



2002 ANNUAL REPORT

A report on the 2002 activities of the
Institute of Transport Studies: The
Australian Key Centre in Transport
management, ITS Sydney and ITS Monash.

*Established and supported under the Australian
Research Council's Key Centre Program.*

INSTITUTE OF TRANSPORT STUDIES

The Australian Key Centre
in Transport Management

The University of Sydney
and Monash University

Established under the Australian Research Council's Key Centre Program.

2002 Annual Report

January 2002

**INSTITUTE OF
TRANSPORT STUDIES**

The Australian Key Centre
In Transport Management

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1. ABOUT THE KEY CENTRE

ITS: The Australian Key Centre of Teaching and Research in Transport Management was established in July 1995 as a joint venture between the University of Sydney and Monash University. ITS grew out of two existing Centres – The Institute of Transport Studies within the Graduate School of Business at the University of Sydney, and the Monash Transport Group within the Department of Civil Engineering at Monash University. The Institute at Sydney and the Monash Transport Group were leading Australian Centres in transport management and traffic education and research in their own right prior to the establishment of the Australian Key Centre. In January 1998, ITS Sydney relocated to the Faculty of Economics, renamed in January 2000 as the Faculty of Economics and Business.

The Institute of Transport Studies (ITS) has nodes at the University of Sydney and Monash University. The Director of ITS is Professor David Hensher FASSA, Professor of Management at the University of Sydney. Associate Professor Geoff Rose is Director of ITS Monash.

The Key Centre is guided by two Advisory Committees, one for each node, comprising eminent academic, industry and government representatives. The advisory committees' role (as a group or individually) is to provide advice on any matters referred to it by the Key Centre Executive, as well as to initiate matters for consideration that are of interest to the Key Centre, such as the teaching and research program and opportunities for participation of industry and government. The new nodal structure for the Advisory Board was introduced in 2002. ITS provides education programs at a range of levels: PhD, Masters, Graduate Diploma, Graduate Certificate, continuing education workshops, management development seminars and Certificate programs. In addition, ITS conducts transport, traffic, logistics and supply chain related research. The Institute has an extensive program of related activities including publications, participation at conferences, software development, contract research to industry and government and links to other leading transport and logistics institutes around the world, especially in the USA, UK, Canada, The Netherlands, Chile and Sweden.

July 2001 marked the completion of the six years of core funding from the Federal Government. The Key Centre however has continued in its present institutional and structural guise to make notable contributions to the research and education profile of Australia under the exact same charter it had as a Federal funded Key Centre. The University of Sydney has recognised ITS as a Research Strength in its review of areas of research that should be supported.

2. DIRECTOR'S REPORT

The Institute of Transport Studies has moved forward in many directions since the Key Centre funding was concluded in 2001. Although we continue formally as a Key Centre and aspire to the high levels of excellence associated with such status, ITS has diversified its portfolio of activities to embrace new opportunities. Notable developments include the establishment of a Global Positioning System (GPS) program under the guidance of Professor Peter Stopher. With initial funding from the NSW Road and Traffic Authority (RTA) to investigate the reliability of data reported in household travel surveys, ITS has invested heavily in vehicle and personal GPS loggers. The team of four researchers in Sydney is actively developing new software and applications to integrate GPS and GIS technologies into a system for tracking and evaluating the spatial performance of the transport system. The continuing quality partnership between the Bus and Coach Association of NSW and ITS-Sydney has made several notable contributions in 2002, especially the development of performance based contracts as a way ahead in the reform of bus industry. This effort was recognised by the Bus Association of Victoria and the Bus Industry Confederation who have since participated with ITS-Sydney in this reform program. ITS is proud of its participation with industry, striving to grow the knowledge base and share good ideas.

Academic staff at both nodes have not changed, but some research and administrative appointments were made in 2002. Kirsten Jakobsen left to pursue a research career. Jo Sarjana joined ITS-Sydney as the Executive Officer and personal assistant to the Director and Loloma Wren took over from Virginia Burns as Industry Coordinator for ITS-Sydney. Professor Ann Brewer has relocated to the Central University as an Assistant PVC, on secondment until 2005 (with the option to extend).

2002 saw the strengthening of a new quality partnership with the RTA (NSW). A "Women in Transport Management Scholarship 2002" funded by the RTA for the MTM was awarded to Kris Nguyen after a competitive process. In addition an Advanced Certificate in Transport and Traffic Management (ACTTM) was designed for a 2003 intake of RTA staff who competed for 15 RTA scholarships to cover all fees. The support of the CEO (Paul Forward) and his senior management staff (especially Deanna Dodd) is greatly appreciated.

The demand for graduate study has grown substantially in 2002. In ITS-Sydney we experienced a 62% increase in student numbers. This sends the right educational signals to the University in recognising the important contribution of ITS to higher education. David Hensher took on an additional role as Associate Dean (Postgraduate coursework) in the Faculty in April 2002.

The Monash node started the year with a mini-retreat to reflect on 2001 results and plan for 2002. The annual mini-retreat continued to provide an ideal opportunity to maintain a strategic focus on the group's activities. One of the key items flagged at the 2002 retreat was securing industry support to expand teaching and research activities in public transport. All members of the ITS (Monash) team were delighted when the Government of Victoria, through the Department of Infrastructure and VicRoads, and the Bus Association of Victoria agreed to fund Australia's first Chair in Public

Transport. This support is greatly appreciated and is a testimony to the close links with the public transport industry which have been built up through delivery of the Transport Management Course in Bus and Coach Operations. The new Professor of Public Transport is expected to be appointed at Monash in 2003.

The distance education postgraduate program in Transport and Traffic, offered by ITS (Monash), is set to benefit from the groundwork done in 2002 to revise the course structure. The revised course, which includes two new Masters degree options (Master of Traffic and Master of Transport) and a double Masters degree option, will be offered beginning in 2003. While two new units will be brought on line to strengthen the offerings in the Master of Transport program, the revisions largely amount to a repackaging of the existing units. The changes are expected to stimulate further student interest in the program. Already about 70 per cent of the students in the program come from outside Victoria and there is increasing interest from overseas students. This clearly demonstrates the increasing geographic reach of the engagement with our students.

Research remains an important area of activity, with 2002 seeing continuation of the summer student research scholarships at ITS (Monash) which proved popular in 2001. Two new undergraduate students are working with Bill Young and Steve Greaves under this program. In addition to contributing to current research projects, this initiative is also aimed at increasing student interest in research activities. While not reflected directly in the 2002 Annual Report, ITS (Monash) has been active in a number of research proposals which are expected to result in increased research activity in 2003. One of these was an ARC Linkage Grant Application submitted in conjunction with the Victorian Environmental Protection Authority. That project is focussed on evaluating an environmentally oriented driver-training program and will strengthen the research activities at ITS (Monash) which rely on passive GPS data collection.

I am greatly appreciative of all the staff at both nodes in contributing to the continuing success of the Institute of Transport Studies.



David A. Hensher FASSA
Director

3. ENROLMENTS FOR 2002

A summary of student numbers is given below for the various programs. Unlike previous years in which we only reported students enrolled in the range of transport and logistics degrees, we have broken with tradition to report the actual number of students enrolled in each unit of study. This more meaningfully records the demand for the transport and logistics units of study. Many of our students are enrolled in other degrees such as the MCom, MIB and MDesSc.

Sydney:

Graduate Program

Year	GradCertTM			GradCertLM		
	Local	Internat.	Total	Local	Internat.	Total
1999	15	0	15	7	0	7
2000	6	1	7	15	0	15
2001	3	0	3	5	0	5

Year	GradDipTM			GradDipLM		
	Local	Internat.	Total	Local	Internat.	Total
1999	16	2	18	na	na	na
2000	5	1	6	2	1	3
2001	4	1	5	5	0	5

Year	MTM			MLM			PhD		
	Local	Internat.	Total	Local	Internat.	Total	Local	Internat.	Total
1999	22	11	33	na	na	na	2	1	3
2000	10	7	17	13	4	14	2	3	5
2001	7	5	12	16	14	30	4	2	6

Year	Specialisation	Total	Specialisation	Total	Local	Internat.	Total
2002	Transport UoS	134	Logistics UoS	371	2	4	6

Certificate Programs

Year	CTM (bus & coach)	CCM	CLM
1999	53	167	**
2000	31	198	***
2001	47	164	15
2002	56	171	12

** Two executive programs were run.

*** No programs except via Deakin Australia.

Monash:

Year	Postgraduate (Coursework)	MEngSci (Research)	PhD	Industry Programs	
				Parking Management	TMC (Bus and Coach)
2000	20	3	3	4	908
2001	28	1	5	8	453
2002	51	1	5	7	312

4. MEETING OBJECTIVES

Objectives

The primary objective of the Institute is to undertake graduate teaching, management development programs, grant and contract research and development in the fields of transport and logistics management.

The work of the Institute also has the following objectives:

- To provide a focus for University activity in areas of transport and logistics management and to establish an environment attractive to those committed to excellence in graduate transport and logistics management programs and research;
- To collaborate with key players having an interest in transport and logistics management and its applications;
- To offer specialised training courses, workshops, short courses and seminars on topics of interest in the area of transport and logistics management; and
- To seed the development of innovative ideas in transport and logistics management policy and professional practice in Australia, in which the Institute of Transport Studies plays a role.

Achieving objectives

These objectives are achieved by:

- Developing and offering graduate transport and logistics programs, certificate, management development programs and short courses at both ITS Sydney and ITS Monash;
- Bringing high quality transport and logistics management programs to people outside Sydney and Melbourne as well as widening the offerings of courses in Melbourne and Sydney through access to courses provided by both ITS Monash and ITS Sydney;
- Contributing to Australia's growing participation in the Australasian and Asia Pacific region in a leadership role in transport and logistics management;
- Widening the range of courses available for middle level professional managers in critical areas of transport and logistics not currently served;
- Equipping managers in all disciplines (e.g. engineering, economics, planning), the small business sector and local government to succeed in the face of technological, economic and institutional change;
- Building on the recognised need for stronger links between education of technical specialists and managers in transport and logistics;
- Undertaking research to develop state-of-the-art management practices and technical processes;

- Transferring the knowledge developed through research to client groups through the Institute's publications, workshops, conferences, seminars, and by participation in networks of transport and logistics managers and engineers; and
- Conducting activities that are directly or indirectly related to the attainment of the above objectives.

Objectives and performance measures

The following table summarises performance measures to show how the Key Centre is meeting its objectives. More detail is provided in specific sections throughout the annual report.

Objective	Performance measure
Australian transport and logistics management expertise highly regarded	<p>Requests for working papers and the 10 year ITS-Syd CD-Rom.</p> <p>Requests for involvement in research and consultancy projects. Strong enrolments in all levels of education programs from PhD, Graduate program, Certificate programs and short courses.</p> <p>Requests for speaking at a large number of venues.</p> <p>Editorial positions held by staff on leading international and national journals.</p>
Programs outside Melbourne/Sydney	<p>Delivery of the Graduate Programs in Transport and Traffic by distance education throughout Australia and internationally.</p> <p>Delivery of Transport Management Courses in Bus and Coach Operations.</p> <p>Delivery of Education Program in Parking throughout Australia by distance education.</p> <p>Delivery of Certificates of Bus and Coach Management for Western Australia.</p> <p>Introduced web-based courses for Sydney Graduate Programs.</p>
Contribute leadership in Australasia and Asia Pacific	<p>Participation in Asia Pacific and Australasian Conferences.</p> <p>Aviation research for Asia Pacific countries.</p> <p>Supervision of PhD students in South East Asia and New Zealand.</p> <p>Joint venture with NSW Roads and Traffic Authority through an annual Woman in Transport Scholarship for graduate coursework study.</p>
Courses in critical areas for middle managers and small business	<p>Executive Programs in Discrete Choice Analysis, Logistics Management/Supply Chain Management and Freight Management conducted.</p> <p>Short courses and workshops conducted to meet specific needs.</p> <p>Delivery of a distance program in Logistics and Supply Chain Management with Deakin Australia.</p> <p>Development of a one-day course on use of GPS and GIS tools in transport planning.</p> <p>Development of an Advanced Certificate in Transport and Traffic Management (ACTTM).</p> <p>Development of an Advanced Certificate in Logistics Management (ACLM).</p>
Link transport engineering and management education	<p>Short courses and workshops integrating engineering and management.</p> <p>Short course on travel surveys, transport policy and transport scheduling.</p> <p>Short courses on discrete choice modelling and stated choice methods.</p>
State of the art research	<p>Many research projects for range of government and private clients.</p> <p>Publications in leading journals.</p> <p>3 new PhD commencements in 2002.</p>
Transfer of research to transport community	<p>Through publications including 20 working papers, conferences, journals and books such as <i>Operating a Bus and Coach Business</i>, <i>Transport: An Economics and Management Perspective</i>, <i>Roads and the Community</i>, <i>Traffic Engineering and Management</i>, <i>Stated Choice Methods: Analysis and Applications</i> and the <i>6-volume series of Handbooks in Transport (for Elsevier-Pergamon)</i></p> <p>Published over 20 papers in refereed journals and conference proceedings.</p> <p>Through presentations and attendance at conferences and seminars.</p>

5. THE ITS TEAM

ITS Sydney

Academic and Research Staff

David Hensher, BCom (Hons) PhD *UNSW*, FASSA FCIT FAITPM CompIEAust MAPA

Professor of Management

Director, Institute of Transport Studies and Head of ITS-Sydney node, Associate Dean (Graduate Coursework Programs), and occasional Acting Dean, Faculty of Economics and Business.

A Fellow of the Academy of Social Sciences in Australia, Immediate Past President of the International Association of Travel Behaviour Research and Immediate Past Vice-Chair of the International Scientific Committee of the World Conference of Transport Research, David has published extensively (over 270 papers) in the leading international transport journals and key journals in economics as well as seven books. In January 2001 published *Transport: An Economics and Management Perspective* (with Ann Brewer), Oxford University Press. One of his books - *Stated Choice Methods* (with Jordan Louviere and Joffre Swait), Cambridge University Press, was published in September 2000. Major areas of teaching and research are transport economics, institutional reform, transport strategy, transport policy, sustainable transport, productivity measurement, discrete choice methods, stated choice experiments, privatisation and deregulation. David has advised numerous government and private sector organisations on matters related to transportation.

Ann Brewer, BA MCom (Hons) *Macq* PhD *UNSW*, MCIT

Acting Head, School of Business (until March 2002), Acting Pro-Vice Chancellor (Employee Relations), March 2002-September 2002, Assistant Pro-Vice Chancellor (September 2002-2005).

Professor of Organisational Logistics, Graduate Program (until March 2002).

A specialist in organisational behaviour, human resource management, Ann has experience in a many industries, with major projects on current issues such as teleworking, generational issues in business, value chain management, the impact of the Sydney Olympics on transport, educational needs of adult learners, all of which are pertinent to transport and logistics management. Ann has published numerous papers and five books. Ann is co-author (with David Hensher) of *Operating a Bus and Coach Business* (Allen and Unwin, 1997) and *Transport: An Economics and Management Perspective*, Oxford University Press (2001). In her role as Director of Industry Programs, Transport & Logistics, Ann has developed two distance programs in Logistics and Supply Chain Management, one with Ford International through Deakin Australia and the other with Deakin Australia. Also directed the ongoing bus and coach programs in the Institute of Transport Studies (until March 2002).

Peter Stopher, BSc (Eng) (Hons) PhD Lond, MASCE, MASA, MITE
Professor of Transport Planning, Deputy-Director of the ITS-Sydney node
Coordinator of ITS-Sydney Graduate Research Program

A specialist in travel-demand forecasting, travel behaviour research, transport survey methods and transport and environmental issues. Peter has more than 33 years of professional experience as a university teacher and as a professional in transport planning, and has published more than 130 papers in leading international journals and has also published a number of books in transport-related topics. Peter completed editing a book on *Transport Survey Quality and Innovation* to be published in 2003. He has made major contributions to the profession as a founding member of the TRB Committee on Traveler Behavior and Values, of which he has just been awarded Emeritus Membership, and also founded the TRB Committee on Survey Methods. Peter's current teaching and research cover transport policy and planning, environmental analysis, travel demand modelling, travel forecasting, and survey methods and design. He is pioneering the use of GPS devices in transport data collection, and is also working on standards for household travel surveys and the simulation of travel survey data. Peter has also advised agencies around the world on various aspects of transport planning and data collection. Professor Peter Stopher was elected a Fellow of the American Society of Civil Engineers at the beginning of June. ASCE states: "Election to the ASCE membership grade of fellow recognises an engineer who has made significant technical achievements, is legally registered as a professional engineer or land surveyor, and for at least 10 years has demonstrated notable achievement in responsible charge of engineering activity, as well as continuing professional attainment, following election to the ASCE grade of member." Peter has been a member of ASCE since 1972, but is not a registered professional engineer or land surveyor. ASCE waives this requirement only in exceptional cases, where an individual has a record of outstanding achievements in the field of civil engineering. Election to Fellow requires nomination by at least five Fellows of the Society and letters of reference from at least three of them, indicating the attainments and standing of the individual. Currently, out of a membership of 129,000, there are 7,000 Fellows worldwide in ASCE.

Shams Rahman, MSc Belarus ME Asian IT PhD Exeter
Senior Lecturer in Logistics

Shams specialises in the fields of logistics and supply chain management, quality management and business modelling. His most recent prior appointment was with the Graduate School of Management at The University of Western Australia and prior to that, he was on the teaching and research staff of Universities in Australia, the United Kingdom and Thailand. Shams has published widely in the international journals which include *International Journal of Physical Distribution and Logistics Management*, *Journal of Operational Research Society*, *European Journal of Operational Research*, *International Journal of Quality and Reliability Management*, *Global Business Review*, *Total Quality Management*, *International Journal of Operations & Production Management*, and has a research interest in the areas of logistics and supply chain management, theory of constraints, quality management in logistics, and policy analysis and deployment of services. Currently, Shams is editing a book on supply chain management. He has also worked in a public transport corporation and in various positions in training and development institutes.

Tu Ton, BE MEngSc PhD
Senior Research Fellow

Tu has skills in traffic and transport engineering, EIA of transport infrastructure and traffic and transport computer modelling using artificial intelligence technology including object-oriented programming, artificial neural networks and knowledge based expert systems. In 1997 Tu established the ITS Sydney Geographical Information System (GIS) and advanced computing laboratory as well as promoting GIS to bus operators. Tu is leading an ITS team developing a strategic transport planning decision support system – The Transport and Environment Strategy Impact Simulator (TRESIS).

Philip Bullock, BSc (Applied Geography) (Hons), MLM (in progress)
Senior Research Analyst and Project Leader in GPS/GIS Program

Philip joined ITS in May 2000. He is providing research and administrative support to the Director and ITS academics and most recently coordinates a number of research projects for Professor Peter Stopher. Projects in 2002 include GPS systems as a way of evaluating the reliability of travel survey data, analysing a survey of environmental attitudes, testing the development of synthetic household travel survey data, and statistical analysis of a survey of service quality in the bus sector. Philip has previously worked in a large wholesale company where he managed transport and distribution. Philip is enrolled in the MLM.

Cam Ngo, BEngSc Vietnam MEng USA MEngSc PhD UNSW
Research Analyst

Cam joined ITS in September 1998. His major field is highway, traffic and transport engineering and local area traffic management. His interests lie in artificial intelligence and knowledge-based expert systems. He is currently working on the TRESIS project; which includes entering the speed data and lane data into the Sydney road network, collecting and entering bus-headway of bus routes in Sydney into the bus route database, entering bus routes into map layers, preparing and creating busway layer for rapid bus routes, analysing and classifying the vehicle data for the scrappage model, estimating public transport cost, and creating zone to zone length (access/egress and bus route lengths), travel times (access/egress and bus times) and bus fare matrices. He is currently working to prepare data for TRESIS versions 1.3 and 2.

Freddy Susanto, BSc UNSW
Computer Programmer

Freddy is working on the TRESIS project, where he is involved in building the input and output user interface for the TRESIS program and map object programming.

Frederic Horst, BBA (equiv), MTM
Research Analyst (until September 2002)

Frederic joined ITS as a Research Analyst in August 2001 and is working for Professor Stopher on the project on GPS systems as a way of evaluating the reliability of household travel survey data, and also on developing metadata standards for ITS, and cataloguing and archiving data sets acquired and used by ITS. Frederic completed the

MTM with numerous awards. In October Frederic took up a position in the Aviation Industry, based in Luxembourg.

Marijana Vurmeska, BA, MPhil
Research Analyst

Marijana is responsible for providing research assistance to Professor Ann Brewer. She joined ITS in December 2001 and is currently involved in a number of projects including a survey of prospective postgraduate students and employers and a Human Resource Management Trends study. A graduate of The University of Sydney, she completed her Bachelor of Arts (Psychology) degree in 1998 and her Master of Philosophy (by research - Architecture) degree in 2001. Her thesis was focused on the visibility of drug use in public places and its influence on young people's attitudes to drugs. After the completion of her MPhil, Marijana worked as a research assistant to Professor Elizabeth Webby and Dr Alison Bashford on a large ARC grant entitled 'Nation, Citizenship, Cultures – Australia and the region'. Marijana Vurmeska was recently awarded the degree Master of Philosophy (Architecture) from the Faculty of Architecture, University of Sydney. The title of her thesis was 'Young adult's perceptions of drug use in public places'. The thesis examined young adult's perceptions of illegal drug use in public places within their neighbourhood, their general attitudes to drug use and the relationship between the two. The main findings indicate that drug use was perceived in most public places within suburbs in Sydney and generally attitudes to drug use were negative. There was a weak relationship between perception of drug use and attitudes to drug use. The research highlights the need to focus on specific sections of the neighbourhood in order to develop a greater understanding of the risk factors at the neighbourhood level.

Tomoko Sugiura, BPsych UNSW, PhD (in progress)
Research Analyst

Tomoko is responsible for providing research assistance to Dr Shams Rahman. She joined ITS in February and is currently involved in the supply-chain management program. Tomoko has an Undergraduate degree in Psychology (UNSW) and is currently a PhD candidate at UNSW. Her Honours thesis focused on the reliability of psychiatric diagnosis and her PhD thesis looks at the effects of cross-cultural adjustment on the work adjustment of expatriate managers, and academic adjustment of international students. Tomoko has several publications in the area of mental health.

