS implementations in CBD road networks	215
2002-04	ARC Linkage International	Developing an international knowledgebase on urban transport policy instruments	22
2001-03	ARC Large	Modelling of chaotic, bi-directional, mixed-user road traffic systems	199
2001-02	ARC SPIRT	Urban drive cycles for the analysis of air quality and greenhouse gas emissions from road traffic	97
2000-02	ARC Large	Modelling Australia's strategic transport systems	133
2000-02	ARC SPIRT	Land use, travel behaviour and the viability of different forms of transport: an analysis with reference to metropolitan transport corridors	205
2000-02	ARC SPIRT	The use of new technologies for providing better public transport	162
1999-2002	ARC SPIRT (APAI)	Developing measures of accessibility for use in transport and land use policy analysis	79
1998-2001	ARC SPIRT (APAI)	Developing a policy sensitive tool for evaluating travel demand management measures	77
2001	SENRAC	Comparison of the fuel and emissions performance of diesel and CNG buses	52
2000	SENRAC	A greenhouse gas model for mobile sources in metropolitan Adelaide	57
1998-2001	SRDC	Dynamic modelling of sugar cane transport and storage systems	88
1998-99	ARC SPIRT	Advanced GPS/GIS application in the SA Police Force	133
1999	ARC Small	Use of discrete event simulation modelling of arterial road traffic flow for incident detection and incident management planning	24
1998	ARC Small	A discrete event microsimulation model of arterial road traffic flow for ITS applications	19
1996-99	ARC Collaborative Research	Automatic detection of incidents in earthmoving operations	167
1993-95	ARC Collaborative Research	Decision support tools for strategic planning applications	105
1994-96	ARC Collaborative research	Development of demand-responsive transport as feeder services to metropolitan public transport	127
1998	FORS Seeding Grant	Modelling mobility, fuel and emissions impacts of lower speed limits	16
1996	FORS Seeding Grant	Models of safety performance of signalised intersections	18
1997-99	DIST IST Major Grant	Environmental impacts of road transport systems	30

## Selected Recent Projects involving Collaboration with Industry

1. **Development and conduct of SA Training and Accreditation Program for Road Safety Auditors, SA**  
Department of Transport (1995-)  
This project involved the design and presentation of the South Australian training program for accreditation of road safety auditors. The program was based on the generic course program developed for the Federal Office of Road Safety, adapted to South Australian needs and intensified to introduce a more 'active' learning style to the program. Five courses were run in 1996-8 specifically for Transport SA. Since then the course has been run annually by the University, with input from Transport SA. The latest course was held in November 2001.
2. **Review of Brisbane Integrated Transport Study modelling methodology**, Queensland Transport (1996)  
This project involved an in-depth review of the development of the multimodal transport network modelling package ITFEM (Integrated Transport Forecasting and Evaluation Method) being produced for Queensland Transport and applied to regional networks in South East Queensland. The review considered the advanced technical aspects of the model, its current applications, and its availability for a variety of tasks in transport planning and policy analysis.
3. **Report on relationships between traffic congestion and noise pollution and emissions**, ARRB Transport Research Ltd (1996-97)  
This project was conducted for ARRB Transport Research as a review of the range of models available for considering traffic congestion and noise and air pollutant emissions, and the existing and potential use of those models in Australia. It is also to define the needs for further research and evaluation in the field of environmental impact assessment for traffic systems.
4. **Traffic management strategy for the City of Adelaide**, Adelaide City Council (1997-8)  
The traffic management strategy study was undertaken by a consortium consisting of Kinhill Urban, Murray F Young and Associates, and the TSC. Professor Taylor's involvement was in the modelling of alternative traffic management plans for the Adelaide CBD road network, with particular emphasis on treatments for North Terrace, and possible travel demand management initiatives.
5. **National inquiry into urban air quality in Australia**, Australian Academy of Technological Sciences and Engineering (1997)  
AATSE conducted this inquiry for the Commonwealth Department of the Environment in 1997. Professor Taylor chaired the working party TG5 in the inquiry, which looked at the air quality consequences of travel behaviour and logistics in Australia's capital cities. The possible effects of various travel demand management policies such as electronic road pricing on air quality were examined. He undertook the modelling of the potential effects of road pricing schemes on air quality in the Melbourne metropolitan area.
6. **Evaluation of media campaign against excessive speed**, SA Department of Transport (1998-2001)  
This project involved the long term monitoring and analysis of community attitudes to speed and speeding behavioural in metropolitan Adelaide, and the investigation of possible relationships between media campaigns, community attitudes to speeding and on-road behaviour of drivers.
7. **TASEAP: Thai-Australia Science and Engineering Advisory Project**, Australian Agency for International Development (AusAid) and the Kingdom of Thailand Ministry of University Affairs (1997-2001)  
Professor Taylor was appointed as the Transport Engineering sub-program leader in this major project aimed at assisting curriculum development and building international research collaborative links for Thai universities. He reviewed the state of traffic and transport engineering education in Thailand, recommended developments in curriculum design and content, and arranged fellowship programs for Thai academics to spend time at Australian universities.
8. **Independent review of land acquisition proposal for a road project**, SA Minister for Transport, Urban Planning and the Arts (1999)  
The SA Minister for Transport appointed Professor Taylor as the independent reviewer for a disputed land acquisition proposal between Transport SA and a land owner in the south-east of SA (Mt Gambier).
9. **Review of needs for research in travel demand modelling**, ARRB Transport Research Ltd (1999)  
Professor Taylor contributed to a review of research needs and directions for travel demand modelling by preparing a discussion paper based on his recent overseas experience in the development of travel demand models.