Qingjian Jiang, BEng Tsinghua University, China, MEng China, PhD (in progress)
Research Analyst

Before joining ITS, Qingjian worked for an electronic component manufacturing company where he was engaged in quality management and R&D. He had established a quality system, which is ISO 9001 accredited, and developed applications for household appliances, one of which is holding a patent. Qingjian commenced working at ITS in December 2001. He is working with Professor Peter Stopher on a project of using passive GPS devices in household travel surveys. He is responsible for developing GISDK programs for automation of data processing and visualization of travel survey data. He also involved in travel survey data processing.

John Rose, BEc (Hons), PhD (in progress)
Research Analyst and Graduate Program Tutor

John's interest is in choice modelling and stated choice experiments. He is enrolled in a PhD which focuses on the development of interactive agency choice experiments in the transport sector. John also provides tutorial support to the graduate program as well as assisting the Director in the development of stated choice design generator.

Rahaf Alsnih, BSc (Hons)

After completing a BSc (Hons) in Economic Geography, Rahaf worked at ITS on a number of projects such as the project that investigated commuter coping strategies and behaviour during the Sydney 2000 Olympic Games. She is currently working with Professor Peter Stopher on the standardization of household travel survey project and her main interests lie in transport management and planning.

Graham Pointer, BSc (Hons)

Graham completed an honours degree in economic geography (UNSW) in 2000. After travelling and working overseas in the manufacturing and sales fields Graham returned to Australia and worked in the area of transport in the private sector. He is currently involved in projects on updating methods for data definition as well as a review of the costing formulae used for commercial and non-commercial bus contracts in NSW.

Andrew Collins, BSc (in progress)

Andrew joined ITS in late 2001 as a specialist internet programmer. He is working on the design of a template for internet surveys, especially stated choice surveys.

Administrative Staff

Virginia Burns

Course Co-ordinator, Industry Programs (until November 2002)

Virginia joined the Institute of Transport Studies in October 2001. Prior to joining The University of Sydney in 2000, Virginia spent eight years working in the Vocational Education & Training sector with TAFE NSW, at the Hunter Institute of Technology, where she gained considerable experience in student administration, educational planning, international student support and business development. Virginia's most recent appointment at The University of Sydney was Executive Assistant to the Pro Vice-Chancellor (Teaching & Learning). Virginia is the first point of client contact for the Certificate of Coach Management and the Certificate of Transport Management. Virginia is responsible for coordinating the Institute's Industry Programs which includes the administration of student services from enrolment to certificate presentation across a wide range of industry programs offered by ITS.

Loloma Wren, BBus, GradDipPR&Mktg

Course Co-ordinator, Industry Programs (from November 2002)

Prior to joining the staff of ITS, Loloma's experience in education administration covered a number of professions including specialist physicians, accountants, the environmental health and building industries and dentists, in addition she has planned and organized a variety of conferences for the medical profession. Loloma's

responsibilities with ITS will encompass the administration of the industry programs for the bus and coach industry and a number of postgraduate programs. Loloma has a BBus from UTS, Ku-ring-gai Campus and a postgraduate diploma in Public Relations and Marketing.

Gary Mariano, MSCE
Computer Systems Officer

Gary is responsible for server administration at the network level and user support and workstation maintenance at the user level. He is also responsible for the design and maintenance of the homepage.

Kirsten Jakobsen, BSc/BA (Hons) ANU
Personal Executive Assistant (until February 2002)

Kirsten provides administrative and secretarial support to the Director and ITS academics, coordinates the day to day administration of the graduate program, coordinates the ITS Systemwide and local node Advisory Committee meetings, produces desktop materials for the graduate program, certificate program, short courses, ITS functions and generic ITS flyers. Her background lies in university administration for both The University of Sydney and The Australian National University.

Jo Sarjana
Executive Officer and Personal Executive Assistant to the Director (from March 2002)

Prior to joining The University of Sydney in 1999, Jo managed her own business and information services office for five years in Bali, Indonesia. Jo provides administrative and executive support to the Director and ITS academics, manages the day to day administration of the graduate program, coordinates the ITS-Sydney local node Advisory Committee meetings, produces desktop materials for the graduate program, certificate program, short courses, ITS functions and generic ITS flyers.

Anne Fernando, ACMA
Finance and Personnel Officer

Anne is responsible for the Institute's financial and personnel details. Her duties include day to day operations of the finance section, maintaining and monitoring of financial records, reconciling monthly statements, ordering stationary, raising invoices, and so on. She is also responsible for updating ITS budgets, preparation of revised budgets and interacting with the Director of ITS and the Faculty manager. She is a fully qualified accountant with professional membership of the Chartered Institute of Management Accountants (UK).

Adjunct Faculty

Elizabeth Barber, MEconSt UQ

Elizabeth continues an academic career spanning the past twenty years, teaching at the University of Queensland, Australian National University, University of Canberra and University of New South Wales. Her research interests include project management, transport economics, logistics and supply chain management. For the past ten years she has been involved in military logistics researching logistics and supply chain initiatives

for the Australian Defence Force. Her recently published book “Asset Visibility in the Australian Military” highlights these interests. Her forthcoming book, “The Logistics of the East Timor Campaign” is due for publication in mid 2002.

Elizabeth teaches Strategy and Supply Chain Management and the Industry Laboratory.

Trevor Heaver, BA Oxon MA PhD Indiana

UPS Foundation Professor of Transportation & Director of the Centre of Transportation Studies

Trevor is Professor Emeritus, University of British Columbia. He is a past Chairman of the World Conference on Transportation Research, the Past President of the International Association of Maritime Economists and was recently Francqui Chair Professor, University of Antwerp. Trevor is focusing his research on issues related to ports, shipping and international supply chain management. Particular topics include: performance measurement and benchmarking port terminals; interface problems between container terminals and inland carriers; the restructuring of the liner shipping industry in response to market and regulatory changes; organisational issues for exporters in international supply chain management.

Peter Lok, B.App.Sc., M.H.P.(UNSW), M.B.A. (UTS), Ph.D (UTS)

Dr Peter Lok is Senior Lecturer in Management at the University of Sydney. He teaches in the areas of Managing People, Strategic change management, Strategic HRM and Managerial Practices in Asia. He has extensive working experience in the areas of corporate transformation, productivity evaluation and human resource management in UK, Australia, NZ, China, Hong Kong, Singapore, Malaysia and Taiwan. His consulting activities include many leading firms and he also publishes regularly in management journals.

Rodney Swan, BSc (Hons) Mtech

Visiting Fellow

Managing Director, BGP Pty Ltd

Rodney is one of Australia’s leading strategists in competitive bidding for public and private sector service projects, with a number of successful infrastructure projects to his credit. He is highly experienced in the financial and operational requirements of projects, with expert knowledge of opportunities in the transport, health and environment sectors. Rodney teaches in the graduate program in infrastructure planning and outsourcing.

Alastair Stone, BEng, PhD

Visiting Fellow

Managing Director, Pacific Infrastructure Corporation

Alastair has over thirty years experience in banking, economics and engineering. He has successfully initiated, implemented and participated in major projects and infrastructure deals. He has also advised various international and domestic agencies and governments; including the Asian Development Bank, World Bank, Jakarta Municipal Government, Shanghai Municipal Government, and several Australian State Governments, on private sector participation policies and strategies. His career has covered all facets of urban affairs including senior positions with the World Bank, Lend Lease and Merrill Lynch. Alastair teaches in the area of joint ventures in public

infrastructure projects. Alastair presents in the graduate program Infrastructure Planning, Financing and Tendering course with Rodney Swan.

Andrew Kerr, MBA (Macq), DBA dist (IntMC)

Andrew has an extensive management and consulting background in the areas of operations management, service operations, marketing, services marketing, supply chain management and logistics. His doctoral research involved the strategic ramifications of enterprise outsourcing decisions, both in Australia and overseas. Since late 1987, Andrew has been the Managing Director of Griffin Corporate Services; a Sydney based strategic consulting practice with network offices in several Pacific Rim cities. Previously, he held senior management appointments with Marrickville Holdings, Myer (NSW) Limited, GEC Australia Limited, Digital Equipment Corporation, Sperry Limited and Unisys. Andrew is a visiting fellow at a number of graduate schools and since 1989 has delivered numerous post-graduate programs in Australia and overseas. Formerly Australian and Far East Editor of the International Journal of Physical Distribution & Logistics Management, Andrew remains a member of that Journal's Editorial Advisory Board. He is an assistant editor of the Gower Handbook of Logistics and Distribution Management. Andrew teaches international logistics in the Graduate program.

Full-time PhD Students

Alejandra Efron, BEng Argentina MSc Brazil

An industrial engineer (Argentina), Master in Logistics (Brazil) and a specialist in International Transportation (UNCTAD), Alejandra has worked for Ryder Latin America leading the development and implementation of Toyota's interplant logistics, ISO9002 certification and other tasks. Her interest is in researching the logistics strategy choice for small and medium firms using Stated Preference techniques.

Wafa Dabbas, BSc MSc

Wafa holds a Bachelor of Science in Civil Engineering and a Master of Science in Engineering from the UK. She has experience in transport policy and planning and has skills in international procurement and projects management. Her current research area is in Transport and the Environment, in particular modelling traffic vehicle emissions for air quality assessment.

Tapash Saha, BEng MEngSc

Tapash is specialising in the freight sector with particular reference to the courier market in urban areas. He suspended candidature for personal reasons.

Melody Ju-Miao Hsiao, BSc MSc

Melody holds a Bachelor of Science in Business Administration from University of Massachusetts, Lowell, and a Master of Science in Management Science from California State University, Fullerton. She has been a lecturer at Ling Tung College in Taiwan for ten years. Her current research area is in supply chain management, with special interests in buyer-supplier relationship, retail business and supply chain performance. The title of her PhD study is "The Determinants of Supply Chain Performance for Retail Outlets."

John Rose, BEc (Hons), PhD (in progress)
Research Analyst and Graduate Program Tutor

John's interest is in choice modelling and stated choice experiments. He is enrolled in a PhD which focuses on the development of interactive agency choice experiments in the transport sector. John also provides tutorial support to the graduate program as well as assisting the Director in the development of stated choice design generator.

Part-time PhD Students

Virginia Fazio, BSc (Hons), DipEd, MBA *Melb*, MSc, PGDipDiet *Deakin*

Virginia's area of study focuses on investigating corporate governance of health service organisations, specifically looking at the role of the board and organisational performance.

Seu Cheng, BA MA (Econ) *University of Manitoba, Canada*

Seu's PhD research focuses on the issue of integrated logistics management and its implications on shippers' choice of freight intermediary service attributes and the valuation of time in the supply chain.

Visiting Research Scholars

Joerg Kastelic

Jörg is a graduate student in civil and transport engineering at Graz University of Technology in Austria. Between February and July 2002, he spent time at ITS working on his diploma thesis for his home university. The subject of his thesis deals with passive, non-intrusive Global Positioning System (GPS) units. His main focus is on developing an algorithm to describe varying signal quality and to repair faulty travel data.

Kwang Sik Kim BA, PhD

Kim is a Professor, working with the Department of Public Administration, Sung Kyun Kwan University in Seoul, Korea. Kim is with ITS for seven months from July 2002 to February 2003. His research focus is on examining an integrated transportation, land use and environment model using TRESIS. The longer term plan is to apply TRESIS in a Korean city and eventually contribute to doing some comparative studies using data from Korean cities and their Australian counterparts. His visit has been partially sponsored by the Korea-Australia Foundation.

Dr Luzenira Aalves Brasileiro

B.E (Civil), MEngSc, PhD

Luzenira has been a lecturer in Transport Planning Area at Faculty of Engineering at University of Estadual Paulista (UNESP) since 1995. She teaches Air Transportation, Airports Building, Transport Economics and Transport Technologies and Research Methodology subjects. Her research experiences and interests cover taxi system, urban school transportation, transitway, cycleway, parking, transport by taxi-motorcycle and vehicle routing using GIS. During her visit at the Institute (from July to December 2002), she worked with Tu Ton on the development of methodology for estimating OD matrices from real time traffic count. Her visit to ITS was from July until December.

ITS Monash

Geoff Rose, BEng *QIT* MSc PhD *Northwestern*, MIEAust CPeng
Associate Professor
Director, ITS Monash

Geoff's professional interests cover intelligent transport systems, travel behaviour and non-motorised transport. His experience spans government, consulting and academia. He is Director of the postgraduate program in transport being offered by distance education and is the author of three units (Intelligent Transport Systems, Traffic Engineering Fundamentals and Transport Network Models) offered as part of that program in the 2002 academic year. Active research projects relate to travel behaviour change programs, bicycle facility level of service, impacts of intelligent transport systems on travel behaviour and strategic planning of field service systems.

William Young, BE (Hons I) *UNSW*, GradDipMgt *Deakin*, MSc, PhD, FIEAust, FCIT, FITE
Head, Department of Civil Engineering, Monash University

Bill is Head of the Department of Civil Engineering and a recognised specialist in parking and transport land use interaction. His research interests also cover infrastructure management and computer systems. Bill has taken an active role in developing course material and short courses in Traffic Engineering and Management.

John Clements, BCom DipEd MEc MAdmin FCILT
Program Director, Transport Management Course in Bus and Coach Operations

John joined ITS Monash in July 2000 after spending many years on the staff at RMIT University. Prior to joining ITS (Monash), John was Acting Head of the School of Marketing at RMIT University, and had previously been Head of the Department of Marketing, Logistics and Property and a Principal Lecturer responsible for the Transport and Logistics Management Group at RMIT. John is a Fellow of the Chartered Institute of Logistics and Transport and actively involved in the CILT (Victorian Section) General Committee and Passenger Transport Group. His major academic and research/consulting interests are in transport economics, policy and management. He has professional and consulting experience in the public sector, including the Victorian Ministry of Transport, the public transport operating authorities and water resource boards. John is a member of the editorial advisory board of the International Journal of Logistics: Research and Applications. He has undertaken quality assurance auditing with Open Learning Australia.

Stephen Greaves BA *Leeds*, MSc *Wales*, PhD *Louisiana State University*
Lecturer, Department of Civil Engineering

Stephen Greaves is a lecturer in transportation at Monash University. Stephen joined the department in January of 2001 after completing his undergraduate studies at Leeds University in England and his PhD at Louisiana State University in the United States. Current research projects include using GPS data to provide greater insights into on-road driver behaviour, evaluation of driver behaviour training programs, building bus

drive-cycles from GPS data for fuel consumption and emissions modelling, and measuring personal exposure to pollution based on activity levels.

Astrid De Alwis, BA Melb GradDipTr&DistMgt RMITU, MLogMgt, MCILT
Assistant Program Director, Transport Management Course in Bus and Coach Operations

Astrid is a logistician and lecturer with a background in Transport Systems, which she has taught or practised for more than twelve years. She has worked as a transport consultant to several commercial organisations, and published key documents for some. Astrid's chief strength lies in her varied and cross-disciplinary educational and experiential background. Having worked in government, industry and academia, and on local and international projects, Astrid brings to ITS (Monash) a broad blend of skills and aptitudes. While assisting with the ongoing development and delivery of the Transport Management Course in Bus and Coach Operations, Astrid is also pursuing a consulting interest in business systems and business development.

Deb Wagner
Research Assistant

Deb Wagner has worked part time with Geoff Rose on the development of a training resource guide for TravelSmart officers. Deb is currently undertaking postgraduate study in the field of health promotion and specialising in the application of health promotion in the transport sector. Her professional background includes extensive experience in training in customer service and as an Energy Advisor to provide advice on domestic energy conservation.

Andrew Haines, BSc
Technical Support

Andrew provides technical support in the computing and systems area.

Brenda O'Keefe
Administration Manager

Brenda is responsible for managing administrative support at ITS Monash. She has a major involvement in the Transport Management Course in Bus and Coach Operations where she handles general course enquiries, student enrolment and record keeping as well as all written communications with students throughout the semester. She manages the production of all distance education material and supports other ITS activities including seminars, workshops and public lectures. Brenda has also taken on the role of administering all aspects of the Department of Civil Engineering's distance education postgraduate program in Transport and Traffic and also the Infrastructure Engineering and Management program. This includes processing enrolments, re-enrolments, withdrawals and completions, undertaking web site development, and carrying out extensive liaison with the Distance Education unit at Gippsland, other areas within the university system and the faculty's postgraduate officer.

Julia Arnold, MB, BS, BSc(Med), BA(Hons) *Sydney*
Finance Assistant

Julia came to work at ITS-Monash for six weeks in January 2000 and is still there! She works one day a week to provide monthly income and expenditure reports, budgets, projections and other financial accounting services, as well as assisting with reports and other large administrative tasks.

Adjunct Faculty

Ken Ogden
Manager (Public Policy), RACV

Ken has over 30 years of experience in transport and public policy. He founded the transport group at Monash University in 1969 and was a Professorial Fellow when he left in 1996 to join the Royal Automobile Club of Victoria (RACV). He is currently Group Manager (Public Policy) in the RACV, where he has responsibility for the Club's advocacy activities and research in such areas as road and vehicle safety, traffic engineering, transport planning and policy and traffic safety education.

Rahmi Akcelik, CivEng *ITU PhD Leeds*, Fellow IEAust, Fellow ITE
Director, Akcelik and Associates Pty Ltd

Dr Akcelik is an Adjunct Professor in the Department of Civil Engineering at Monash University and a leading scientist and software developer in the area of traffic management, with over 190 technical publications in his area of expertise. His recently formed research and software company specialises in the areas of road traffic operations, traffic engineering, management and control. Dr Akcelik is a member of the Signalised Intersections Subcommittee of the UK Transportation Research Board Committee on Highway Capacity and Quality of Service, and is also on the Transportation Research Board Committee on Traffic Signal Systems. His current areas of activity include software development, training workshops and consultancies on traffic signals, roundabout design options and greenhouse gas abatement through traffic management measures.

Rita Seethaler MEd *Berne*

Rita graduated with a Master of Economics and Political Science from the University of Berne, Switzerland, in 1994. She has worked for the Swiss Federal Office of Statistics and for the Bureau of Transport Studies (Federal Department for Environment, Transport, Energy and Communications), Berne. She is presently a Director of the Urban Transport Institute, Victoria and an Associate of the Institute of Transport Studies (Monash University). She is the author of the postgraduate unit *Infrastructure project and policy evaluation*, which is offered by distance education as part of the postgraduate program in infrastructure engineering and management at ITS-Monash. Rita is currently undertaking a PhD with ITS.

Tony Richardson BE(Hons) MEngSc *UNSW PhD*

Tony has wide experience in academia, having worked at Monash University, RMIT, the University of Melbourne, the University of Sydney and Cornell University in the USA. He has also worked for the Australian Road Research Board, the Victorian Ministry of Transport and in his own consulting practice. As well as being an Adjunct

Professor at Monash, Tony is also a Director of the Urban Transport Institute, Victoria. He is the author of the postgraduate unit *Infrastructure project management* which is offered by distance education as part of the postgraduate program in infrastructure engineering and management at ITS-Monash.

Visiting Research Scholars

Jean Luc Ygnace

Dr Jean-Luc Ygnace is a senior researcher with INRETS, the French National Institute for Transport and Safety Research. He has developed an international reputation for his work in the field of Intelligent Transport Systems and has been a key researcher in the French Rhone corridor project where mobile phones were used as probes to estimate freeway traffic speed. He spent July 2002 as a visiting researcher with the Institute of Transport Studies at Monash University. During that time he undertook research on the role of mobile telecommunications in integrated multimodal transport.

PhD Students

Jim Youngman

Jim's PhD research is focused on the strategic planning of field service operations, specifically the determination of optimal operating boundaries for field service teams. Jim has many years of experience in operations research related to field service management through a long career with the RACV.

Merle Chan

Merle is examining the impact of in-vehicle navigation systems on travel behaviour. The study focuses on the mobility impacts of these devices but recognises that there are related safety impacts through changes to exposure. She completed her undergraduate degree in civil engineering at the University of Auckland.

Tim Martin

Tim is a principal research engineer with ARRB Transport Research Ltd, and commenced his PhD in April 2001. He is working on the prediction of pavement performance at a road network and road project level.

Tan Yan Weng BE MEngSc MCILT MIES'pore MREAAA

Yan Weng is an Associate Professor in the School of Civil and Environmental Engineering at Nanyang Technological University, Singapore. His current PhD research is in the area of parking systems design, with particular emphasis on developing an interactive stated preference approach to collect information on parking behaviour in multi-use facilities.

Rita Seethaler MEc Berne

Rita graduated with a Master of Economics and Political Science from the University of Berne, Switzerland, in 1994 and is presently a Director of the Urban Transport Institute, Victoria and an Associate of the Institute of Transport Studies (Monash University).

She was awarded a PhD scholarship by the Victorian Minister for Transportation to develop evaluation approaches for “total transport” strategies. Rita is currently looking at this concept from the perspective of developing and measuring the impact of psychological persuasion techniques on peoples’ travel choices.

6. RESEARCH AND POLICY

Sydney: New in 2002

ARC Discovery Program Grant on Freight Transport and Supply Chain Alliances

ITS Sydney was successful in securing a 5-year ARC grant to investigate the relationship between urban freight transport and the environment. The aim is to develop a new approach to modelling the key travel choices associated with the movement of urban freight. A central focus is on understanding the interactive agency aspect of the supply chain within which freight movement decisions are made. Thus the decision on choice of supply chain alliance and structure precedes the specification and modelling of trip decisions such as routing and chaining. The long term goal is to have a suite of choice models that can be used to evaluate the impact of transport policies such as congestion pricing on freight movements.

Bus Reform in NSW

The bus and coach sector in New South Wales (NSW) is under review as part of a Bus Reform initiative of the NSW government. One matter central to the review is the establishment of a value for money (VM) regime to ensure that operators deliver to the market the best possible service levels consistent with stakeholder needs and the objectives of government. In developing a VM regime, one must recognise the potential conflict between the operator’s profit maximisation objective and the government’s social surplus maximisation objective. ITS has proposed an incentive-based performance contract regime delineated by the quantity and quality of service delivered (represented by service quality weighted patronage), the financial outlays by operators and non-operator sources in delivering this service level, and an implementation plan that delivers monitored information as well as a holistic commitment by all stakeholders. Assoc. Professor Erne Houghton from the Department of Econometrics and Business Statistics, The University of Sydney, is actively participating in this project.