10. **Monitoring and evaluation of city-wide 40 km/h area speed limit**, City of Unley, South Australia (1999-2003)  
The TSC was invited by the City of Unley to undertake the analysis of the impacts of the city-wide 40 km/h residential street speed limit introduced in 1999. This involves the statistical analysis of speed and traffic behaviour across the municipality, surveys of residents' attitudes to the 40 km/h limit and trends, and the development of a Paramics simulation model of the road network in the municipality.
11. **Review of the RACV travel time monitoring program**, Royal Automobile Club of Victoria (2000)  
RACV commissioned the TSC to undertake a review of its arterial road travel time monitoring program, to recommend possible changes to the methodology and technology used in travel time monitoring in the light of new technological developments and future data needs, and to consider the potential role of the RACV as an on-line provider of traffic condition information.
12. **ITS technologies for heavy vehicle management, compliance, regulation and enforcement**, Transport SA (2000)  
TSC undertook a review of the present and potential applications of ITS technologies for the improved efficiency and effectiveness of road freight operations in South Australia.
13. **Evaluation of environmental impacts of speed limit changes**, Transport SA (2000)  
The trade-offs between the potential safety benefits of reduced speed limits on urban roads and streets and mobility, energy and environmental effects are being investigated in this project. The work includes on-road studies using the TSC's instrumented car (which can record travel progression, fuel consumption and pollutant emissions on a second-by-second basis) and computer simulation studies.
14. **Impact of Intelligent Transport Systems (ITS) on greenhouse and air quality emissions**, Commonwealth Department of Transport and Regional Services, Maunsell McIntyre Pty Ltd and QED Environmental Consultants Pty Ltd (2000-1).  
TSC was part of the consortium undertaking this project to provide expert specialist advice on both transport network modelling and emissions from motor vehicles. The project reviewed and examined the likely emissions impacts of ITS implementations at both the macro-scale (e.g. electronic road pricing) and the micro-scale (e.g. freeway incident management). It led to pioneering research on the combination of simulation modelling and on-road data collection.
15. **Scoping study for modelling of urban freight and greenhouse emissions**, Commonwealth Bureau of Transport Economics (2000)  
Professor Taylor was commissioned to prepare the research design for a major research project by BTE to develop a behavioural model of urban freight transport and logistics that can be used to simulate the impacts on greenhouse and air quality emissions from freight transport sources of a wide range of transport policy instruments. The proposed model framework includes 'city logistics' models of freight transport and distribution using microsimulation techniques.
16. **Independent review of land acquisition proposals for a road project**, SA Minister for Transport, Urban Planning and the Arts (2001)  
The SA Minister for Transport appointed Professor Taylor as the independent reviewer for disputed land acquisition proposals between Transport SA and two land owners along the Portrush Road upgrade project in the eastern suburbs of Adelaide
17. **Performance of CNG buses and energy implications of bus priority in public transport**, SENRAC, SA Passenger Transport Board and Transport SA (2001-2)  
This project aims to determine the actual and relative performance of CNG and diesel buses in terms of their energy use and emissions generation, as well as the likely energy and emissions savings from the implementation of bus priority measures. The project involves the development of engine map models of energy and emissions performance and on-road data collection.
18. **Review of the Glenelg Access Strategy final report**, City of Holdfast Bay (2001-2)  
Professor Taylor was one of two independent reviewers of the report prepared for the City of Holdfast Bay by QED Pty Ltd.