Mixed Logit Models: the State of Practice

The mixed logit model is considered to be the most promising state of the art discrete choice model currently available. Increasingly, researchers and a few practitioners are estimating mixed logit models of various degrees of sophistication with mixtures of revealed preference and stated preference data. It is timely to review progress in model estimation because the learning curve is steep and the unwary are likely to fall into a chasm if not careful. Although the theory is relatively clear, estimation and data issues are far from clear and indeed there is a great deal of potential mis-inference consequent on trying to extract increased behavioural realism from data that is often not able to comply with the demands of mixed logit models. Possibly for the first time, we now have an estimation method that requires extremely high quality data *if* the analyst wishes to take advantage of the extended behavioural capabilities of such models. This

research focuses on the new opportunities offered by mixed logit models and some issues to be aware of to avoid misuse of such advanced discrete choice methods by the practitioner.

Congestion Pricing and the Optimal Provision of Public Infrastructure Goods: With Reference to Toll Roads

The research provides a theoretical framework within which to analyse the effects of private sector participation in the provision of public goods and suggests a way of applying the theory in the context of a transport network, where the focus is on recovering from users the financial outlays made by investors in toll roads. We also look at the effects of public infrastructure investment on private sector productivity from a public goods point of view. Public infrastructure is assumed to be a (partially congested) public good. This project aims to develop a simple and practical way of setting individualised prices for users of public goods to achieve short run optimality. The research addresses the issue of free-riding in the case of a public good provision and suggests that, rather than assuming free riding will naturally lead to 'market failure' and government intervention, it can be shown that an appropriate and practicable set of Lindahl prices for toll road charges can be devised which will help to restore the power of the invisible hand.

A Latent Class Model for Discrete Choice Analysis: Contrasts with Mixed Logit

The multinomial logit model (mnl) has for many years provided the fundamental platform for the analysis of discrete choice. The basic model's numerous shortcomings, most notably its inherent assumption of independence from irrelevant alternatives (iia), have motivated researchers to develop a variety of alternative formulations. The mixed logit model stands as one of the most significant of these extensions. This research proposes a semi-parametric extension of the mnl, based on the latent class formulation, which resembles the mixed logit model, but which relaxes its requirement that the analyst makes specific assumptions about the distributions of parameters across individuals. An application of the model to the choice of long distance travel by three road types (2-lane, 4-lane without a median and 4-lane with a median) by car in New Zealand will be used to compare the mnl latent class model with mixed logit.

Stated Choice Design Generator

Stated Preference (SP) techniques are becoming increasingly popular amongst both practitioners and academics and are enabling users to elicit utility functions based on multi-attribute decisions, such decisions covering product choice, course of action selection or an individual's future intentions. SP methodologies allow the researcher to estimate from a number of hypothetical situations presented to respondents, individual, segment or market level utility estimates, as well as allowing the evaluation of possible attribute level trade-offs being made within the context of the decision under study. Through examination of the trade-offs facing the decision maker, researchers are able to derive predictions as to the likely outcome for given decision makers.

Choice Analysis: A Primer for Beginners

Over the last 30 years (at least) there has been a steadily growing interest in the development and application of quantitative statistical methods to study choices made by individuals (and to a lesser extent, groups of individuals). With an emphasis on both understanding how choices are made and forecasting future choice responses, a healthy literature has evolved. Recent reference works by Louviere, Hensher and Swait (2000)

and Train (2003) synthesise the contributions. However while these two sources represent the state of the art (and practice), they are technically advanced and often a challenge for the beginner. This primer sets out to divest the expert of their ownership of choice modelling. Through the use of a single case study each step of the process undertaken by the expert in developing models of choice is explained, beginning with the derivation of choice models and moving through to model estimation. An attempt has been made to stay true to the target market, the beginner, by keeping the language and explanations as simple as possible as well as by providing as much practical advice, taken from our own experiences, as is possible.

Large ARC Grant

ITS Sydney entered the second year of a three-year ARC grant (\$215,000) to undertake a study titled Extending Theoretical and Empirical Domains of Travel Time Valuation to Accommodate Time Heterogeneity, SP Design Strategy and Error Covariance Structure. The Design of Designs (DoD) software fieldwork has now been completed.

Valuation of Travel Time Savings (VTTS): A New Sydney Study

The valuation of travel time savings estimates used in Sydney have been updated for many years from relatively old data sources and methods. Commissioned by Transfield, ITS has developed a state of the art laptop based stated choice experiment in which a sample of car commuters, car non-commuters, and organizations using light commercial and heavy vehicles for goods and services distribution were interviewed to identify willingness to pay for various toll charges and collection/payment mechanisms. The setting is the current and future toll roads in Sydney. In 2002 we continued to refine VT estimates using new choice models.

Simulating Household Travel Data in Australia

Household travel data is a critical component of the travel demand forecasting process. Travel surveys have always been a problematic, high cost activity for metropolitan planning organisations. In research undertaken by Professor Peter Stopher at Louisiana State University, a method was developed to synthesize household travel survey data from a combination of data sources from the US Census and the 1995 National Personal Transportation Survey (NPTS). This involved creating distributions of pertinent variables (numbers of trips by purpose, mode of travel, etc) from NPTS data and applying them to a sample of local region residents (drawn from Census data). The results of the simulation were then compared with actual travel surveys undertaken in the simulated regions. This research represents a continuation of this work. Using a similar methodology, household travel data will be synthesised for a number of Australian cities using a combination of data from the ABS Census and local travel surveys. This process holds out considerable promise for replacing the collection of larger and more expensive samples of household travel data, particularly for small and medium sized urban areas.

NCHRP 8-37: Standardising Personal Travel Surveys

This project is being undertaken for the National Cooperative Highway Research Program (NCHRP) of the U.S. National Academy of Sciences/National Academy of Engineering and is being managed by Professor Peter Stopher, with a team of 5 expert advisors from around the world. The objectives of the project are to develop objective standards that would lead to an overall increase in the quality and reliability of transportation surveys performed at household and person levels, and would also

improve the comparability between surveys. These standards will provide guidance on how to select cost effective survey methods, how to implement the survey itself, how to analyse the results, and how to report measures that allow the assessment of the quality of the data.

ARC Research Equipment Grant

ITS was awarded a major equipment grant for a "Global Positioning System (GPS) Vehicle and Person Tracking Program" from the SESQUI R&D program in the University. With this grant, ITS has purchased ten GPS devices for use in vehicles, with a storage capacity of 4 Mb of data, and also a powerful desktop computer for processing and displaying the data from the GPS tracking. In addition, ITS has provided specifications to a firm in the US - GeoStats in Atlanta, Georgia - for a new wearable GPS device with rechargeable batteries. It is expected that ITS will purchase ten or more of these units, once development is completed in mid to late 2002. These devices will be used in a number of applications of measuring personal and vehicle travel in the Sydney area and elsewhere.

Warringah Travel Time Study

In response to on-going traffic problems in the Warringah area, the Federal Bureau of Transport and Regional Economics (BTRE) recently commissioned ITS to assess the feasibility of a number of strategies for improving transport in the area, including several tunnel options and a dedicated busway, as well as other measures to improve traffic flow at intersections. In the first stage of the project, ITS will collect detailed up to date travel time data on major arterial roads in the area using Global Positioning System (GPS) technology. This information will then be used in ITS's Transport and Environment Strategy Impact Simulator (TRESIS) model to evaluate the impact that each option will have on patterns of travel demand. Output detailing changes in travel times, accidents, noise and residential amenity will be used to analyse the costs benefits of each option.

STA Pilot GPS Study

Global Positioning System (GPS) technology provides highly accurate information on travel times and traffic conditions, however, data processing and analysis are often difficult because of the vast number of records that are collected by GPS devices. Although raw GPS track points can be viewed on most standard GIS packages, on-screen visual analysis is extremely time consuming for even small amounts of data. The State Transit Authority (STA) and ITS are jointly undertaking a Pilot Travel Time Study of the L90 bus route using passive GPS devices, with the aim of developing a standard methodology for processing and analysing bus based-GPS data that can be applied to other routes. A specialised GIS-based software application will be written by ITS to measure on-time running, travel time variability by time of day/day of week, out-of-service time, as well as travel under congested traffic conditions.

An Empirical Investigation into Critical Success Factors in Agile Supply Chains

A key feature of the present day business environment is the idea that it is supply chains that compete, not companies. There is a growing interest in seeking an understanding how a supply chain might be "agile", as opposed to just being efficient, lean, quality driven and pro-active. Despite this increasing interest, most research to date has focused on the development of conceptual frameworks; there is an absence of empirical studies testing hypotheses based on theory in this field. The aim of this study is to initially

identify some of the factors critical for successful agile organisations in managing their supply chains. Potential sources of differentiation will be identified from theory and a framework on which to base further research will be developed.

Emergency Evacuation

Very little research has been done on the ability of transport systems to cater for emergency evacuations in large urban areas. One of the key difficulties in planning for emergency situations is that the peak demand for travel occurs at a point in time which is unknown in advance. This study involves revealing the preferences made by households, in relation to emergency evacuation, and subjecting these preferences to a Stated Choice Experiment. A model will be devised that forecasts when people will evacuate in an emergency situation. This information will allow policy makers and planners to assess the capabilities we have in terms of transport planning for evacuations and the community plans are currently in place to tackle this issue. A pilot experiment conducted in the U.S on hurricane emergency will be adopted and a sample of Sydney households will be drawn from both evacuated areas during the 2001 bushfire season and those not evacuated. This project is being funded by the Emergency Management Administration in the Attorney General's Office, NSW Government.

Sydney: Continuing from 2001

Large ARC Grant on Design of Designs

ITS Sydney entered the second year of a three-year ARC grant (\$215,000) to undertake a study titled Extending Theoretical and Empirical Domains of Travel Time Valuation to Accommodate Time Heterogeneity, SP Design Strategy and Error Covariance Structure. The Design of Designs (DoD) software has been completed and fieldwork commenced.

ARC Sesquicentenary Grants

ARC Sesquicentenary grants awarded in 2001 generated ongoing research on:

- An Integrated Supply Chain Based Urban Freight Model System: Stage 1. Development of Behavioural Choice Models
- Exploring Application of a Procedure for Simulating Household Travel Data in Australia
- Agile Supply Chains
- The Knowledge Worker: A Case-study of Innovation and Change (in collaboration with Dr Finkelstein in the Faculty of Arts)

Valuation of Travel Time Savings (VTTS): A New Sydney Study

The valuation of travel time savings estimates used in Sydney have been updated for many years from relatively old data sources and methods. Commissioned by Transfield, we developed a state of the art laptop based stated choice experiment in which a sample of car commuters, car non-commuters, and organizations using light commercial and heavy vehicles for goods and services distribution were interviewed to identify willingness to pay for various toll charges and collection/payment mechanisms. The setting is the current and future tollroads in Sydney. In 2002 we continued to refine VT estimates using new choice models.

Simulating Household Travel Data in Australia

This research represents a continuation of work undertaken by Professor Peter Stopher at Louisiana State University, a method was developed to synthesise household travel survey data from a combination of data sources from the US Census and the 1995 National Personal Transportation Survey (NPTS). This involved creating distributions from NPTS data of pertinent variables (numbers of trips by purpose, mode of travel, time of day of travel, and trip length), and using them to estimate travel-demand models. A sample of local region residents was then drawn from the weighted Census data, providing detailed information on the socioeconomic characteristics of the sample. Using these socioeconomic characteristics, travel data were simulated from the distributions developed from the NPTS data. The results of the simulation were then compared with actual travel surveys undertaken in the simulated regions. Using a similar methodology, household travel data was synthesised for Adelaide using a combination of data from the ABS Census and Adelaide Household Travel Survey. Bayesian updating is currently being conducted on the distributions obtained from a sample of the Adelaide Household Travel Survey (AHTS) and the NPTS. This process holds out considerable promise for replacing the collection of larger samples of household travel data, particularly for small and medium sized urban areas and sub areas of large metropolitan areas, where the expenses of samples of 2,500 to 4,000 households are too great for the transport planning organisations to cover, but where data are needed for local model estimation.

Use of Passive GPS to Collect Household Travel Data

This project involves the use of a passive, non-intrusive Global Positioning System (GPS) unit to measure where people travel and to determine the conditions under which the travel takes place. The record from the GPS will form the basis of a subsequent prompted-recall interview to obtain additional information about the travel that cannot be recorded on the GPS device, such as trip purpose and mode of travel. The research is being undertaken on behalf of the New South Wales Roads and Traffic Authority (RTA). This research aims to test and refine the protocol for using passive GPS instruments, collect more accurate and complete geographic data, and also to determine how such data from a subsample of households could be used to correct or factor the data collected by more conventional diary surveys. In addition, the project will also explore questions of route choice, congestion impacts on travel, and the day to day variability of travel. The results of this research will have important implications for improving our knowledge about people's travel in metropolitan areas and also for reducing the potential burden of future travel surveys. ITS recently completed a pilot study for this project and is currently in the process of planning the main survey which will be undertaken in 2003.

NCHRP 8-37: Standardising Personal Travel Surveys

This project is being managed by Professor Peter Stopher, with a team comprising Louisiana State University, Westat, Inc., The Franklin Hill Group, and a team of expert advisors, including Professor Martin Lee-Gosselin (Canada), Werner Broeg (Germany), Kay Axhausen (Switzerland), Joanne Pratt (U.S.A.) and Alan Pisarski (U.S.A.). The project is funded by the National Cooperative Highway Research Program of the U.S. National Academy of Sciences/National Academy of Engineering.

The objectives of this NCHRP project are to develop objective standards that would lead to an overall increase in the quality and reliability of transport surveys performed at

household and person levels, and would also improve the comparability between surveys. These standards will provide guidance on how to select cost effective survey methods, how to implement the survey itself, how to analyse the results, and how to report measures that allow the assessment of the quality of the data. By establishing consistent and objective standards, comparability of data from place to place and time to time will be enhanced. The reliability of the data will be increased, and doubts as to the applicability of data should be able to be removed. It is also an objective of this research to identify the costs and tradeoffs for the procedures and assessment measures that are identified in this research, and to establish whether specific procedures and assessment measures are worthwhile to introduce as standards. Phase I of the project, involving the identification of opportunities for standards and guidelines, development of a classification of those opportunities, and development of a scope of work for Phase II implementation, has been completed and an interim report has been submitted to NCHRP. Compilation of a draft report is now in progress.

An Empirical Investigation into Critical Success Factors in Agile Supply Chains

A key feature of the present day business is the idea that it is supply chains that compete, not companies. There is a growing interest in seeking an understanding how a supply chain might be “agile”, as opposed to just being efficient, lean, quality driven, pro-active rather than reactive. However, despite the growing interest, the majority of the research has focused on the development of conceptual frameworks; there is an absence of empirical studies testing hypotheses based on theory in this field. The aim of this study is to initially identify some of the factors critical for successful agile organisations in managing their supply chains. We seek to identify a range of factors that differentiate ‘more agile’ supply chains from ‘less agile’ supply chains. The purpose is to test potential sources of differentiation identified from the theory and to develop a framework on which to base further research. The objective is to identify and understand key leverage points when seeking to create an agile supply chain.

Cross City Tunnel and Lane Cove Tunnel Project

David Hensher provides special advice to Transfield ABN-AMRO on the proposed Cross-City Tunnel, Lane Cove Tunnel and Western Orbital Projects in Sydney.

Quality Partnership with the BCA NSW

The quality partnership between ITS Sydney and the Bus and Coach Association of NSW (BCA) commenced in 2000. It is a five-year (renewable) agreement with an annual donation to ITS Sydney of \$50,000. The commitment of ITS Sydney to this quality partnership involves a series of discrete activities, all of which support the objectives of the BCA and provide advice and information in various forms. In 2001-2, these activities included the development phase of a methodology to establish a meaningful and administrative feasible measure of service quality (SQI), actively promoting SQI to the Director-General of Transport, giving presentation of the pilot SQI study to John Stott, the CEO of State Transit (STA), working with STA and a number of private operators in developing the SQI approach further as a tool readily available and operational for both PAR and the broader interests on knowing one’s customers, design of a 2-day training program for recruitment officers which is jointly badged as an ITS-BCA initiative, general contribution through Conferences such as ABIC, ATRF and Thredbo series, providing intelligence to the BCA on many matters of

interest, and providing commentary and input into the planned program to update the non-commercial contract costing and case for revised contract fees.

TRESIS

ITS is continuing to develop its urban passenger transport model system called TRESIS – Transport and Environmental Strategy Impact Simulator. The model system is a combined set of models for representing travel, location and vehicle decisions of individuals and households to reflect the growing interest in the environment. The urban passenger transport system contributes to the achievement of broader goals of urban management and the performance of urban areas. It also supports the evaluation of an expansive set of identified policy instruments. The system differentiates and evaluates both aspatial and spatial strategies via Geographical Information Systems (GIS) and system linkage, as well as urban versus spillover impacts beyond the urban area. It emphasises the system-wide impacts of particular policies as well. The current project team members are David Hensher, Tu Ton (Project Coordinator), Freddy Susanto and Cam Ngo.

The new version of TRESIS (Tresis V1.3) was released in November 2000. It is a beta version for evaluating at a strategic level impacts of a large number of transport and non-transport policy instruments on the performance of cities (Sydney, Melbourne, Adelaide, Brisbane, Canberra and Perth) as measured by changes in accessibility, greenhouse gas emissions, modal shares for commuting, car use, consumer surplus and many more outputs indicators. TRESIS version 1.3 with enhanced capabilities in the areas of non-work travel, traffic assignment, mapping displays, input and output interfaces and base year data update to 1998 was released in July 2002. In a major overhaul of V1.2, extending it to include a joint mode-departure time choice model, expansion from commuting to all trips, more detailed methods of incorporating synthetic households and a new user interface for inputs and outputs. Version 2.0, with capability to forecast patronage in the Sydney context at a traffic zone level is due for release in 2003.

Road and Public Transport Networks

As part of the development of TRESIS, ITS Sydney has developed and released its road and public transport networks for Sydney. Known as SydNet-Roads, SydNet-Bus, SydNet-Rail, SydNet-Ferry, SydNet-Light Rail and SydNet-Transitways, these can be purchased under a licence agreement.

Identifying Policies to Reduce Car Use in New Zealand

Funded via Dr Carolyn O’Fallon of Pinnacle Research (NZ) and Dr Charles Sullivan of Capital Research, ITS is involved in an ongoing study into identifying policies to reduce car use in New Zealand. A stated preference design was developed to evaluate alternative options to car use for various trips when faced with a range of levels of parking availability and price, public transport fares, fuel prices, etc. New funding in 2001 enabled this project to continue.

Monash: New in 2002

Establishment of Professor of Public Transport position

Australia's first Chair in Public Transport is being established at Monash University as a result of funding provided by the Government of Victoria through the Department of Infrastructure and VicRoads, and the Bus Association of Victoria. The new Professor of Public Transport will provide leadership in public transport education and research activities, including the development of short courses and seminars, industry education programs, postgraduate studies, research skills training and the identification of research priorities. Applications for the position closed in November 2002 and an announcement is expected regarding an appointment to this position early in 2003.

Investigation into the Use of Persuasion Techniques in Transport Policy (Seethaler/Young/Greaves)

Policies aiming to increase the sustainability of urban transport often face the problem of overcoming unsustainable behaviour patterns that are principally centred around the car and largely dominated by routine choices that do not take sustainability considerations into account. To overcome the barrier of habitual behaviour patterns, awareness campaigns, principally based on the provision of information about the effects of modal choice, are insufficient for stimulating change. Social psychology offers a series of persuasion techniques that are able to reach beyond the mere raising of awareness. For example, involving the target population in a process of personal commitment is likely to increase the up-take of the policy intervention and will therefore have a better chance of creating lasting changes in behaviour. Based on the travel behaviour change (TBC) policy currently under development by the Victorian DOI, the present project attempts to study the effect of different persuasion techniques individually and in combination by using an appropriate experimental design and evaluation techniques.

An Analysis of Bus Fatalities in Australia (Rose)

Detailed national accident data was used to improve understanding of fatal bus accidents by clarifying the types of buses involved and the actual involvement of the bus(es) in each crash. This new project arose from work performed by Dr Eric Hildebrand in 2001, and is funded by the Bus Association of Victoria.

Travel Behaviour Change Opportunities of Major Events (Rose)

This study is exploring the potential of major events (specifically a "ride to work" day) to provide a basis for longer term travel behaviour change. The research is being conducted in conjunction with Bicycle Victoria and the Victorian Department of Infrastructure.

Development of a National Resource Kit for TravelSmart Officer Training (Rose)

This study is developing a national resource kit for training TravelSmart officers who work in local government. These TravelSmart officers are appointed to deliver travel behaviour change programs targeted on workplaces, schools, households or communities. The study is being funded by the Sustainable Energy Authority of Victoria as part of a project which it is undertaking for the Australian Greenhouse Office.

Mobile Phones as Traffic Probes (Rose/Nelson/Ygnace)

This study is exploring the scope for using mobile phones as traffic probes to collect traffic data. This technology has application to parts of the road transport network which is not instrumented with traditional data collection equipment. This is a collaborative project involving A/Prof Geoff Rose from ITS (Monash) along with Dr Richard Nelson from Electrical and Computer Systems Engineering at Monash University and Dr Jean-Luc Ygnace from INRETS, France.

The Benefits of Accreditation in the Road-Based Passenger Transport Industry (Clements/De Alwis)

Four years after the introduction of competition policy to the road-based passenger transport industry, it is time to take stock of what de-regulation has really achieved. This study investigates the nature of benefits, if any, as well as the degree of benefits achieved by the accreditation scheme introduced to the Bus and Coach industry in Victoria.

Using GPS Data to Build Drive-Cycles for Urban Buses (Greaves)

This project explores the potential to build drive-cycles for urban buses collected from on-board GPS data. These drive-cycles will be compared to those currently used in emissions modelling and necessary adjustments made. This project is being supported by a New Staff Member research grant awarded to Stephen Greaves.

Evaluation of Environmentally-Focussed Driver Behaviour Change Programs (Rose/Greaves)

The Victorian EPA is shortly to introduce the first environmentally-focussed driver behaviour change program in Australia. The outcome evaluation of such a program must be rigorous and robust. This project uses automatic data loggers to provide a set of performance measures indicative of driving style that could be used as part of a ‘before’ and ‘after’ study.

Monash: Continuing from 2001

Incorporating Driver Behaviour Into Vehicle Emissions Estimates (Greaves)

Motor vehicles are the most significant contributor to noxious air pollutants in urban areas throughout Australia and the rest of the world. The seriousness of this problem requires that all proposed transportation projects must be evaluated for their potential air quality impacts using approved procedures and tools. Current evaluation procedures for estimating vehicle emissions for a region such as Melbourne use default emission factors developed from national studies that reflect how a “typical” motorist drives. The key parameters in these studies include the vehicle type, acceleration/deceleration, idle time, and cruise speed. However, these default values do not reflect different driving styles (e.g., aggressive vs. cautious), different network configurations (e.g., speed limits, gradient, geometric configuration) or other factors that intuitively must be considered when developing local emissions estimates. This research aims to determine whether driver behaviour has a significant effect on the factors underlying vehicle emission factor calculations, to identify the most critical determinants of differences in driver behaviour and to develop and test a methodology to tailor default emission factors to reflect driver behaviour/local conditions and thereby improve the reliability of

subsequent emissions estimates. A New Staff Member Research Grant awarded to Stephen Greaves funds this work.

Quantification Of Road Pavement Performance At A Road Network Level And A Road Project Level (Martin/Young)

It is postulated, and generally observed, that pavement performance is influenced mainly by levels of maintenance expenditure, climate, traffic loading and its associated dynamic effects and the structural condition of the pavement and its variability along the pavement. All factors are interrelated and correlation of these factors is prevalent in the usual historical performance databases used in quantifying pavement performance. This research aims to develop improved network and project level roughness deterioration models. The quantification of pavement performance will take the form of deterioration relationships expressed as a function of time, traffic loading and other variables and will cover sealed granular pavements (typical of 95% of Australia's sealed road network) and the typical range of traffic levels and climatic conditions for pavements (network and project level) within most road networks in Australia. Pavement performance will be assessed by an overall serviceability and surface condition measure and an overall structural condition measure. More accurate deterioration models will improve the reliability of the estimates of road wear and cost allocation (with implications for heavy vehicle charging), of the estimates of the differences in road maintenance costs that are due to the various climatic regions in Australia, and of the estimates for maintenance and rehabilitation scheduling along each road in the road network (with implications for the estimation of the capital costs of increased pavement capacity under the regime of increased road use).

Mutual Recognition Of Bus Operator Accreditation (Clements)

This project investigates similarities and differences between the educational requirements of bus and coach operator accreditation schemes in various states and territories in Australia, and develops proposals for a national mutual recognition scheme. A set of bus operator management competencies is being developed and acceptance sought for recognition of a common core of minimum competencies for interstate operators.

Parking in Multi-use Facilities (Tan/Young)

This study investigates the application of parking modeling to the design and enhancement of multi-storey parking facilities. The PARKSIM model is used as a base and vehicle movement in multi-storey facilities modelled to enhance its present capabilities. The microsimulation model considers different user and vehicle types within a mixed use development as well as different types of parking operations. It incorporates algorithms for route choice, car following and lane-changing within the car park and external road network.

Equilibrium Modelling of Land Use Activities (Chandra/Young)

This study builds on the development of the LAND package. It investigates the role and use of equilibrium modelling in improving the prediction of land values and location preference of residents and businesses. The model will be applied to the Brisbane region.

Accuracy and Traffic Simulation Modelling (Young)

This project looks at the reliability of traffic simulation models. In particular it investigates the assumptions made in the model and their impact on the output. Particular attention will be paid to assumptions about drivers risk taking.

Modelling Small Area Traffic Networks (Young)

This project investigates the relationship between parking, traffic flow and pedestrian movements in retail developments by developing a microsimulation model.

Environmental Impacts of Transport (Young)

This project explores the relationship between land use, transport and the environment. Long term changes in transport and their impact on land use and the environment are investigated.

Electronic Road Pricing (Young)

This project looks at the development of road pricing technology and the likelihood of the introduction of road pricing in Australian cities.

Modelling Transport Demand and Parking Management (Young)

This project models urban travel on a city-wide scale using activity analysis.

Vehicle Movement at Intersections (Young)

This study is investigating the modelling of vehicle movement on exit intersections. It is particularly interested in determining the interaction between acceleration, car-following and lane changing associated with vehicles moving off from signalised intersections.

Sustainability and Urban Transport (Young)

This project explores the interaction between the transport system and sustainability of cities. The study proposes a number of projects and investigates their utilisation of framework acceptability.

The Modelling and Intelligent Optimisation of Field Service Territories (Youngman/Rose)

Field service is concerned with the delivery of services to customers who are spatially distributed. Common examples are emergency services (police, fire and ambulance), photocopier or computer repair, home maintenance (e.g. plumbers and electricians) and roadside vehicle breakdown services. For a variety of reasons, it is common for service staff (henceforth referred to as “units”) to be assigned to territories each of which is manned by one or more units. Two distinct forms of travel occur in field services. In cases such as ambulance and fire services the requests are often so urgent that there must be a small probability that no units are available when the request is received. This implies that utilisation will be small and units would normally return to their base station at the end of a job: “round trips”. The focus of this project will be the “sequential” trip situation where utilisation is much higher and units usually travel directly from one job to the next. The aim of the project is to find a process for subdividing any region into territories that results in near minimal response times for service requests, assuming the total number of staff available is fixed.

Impact of In-vehicle Navigation Systems on Drivers' Travel Behaviour (Chan/Rose)

In-vehicle navigation systems (IVNS) are now available in Australia as a result of the production of navigable map databases for major Australian cities. These devices provide synthetic voice turn-by-turn guidance to assist the driver in navigating to a nominated destination.

These in-vehicle devices have the potential to improve safety and mobility. This project focuses on the mobility aspect by exploring the extent to which devices of this form can influence decisions relating to trip timing, trip frequency, destination, mode choice and route choice. The extent of impact will be determined by the data collected from a field study. Private car drivers will be recruited to receive a trial usage of an IVNS for up to four weeks. The participants will be required to keep a travel diary. The recorded trips will facilitate a comparison of their travel behaviour before and after the usage of IVNS. To capture their route choice behaviour, a routing exercise will be conducted to understand the decision process employed by each participant when following the routes advised by the IVNS. The last part of data collection requires the participant to indicate their stated choices of destination and trip timing in a self-completion questionnaire.

Level of Service on Roads (Young)

Knowledge of drivers' perception of the level of service on roads is required in order to design road networks. This project has investigated drivers' perception of the level of service of a number of roads. It has shown that drivers consider the safety, speed and provision of parking in determining the level of service in residential streets.

Performance Based Standards for Heavy Vehicles (Young)

This study has explored the role and potential for performance based standards in improving the economic, safety and environmental performance of the road system. This study is part of an Austroads project on Performance Based Standards for Heavy Vehicles.

Road Space Allocation (Young)

This project explores priority to the road user along arterial roads. Priority to cars, public transport, goods vehicles and non motorized vehicles is considered.

FINAL YEAR UNDERGRADUATE PROJECTS IN 2002 (ITS Monash)

Bikeway Facility Level of Service (de Gruyter/Rose)

The level of service provided by bicycle facilities is an important determinant of user satisfaction and route choice behaviour. Stated preference surveys were being used to identify the factors which influence users' perceptions of level of service.

Carpool Car Park (Hamilton/Rose)

This project explored the role which the provision of dedicated car pool car parks has on the formation and continuation of carpooling arrangements.

Impact of In-vehicle Navigation Systems on Driver Speed (Malley/Rose)

Data being collected in a PhD research project was used to examine whether there is any difference in driving style when drivers are receiving navigation instructions from

in-vehicle navigation systems. The results suggest it may be possible to characterize driving style on the basis of data collected passively using a GPS data logger.

Ramp Metering (Lawrence/Rose)

The current status of research on freeway ramp metering was reviewed with a particular focus on the algorithms used to determine how much traffic to let onto the ramps and the network wide implications of ramp metering.

Representation of Shock Wave Propagation on Motorways (Sanders/Rose)

Shock waves are instabilities in the traffic flow which correspond to the generation and dissipation of queues on motorways. Using loop data from Melbourne freeways, the study explored the use of graphical mapping of the data to provide a basis for understanding the 'status' of traffic flow on the freeway.

Mobile Phone Applications For Public Transport (Chan/Rose)

Mobile phones present opportunities for data collection, information dissemination and electronic payment. An international review of current demonstration projects is being compiled.

Internet-Based Travel Survey of University Students (Curwood/Greaves)

A travel survey of Monash University students was last conducted in 1989. This project involves an update of this survey using an internet-based/e-mail approach.

Synthesis of Parking Generation Rates (Nicholls/Greaves)

The purpose of this project is to explore the feasibility of compiling Australian parking generation data into a common format so that it could serve as a reference base for other researchers.

The Costs of Not Implementing ITS Technology (Langdon/Greaves/Grzebieta)

The project considers the impacts of recent legislative changes in the obligations of statutory road authorities with respect to the implementation of ITS speed-mitigation measures.

Identifying Driving Patterns from Global Positioning (GPS) Data (Counsel/Greaves)

This project involves GPS data collection from a group of drivers to determine whether it is possible to classify different driving styles (e.g., cautious, aggressive) from such data.

Measuring Vehicle Emissions – State of the Practice/State of the Art (Lau/Greaves)

Current practice and innovations in methods to measure vehicle emissions in Australia and around the world are being reviewed.

Pedestrian Crossing Analysis (Charnock/Carter/Hasiholan/Young)

This project investigates the use of signalised or unsignalised pedestrian crossings, and examines the base parameters for measuring the performance and the legal use of crossings.

Vehicle Drive Cycles (Sava/Young)

In order to predict the levels of energy consumption and pollution created by vehicles, it is necessary to understand how drivers make travel route decisions. Data loggers are

being used to follow vehicle movements through the road system towards parking lots in the central city.

Public Transport Provision In Suburban Melbourne (Misic/Tran/Young)

This project investigates the level of provision of public transport in suburban Melbourne, focusing on retail and commercial centres.

MASTER OF ENGINEERING SCIENCE BY COURSEWORK AND MINOR THESIS (ITS Monash)

Students who completed the thesis component of this degree in 2002 were:

Red Light Running (Green/Rose)

Data from a number of Australian states are being used to improve understanding of the incidence of red light running and the intersection attributes which are correlated with high levels of red light running and crashes.

Car Ownership Of Residents Living In High Density Apartment Developments (McNally/Rose)

The amount of parking provided for residents of high density developments is often controversial. Surveys of residents in high density developments in South Melbourne have been used to obtain insight into the factors which influence car ownership levels and corresponding use of on-road and off-road parking facilities.

Part-Time Metering Signals At Roundabouts (Natalizio/Rose)

Where flows at roundabouts are unbalanced, intersection performance deteriorates. Metering signals can be installed to activate once the queue on one approach clears a preset threshold. An analytic model of metering signal operation has been used to provide insight into the circumstances where these signals may improve intersection performance.



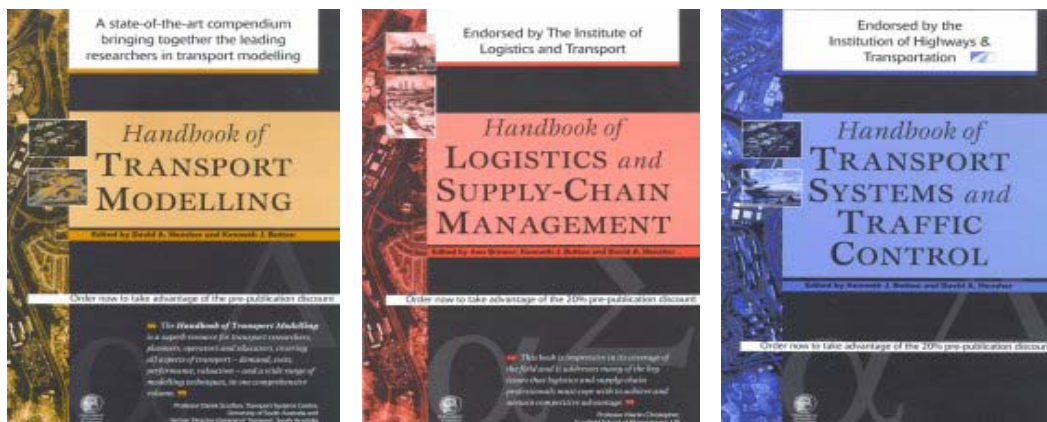
Graduates and staff (L-R): Emmanual Natalizio, MEngSc, Professor William Young, Fiona Green (MEngSc), Assoc Professor Geoff Rose, Phil Harbutt (Master of Transport and Traffic).

Other Activities and Projects

Handbooks in Transport (ITS Sydney)

David Hensher was appointed in 1999 as volume and series editor for a series of Handbooks in Transport with Ken Button (George Mason University) by Elsevier Science Ltd. Three handbooks have been published under the Pergamon imprint over a period of 3 years. The first handbook on Transport Modelling was published in 2000, the second on Logistics and Supply-Chain Management and the third on Traffic Systems and Control have been published in 2001.

An additional 3 volumes to complete the series are in progress. The themes are , transport and the environment, spatial planning systems, and transport policy and institutions. These will be published in 2003, 2004 and 2005.



"The Handbook of Transport Modelling is a superb resource for transport researchers, planners, operators and educators, covering all aspects of transport – demand, costs, performance, valuation – and a wide range of modelling techniques in one comprehensive volume. The editors have called on a group of experienced modellers to report the state-of-the-art of a range of models and their application to passenger and freight transport, across all modes.

"The handbook is a valuable contribution at a time when the need for sound data and rigorous analysis of transport proposals are essential antidotes to projects promoted through hyperbole and/or ideology. Recommended for University libraries, consultants' offices and government agencies." – PROFESSOR DEREK SCRAFTON, TRANSPORT SYSTEMS CENTRE, UNIVERSITY OF SOUTH AUSTRALIA AND FORMER DIRECTOR GENERAL OF TRANSPORT, SOUTH AUSTRALIA.

"Edited by two of the leading figures in transportation research and dissemination, these handbooks are likely to become the essential reference work in the field. Volume 1 on Transport Modelling contains entries by

an impressive range of experts and will be of use both to those new to the field and to established practitioners." – DR JOHN PRESTON, DIRECTOR, TRANSPORT STUDIES UNIT, UNIVERSITY OF OXFORD.

"Logistics and Supply-Chain Management have become key strands of competitive strategy for most leading firms as we enter the new millennium. There has been a growing recognition that without closely integrated logistics and supply-chain strategies it is unlikely that firms will succeed in today's global marketplace. This book is impressive in its coverage of the field and it addresses many of the key issues that logistics and supply-chain professionals must cope with to achieve and sustain competitive advantage." – PROFESSOR MARTIN CHRISTOPHER, CRANFIELD SCHOOL OF MANAGEMENT.

"Edited by two of the leading figures in transportation research and dissemination, these handbooks are likely to become the essential reference work in the field." – DR JOHN PRESTON, DIRECTOR, TRANSPORT STUDIES UNIT, UNIVERSITY OF OXFORD.

"The Handbook of Transport Systems and Traffic Control continues the excellence of this Handbook series at bringing its readers up-to-date, readable expositions of significant topics by an impressive collection of authors. The volume demonstrates the power of combining the strengths of social sciences, planning, and engineering to understand transportation as a system. From networks to equity from traffic flow to traffic calming, the individual articles each promise to provide a first-rate introduction and reference, while together giving a comprehensive understanding of how the parts of the transportation system fit together." – KENNETH A SMALL, UNIVERSITY OF CALIFORNIA AT IRVINE, CA, USA.

"Edited by two of the leading figures in transportation research and dissemination, these handbooks are likely to become the essential reference work in the field." – DR JOHN PRESTON, DIRECTOR, TRANSPORT STUDIES UNIT, UNIVERSITY OF OXFORD.

The review comments below are for 0080435939 Brewer, Button & Hensher, "Handbook of Logistics and Supply-Chain Management".

"succeeds remarkably in its aim to provide information that is authoritative, accessible and valuable. ... the editors have done an outstanding job. ... [The contributors are] an impressive array of well-known and highly respected researchers ... a valuable resource for researchers and professionals alike and a "must-buy" for academic and research libraries."

Amelia C. Regan, University of California, Irvine, in Transportation Research Part A: Policy and Practice, Volume 37, Issue 2, February 2003.

ITS (Sydney) Home Page Review and Redesign

The home page was reviewed in 2002 as part of a triennial update of the overall focus. ITS-Sydney has gained as reputation of having one of the most informative and uncluttered home pages. The new version has benefited from feedback from stakeholders.

ITS (Sydney) Self Help Network (SHN)

To provide further support to the growing number of graduate students, under the 'we care for our students' program, we have designed a set of procedures to facilitate a support network outside of the classroom. It will be piloted in 2003. It involves the allocation of students to small self-help groups (of about 5 persons), allocated so that they are from different countries and stages in their study. A Chair and reporter is selected and the groups meet twice per semester to assist each other under a set of directed rules. A report of the meetings must be provided to the administrative coordinator and made available to the lecturer for information only. We anticipate that the SHN will provide support to all students, especially international students who often find adjusting to the Sydney programs a big challenge.

ITS (Monash) Client Data Base

The new ITS (Monash) database was successfully brought on line in December 2001 (phase 1) and was networked for ITS staff (phase 2) to access in May 2002. Brenda O'Keefe was heavily involved in developing the specification for the new system. Brenda worked closely with Software Design and Solutions who were contracted to develop the database software. The new database has the capacity to manage the data records of all students in the Transport Management Course in Bus and Coach Operations by tracking enrolment, receipt of fees paid, course material distribution, receipt of exam, exam results with exam feedback comments and completion certificate distribution. The new database also has the ability to manage the records of other ITS courses and workshops as well as marketing information.

ITS (Monash) Postgraduate Website Re-development

Brenda O'Keefe assisted in the re-development of two websites for the Off-Campus Postgraduate Programs in Transport and Traffic and Infrastructure Engineering and Management. In consultation with Geoff Rose, the new websites now have Quicklink menus for easy access to view and download information about the two programs.

ITS (Monash) Postgraduate WebCT Website Development

Brenda O’Keefe assisted in the development of the Off-Campus Postgraduate WebCT (Web Course Training) website. The WebCT website provides access to the study resources and a range of communication tools (email, discussion groups and chatrooms) to facilitate communication with the lecturer and other students enrolled in the unit. The website has resolved problems with mail delays in receiving study resources and provides students with greater flexibility as to where they can access the study resources.

Travel Impacts of the Shell Office Relocation (ITS Monash)

Thanks to the enthusiastic response from Shell House staff, a very successful class project has provided final year Civil Engineering students, enrolled in CIV4283 Transport Planning, with experience in undertaking a very real transport planning study. The students worked in groups of three to study the travel impacts of the relocation of Shell’s national office from 1 Spring Street, Melbourne to 8 Redfern Road, East Hawthorn.

The project involved a web based travel survey of current and proposed travel choices, analysis of the survey data and development of a ‘Green Travel Plan’ to promote the use of sustainable transport alternatives for the access to the new site in East Hawthorn. Fewer staff expected to take public transport to the new site (the public transport share falls from 49 per cent to 35 per cent). While the use of non-motorised transport is expected to remain constant (at about 8 per cent), the drop in public transport ridership is taken up by an increase in private transport access, particularly the drive alone option. The development and promotion of a Green Travel Plan can be expected to deliver benefits to Shell, its employees and the wider community. The project proved to be a great win-win for all involved. The students were very motivated about working on a project which realistically simulated a real world transport planning project. For Shell, the study provided important insight into the concerns and anticipated travel patterns of the staff. This insight will help when discussing nearby parking options with the City of Boroondara as well in ensuring that adequate information is made available so that employees can make informed decisions about travel to the new site. The winning student team (see Figure below) was presented with book vouchers courtesy of Shell Australia.



The winning student team along with the members of the assessment panel [L to R: George Boburka (Shell Australia), David Meiklejohn (Sustainable Energy Authority of Victoria) and Noel Matthews (City of Boroondara), Naomi Langdon, Ronald Barrera, Ted Teo and Geoff Rose (Monash University)].

Further Study Undertaken by ITS (Monash) Staff

In two semesters of part-time study (fitted in with her part-time work at the Institute), Astrid de Alwis was able to top up her Graduate Diploma in Transport and Distribution Management to obtain a Masters by Coursework in Logistics Management at Monash University. The additional subjects she has mastered will give her a keen edge for systems-oriented work in transport and logistics.

Stephen Greaves successfully completed the Graduate Certificate in Higher Education (GCHE). This program was established by Monash University for new appointees with limited teaching experience to develop and enhance their teaching skills. The program ran over four semesters and included sessions on education theory, course development, evaluation methods, use of new technologies, lectures, tutorials, one-on-one meetings with students, assisting students with learning difficulties, and an individual project, which was conducted on evaluation of individual performance in group-based subjects. The course reflects the recognition given by Monash University to the importance of ensuring and maintaining standards of excellence in university teaching. The quality of the course is also reflected by the fact that it has recently been accredited in the United Kingdom.

Monash Travel Guide Web Pages

The Monash Travel Guide is an on-line tool that can be used by new and existing students and/or visitors to the University to help them to identify how to find their way to the university given their point of origin and the travel modes, vehicles and time available to them. Geoff Rose and Astrid De Alwis are currently evaluating the existing web pages for the Travel Guide, with the object of making them far more 'user-friendly' than they are now. The revised web pages will provide users with a convenient, accurate and easy-to-use tool that is expected to save them time, money and other resources.

CAITR Web Site (ITS Monash)

The Conference of Australian Institutes of Transport Research (CAITR) is a low cost conference which aims to maximise the opportunity for transport researchers to discuss their work with peers and colleagues in a supportive, informal environment and to be part of a network of expertise. CAITR is particularly valuable to recent researchers (PhDs, Masters and undergraduates by research), giving them the chance to present work in progress, receive constructive feedback and improve presentation skills. ITS (Monash) has developed a permanent web site which will act as an archive for the proceedings of the annual CAITR. The CAITR conference is hosted by a different transport research group round Australia each year. The permanent CAITR web site will provide a link to the hosts of the next CAITR and an option to download papers from the last CAITR conference. Papers from earlier CAITR conferences will be available on CD Rom.

The web site can be accessed at the following address:

<http://www-civil.eng.monash.edu.au/people/centres/its/WorkshopsSeminars/CAITRHomePage>

7. EDUCATION

ITS Sydney

The Education program at ITS Sydney includes:

- PhD program;
- Masters by Research Program;
- Graduate transport & logistics management program;
- Certificate and Advanced Certificate programs; and
- Executive short courses.

ITS offers a fully articulated set of programs in transport and logistics management education, as shown below. Note that articulation between programs is not automatic. An MPhil (Transport & Logistics Management) is also available as a research degree.

PhD program

Students in the PhD program at ITS (at the end of 2002) include:

Full-time

Alejandra Efron (2000): Supply chain and stated preference methods.