19. **Review of the National Road Transport Commission Act**, Australian Department of Transport and Regional Services (2002)  
Professor Taylor was part of the consultancy team engaged by the Australian government to assess the workings of the National Road Transport Commission (NRTC) and recommend to the government on the needs for changes to the 1991 NRTC Act and to the organisation of the NRTC, under the sunset clause in that Act.
20. **Effects of transport and logistics policies on Greenhouse Gas emissions from urban freight vehicles**, Commonwealth Bureau of Transport and Regional Economics (2002-3)  
This project involves the development of a network model of urban road freight transport, behaviourally responsive to policies affecting vehicle and fuel technology, vehicle fleet management, and urban traffic management, that can be used to assess the impacts of policies on the emissions of greenhouse gases and on air quality. The TSC is undertaking the project in collaboration with CSIRO and PPK Consultants.
21. **Evaluation of logistics network modelling tools available to South Australian companies**, SA Centre for Innovation, Business and Manufacturing (2002)  
The TSC is undertaking the review and testing of models of freight logistics networks, aimed at providing recommendations on suitable models for use by small and medium enterprises (SMEs) and to develop awareness and training programs on logistics planning and operations.
22. **Review of travel demand modelling for metropolitan Adelaide**, Transport SA (2002-3)  
Professor Taylor and Professor Derek Scrafton of the TSC undertook a review of the current state of practice of travel demand modelling within the SA Department of Transport and Urban Planning. The review describes the current status of travel demand analysis and transport planning modelling as undertaken in DTUP, establishes the extent to which current models and modelling capability meet user needs, and identifies the means by which these can be enhanced.
23. **Review of the Main Roads WA (MRWA) transport model**, WA Department of Planning and Infrastructure (2003-4)  
Professor Taylor and Professor Derek Scrafton of the TSC are undertaking a review of the state of practice of travel demand modelling in Western Australia. The first stage of review is examining the structure and use of the model developed within MRWA for metropolitan Perth. Subsequent stages of the project will examine the relationships between the MRWA model and other models in use, within DPI and in local government, and then identify the needs and directions for future transport modelling in WA.
24. **Rail demand forecasting and cost modelling**, Department of Transport and Regional Services (2004)  
This project preparing two papers: the first on demand forecasting and modelling in a multi-modal context, and the second on estimating impacts of rail projects on costs, service qualities and performance indicators, for inclusion in the 'National Good Practice Guidelines for the Appraisal of Transport Initiatives'.
25. **Review of central Sydney LRT Paramics modelling study**, NSW Department of Infrastructure, Planning and Natural Resources (2004)  
This project involves reviews of the traffic microsimulation modelling study undertaken in the design and evaluation of the central Sydney LRT project.
26. **Development of a new integrated suite of multimodal travel demand models for metropolitan Adelaide**, SA Department of Transport and Urban Planning (2004-5)  
The project aims to deliver a fully calibrated and validated integrated modelling suite for the multimodal transport system for metropolitan Adelaide, which can be regarded as 'best practice' in the field. The modelling suite will be based on the 'hierarchy of models' concept and will cover both passenger and freight transport.
27. **Review of freight planning methodology**, Victorian Department of Infrastructure (2004-5)  
Professor Taylor joined a consortium headed by Indec Consulting and the Apelbaum Consulting Group to undertake a review of a 1999 proposed methodology for modelling of freight movements in metropolitan Melbourne, and to make recommendations for a preferred methodology.

## TEN CAREER BEST PUBLICATIONS

A personal choice made with great difficulty, and for which there is much wavering, from some 320 publications to which I will lay claim. After some soul searching, in reverse order (from number 10 to number 1) my personal 'top ten' is:

10. Taylor, M A P and Young, T M (1996). Developing of a set of fuel consumption and emissions models for use in traffic network modelling. In Lesort, J-B (ed). *Transportation and Traffic Theory*. (Pergamon-Elsevier: Oxford), pp.289-314.
9. Chambers, L D and Taylor, M A P (1996). Planning with GENIE: a model for forecasting and decision making. *Environment and Planning B* 23, pp.697-709.
8. Taylor, M A P (1977). Parameter estimation and sensitivity of parameter values in a flow rate/travel time relation. *Transportation Science* 11 (3), pp.275-292.
7. Taylor, M A P (2000). Using network reliability concepts for traffic calming - permeability, approachability and tortuosity - in network design. In Bell, M G H and Cassir, C (eds). *Reliability of Transport Networks*. (Research Studies Press: Baldock, Herts), pp.217-242.
6. Taylor, M A P (ed) (2004). Special issue on 'Intelligent transport systems: emerging technologies and methods in transportation and traffic'. *Transportation Research C* 12 (3-4), pp.167-320.
5. Taylor, M A P, Bonsall, P W and Young, W (2000). *Understanding Traffic Systems: Data Analysis and Presentation* (2nd ed). (Ashgate Publishing Ltd: Aldershot).
4. Taylor, M A P (1979). Evaluating the performance of a simulation model. *Transportation Research A* 13A (3), pp.159-173.
3. Taylor, M A P (1992). Exploring the nature of urban traffic congestion: concepts, parameters, theories and models. *Proc Australian Road Research Board* 16 (5), pp.83-105.
2. Taylor, M A P (ed) (2002). *Transportation and Traffic Theory in the 21st Century*. (Pergamon-Elsevier).

and, in the tradition of Frank Lloyd Wright,

1. Taylor, M A P, Scafton, D G and Nairn, R J (2005). Pride and paucity downunder: current practices in travel demand modelling in Australia. Submitted to *Transportation Research A* - special issue on 'A synthesis of best practices in travel demand modelling'.