Wafa Dabbas (2000): Air quality modelling for urban areas.

John Rose (2001): Interactive agency choice experiments in the freight sector.

Melody Hsiao (2002): The determinants of supply chain performance for retail outlets.

Part-time

Seu Cheng (1998): Evaluating shippers' choice of intermediary service attributes: a principle-agent approach.

Virginia Fazio (2001): Corporate governance in health service organisations

Graduate Transport and Logistics Management Program

The transport management program includes the Master of Transport Management or Logistics Management (8 units), the Graduate Diploma in Transport Management or Logistics Management (6 units) and the Graduate Certificate of Transport Management or Logistics Management (4 units).

The demand for the units of study is very high. In 2002 we had a 60% increase in students numbers (with class sizes in the range 45-80 students). Many of the students are doing a major or minor in logistics and/or transport management via the MCom and MIB as well as the transport and logistics degrees.

An appreciation for a graduate student:

“Dear Professor Stopher, Thank you for your help all the way during the course, and the best lecturer that I have had. Hope to see you again. Take care!” Kind regards, yanyan.

Courses

ITS taught the following transport and logistics management courses in 2002:
(students in each unit of study are given in parenthesis)

Summer Session (1-13 February)

- Logistics Management (43)
- Survey Design and Management (13)

Semester 1

- People, Work and Organisation (71)
- Traffic Systems Management and control (10)
- Strategy and Supply Chain Management (58)
- Transport Economics and Management (37)
- Research Project: Discrete Choice Methods (21)

Winter Session (June - July)

- International Logistics (74)
- Environment Systems Assessment (2)

Semester 2

- Land Use and Transport Planning (14)
- Logistics Systems (110)
- Geographical Information Systems for Planning and Marketing (60)
- The Industry Laboratory (86)

Student awards

The awards were presented at the Institute of Transport Studies annual presentation cocktail party in April 2002 attended by students, alumni students, staff and supporters of the Institute.

- The Institute of Transport Studies prize for excellence in full-time study in the MTM program was awarded to Oi Mei Chu
- The Chartered Institute of Transport Ken Hillyar award for best Year 1 student in the MTM program was awarded to Richard Connors
- The Chartered Institute of Transport Sir Hudson Fysh award for best Year 2 student in the MTM program was awarded to Lai Shan Lau
- The Australian Institute of Traffic Planning and Management prize for best student in the Graduate Diploma program was awarded to Frederic Horst

- The Logistics Association of Australia Industry Logistics Prize was awarded to Andrew Komli.
- PhD Student Travel Awards
 - \$2000 towards partial cost of fares and full registration fee for Melody Hsao's for IMP Asia conference in Taiwan, 23 November 2002.
 - \$800 for Wafa Dabbas – to assist in purchase of books and software and attendance at CAITR2003

Certificate programs

Certificate of Transport Management (Bus/Coach)

The CTM was established in conjunction with the Bus and Coach Association (NSW) to provide managerial training for the bus and coach industry. It is the only program to meet the accreditation requirements under the NSW 1990 Passenger Transport Act.

In 2002, ITS conducted 1 CTM course with an intake of 56 students.

Certificate of Coach Management

The Certificate of Coach Management (CCM) is specifically designed for coach operators accredited for long distance and tourist vehicle services (including overnight charter work).

In 2002, 170 students completed the four-day program. There was 1 CCM intake in 2002.

Certificates of Logistics Management, Freight Management and Supply Chain Management

This management program first introduced in 1997 meets the needs of professionals involved in logistics, maritime, supply chain management, retail and freight transportation management. The program structure was revised in 1998 with the introduction of two new courses Certificate of Maritime Logistics and Certificate of Retailing Logistics.

Student awards

The CTM, CCM and CLM Certificate Presentation was held in conjunction with the Institute of Transport Studies 2002 cocktail party on April 6.

The Bus & Coach Association (BCA) Prize for the best student in the Certificate of Transport Management program, worth \$250 in 2002, was awarded to Jason Bailey

Short Courses and Workshops

ITS-Sydney ran a successful three-day workshop on discrete choice methods in March. Using the Limdep software and the recent reference book on Stated Choice Methods by David Hensher (with Jordan Louviere and Joffre Swait), 20 participants from a number of countries were introduced to the latest developments in discrete choice modelling and applications.

Distance Education

CTM (Bus and Coach) and CCM (Coach) Western Australia

In 1998 ITS introduced a distance education format for CTM and CCM in Western Australia with the full support of the Department of Transport (Western Australia) and Bus and Coach Association (Western Australia). In 2002, there were 2 enrolments in the WACTM distance program.

The Deakin Logistics Program

In 2002, 12 students participated in the Deakin program. With Deakin Australia undertaking the marketing of an ITS-Sydney logistics program, 21 students participated in the logistics management unit.

Advanced Certificate in Transport and Traffic Management CTTM (Syd)

The Chief Executive Officer of the NSW Roads and Traffic Authority (Paul Forward) has approved a program of graduate education to be delivered by ITS-Sydney. In 2003 ITS will offer the Advanced Certificate of Transport and Traffic Management (ACTTM) in-house to RTA staff who will compete for 15 scholarships to participate.

This is an industry programmes' advanced certificate in transport and traffic management that is offered by the Institute of Transport Studies (ITS) of the University of Sydney and is specifically tailored to the needs of Practising Professionals. It comprises ten days of instruction offered over a period of 3 months, with no more than 2 days of instruction in any one week. Each day of instruction runs from 9 a.m. until 5 p.m., with appropriate breaks. Lunch and morning/afternoon tea is provided by ITS during each day of instruction. Textbooks are also provided by ITS, together with all course notes and materials needed by students. Articulation: The advanced Certificate is an ITS award, recognised by the University of Sydney. A formal certificate is awarded by the University of Sydney. It is not a Graduate degree but it has a very high level of acceptance in industry. However, satisfactory completion of the Certificate will enable articulation to the Graduate Diploma in Transport Management with credit for 3 of the 6 units (or direct into the Masters degree with the same credits).

Module 1 – Transport and Traffic Systems

Definition of a transport system; passenger and freight transport systems; the transport task; roles and responsibilities in the transport systems of Australia; planning, design, construction, maintenance, and operation of transport systems. We introduce 30 key points of transport systems to illustrate the issues in this module and to set the stage for the subsequent modules. We introduce the basics of traffic analysis: speed, volume, density, capacity, interrelationships among these, and the development of level of service concepts. Participants will solve some simple problems relating to traffic analysis and will review selected key points.

Duration: 2 days.

Module 2 – Traffic Systems Control and Management

This module introduces issues of safety, traffic flow, gap acceptance, and the construction and use of time-space diagrams. We introduce the need for control of the transport system; elements of control: lane markings, signs, signals, geometric designs;

intersections and intersection problems; vehicle actuated and fixed time signals; signal progression and area control; freeway controls. We introduce the issue of facilities for and accommodation of bicycling and walking. We discuss the need to estimate highway capacity and discuss some of the methods to estimate capacity. We also introduce levels of service for the highway system; AustRoads standards and procedures; vertical and horizontal alignments and impacts on safety and control; traffic calming; high occupancy vehicle lanes; and parking provision. We introduce Intelligent Transport Systems: definition, types, discussion of value and contribution to traffic control and management. Participants will solve some simple problems relating to traffic signal timing, capacity estimation, and level of service.

Duration: 3 days.

Module 3 – Transport Infrastructure Planning and Forecasting

This module introduces the issues relating to infrastructure planning and risk sharing for passenger and freight transport. It covers some of the financing options, such as joint ventures, Build-Own-Operate-(Transfer) (BOO(T)), and other types of private-public financing ventures. It deals with institutional settings to deliver transport infrastructure. We introduce concepts related to traffic forecasts, revenue projections, value of travel time savings, trip purposes, time of day issues, etc. Induced travel and its effects on investment decisions and planning is discussed. The Sydney travel model is introduced with a discussion of how trip tables are developed for use in traffic planning and forecasting. Key behavioural parameters of the model are discussed.

Duration: 2 days

Module 4 – Transport Policy, Decision Making, and the Environment

This module introduces transport policy development and the relationship of transport to other sectors of the economy; the nature of decision making and models of decision making; effect of decision making characteristics on technical transport planning and engineering; performance measurement and policy; external policies and their impact on the transport sector. The impact of human activity on the environment. Key environmental themes are: air quality, noise pollution, traffic congestion, greenhouse gas emissions, social alienation and quality of life. We outline the EIS process and the legislation behind it. We also provide an overview of the main methods to evaluate projects that have an environmental impact (e.g., cost-benefit analysis, cost effectiveness analysis, multi-criteria evaluation). We introduce various Economic Analysis Manuals. We also introduce TRESIS (the Transport Environmental Strategy Impact Simulator) as a useful decision tool to evaluate the systemwide and local impacts of transport initiatives such as infrastructure provision (roads, tollroads, busways, light rail, heavy rail etc), pricing (congestion charging, automobile prices, GST, fuel taxes, carbon tax, parking prices), and public transport service and fare levels. Participants will get a hands-on experience in planning Sydney.

Duration: 3 days.

ITS Monash

The educational activities and programs at ITS Monash include:

- PhD program;
- Master of Engineering Science by research;
- Master of Engineering Science by coursework and minor thesis
- Master of Transport and Traffic;
- Student awards (undergraduate and postgraduate)
- Undergraduate student scholarship
- Transport Industry Education Programs; and
- ITS (Monash) lecture seminars and workshops

PhD program

Students engaged in PhD research at ITS Monash at the end of 2002 included:

Merle Chan: Impacts of in-vehicle navigation systems on travel behaviour

Tim Martin: Predicting pavement performance at a road network and road project level.

Tan Yan Weng (external): A study of parking in multi-use facilities

Jim Youngman: The modelling and intelligent optimisation of field service territories

Rita Seethaler: Investigation into the use of persuasion techniques in transport policy

Master of Engineering Science by research

Students engaged in Masters research at ITS Monash (at the end of 2002) included:

Ed Chandra (external): Equilibrium modelling of land use activities

Master of Engineering Science by coursework and minor thesis

Students who submitted theses for this degree and subsequently completed during 2002 were:

Fiona Green: Red light running

Kate McNally: Car ownership of residents living in high density apartment developments

Emmanuel Natalizio: Part-time metering signals at roundabouts

The following student submitted but has not yet graduated:

Sigrid Sanderson: Transport for people with disabilities

Note that 2001 was the last year that this course was offered in this form – see section below for details of the revised course structure.

Postgraduate degrees by coursework

A good deal of effort during 2002 went into a major revision to the postgraduate program in Transport and Traffic, which was introduced in 1999, and is offered via distance education. The revised program comes into effect in 2003 and is similar in structure to the original one, with postgraduate degrees offered at three levels: Graduate Certificate, Postgraduate Diploma and Masters. The difference is that there are now two Masters degree options (Master of Traffic and Master of Transport) and they require only eight subjects to be completed by students who enter with a four year undergraduate degree. A double Masters degree option (Masters of Traffic and Master of Transport) is also available for students who complete 12 subjects. As part of the course changes, two new units are being added to the program: CIV5314 Transport Planning and Policy (commencing Semester 1, 2004) and CIV5315 Transport Economics (commencing Semester 2, 2003).

As part of a regular program to update the ITS (Monash) web site, major changes were made so that the site is now the primary mechanism for distributing information about the postgraduate program. To promote the revised program, an advertising campaign was undertaken in the last quarter of 2002 focusing on transport and traffic journals with an international readership. That advertising program was certainly successful in stimulating interest in the program as indicated by the increased visits to the ITS (Monash) web site.

The distance education program in Infrastructure Engineering and Management came on-line in 2002. As part of that program students are able to take a minor specialisation in transport, traffic or water engineering.

Units

Transport and traffic related units offered in 2002 as part of the distance education postgraduate coursework degree programs included:

- CIV5301 Traffic Engineering Fundamentals
- CIV5302 Traffic Engineering and Management
- CIV5303 Quantitative Methods
- CIV5304 Intelligent Transport Systems
- CIV5305 Transport Network Modelling
- CIV5306 Road Safety Engineering
- CIV5307 Parking Policy and Design
- CIV5308 Case Studies in Transport
- CIV5310 Infrastructure Project Management
- CIV5311 Infrastructure Project and Policy Evaluation
- CIV5312 Asset Management I
- CIV5313 Asset Management II

Student awards

The following prizes were awarded in 2002:

The Egis Highway Design Prize – awarded to the group of BE students who submitted the best highway design – Simone Esler, Silvia Goncalves and Nelson Yick

The Richardson Prize in Transport – awarded to the BE student showing the greatest proficiency in transport engineering – Chris Coath

The Turnbull Fenner Traffic Engineering Prize – awarded to the BE student showing the greatest proficiency in level 4 transport engineering elective subjects – Gavin Catto

Undergraduate student scholarship

The ITS (Monash) Undergraduate Student Scholarship was initiated in 2001 to encourage the brightest undergraduate students to consider a research career in transportation. The inaugural recipient was Chris de Gruyter, a level 3 civil engineering student who was interested in pursuing his transportation studies further. Chris worked from December 2001 to February 2002 on a project supervised by Dr Stephen Greaves, using GPS technology to form profiles of “real” driver behaviour. Chris assisted with the downloading, processing, and display of the data in a GIS environment, and produced a working document report.

Two students, Andrew Somers and Patrick Reed, have been awarded scholarships from December 2002 to February 2003. Andrew is working with Stephen Greaves on an extension of Chris de Gruyter’s project using GPS data. Pat is working with Professor Bill Young on road space allocation on two arterial roads in Melbourne, developing performance criteria for different travel modes. Both these projects are being funded by a Faculty Research Grant.

Transport Industry Education Programs

Transport Management Course in Bus and Coach Operations

The Transport Management Course in Bus and Coach Operations was launched in March 1999 and there have been over almost 3000 unit enrolments since its inception. It is a distance education program and forms part of the industry accreditation system which came into effect in Victoria from 1 May 1999. The distance education delivery is supplemented by a half day introductory ‘face-to-face’ session at the beginning of each semester, for students who are new to the course. 1476 operators have successfully completed the course since 1999.

Course Structure

The full course consists of four units, each of which requires one semester (12 weeks) of study. Unit selection is determined however by the category of accreditation being sought. The four units are:

- Unit 4101 Introduction to legislation and operations
- Unit 4102 Financial management
- Unit 4103 Human resource management
- Unit 4104 Marketing, planning and operations

All units selected for study need to be completed within two years of initially enrolling in the course.

Operators of scheduled services that operate five or less vehicles (normally school bus operators only) need to complete unit 4101 only.

Operators of scheduled services that operate five or less vehicles who wish to upgrade from small operator accreditation to offer tour or charter services need to complete units 4102, 4103 and 4104.

All other operators (including tour and charter) need to complete all four units.

Course Developments

During 2001/2002, the ITS Monash team, with financial assistance from DOI and reference to BAV and other industry specialists, implemented the recommendations of the November 2000 Course Review, by:

- Simplifying the course structure to four subjects, with accreditation stream requirements met by specialist exam questions
- Providing more opportunity in exam questions for application of learning materials to the operator's own business, including applications to school bus operations
- Revising the content of all units, especially in relation to recent legislative and regulatory changes, and adding new material in important areas such as school bus safety, workplace safety, national driving hours and chain of responsibility legislative developments, internal review/compliance auditing and risk management, yield management and probability analysis
- Updating the Marshco case study and associated maps (originally developed by ITS-Sydney)
- Maintaining the course standard and level but with simpler, less technical language in the subject manuals, a more user friendly logical flow of topics and with more responsive tutorial support and exam feedback

Feedback from course participants has been excellent, indicating the modifications to the course have further improved its relevance and service delivery, especially to meet the needs of new participating groups i.e. industry entrants, additional management and supervisory staff (or aspiring managers) of large operators, and small operators wanting to expand their range of services.

Continuing review and improvement of the course, in conjunction with advice from DOI, BAV and industry participants, remains an on going priority.

In response to participant feedback, beginning in 2003. a revised schedule for offering the management subjects will be introduced. One management subject will be available in each of the three semesters, with the introductory subject 4101 continuing to be offered in all three semesters. Subject manuals will be revised to enable the management subjects to be taken in any order, thereby enabling participants to complete the course in minimum time. This scheduling will be better related to the needs of participants now that the large group of operators who were

in the industry when operator accreditation was first introduced has now completed the course.

Awards dinner

The Institute of Transport Studies held its third annual Transport Management Course awards night and dinner at the Monash Club on 30 August, 2002. Carlo Carli MP, Parliamentary Secretary for Infrastructure, provided the keynote speech.

Over 130 people attended the evening to celebrate operators' receiving their course completion certificates and the presentation of awards for outstanding performance. The Deputy Vice-Chancellor (Resources) of Monash University, Alison Crook, presented course completion certificates to 43 operators. Industry sponsors announced the nominees and winners of six awards for outstanding performance in the course. Over 200 bus and coach operators completed the course in the last year.

Industry sponsored awards for outstanding performance in the course in 2001 were:

- The Bus Association of Victoria Overall Award for best performance in all units was awarded to Gregory Condon, Wodonga
- Department of Infrastructure Small Operator Award for Unit 4101, Introduction to Legislation and Operations, was awarded to Leanne Swain, Horden Vale
- Audit Enterprises, AC/AO Operator Award for Unit 4101 Introduction to Legislation and Operations was awarded to Kym Driver, Driver Group, Mt Waverley
- The Pitcher Partners Large Operator Award for Unit 4102, Financial Management, was awarded to James Garrett, Action Tours, Glenroy
- The Eastside Truck and Bus Service Centre Award for Unit 4104, Marketing, Planning and Operations was awarded to John McCarthy, Lancefield Bus Service, Lancefield
- The Grenda Group Award for Unit 4103 Human Resource Management was awarded to Gregory Condon, Wodonga

Generous door prizes for the night were donated by Konica and Accor Hotels.



Small operators with Ms Alison Crook, Deputy Vice-Chancellor & Vice-President (Resources) of Monash University



John Stanley with Mr Gregory Condon (GJE & BA Condon), winner of the Transport Management Course in Bus and Coach Operations Overall Award - Sponsored by Bus Association Victoria

Education Program in Parking Management

Bill Young continued to present the distance education program in parking management for the Parking Association of Australia. The program involves four units;

- Unit 1101 Introduction to parking
- Unit 1102 Parking management
- Unit 1103 Parking design & policy
- Unit 1104 Parking technology & information collection.

8. PUBLICATIONS

Staff disseminate research and policy work through a wide range of publications from books, journal articles, conference proceedings, working papers and project reports.

ITS: SYDNEY

Books and Book Chapters

Hensher, D.A. and Golob, J. (2002) “Telecommunications-Travel Interactions” in Mahmassani, H. (ed.) *In Perpetual Motion: Travel Behavior Research Opportunities and Application Challenges*, Pergamon Press, Elsevier Science, Oxford, 209-220.

Journal Articles

Hensher, D.A. and Greene, W.H. (2002) Specification and Estimation of the Nested Logit Model: Alternative Normalisations, *Transportation Research*, 36B(1), 1-18.

Wang, B., Hensher, D.A. and Ton, T. (2002) Safety in the road environment: a behavioural response perspective, *Transportation*, 29 (3), 253-270.

Hensher, D.A. and Brewer, A.M. (2002) Going for Gold at the Sydney Olympics: How did the Transport Perform? *Transport Reviews*, 22 (4), 381-399.

Hensher, D.A. and King, J. (2002) Environmental Responsibility on Campus: Stakeholder Views on the Environmental Performance of the University of Sydney, *Environmental Education Research*, 8 (2), 199-224.

Hensher, D.A. (2002) A Systematic Assessment of the Environmental Impacts of Transport Policy: An End Use Perspective, Prepared for an invitational Special Issue of *Environmental and Resource Economics* on ‘Tools of the Trade for Environmental Economists’ guest edited by Richard Carson, 22, 185-217.

Hensher, D.A. and Prioni, P. (2002) The Missing Link in Contract Performance Assessment: The Integration of a Service Quality Index into a Competitive Tendering Regime, *Journal of Transport Economics and Policy*, 36 (1), 93-114.

Hensher, D.A. and Macario, R. (2002) Organisation and Ownership of Public Transport Services, *Transport Reviews*, 23 (2), 353-365.

Louviere, J., Richard Carson, Andrew Ainslie, Trudy Cameron, J.R. DeShazo, David Hensher, Robert Kohn, Tony Marley and Deborah Street (2000) Dissecting the Random Component of Utility, *Marketing Letters*, 13 (3), 177-194

Hensher, D.A. and Ton, T. (2002) TRESIS: A Transportation, Land Use and Environmental Strategy Impact Simulator for Urban Areas, *Transportation*, 29 (4), 439-457.

Hensher, D.A. (2002) Road Pricing and Charging: A Commentary, The Warren Centre for Advanced Engineering, The University of Sydney.

Rahman, S. and Sohal, A.S. (2002) A review and classification of total quality management research in Australia and an agenda for future research, *International Journal of Quality and Reliability Management*, 19 (1), 46-66.

Rahman, S. (2002) A review of empirical research on Total Quality Management using scale-developing methods: an Australian perspective *Total Quality Management*, 13(5), 635-649.

Rahman, S. (2002) Leadership and HR focus in TQM research in Australia: an assessment and agenda *Benchmarking: An International Journal*, 9 (5) 485-505.

Hensher, D.A. (2002) Determination of Passenger Potential Associated with a Regional Airline Hub at Canberra International Airport, *Journal of Aviation Management*, 8, 301-311.

Proceedings of Conferences (Refereed)

Truong, T.P and Hensher, D.A. (2002) Congestion charging and the optimal provision of public infrastructure: theory and evidence, 25th Australasian Transport Research Forum, incorporating the BTRE Transport Policy Colloquium, Canberra, 2-4 October 2002.

Stopher, P, Bullock, P and Rose, J. (2002) Simulating household travel survey data in Australia: Adelaide case study, 25th Australasian Transport Research Forum, incorporating the BTRE Transport Policy Colloquium, Canberra, 2-4 October 2002.

Ton, T and Hensher, D.A. (2002) A spatial and statistical approach for imputing origin-destination matrices from household travel survey data: a Sydney case study, 25th Australasian Transport Research Forum, incorporating the BTRE Transport Policy Colloquium, Canberra, 2-4 October 2002.

Stopher, P, Bullock, P and Jiang, Q. (2002) GPS, GIS and personal travel surveys: an exercise in visualisation, 25th Australasian Transport Research Forum, incorporating the BTRE Transport Policy Colloquium, Canberra, 2-4 October 2002.

Rahman, S and Bullock, P. Soft TQM, Hard TQM, and Organizational Performance Relationships: An Empirical Study, the Sixth International Research Conference on Quality, Innovation and Knowledge Management, Kuala Lumpur, Malaysia, 17-20 February 2002.

Rahman, S and Klaus D. Fahrner. Use of Constraints Management in Targeting Quality Improvement Initiatives: Australian Case Studies, the Sixth International Research

Conference on Quality, Innovation and Knowledge Management, Kuala Lumpur, Malaysia, 17-20 February 2002.

Hsiao, M., Purchase, S. and Rahman, S. (2002) The impact of buyer-supplier relationship and purchasing process on the supply chain performance: A conceptual framework, IMP Conference 2002, Perth, Western Australia, 11-13 December.

Journal Articles (forthcoming / in press / editorial consideration)

Hensher, D.A. and Stanley, J.K. (in press) Performance-based contracts and/or competitive tendering in urban bus service provision, *Transportation Research A*.

Hensher, D.A. and Houghton, E. (in press) Performance-based contracts for the bus sector: delivering social and commercial value for money, *Transportation Research B*

Hensher, D.A., Stopher, P.R. and Bullock, P. (in press) Benchmarking and Service Quality at a Market Segment Level (Presented at 2002 Annual Meeting of the Transportation Research Board, Washington DC.) *Transportation Research A*.

Hensher, D.A. (forthcoming) Performance Evaluation Frameworks, in Hensher, D.A. and Button, K. (Series and volume eds) *Transport Strategy, Policy and Institutions, Handbooks in Transport Vol 6*, Pergamon Press, Oxford. To be published 2005.

Greene, W.H. and Hensher, D.A. (in press) A Latest Class Model for Discrete Choice Analysis: Contrasts with Mixed Logit, *Transportation Research B*.

Truong, T.P. and Hensher, D.A. (editorial consideration) Free-Riding and the Invisible Hand in the Optimal Provision of Public Infrastructure Goods: With Reference To Toll Roads.

Hensher, D.A. (editorial consideration) Urban Public Transport Delivery in Australia: Issues and Challenges in Retaining and Growing Patronage.

Hensher, D.A., Stopher, P.R. and Bullock, P. (in press) Benchmarking and Service Quality at a Market Segment Level (Presented at 2002 Annual Meeting of the Transportation Research Board, Washington DC). *Transportation Research*

Hensher, D.A. and Sullivan, C. (in press) Willingness to Pay for Road Curviness and Road Type, *Transportation Research D*.

Hensher, D.A. and Greene, W.H. (in press) Mixed Logit Models: State of Practice and Warnings for the Unwary, November, *Transportation*. Note: I have been invited to present this paper at the 2003 American Economic Association Annual Conference in Washington DC. (The other paper on the session is by Nobel Laureate Prof Dan McFadden).

Stopher, P.R. and Wilmot, C.G. (forthcoming) Development of a Prototype Time-use Diary and Application in Baton Rouge, Louisiana, *Transportation Research Record*.

Wilmot, C.G. and Stopher, P.R. (forthcoming) Transferability of Transportation Planning Data, *Transportation Research Record*.

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Hensher, D.A. and Button, K. Introduction, in Hensher, D.A. and Button, K. (in press). (Series and volume eds) Transport and the Environment, Handbooks in Transport Vol 4, Pergamon Press, Oxford.

Hensher, D.A. Integrated Transport Models for Environmental Assessment, in Hensher, D.A. and Button, K. (in press) (Series and volume eds) Transport and the Environment, Handbooks in Transport Vol 4, Pergamon Press, Oxford.

Ton, T. and Hensher, D.A. (in press) Synthesising population data: The Specification and Generation of Synthetic Households in TRESIS, in Proceedings of the 9th World Conference of Transport Research.

Hensher, D.A. (in press) Service Quality as a Package: What does it mean to Heterogeneous Consumers? in Proceedings of the 9th World Conference of Transport Research.

Hensher, D.A. (in press) The Valuation of Non-Commuting Travel Time Savings for Urban Car Drivers, in Proceedings of the 9th World Conference of Transport Research.

Hensher, D.A. (in press) Integrated Micro-simulation Models, in Hensher, D.A. and Button, K. (Series and volume eds) Transport and the Environment, Handbooks in Transport Vol 4, Pergamon Press, Oxford.

Hensher, D.A. Markets in Transport Planning, in Hensher, D.A. and Button, K. (Series and volume eds) Transport Strategy, Policy and Institutions, Handbooks in Transport Vol 6, Pergamon Press, Oxford. To be published 2005.

Hensher, D.A. (in press) Models of Organisational and Agency Choices for Passenger and Freight-Related Travel Choices: Notions of Interactivity and Influence, Invitational Resource paper for the 8th International Association of Travel Behaviour Conference, Switzerland, 2003.

Journal Articles, Book Chapters and Books (in progress)

Hensher, D.A. and Rose, J. Alternative econometric models for capturing interactive agency choices, Institute of Transport Studies, The University of Sydney (ARC-DP Grant 02-06)

Hensher, D.A. and Rose, J. Respondent burden in stated choice experiments: does temporal burden-spreading help?

Hensher, D.A. Revealing differences in behavioural response due to the dimensionality of stated choice designs (ARC VTTS Grant 01-03)

Hensher, D.A. and Houghton, E. Growth after transition under performance-based contracts.

Hensher, D.A. and Rose, J. Choice Analysis: A Primer for Beginners.

Hensher, D.A. and Greene, W.H. Taking advantage of priors in estimation and posteriors in application to reveal individual-specific parameter estimates.

Hensher, D.A. and Goodwin, P.B. Implementation of values of time savings: the extended set of considerations in a tollroad context, Special issue of Transport Policy, guest edited by D. Hensher, J de Dios Ortuzar and Harry Timmermans.

Hensher, D.A. Transport futures- the big Issues and challenges (for RTA Executive Workshop, February 2003)

Alsnih, R., Hensher, D.A. and Stopher, P.R. Seniors in an aging population and their mobility requirements

Hensher, D.A. and Houghton, E. Performance-based contracts, workshop report, Thredbo 8.

Hensher, D.A. TRESIS 1.3 – searching for useful policy instruments to assist the transport reform agenda

Wolnizer, P.W. and Hensher, D.A. Audits and governance – explaining the successes and failures.

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Hensher, D.A. (2002) How Safe are Buses Carrying Children?, *BCA Bulletin* March, 32-34.

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Rose, J. and Hensher, D.A. Modelling Agent Interdependency in Group Decision Making: Methodological Approaches to Interactive Agent Choice Experiments

Efron, A., Brewer, A. and Hensher, D.A. International Travelling Art Exhibitions: A negotiated value process.

Kwang, K., Hensher, D.A. and Ton, T. Examining the Applicability of the TRESIS Model System to Seoul, Korea.

Dabbas, W. and Hensher, D. A. Measures for Modelling Automobile Emissions: using Classification and Regression Trees (CART).

ITS: MONASH

Books and Book Chapters

Greaves, S.P. (forthcoming 2003) GIS and the Collection of Travel Survey Data. In: Handbook 5: Transport Geography and Spatial Systems (Eds., Hensher et al). Pergamon Press.

Young, W. (2002) Transport Infrastructure in Ted Munns (ed.) *Encyclopaedia on Environmental Change*, vol.3, John Wiley and Sons, New York

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Ayati, E. and Young, W. (2002) Estimation of the Cost of Rural Road Crashes in a Developing Country, *Traffic Engineering and Control*, 43(2), 56-60

Ayati, E. and Young, W. (2002) The Cost Effectiveness and Rate of Return of Investments in Traffic Safety Projects in a Developing Country, *Traffic Engineering and Control*, 43(8), 307-315

Hildebrand, E. and Rose, G. (2002) Benchmarking Australian Bus Safety, *ARRB Journal*, 11(1) 52-65.

Youngman, J.H.R. (2002) Field Service Territories *Road and Transport Research*

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Norojono, O. and Young, W. (2002) (in press) A Stated Preference Freight Mode Choice Model, *Transport Planning and Technology*

Rose, G. (2002) (in press) Providing Premium Carpool Parking Using a Low-tech ITS Initiative', *ITE Journal*, 72 (7), 32-36

Conference Proceedings

Greaves, S.P. and De Gruyter, C (2002) "Profiling Real-World Driving Behaviour Using Passive Global Positioning System (GPS) Technology," CD-Rom Proceedings of the ITE International Conference, Melbourne, 12 – 13 September 2002.

Langdon, N., Greaves, S.P. and Grzebieta, R. (2002) "Implications of Recent Legislation for Statutory Road Safety Authorities: A Case Study in Speed Control Measures", 2002 Road Safety Conference, Adelaide, 3-5 November 2002

Tan, Y.W. and Young, W. (2002) Modelling Traffic and Parking in Multi-Storey Parking Systems *International Conference of Seamless and Sustainable Transport*, Singapore

Young, W. and Tan, Y.W. (2002) Data and discrete event parking simulation models, *Proceedings of the International Symposium on Transport Simulation*, Japan

Rose, G. (2002) Encouraging Carpooling with an Access Controlled, Premium Carpool Carpark, Proc. 5th Malaysian Roads Conference.

McNally, K and Rose, G. (2002) Car Ownership and Parking Needs of High Density Apartment Residents, CD Rom Proc. ITE ANZ 2002 International Conference, Melbourne.

Conference Proceedings (in press)

Stopher, P.R., Greaves, S.P. and Bullock, P (2003) “Simulating Household Travel Survey Data: Application to Two Urban Areas”, Paper accepted for presentation at the 82nd Annual Meeting of the Transportation Research Board, Washington DC

Chan, M. and Rose, G. (2002) “Navigation and Travel Behaviour: Findings From Focus Group Research”, International Conference on Seamless and Sustainable Transport, Singapore, 25-27 November

ITS Working Papers

All Working Papers may be purchased from ITS.

ITS-WP-02-01 *The Mixed Logit Model: The State of Practice* (Hensher & Greene).
Abstract: The mixed logit model is considered to be the most promising state of the art discrete choice model currently available. Increasingly researchers and practitioners are estimating mixed logit models of various degrees of sophistication with mixtures of revealed preference and stated choice data. It is timely to review progress in model estimation since the learning curve is steep and the unwary are likely to fall into a chasm if not careful. These chasms are very deep indeed given the complexity of the mixed logit model. Although the theory is relatively clear, estimation and data issues are far from clear. Indeed there is a great deal of potential misinference consequent on trying to extract increased behavioural realism from data that are often not able to comply with the demands of mixed logit models. Possibly for the first time we now have an estimation method that requires extremely high quality data *if* the analyst wishes to take advantage of the extended behavioural capabilities of such models. This paper focuses on the new opportunities offered by mixed logit models and some issues to be aware of to avoid misuse of such advanced discrete choice methods by the practitioner.
January, 2002 (This is the revised paper on 10 June 2002)

ITS-WP-02-02 *Service Quality – Developing a Service Quality Index (SQI) in the Provision of Commercial Bus Contracts* (Hensher, Stopher & Bullock)
Abstract: The measurement of service quality continues to be a challenging research theme and one of great practical importance to service providers and regulatory agencies. The key challenges begin with the identification of the set of potentially important dimensions of service quality perceived by passengers, current and potential. We then have to establish a way of measuring each attribute and identifying their relative importance in the overall calculation of satisfaction associated with existing service levels. Once a set of relevant attributes has been identified, this information can be integrated into programs such as monitoring and benchmarking, and even in contract specification. This paper, building on earlier research by the authors, investigates ways of quantifying service quality and comparing the levels within and between bus operators.

The importance of establishing suitable market segments and the need to scale the service quality index for each operator to make meaningful comparisons is highlighted.

ITS-WP-02-03 *A Systematic Assessment of the Environmental Impacts of Transport Policy: An End Use Perspective* (Hensher)

Abstract: This paper presents an integrated urban passenger transport model system for evaluating the impact of a large number of interrelated policy instruments on urban travel behaviour and the environment. The model system has four integrated modules defining household location and automobile choices, commuter workplace and commuting travel choices, non-commuting travel activity, and worker distributed work practices. The demand model system, estimated as a set of discrete and continuous choice models, is combined with a set of equilibrating criteria in each of the location, automobile and commuting markets to predict overall demand for passenger travel in various socio-economic segments, automobile classes and geographic locations. We illustrate the diversity of the system by applying the integrated system to Perth (Western Australia), in the context of assessing their impacts on greenhouse gas emissions. The model system is embedded within a decision support system to make it an attractive suite of tools for practitioners.

ITS-WP-02-04 *Establishing Value for Money in Incentive-Driven Quality Contracts: The Bus Reform Agenda in New South Wales* (Hensher)

Abstract: The bus and coach sector in New South Wales (NSW) (Australia) is currently under review as part of a Bus Reform initiative of the NSW government. One matter central to the review is the establishment of a value for money (VM) regime to ensure that operators deliver to the market the best possible service levels consistent with stakeholder needs and the objectives of government. In developing a VM regime, we recognise the potential conflict between the operator's profit maximisation objective and the government's social surplus maximisation objective. A key underlying feature of 'value for money' (VM) is identifying the benefit to society associated with each dollar of subsidy from government. We propose an incentive-based performance contract regime delineated by the quantity and quality of service delivered (represented by service quality weighted patronage), the financial outlays by operators and non-operator sources in delivering this service level and an implementation plan that delivers monitored information as well a holistic commitment by all stakeholders.

ITS-WP-02-05 *Willingness to Pay for Road Curviness and Road Type* (Hensher & Sullivan)

Abstract: This paper develops a method to value two road design features: curviness and road type (2-lane, 4-lane without a median, and 4-

lane with a wide grass median). These features are linked to the safety of the road environment, providing information on how much individuals are willing to pay to reduce exposure to risk in the driving environment when trading between mixtures of curviness and road type. A stated choice experiment was designed in which car and truck drivers undertaking regional and inter-urban trips out of six New Zealand cities evaluated alternative trip profiles (including their current trip profile) in terms of travel times and costs in addition to curviness and road type, and chose one of the trip profiles as the most preferred.

ITS-WP-02-06 *Exploring the Use of Passive GPS Devices to Measure Travel, January 2002* (Stopher, Bullock & Horst)

Abstract: Global Positioning System devices are emerging as a potential means to collect improved data on the spatial aspects of personal travel. In many applications, the GPS device is coupled with a Personal Data Assistant of some type and the respondent who is using the GPS device is required to enter various data items at the start of each trip made with the device. This procedure has the disadvantage that it relies on the memory of the respondent to use the PDA, and also is subject to being missed if the respondent is in a hurry.

This paper builds on earlier work by Stopher and others to develop a passive GPS device, for which additional non-GPS data may be added either through inference or through a subsequent prompted recall survey. The paper describes the use of both in-vehicle and personal versions of a GPS device that logs position in one- or five-second intervals and has a number of other capabilities, such as turning off automatically when speed drops below 1 knot. Experiments have been performed in which the devices are tested for a range of different situations, including collecting data for one month, collecting data on trains, buses, and ferries, and experimenting with automatic on/off procedures.

The paper reports on a number of experiments, describes the procedures undertaken to download and analyse the data, and processing of the data for the prompted recall surveys. Initial results are included on experiments with the prompted recall, and options to develop this as an internet survey are explored.

In addition, analysis of the data is conducted to investigate congestion and the amount of time spent under congested travel conditions. Potential applications of this analysis to a variety of purposes is described in the paper.

ITS-WP-02-07 *Leadership and HR Focus in TQM Research in Australia: An Assessment and Agenda* (Rahman)

Abstract: Empirical studies indicate that only a handful of the soft TQM elements contribute to organisational performance. The elements of soft TQM, such as executive commitment, loyalty, teamwork and empowerment, training and education, are essentially leadership and human resource (HR) aspects. The objective of this study is to examine the state of leadership and HR focus in TQM research in Australia from published literature and to determine the areas for future research. The literature search covered 31 reputable referred journals over the years 1985–1999 and identified 90 articles which focused on aspects of total quality management (TQM). However, it was not possible to identify the primary focus of 23 articles which were either conceptual papers and did not address any specific criterion of the Australian Business Excellence (ABE) Framework, or addressed all criteria in general. Hence these articles were not considered for further analysis. The rest of the articles (67) were classified using the seven criteria of the ABE Framework and it was found that about 40% of the reviewed articles had leadership and HR as primary focus. The review shows that considerable attention has been devoted to research in strategic direction, organizational culture of the leadership category and, involvement and commitment, and effectiveness and development of the people category. Further research is necessary in areas such as top managements' role in environmental issues and community contribution, health, safety and well-being of employee, and disseminating leadership throughout the organization.

ITS-WP-02-08 *A Latent Class Model for Discrete Choice Analysis: Contrasts with Mixed Logit* (Greene & Hensher),

Abstract: The multinomial logit model (MNL) has for many years provided the fundamental platform for the analysis of discrete choice. The basic model's several shortcomings, most notably its inherent assumption of independence from irrelevant alternatives (IIA) have motivated researchers to develop a variety of alternative formulations. The mixed logit model stands as one of the most significant of these extensions. This paper proposes a semi-parametric extension of the MNL, based on the latent class formulation, which resembles the mixed logit model but which relaxes its requirement that the analyst makes specific assumptions about the distributions of parameters across individuals. An application of the model to the choice of long distance travel by three road types (2-lane, 4-lane without a median and 4-lane with a median) by car in New Zealand is used to compare the MNL latent class model with mixed logit.

ITS-WP-02-09 *The Theory of Constraints' Thinking Process Approach to Developing Growth Strategies in Supply Chain* (Rahman)

Abstract: Many attempts have been made to study factors influencing the performance of supply chains. These studies are generally quantitative and involve rigorous statistical analyses. This paper describes an application of a system approach known as the thinking process (TP) of the theory of constraints (TOC) not only to identify critical success factors in supply chain management, but

also to understand causal relationships between these factors. The study was conducted in a group-based model building environment with a group of students who specialised either in logistics management or e-commerce. The results suggest that understanding the dynamic nature of supply chain through cause and effect relationships is critical to the formulation of supply chain growth strategies.

ITS-WP-02-10 *Relationships Between Soft TQM, Hard TQM, and Organisational Performance* (Rahman & Bullock)

Abstract: Many empirical studies have demonstrated that only a handful of soft total quality management (TQM) elements contribute to organisational performance while elements of hard TQM have no relationship with performance. Despite these findings, a review of literature suggests that the elements of hard TQM in fact have a profound impact on organisational performance. The empirical studies which have investigated the relationship between hard TQM and performance have investigated the impact of each dimension of TQM on performance separately. We argue that it is more appropriate to investigate the direct impact of soft TQM on the diffusion of hard TQM in organisations and then assess the direct impact of hard TQM on performance. Besides direct effects, it is also important to investigate the indirect effect of soft TQM on performance through its effect on hard TQM elements. Analysis of 260 Australian manufacturing companies revealed that both soft TQM and hard TQM contribute directly to organisational performance. The results also indicate that there are significant positive relationships between the elements of soft TQM and those of hard TQM. Moreover, in addition to its direct affect, the elements of soft TQM also indirectly affects an organisation's performance through its effect on hard TQM elements.

ITS-WP-02-11 *Performance-Based Quality Contracts in Bus Service Provision* (Hensher & Stanley)

Abstract: Institutional reform of the bus sector is a topical discussion item in a number of countries at present. A specific focus is on ensuring a value for money (VM) regime to identify the benefits to society associated with each dollar of subsidy support from government. This paper argues that a Performance-Based Contracting (PBC) regime offers the best prospects of achieving a system-wide value for money outcome. It proposes a reward system for bus operators that combines payment for delivering a minimum level of service (MSL), that meets government community service obligations, plus an incentive regime that rewards operators for patronage increases (above MSL patronage levels). The patronage incentive is based on expected user and external benefits deriving from service improvements and patronage increases. Cost benchmarking at relevant best practice levels is proposed to ensure remuneration is based on efficient cost levels. The paper argues that a PBC approach is consistent with maximising social surplus from public

transport provision across a geographic area, for any given budget constraint and regulatory imposed minimum service levels. The main alternative, Competitive Tendering, is argued to be less attractive than PBC's in terms of securing the maximum social surplus to the community, given the total amount of subsidy support available.

ITS-WP-02-12 Simulated Household Travel Survey Data: Synthetic Data in Australia (Stopher, Rose and Bullock)

Abstract: A method has been developed to synthesize household travel survey data from a combination of Census and national transport survey data sources. The procedure, described in other papers, involves creating distributions of pertinent variables (numbers of trips by purpose, mode of travel, time of day of travel, and trip length) that can be used to estimate travel-demand models. A sample of local residents is then drawn from disaggregate census data, providing detailed information on the socioeconomic characteristics of the sample. Using these socioeconomic characteristics, travel data are simulated from the transport data distributions using Monte Carlo simulation. This procedure was developed in the United States in the past four years.

The paper describes the application of this procedure to Adelaide, South Australia, for which an actual household travel survey exists from 1999. The paper describes results obtained from applying the generic data as the basis of the simulation. Results are compared between the synthetic and real data to determine the closeness of the match between the data sets. The procedure uses data derived from a nationwide travel survey in the US, but uses census data for Adelaide from the 1996 ABS Census, using the one percent sample. The purpose of this research was to determine the extent to which the trip characteristics distributions from the US could be used in Australia. It is concluded that the procedure performs about as well as the process was shown to perform in Dallas, Salt Lake City, and Baton Rouge in the US.

This process holds out considerable promise as a means to increase available samples for local and corridor planning, as well as to provide data for regions that have typically not been able to undertake household travel surveys on the scale of those being conducted in the Melbourne and Sydney regions.

ITS-WP-02-13 *Understanding Underlying Constraints Affecting Decision-Making by Morning Car Commuters* (O'Fallon, Sullivan & Hensher)

Abstract: In New Zealand as elsewhere, there is an increasing interest in alleviating congestion on the road transport network to improve economic productivity, reduce pollution, and to use the transport network more effectively. Governments enact various policies to encourage car drivers to change their behaviour, but often find that the full impact is not reached. We propose that car drivers have

constraints influencing their mode choice for the morning peak period trip. A stated preference experiment conducted in the three largest New Zealand urban areas identifies these constraints and their impact on a series of policy initiatives designed to influence car driver behaviour.

ITS-WP-02-14 *Urban Public Transport Delivery in Australia: Issues and Challenges in Retaining and Growing Patronage* (Hensher)

Abstract: Urban public transport continues to be a high priority social obligation of governments throughout the world. In some jurisdictions it is the prime responsibility of national governments, while in other localities it is a state or local responsibility. To varying degrees, public and private organizations deliver the services within a regulatory framework that has responsibility for the performance of suppliers in a wide range of market settings. Increasingly government subsidy support is being aligned to the patronage levels and market share of public transport. This paper focuses on the challenges involved in retaining and growing patronage in the presence of the dominant automobile. We focus primarily on bus and rail services but recognise the valuable role of ferries and taxis in the delivery of public transport.

ITS-WP-02-15 *Understanding Underlying Constraints Affecting Decision-Making by Morning Car Commuters* (Ton & Hensher)

Abstract: A Household Travel Survey (HTS) is a valuable instrument for collecting data suitable for studying the travel behaviour of a sample of households in a specific geographical context. One important output from the trip data after expansion to the population is a set of origin-destination (O-D) trip matrices for combinations of trip purpose, time of day and mode of transport. However, the O-D matrices generally take the form of sparse matrices (ie. cell values are mostly zero). The degree of sparseness of these matrices is a function of sample size (a consequence of cost constraints), segmentation requirements and the spatial resolution of a geographical zoning system. Another factor contributing to the sparseness is the non-revelation of information in some cells in order to protect the privacy of households who live in those cells where their total amount of travel in a cell is less than a cut-off criterion (eg. < 200 trips).

Establishing an appropriate value to assign to a 'zero value' cell is a non-trivial task. There are two key issues to work through. The first is how to set up a classification rule to determine either if zero value cells have no travel related activity at all (ie genuine zeroes) or the travel values are truly missing. The second issue is the development of a trip allocation rule to assign the number of trips to each missing value cell within the constraint of a given total number of trips to be allocated to each missing value cell (given knowledge of marginals).

This paper shows how spatial and statistical techniques can be implemented to estimate the number of missing value cells and the number of trips associated with each missing value cell. The classification rule is a spatial one in locating missing value cells for any travel activities between each origin and destination. It is driven by the mean trip length distribution of the origin and destination distance among traffic zones. The trip allocation rule is constructed to allocate the number of trips to missing value cells using a distribution assumption (such as the uniform). The two rules are then combined in a process based on the proportion of trip purposes and modes of travel for a whole sample of household travel records. We implement the method for Sydney for the period 1998-2000 to obtain total passenger trip movements for linked trips by five purposes, six modes and six times of day.

ITS-WP-02-16 *Performance-Based Quality Contracts for the Bus Sector: Delivering Social and Commercial Value for Money* (Hensher & Houghton)

Abstract: Reform of the bus sector has been occurring in many countries. One matter central to these reform initiatives is the establishment of a value for money (VM) regime to ensure that operators deliver to the market the best possible service levels consistent with stakeholder needs and especially the objectives of government. A key underlying feature of 'value for money' (VM) is identifying the benefit to society associated with each dollar of subsidy support from government. This paper reviews the elements of a VM regime within the setting of an incentive-based performance contract and develops a formal framework for establishing optimum subsidy based on system-wide maximisation of social surplus. The maximisation of social surplus is subject to a number of constraints including the commercial imperative of the operator, minimum service levels under community service obligations and a fare and subsidy budget cap. An important feature of the performance-based contract (PBC) regime is a passenger trip-based incentive payment scheme linked to user and environmental externality benefits incorporating a subsidy per additional passenger trip above the patronage delivered under minimum service and fare levels. In this way, rewards to operators are revealed through the fare box, through increased consumer surplus and through reductions in negative externalities associated with car use. PBCs can be designed to accommodate both transition from an existing regime and post-transition growth strategies. The implementation of performance-based contracts is illustrated using data from private operators in the Sydney Metropolitan Area.

ITS-WP-02-17 *Encouraging Carpooling With An Access Controlled, Premium Carpool Carpark* (Rose)

Abstract: Empty vehicle seats represent a large inefficiency in the road transport system. Travel Demand Management (TDM) strategies offer one approach to improving vehicle occupancies. Intelligent Transport Systems provide many opportunities as enabling technologies for TDM Programs. In this paper an example of the contribution which ITS is making to increase vehicle occupancies at a major Australian university campus is examined. A dedicated access controlled carpark for carpool participants is proving successful with the technology enabling carpool carpark areas to be designated around the campus. The carpool parking facility is proving popular due to a combination of the access system in conjunction with more convenient locations and increased capacity. Evaluation results highlight the positive impact of this scheme on vehicle occupancy levels and there is strong support for the carpooling initiative by both the university and the users.

ITS-WP-02-18 *Navigation and Travel Behaviour: Findings from Focus Group Research* (Chan and Rose)

Abstract: A series of focus groups explored drivers' reactions to in-vehicle navigation systems (IVNS) and the changes in their travel patterns which could result from having an IVNS in their vehicle. The study focused on younger (25 years of age or less) and older (65 years and over) drivers. Both age groups anticipated that if there was an IVNS in their vehicle, they would be likely to drive more, participate in more activities, visit distant destinations, travel in unfamiliar areas, drive more at night and during the peak period, use street directories less, use freeways more and possibly use public transport less. While the magnitude of these changes were not great, there were statistical differences between the older and younger drivers. The research reported here provides important insight into how Intelligent Transport Systems technologies can possibly influence travel behaviour. Further research is required to understand more fully the extent to which ITS will either facilitate the development of seamless public transport services or simply reinforce the convenience of the car and entrench its position of dominance in urban travel.

Project Reports

Warringah Transport options study, Report for Bureau of Transport and Regional Economics (Stopher, Hensher, Ton, Ng, Bullock)

Mutual recognition of interstate bus operator accreditation qualifications, Report for Department of Infrastructure (Clements)

Pedestrian movement at Melbourne Central, Report for Department of Infrastructure (Young)

9. INDUSTRY PARTICIPATION

Conferences Chaired

- David Hensher chaired closing plenary session of the 2002 Australian Transport Research Forum, Canberra, 2-5 October 2002.
- Peter has been elected as the co-chair of the 7th International Conference on Travel Survey Methods, which is to be held in Costa Rica in August, 2004. In connection with this, Peter visited Costa Rica at the end of July, together with co-chair Cheryl Stecher and Local Organising Committee Chair Carlos Arce, to inspect possible sites for the conference and to kick off preliminary planning for the conference.

Unpublished Conference, Seminar and Forum Presentations

- Shams Rahman was invited to be the lead presenter at a workshop in (February 2002) on Supply Chain Management in Dhaka. The workshop was organised by Nestle Bangladesh Pty Ltd for its middle and senior managers.
- Shams Rahman attended a conference in Kuala Lumpur, Malaysia, on Quality, Innovation and Knowledge and presented two papers. Shams also chaired a presentation session. (February 2002)
- Transport and its role in Warringah. Invitational Briefing Talk by Hensher and Stopher on Transport Challenges in Warringah, on behalf of Tony Abbott MHR. (22 February 2002).
- Bus Industry Confederation National Conference 14-17 April 2002. Session 1 chaired by David Hensher on Institutional Reform Across All States. (15 April 2002)
- Paper presented by Peter Stopher and Philip Bullock, The Role of GPS Systems in Public Transport Planning, (16 April 2002).
- GPS Bus Day. ITS ran a one-day workshop for bus operators to introduce them to the benefits of GPS and GIS systems for bus planning. Led by Peter Stopher and Philip Bullock. (3 May 2002).
- David Hensher and Peter Stopher were invited to address the SHOROC Regional Organisation of Councils, presenting a paper titled "Transport Challenges for the Peninsula". This invitation follows on from the February Forum organised by Tony Abbott and which Hensher and Stopher gave the key address. (22 May),
- Peter Stopher attended the International Colloquium on "The Behavioural Foundations of Integrated Land-Use and Transportation Models: Assumptions and New Conceptual Frameworks" which was held in Quebec, Canada. He presented a paper entitled "The creation of simulated household travel survey data, based on available demographic data from households". In addition, Peter participated at the meeting of the International Steering Committee for the Major Collaborative Research Initiative 2000-2005, held by a consortium of Canadian Universities. Peter is one of five members of the Steering Committee, which is overseeing the research being conducted under this effort. (June 2002).
- Peter Stopher attended the 7th International Conference on Applications of Advanced Technologies to Transportation, organised by the American Society of

Civil Engineers. At the conference, Peter chaired a session on GIS and GPS Applications, and also presented a paper entitled "Exploring the Use of Passive GPS Devices to Measure Travel". Peter also chaired a meeting of the ASCE Committee on Planning in the Urban Transportation and Development Division. He is the vice-chair of this committee and chaired the meeting in the absence of the committee chair. (August 2002).

- David Hensher, Peter Stopher and Wafa Dabbas were invited to give short talks on Sustainable Development, (University of Sydney) Research Showcase. (17 September 2002).
- Professor Peter Stopher was invited to give a presentation entitled "What Can Transport Pricing Achieve" at the NRMA Conference on Transport Pricing on (12th November).
- AITPM Technical Forum. Geoff Rose spoke at an AITPM Technical Forum on "Making Smart Traffic and Transport Practitioners and Getting the Staff you Deserve". The hour-long panel discussion focussed on issues associated with the professional development of staff. Geoff's presentation highlighted that many current undergraduate programs provide limited exposure to transport and traffic studies. He argued that continuing education and postgraduate study would continue to be important for individuals pursuing a professional career in the transport and traffic field. He voiced concern about a perceived emphasis in many state government organizations on the development of generic project administration skills over deeper technical skills.

Conference and Seminar Attendance

- David Hensher, Virginia Burns and Philip Bullock attended the Bus Industry Confederation National Conference 2002. David Hensher was the panel reviewer on reform in public transport and gave a paper on performance-based contracts. Philip Bullock gave a talk on the use of GPS systems in bus planning. (April 2002).
- Shams Rahman attended a dinner organised by the Logistics Association Australia (LAA). Howard Critchley - Managing Director, TNT Logistics gave a presentation on "Integrated Logistics from 3PL/LLP Perspective". (April 2002).
- ITE 2002 International Conference, Melbourne, 12-13 September (Rose and Greaves)
- 5th Malaysian Roads Conference, Kuala Lumpur, October 6-9 (Rose)
- Smogbusters National Speaking Tour, Professor J. Whitelegg. "Policy and practice for sustainable transport in Europe: Does Australia need a National Sustainable Transport Strategy", 12 February 2002 (Rose)
- ITE/IEAUST Annual Breakfast Meeting. Guest Speaker Hon Peter Batchelor, Minister for Transport, Victoria, 13 February 2002 (Rose, Young, Greaves)
- Vic Roads Seminar. J. Poynton. "Research – A Pom's Perspective, Managing Highways Research in the UK". 21 February 2002 (Rose)
- AITPM Technical Forum. "Integrated Transport: New Directions for Getting Started". 6 March 2002 (Rose, Greaves)
- AITPM Technical Forum. "Freight Strategy and the Industry". 9 April 2002 (Rose)
- AITPM Technical Forum, "Making Smart Traffic and Transport Practitioners and Getting the Staff you Deserve", 3 September 2002 (Rose)

- DOI Seminar. Dr J. Merory and Mr R. Greig, “Cycle Instead: An Innovative Health Promotion Strategy on Active Transport” 18 September 2002. (Rose)
- International Symposium on Transport Simulation, Japan (Young)
- ITE ANZ 2002 International Conference on Transport Operations and Safety, Melbourne (Rose)

Media and Meetings

- David Hensher interviewed by Alison Handmer, University of Sydney’s UniNews (March 2002), “*The Fair Alternative to Sydney’s Road Tolls*”, (15 March 2002).
- David Hensher interviewed by Joseph Kerr, Sydney Morning Herald (SMH), “*Dad’s taxi riskier than getting bus to school*”, (5 April 2002).
- David Hensher interviewed by Paul Bevan, ABC Radio, Newcastle 10am, (5 April 2002).
- David Hensher interviewed by Stuart Martin, Daily Telegraph, “*The Role of Mathematical Transport Modelling*”, (9 April 2002).
- David Hensher interviewed SMH. “*On the road to a cheap, vote-winning transport system*”, appearing in SMH, (20 May 2002).
- David Hensher met with Prof Derek Scrafton, University of South Australia, to discuss “*The Public Transport System*”, in Sydney, (13 June 2002).
- David Hensher and P. Stopher met with John Anderson MHR (Deputy Prime Minister) and Tony Abbott MHR in Canberra to discuss *Transport Options for Warringah*, (30 June 2002).
- David Hensher interviewed by Frank Walker, The Sun-Herald, “*The railroading of our public transport*”, (30 June 2002).
- David Hensher interviewed by Deirdre Macken, Australian Financial Review, “*Boom in the Burbs*”, (5 July 2002).
- David Hensher interviewed by Alan Jones, 2GB, on “*Public Transport*”, (2 July 2002).
- David Hensher interviewed by Tony Delroy, ABC Radio, on “*Migrating Workforce in the City*”, 5 July 2002.
- David Hensher interviewed by Deirdre Macken, Australian Financial Review, “*Mythic City*”, (30 August 2002).
- David Hensher interviewed by Anna Salleh, ABC Science Online (The Lab), on “*Sustainable Development*”, (September 2002).
- David Hensher met with Carlo Lacovini, Senior Consultant, Methodos S.p.A, Italy, on “*Sustainable Mobility – Australia/Europe*”, and “*Car Sharing Schemes*”, 2 November 2002.
- David Hensher and Peter Stopher met with Chinese delegation from the SouthWest Jiaotong University, Chengdu, Sichuan, PR China, including Professors Zhou Benkuan, President, He Yun-an, Head of Personnel, Qipeng Yan, Director, Liu Jianxin, Vice Dean – Post Graduate School, and Chaoming Liu, Dean, on 28 November 2002. Objective was to share ideas on transport management.
- Professor Bill Young wrote an article on car parking and pollution in *Melbourne MX*
- There was a report of the conference paper given by Associate Professor Geoff Rose on car pooling in *Buletin MRC*, the daily bulletin of the Malaysian Roads Conference
- An article on Associate Professor Geoff Rose’s research project on Australian bus safety appeared in *Translink*, the official publication of the Chartered Institute of Logistics and Transport (Rose)

- A report on the role of the Bus Association Victoria's role in assisting the establishment of the Professorial position in Public Transport at Monash University was published in the July edition of *Australian Bus and Coach*

Other

- Shams Rahman was invited to join the Editorial Advisory Board of the Journal: Innovation and Prosperity: an International Journal.
- Shams Rahman was invited to join the Academic Advisory Committee of the Logistics Association of Australia.
- Peter Stopher has been elected as a Fellow of the Institution of Engineers Australia and a Fellow of the Civil College.
- Cam Ngo has been preparing and updating data sets, editing the documentation and testing TRESIS version 1.3. He has prepared a paper titled: Analysing Network Capacity: Through Capacity, Passing Capacity and Holding Capacity.
- Special issue of Transport Policy on Value of Travel Time Savings, guest edited by D. Hensher, J de Dios Ortuzar and Harry Timmermans.
- Peter Stopher was invited to give the Occasional Address in The Great Hall, at The University of Sydney Graduation Ceremony on 18 October 2002.
- Dr Stephen Greaves (ITS Monash) attended an advisory session on data needs with the Department of Infrastructure (DOI) on 20/9/02. The purpose of this advisory session was to review the data needs of the DOI and possible data collection strategies to meet those needs. Professor Peter Stopher was invited down from Sydney to provide his expertise and insight in a number of different areas the DOI is currently considering. The session covered options for the continuous survey (known currently as VATS), new technologies (GPS, GIS), new methodologies (time-use, synthetic data), and different types of surveys (state preference). The session was enlightening and rewarding, and it is hoped that work will continue closely with the DOI in this important area in 2003.
- A public debate entitled "The bicycle – the solution to Australia's 21st century traffic problem?" was held at Monash University in September. It was supported by ITS Monash together with the Graduate School of Environmental Science, the Cycling Promotion Fund and the Monash Green Office. Associate Professor Geoff Rose from ITS Monash spoke on the team for the negative. The debate raised issues such as greenhouse gases, traffic congestion and sustainable transport in the light of the increasing dominance of the car in the lives of Australians. There were questions from the floor at the conclusion of the presentation, and the audience of more than 150 people voted the team for the affirmative as the winners. It was hoped that the debate would raise public awareness about the range of transport options available for the future.

Prestigious Recognition

Professor Peter R. Stopher

Named Fellow by ASCE

WASHINGTON, DC. Dr. Peter R. Stopher, a member of the **American Society of Civil Engineers (ASCE)** and Professor at Sydney University Institute of Transport Studies of Sydney, Australia was recently elevated to the membership level of “Fellow” within the Society. The Fellow designation is considered one of the most esteemed honors that Civil Engineers can receive from their peers.

To be considered for the elevation to the grade of Fellow, an ASCE member must be a legally registered engineer or land surveyor, and have had responsibility spanning at least 10 years in the grade of Member. The member also must be qualified to direct, plan, or design engineering works. An ASCE Member may also be awarded Fellow Grade if he or she has had responsible charge of important industrial business, construction, educational, editorial, research, or engineering society activity, requiring the knowledge and background gained from extensive engineering training and experience.

In bestowing the grade of fellow on Dr. Peter R. Stopher and other ASCE members, ASCE's past president Delong Hampton pointed out that “the work of these prominent civil engineers realizes a major goal: to serve as stewards of the public infrastructure and guardians of public health and safety.”

Dr. Stopher’s Fellow elevation ceremony took place during a meeting of the Society at the International Group in Sydney, Australia.

Founded in 1852, ASCE represents more than 120,000 Civil Engineers worldwide and is America’s oldest national engineering society.

10. INDUSTRY LINKAGES

Other activities by ITS which contribute to industry and community linkages include positions in conference organisations, international committees and editorial positions, as well as overseas visits and public lecture series.

David Hensher met with Stephen Lucas, President, Bus Industry Confederation, Michael Apps, Executive Director, Bus Industry Confederation, John Stanley, Executive Director, Bus Association (Victoria) and Daryl Mellish, Executive Director, Bus & Coach Association (NSW) for discussion on “*Design of Public Transport Summit for the Year 2003*”, (12 June 2002).

David Hensher met with Thomas Chiu from the Australia-China Council to discuss education and training in the areas of logistic management and Becky Chiu, a registered consultant from DEETYA, (26 April 2002).

David Hensher met with Peter Debnam, NSW Shadow Minister of Transport for a briefing on transport reform, (26 April 2002).

Positions

Conference Organisation

- Conference Chair, International Steering Committee for Transport Survey Conferences, International Conference on Transport Survey Quality and Innovation (Stopher).
- Member, Local Organising Committee, 15th International Symposium on Transportation and Traffic Theory, Adelaide, 16 – 18 July, 2002 (Hensher, Rose)
- Member, Scientific Committee, 25th Australasian Transport Research Forum, Canberra, September (Hensher, Stopher)
- Member, Scientific Committee of the International Association of Travel Behaviour Research Conference 2003, Luzerne, Switzerland.

International Positions

- Member, US Transportation Research Board Committee on Telecommunications and Travel Behaviour (Brewer)
- Member, World Conference on Transport Research Society (Hensher, and Taylor)
- Founding member, US Transportation Research Board Committee on Traveller Behaviour and Values (Hensher)
- Member, US Transportation Research Board Committee on Travel Forecasting (Hensher)
- Past President, International Association for Travel Behaviour Research (Hensher)
- Member, Air Transport Research Group (Hensher)
- Member Emeritus, Transportation Research Board's Committee on Traveller Behaviour and Values (Stopher)
- Vice Chair, Committee on Planning, American Society of Civil Engineers (Stopher)
- Member, TRB Committee on Survey Methods (Stopher)
- University Representative to the Transportation Research Board for ITS Sydney (Stopher)
- Member Institute of Transportation Engineers (US), (Stopher)
- Member, American Statistical Association (Stopher)
- Fellow, Chartered Institute of Logistics and Transport, United Kingdom (Clements, Young, Hensher)
- Fellow, Institute of Transportation Engineers, U.S.A. (Young)

Australian Positions

- Member, Faculty of Economics and Business Executive Committee (Hensher)
- Member, Graduate Studies Board, Central Committee and Sub-committee, The University of Sydney (Hensher)
- Chair, Graduate Studies Board, Faculty of Economics and Business, The University of Sydney (Hensher)
- Joint Chair, Teaching & Learning Committee, Faculty of Economics and Business, The University of Sydney (Brewer until February 2002)
- Member, Logistics Management Association (Brewer)

- Chair, ITS Logistics Management Group (Brewer until February 2002)
- Member, School of Business Executive (Hensher)
- Member, The University of Sydney Faculty Restructuring Working Party (Hensher)
- Member, The University of Sydney Environment Advisory Committee (Hensher until April 2002 when committee concluded)
- Member, Department of Urban Services, ACT Territory Plan Review for Strategic Transport Plan for Integrated Land Use and Transport Planning (Hensher)
- Member, Transport Data Centre, Technical Advisory Committee, NSW Department of Transport (Hensher)
- Member, Transport Research Centre (RMIT University) Advisory Committee (Hensher, Young)
- Member, The University of Sydney Faculty of Economics and Business, Research Committee (Stopher)
- Member, Advisory Committee of the Australian Retailing Committee (Hensher)
- Executive Committee Member, Inland Freight Railway Study (Melbourne to Brisbane) (Hensher)
- Member, Central Promotions Committee, University of Sydney, Central (Brewer)
- Academic Board Nominee, Selection and Promotion Committees (Brewer)
- Chair, Postgraduate Program Review, Faculty of Economics and Business (Brewer up to January 2002)
- Acting Head, School of Business, Faculty of Economics and Business, University of Sydney (Brewer up to January 2002)
- Member, Academic Board/Forum, University of Sydney (Brewer)
- Member, Academic Honest Working Party, University of Sydney (Brewer)
- Member, Teaching and Learning Central Committee, University of Sydney (Brewer)
- Chair, Postgraduate Coursework Committee, College of Humanities and Social Sciences, University of Sydney (Brewer up to January 2002)
- Member, Faculty of Economics and Business Executive Committee, University of Sydney (Brewer up to January 2002)
- Additional Member, Undergraduate Review Committee, Faculty of Economics and Business, University of Sydney (Brewer up to January 2002)
- Member, PhD Sub-committee, University of Sydney (Brewer up to January 2002)
- Member, Review Team of the Academic Board Quality Assurance Committee, University of Sydney (Brewer)
- Member, Institute of Transportation Engineers (ITE) Australia and New Zealand Section (Young, Rose)
- Member, Advisory Committee, NRTC Committee on Performance Based Standards (Young)
- Member, Australian Institute of Traffic Planning and Management (AITPM) (Rose)
- Member, Chartered Institute of Logistics and Transport (Brewer, de Alwis, Young)
- Member, Chartered Institute of Logistics and Transport (Victorian section), General Committee and Passenger Transport Group Committee (Clements)

- Member, Transport Research Centre (RMIT University) Advisory Committee (Hensher, Young)
- Corresponding Member, National Committee on Transportation Engineering, Institution of Engineers, Australia (Rose)
- Member, Monash University Faculty of Engineering Board, Steering Committee (Young)
- Chair, Monash University Department of Civil Engineering Management Committee (Young)
- Chair, Monash University Faculty of Engineering Graduate and Further Education Committee (Young)
- Deputy Chair, Monash University Faculty of Engineering Education Committee (Young)
- Chair, Monash University Advisory Committee on People with Disabilities (Young)
- Member, Monash University Education Committee (Young)
- Member, Monash University, Car Parking Policy Committee (Rose)

Editorial Positions

David Hensher is Associate Editor of *Asia Pacific Journal of Transport*, Area Editor of *Transport Reviews*; and is on the editorial boards of *Transport Policy*; *Transportation*; *Transportation Research*; *International Journal of Transport Economics*; *Logistics and Transportation Review*, *Transportation Research Part E* (from 1997); *Journal of Transport Economics and Policy*; *Transportation Planning and Technology*; *Journal of Retail and Consumer Services*, *Journal of Transport and Statistics* and *Cooperative Transportation Dynamics* (online journal). David has been appointed volume and series editor for Elsevier/Pergamon *Handbooks in Transport*.

Ann Brewer is on the International Editorial Advisory Board for *International Journal of Logistics: Research*.

Peter Stopher is on the Editorial Board of *Transport Reviews*.

Bill Young is an Associate Editor of *Transportation*.

Geoff Rose is a member of the editorial board of *Transport Engineering in Australia*.

Reviews of Papers

Staff reviewed papers for a wide range of transport journals and conferences.

David Hensher refereed papers for *Transportation Research*, *Journal of Transport Economics and Policy*, *Transport Reviews*, *Journal of Transportation and Statistics*, *ATRF*, special issues of transport journals for the *International Association for Travel Behaviour Research* and *WCTR 2001*.

Peter Stopher refereed papers for *Transportation*, *Transportation Research*, *Transportation Research Board* and *Transport Reviews*.

Geoff Rose refereed papers for *Road and Transport Research*, and the *ATRF Conference*.

Seminar Series and Policy Workshops

ITS Seminar Series (ITS Sydney)

The following seminars given by invited overseas visitors to ITS were held:

7 May 2002, ITS Sydney Seminar Road Pricing: From Rhetoric to Reality? by Visiting Professor Peter Jones, Director, Transport Studies Group, University of Westminster, UK.

19 August 2002, ITS Sydney Seminar Vendor-Manufacturer partnerships in process industries: Insights from a case study in NZ forestry by Dr Jay Sankaran during his visit from 12 – 23 August 2002.

22 October 2002, ITS Sydney Seminar Churn, Volatility and Elasticity: The problem of conflicting evidence on how easy it is to change travel behaviour by Professor Phil Goodwin, Professor of Transport Policy and Head of the Centre for Transport Studies at University College London. Phil was at ITS from 21 – 24 October 2002.

ITS (Monash) Lectures, Seminars and Workshops

“Travel Time Estimation using Mobile Phones as Probes”- a seminar by Dr Jean-Luc Ygnace

During his time as a visiting researcher at ITS (Monash), Dr Jean-Luc Ygnace delivered a seminar which dealt with the estimation of traffic speeds and travel times using mobile phones as traffic probes. Current travel time estimates are commonly based on the data from detectors embedded in the pavement (eg inductive loops). Developments in cellular positioning and the spread of mobile phones provide the opportunity to use mobile phone equipped vehicles as traffic probes. This seminar, which focussed on a major feasibility study conducted in the Rhone corridor in the south of France, attracted an audience of nearly 30 professionals from state government organizations and the private sector. Dr Ygnace described how traffic speed data based on the mobile phone probes was compared to speeds obtained from inductive loop detectors installed throughout the test corridor. The work indicated that the technology has the potential to produce a major breakthrough for traffic management along freeways not yet equipped with any sensors.

Second annual Ogden lecture

The Ogden Transport Lecture was initiated by the Institute of Transport Studies (ITS) to recognise Professor Ken Ogden’s role in founding Monash’s transport program in 1969. The 2002 Ogden Transport Lecture was delivered by Professor William J. Mitchell, Dean of the School of Architecture and Planning at MIT. His lecture was entitled “e-topias: cities in the digital electronic era” and explored the new forms and functions of cities and highlighted design and planning directions for the future. The speaker and the topic obviously stimulated the interest of the profession and the community and ITS (Monash) was delighted to have Bill Mitchell address a capacity audience in the Shell Theatre in the city.

Maintaining Industry and International Contacts

- Peter Stopher has been active in building relationships with RTA (NSW), Department of Transport (SA), Department of Infrastructure (Vic) and Department of Transport (Qld).
- Shams Rahman – Taiwan Nov 2002.
- Saqif Rahman completed a week's work experience with Gary Mariano (IT) in November 2002 as part of his school training...
- Geoff Rose undertook a series of meetings and technical visits as part of a visit to Malaysia in October to attend the 5th Malaysian Roads Conference. He visited the Control Centre for the Malaysian capital city of Putrajaya, which provided an opportunity to learn about the application of intelligent transport systems in this key city in the multimedia supercorridor. He also had a meeting with the Malaysian Minister for Transport, YB Data Seri Dr Ling which provided an opportunity to discuss development in sea and air ports, railways and urban transport.
- In November, Geoff Rose visited Perth and Adelaide to discuss developments in travel behaviour change programs operating under the TravelSmart banner. Discussions were held with representatives from state and local government agencies and consulting firms.
- Professor Bill Young was invited to present a paper at the International Symposium on Transport Simulation in Yokohama, Japan, in August. The chair of the conference, Professor Masao Kuwahara, had visited ITS Monash from December 2000 to May 2001. The meeting presented a preeminent review of the world status of traffic simulation.
- The visit by Dr Ygnace from the French National Institute for Transport and Safety Research (INRETS) provided an opportunity to strengthen links with industry. A series of meetings was arranged so that Dr Ygnace could meet people working in the intelligent transport systems area in Melbourne. This included telecommunications researchers, representatives from the RACV, Vic Roads and the private sector.

Other Activities

- TRB University Representatives Program. ITS Sydney and ITS Monash have been included in the TRB University Representatives program. This program includes university representatives from the United States, Canada, Japan, Kuwait, Mexico, Peoples Republic of China, Philippines, Slovakia, Thailand, and the United Kingdom.
- ITE ANZ 2002 International Conference on "Transport Operations and Safety (ITS Monash). ITS (Monash) was a major contributor to the Institute of Transportation Engineers Australian and New Zealand Section's 2002 International Conference. The conference was held in Melbourne on 12 and 13 September and attracted registrants from throughout Australia, New Zealand and overseas. In addition to contributing two papers and participating in the exhibition, ITS (Monash) also sponsored the CD Rom proceedings of the conference. The exhibition provided a valuable experience with the focus of the display being the distance education

postgraduate program in Transport and Traffic. The ITS staff who were present responded to questions from many delegates about the program and the course notes for the 15 units now available in the program were on display.

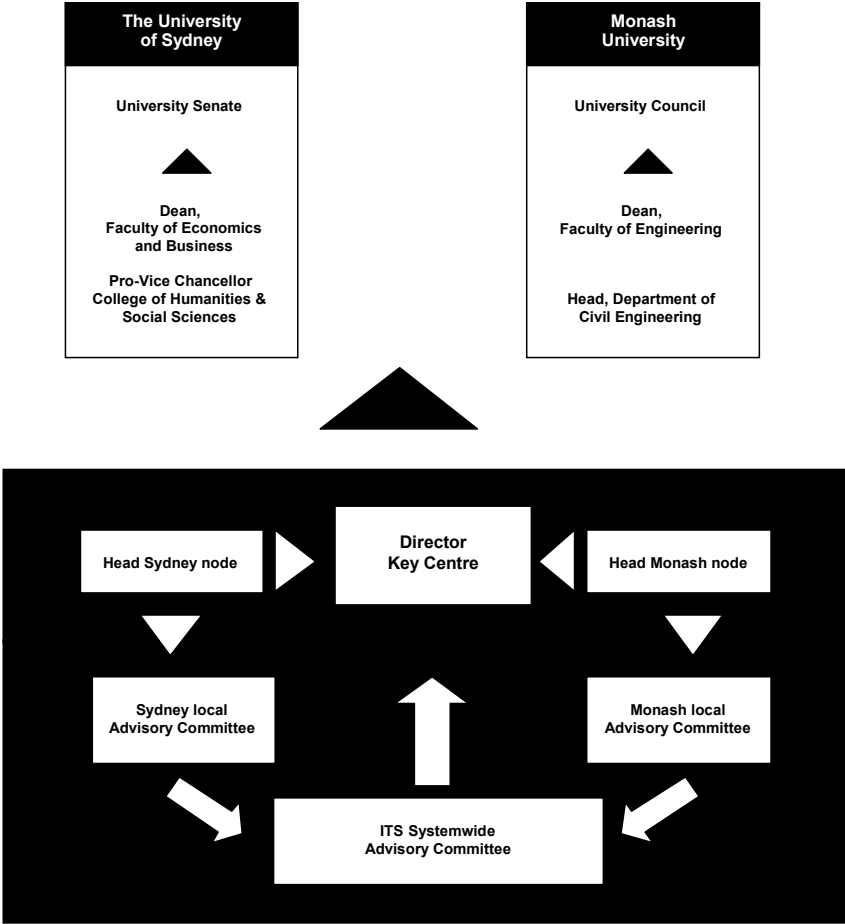
- ITE Student Industry Night (ITS Monash). The annual ITE student industry night was held in August, 2002. The function is arranged so that invited members from public and private sectors of the transport industry may come and talk to undergraduate students about their professional activities. The evening also leaves time for networking and possible employment opportunities.
- Student attendance at AITPM national conference in Perth (ITS Monash). Top student Chris de Gruyter was awarded a grant by AITPM to attend their Perth conference in August. Chris presented a report of his experiences on his return.
- IEAust Sydney Panel Peter Stopher

11. Management structure

The management structure of the Key Centre is shown in the diagram below.

The role of the Advisory Committees at each node is to provide advice on any matters referred to it by the Key Centre Executive, as well as to initiate matters for consideration that are of interest to the Key Centre, such as the teaching and research program and opportunities for participation of industry and government. Recommendations for changing the structure of the Advisory Committee that were approved in 2001 were implemented in 2002. These are:

- That ITS Sydney and ITS Monash separately establish a small Advisory Committee of 10 people to handle node-specific matters, comprising the Head of each node and a representative from the other node. This committee would provide advice on the functional activities of each node.



ITS Sydney Advisory Committee

Prof. David Hensher

Director, Institute of Transport Studies

Prof. Ann Brewer

Director, ITS Logistics Management Group and Director, Industry Programs, Institute of Transport Studies until January 2002.

Prof. Peter Stopher

Professor of Transport Planning, Institute of Transport Studies

Mr Doug Dean

Managing Director, Collex Waste Management Pty Ltd

Mr Keith Campbell

Vice-President, Logistics Association Australia

Mr Don Telford

Divisional Director, Logistics, Toll Logistics

ITS Monash Advisory Committee

The advisory committee for the Monash node is to be re-established in 2003 in response to retirements by a number of individuals who served on the original committee. It is anticipated that the committee will meet early in 2003.

12. FINANCIAL STATEMENTS: ITS-SYDNEY

**These will be included in the final version but we are releasing the annual report now for information.*

Institute of Transport Studies

Statement of Income and Expenditure for the twelve months ended 31/12/2002

INCOME

	2002
	Sydney
	\$
ARC Centre Grants	-
Other ARC Programs	
Other Commonwealth Govt Grants	
Donations	
Membership & Subscriptions	
Graduate Programs	
Fees Education Programs	
Host Institution Support	
Other Income Sources/Interest	
Total Income	_____
EXPENDITURE	
Salaries	
Equipment	
Conference	
Travel	
Accommodation	
Consumables	
Catering	
Other Expenses	
Total Expenditure	_____
Surplus/(Deficit)	()
Accumulated Funds as at 1 January 2003	

Accumulated Funds as at 31 December 2002	
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FINANCIAL STATEMENTS: ITS MONASH

(To be advised by Monash University).

ITS Sydney 2002 Evening of Awards Presentations

The Institute of Transport Studies Annual Presentation of Awards 2002 was held on Saturday, 6 April 2002, at the Forum Restaurant, Darlington Centre, the University of Sydney. The function, attended by 100 guests, was an opportunity for the industry, guests and the Institute to acknowledge the significant achievements of the students in the Institute's Graduate Programs and Industry Program.

At the Institute of Transport Studies Annual Presentation of Awards evening held at the University of Sydney on Saturday 6 April, 33 graduands received their Certificate of Transport Management (CTM(Syd)) in the presence of 100 guests.

Darryl Mellish (ED, BCA(NSW)) presented the Bus and Coach Industrial Association Prize for the Best Student in 2001 to Jason Bailey.

In presenting the award Darryl Mellish congratulated the Institute of Transport Studies for its active and important contribution to the Bus and Coach Industry in NSW and mentioned the enormous value that BCA (NSW) receives from the Quality Partnership with ITS (Sydney). The substantial contribution of ITS (especially Professor David Hensher) in the preparation of the 2002 Submission to IPART was given a special mention. The Graduates in 2002 in the CTM are the 10th year of participants in what can only be described as a hugely successful joint venture in education and training between the BCA and ITS. The signs are that the program continues to thrive and we encourage operators to enrol their new management and operations staff in the July 2002 program (for further details email Loloma Wren on Lolomaw@its.usyd.edu.au). In addition to the CTM program, ITS provides a Certificate of Coach Management as part of the joint venture. In 2001 over 180 individuals completed the CCM and to date in 2002 52 participants have been through the CCM.

In addition to the CTM graduation, students in the ITS graduate transport and logistics management programs were recognised with awards for the top students. Since the early 1990's over 20 operators in NSW have graduated with a Masters degree in transport management from The University of Sydney.

Professor David Hensher, Director Institute of Transport Studies
welcomes guests.



Mr Fred Gennaoui, President NSW Branch of Australian Institute of Traffic Planning and Management presents the AITPM Award for Best Overall Performance by a Student in the Graduate Diploma of Transport Management 2001 to Mr Frederic Horst.



Mr Jo Famularo, Vice President (Education), Logistics Association of Australia presents the Logistics Association of Australia 2001 Industry Logistics Prize to Mr Andrew Komli.



Ms Julie Dryden, Chairman NSW Section of the Chartered Institute of Transport presents the CITIA Ken Hillyar Award for Best First Year Student in the Master of Transport Management Program 2001 to Mr Richard Connors.



Ms Julie Dryden, Chairman NSW Section of the Chartered Institute of Transport presents the CITIA Sir Hudson Fysh Award for Best Second Year Student in the Master of Transport Management Program 2001 to Ms Lai Shan Lau.



Professor Peter Stopher, Professor of Transport Planning, ITS, presents the Institute of Transport Studies Award for Best Overall Performance by a Student in the Master of Transport Management Program 2001 to Ms Oi Mei Chu.



The Institute of Transport Studies 2001 Award Recipients pictured with Professor David Hensher (centre).



DCM Class Photo 2002

**ROADS AND TRAFFIC AUTHORITY NSW
WOMEN IN TRANSPORT MANAGEMENT SCHOLARSHIP 2002**

The Roads and Traffic Authority NSW has funded an annual full-time Scholarship for a woman to undertake the Master of Transport Management (MTM) by coursework at the University of Sydney, commencing in Semester 2, 2002. The Scholarship is valued at over \$12,000.

The first recipient of the Scholarship is Ms Kris Nguyen. Ms Nguyen has a Bachelor of Engineering (Civil) from the University of Technology Sydney and has been employed in the transport industry for a number of years. Professor David Hensher, Director of the Institute of Transport Studies described the RTA support as a significant development in a quality partnership between two organisations devoted to the education of the next generation of transport managers and policy advisers. The Scholarship will be offered annually.



**Ms Kris Nguyen with Professor David Hensher,
Director, Institute of Transport Studies, The University of Sydney.**



**Professor Nathan Gartner, Professor of Civil & Environmental Engineering,
University of Massachusetts who visited ITS in July 2002.**

WHAT ITS MEANS TO OUR STAKEHOLDERS...

"I was just writing to say thanks for the transport economics lectures and to say that I look at a lot of the things at work quite differently because of them."

Tim Dewey, Student

"...I really wish I could have a chance one day working with you - a world renowned expert for a joint transport-air pollution project."

Charles Xu, Environmental Protection Authority

"On behalf of the Environment Advisory Committee may I thank you for the excellent report you (Jenny King) and David Hensher prepared on the recent Survey of the University of Sydney's Key Stakeholders' Views on Environmental Issues. The comprehensive and lucid analysis of the results which you have undertaken provides the University with an effective foundation on which to build its Environment Policy and Implement Strategies and the Committee is most grateful for this."

Professor Ken Eltis, Deputy Vice Chancellor, University of Sydney

"I would like to thank you for your presentation at the Institute Dinner on Wednesday, July 14, 1999. The points you covered certainly raised some interest amongst members. Indeed, the range of options in transport education was quite impressive, particularly in what the ITS has developed over time."

L. J. Harper, Immediate Past Chairman, Chartered Institute of Transport in Australia

"A letter, at long last, to formally thank you for your presentation to our Bus Day seminar last month. We believe it was very well received and supported by local politicians, transport planners and the media, and your contribution has generated considerable interest."

John Collyns, Executive Director, Bus & Coach Association New Zealand

"Thankyou also for your help with the *Journal of Transportation and Statistics*. We have completed our first year and, thanks to contributions from outstanding researchers such as yourself, successfully, I think. Of course, we'd welcome further contributions from you and your colleagues down under at any time."

David L. Greene, Oak Ridge National Laboratory, US

"I am writing on behalf of the National President, Keith Todd to thank you for attending the National Conference in Cairns and for addressing our delegates. Your presence was an essential element in what was a very successful conference."

Ian MacDonald, Conference Director

"The success of ITS is a matter of record and does not need to be recounted here. I am very proud of the small part that I played in providing a home for ITS and an environment which allowed you and your colleagues to get on with the important job of establishing ITS as a centre which is now recognised internationally... I have no doubt that ITS will go from strength to strength in its new home. Please pass on to everybody in ITS my thanks for their help and support in the past and my very best wishes for the future."

"I was surprised and delighted to be made an Honorary Member of the ITS Alumni Association Inc. ITS now has some very distinguished alumni and, of course, it has always enjoyed strong support from the industry and from Government. I am sure that these connections will continue to provide ITS with the support and encouragement that is now essential for all university activities."

Murray Wells, Graduate School of Business

"With my fairly sudden withdrawal from active involvement in University of Sydney affairs, I didn't ever see you to congratulate you on your success in being named as a Commonwealth Key Centre. I became a great admirer of your Institute's achievements and your whole approach..."

Brian W. Scott, Management Frontiers Pty. Ltd.

"If as a result of our association we have made people's travel more pleasant, or the movement of the goods or services they require more efficient, I will be glad. Thanks a million for your part in making my job both enjoyable and rewarding."

Derek Scrafton, Director-General of Transport, SA (retired)

"Thankyou for taking the time to introduce me to staff of the Institute last Friday and for your warm welcome. I found my visit to be most informative and encouraging. I see many opportunities for close cooperation between our organisations."

Stephen Hunter, Director, Bureau of Transport and Communications Economics

"Just a brief note of congratulations for the award of a Key Centre. I was delighted to hear of your news...I know you and your team will do a great job and provide the University of Sydney with a further example of its ability to 'deliver' in research"

Professor Bruce G. Thom, Vice-Chancellor, University of New England

"In a country which is so reliant on efficient and safe transport systems, it is gratifying to know we now have a centre which will play such an integral role in research and lead the way in the development of excellence in Transport Management standards."

D. Geoff Stevenson, Director General, Queensland Department of Transport

"The ITS is already recognised in Australia and Overseas for its leading role in teaching and research in transport. This recognition is the result of many years of hard work by the ITS staff and the leadership you have shown. I am privileged to participate in the ITS program and look forward to a continuing role."

Rodney T. Swan, Managing Director, Business Growth Projects

"I am proud to be associated with ITS Sydney. Their publications have placed them at the forefront of international studies in transportation management."

Professor G.J. Fielding, University of California, Irvine

"The MTM course offered a unique blend of practical Transport Management modules and core MBA modules in the one package. The modules were all well presented with good handouts, reading lists and stimulating assignments. Student participation in lectures was encouraged and, because many students were already in the workforce, their contributions enabled others to appreciate the practical implications of the subject being taught...The MTM lecturing staff are well connected within the public and private sectors of the Logistics/Transport Industry and thus the lectures have a practical focus rather than a heavy bias towards academic theory."

Mel Hindson, Manager, Systems Projects, TNT (graduate)

"I would like to take this opportunity to say how much I have enjoyed working with you and your co-authors. The project has broken new ground for Cambridge and I feel that it has been one of the most important ones that Cambridge has committed to over the last few years. Once again many thanks for the immense patience you showed during the reviewing, I realise that it was long and drawn out, but I hope worthwhile."

Ashwin Rattan, Economics Editor, Cambridge University Press, UK (about 'Stated Choice Methods')

“Great course, great teachers, great admin officer – if my performance was as good as theirs, I wouldn’t be so worried about passing.”

Distance Education postgraduate student in unit review questionnaire

“All very good standard for the difficult task of combining a seminar for so many different user groups”

Delegate at “Safety, Customer Service and Profitability” seminar

“This course is very well designed, to the point, relevant to today’s operations and well managed by Monash University. It has given me extra skills and knowledge to facilitate my position as an Operations Manager”

Course participant, Transport Management Course in Bus and Coach Operations

Well, I’ve now finished the Intelligent Transport Systems subject. I just wanted to say that I found the course very interesting and it has brought me up to speed in this area of Transportation. The various web site links made for a fun way of learning.

Comment from a student in CIV5305 Intelligent Transport Systems