Faculty of the Built Environment

Transport and Society

Professor Glenn Lyons

Inaugural Lecture, 1 May 2003

Professor Glenn Lyons
Unit for Transport and Society
Faculty of the Built Environment
University of the West of England
Frenchay Campus
Coldharbour Lane
BRISTOL BS16 1QY

Tel 0117 344 3219
Mobile 07748 768404
Fax 0117 344 3899
Email Glenn.Lyons@uwe.ac.uk
Website www.transport.uwe.ac.uk

Unit for Transport & Society

In 1963 the Buchanan Report advocated a combination of new road capacity, improved public transport and traffic restraint as a means to tackle congestion. Forty years on and the advice from many transport experts remains the same. However, the scale and complexity of the problems associated with a mobility-dependent society have grown. The need for politicians to make tough but realistic policy decisions on transport is now becoming unavoidable. They must confront the realities of living with the car as must the general public. Policymakers now also have social well-being and sustainable development moving higher on their agendas alongside transport. Against such a backdrop, this article makes the case for transport research, policy and practice to acknowledge the inherent links between transport and society. It argues that greater recognition and understanding of such links is crucial to confronting the realities we face. Transport does not merely serve society, it shapes society, as in turn society shapes transport. The future of each is dependent on the other and we must recognise this. The article advocates in turn that the transport profession must move from its heartlands in engineering and economics to also embrace such disciplines as sociology and psychology. A factual picture of the many facets of present-day society is presented and the implications for travel demand are discussed. Through considering phenomena such as social norms and habitual behaviour, the article then argues that the travel choices and behaviour of individuals are not simply a matter of economic optimisation. This points to the need for decision makers to be furnished with better evidence concerning the transport problems we face and the potential efficacy of measures that might be taken. Discussion of public attitudes and the role of the media is included in the context of assessing how politicians can be encouraged and supported in their implementation of realistic but unpopular policies.

Transport and Society

Professor Glenn Lyons
Unit for Transport and Society, UWE, Bristol

Introduction
In 1924 the first white line was laid down in a London street as an experiment in solving the traffic congestion problem, which was considered at that time to have become acute (see Figure 1). Further back still there were serious concerns that 'pollution' from horse-drawn traffic would leave London knee-deep in the consequences.

Figure 1. First white line in London (image reproduced from Morton, 1934)

Ever since it seems that we have been waging a constant battle against the problems arising from mobility. Notable in the list of problems are congestion, pollution and adverse social impacts. In 1997 Professor Phil Goodwin gave his inaugural lecture at UCL, London. It was titled 'Solving Congestion' (Goodwin, 1997). As time has passed we seem no closer to achieving that aim. At best it could be argued that we are managing congestion. At worst, we are coping with congestion while, at the same time, our transport system undergoes a graceful degradation under the burden.

What the experts say
A key report has set out recommendations for action to tackle congestion – it advocates a co-ordinated policy involving a combination of new road capacity, development of public transport and traffic restraint measures. This is not, however, a recent publication. The Buchanan Report ('Traffic in Towns') was published in 1963 (Buchanan et al, 1963) to "foresee the full development of motor transport, to discern the problems arising, and to show what in principle can be done about them".

In the intervening forty years the number of licensed cars on Britain's roads has quadrupled and passenger travel (measured in passenger kilometres) has increased by nearly two and a half times.

In 2002, 28 professors of transport submitted jointly an open letter of concern to the Secretary of State for Transport, Alistair Darling MP (TPS, 2002). In this carefully worded article, the thrust of the message was clear: a combination of selective road-building and improvements to alternative means of transport to the car will not improve travel conditions *unless* accompanied by traffic restraint.

So it seems that, whilst not universally accepted, the position of transport experts has not altered dramatically in forty years. Rather what has changed is that the problem has grown in scale and complexity. We have moved from the Motor Age being "at a comparatively early stage" in 1963 (Buchanan, 1963) to 2003 when the *Information Age* is now at a comparatively early stage. The Motor Age is now at its height or, it might be argued, past its prime.

What the politicians do

Transport experts, for the most part, are not politicians. They are able to keep a safe distance from the wrath of the electorate. Voters in the main do not like any prospect of their car use being compromised. Perhaps rather naïvely and unsympathetically they expect to have, simultaneously, unfettered levels of mobility *and* a reliable and efficient transport system.

The motoring public are happy to advocate that public transport should be improved but with an implicit if not expressed assumption that it will be used (more) by *other* people. Traffic restraint, however, is another matter. Surely it is an outrage to further impede car use by reducing its priority on the highways or by *charging* the poor motorist to do battle with congestion? After all, has the motorist not suffered enough already with being in traffic jams and paying the Treasury dearly for the privilege in the form of road and fuel tax?

As a result, while politicians have been happy to engage in debate over transport challenges and to commission numerous studies, they have been reluctant to turn intent into action or at least action in the full sense which seeks to improve alternatives to the car *and* restrain car use.

One can argue that politicians should *lead* the democratic will of the people rather than follow it but the mindset of the politician has remained unaltered for generations – their overarching aim is to gain and remain in power and to do so they pay careful heed to public opinion – opinion consistently fuelled and influenced by the media.

What the future holds

So then, it appears we are at a stalemate – the transport experts can see a way forward but it is not one that the politicians are prepared to pursue. If this is the case then what can the next generation of transport professors hope to achieve? Can there be any value in publishing further articles that, in various ways, (re)state the case? The answer to the second question in relation to this article is something for the reader to decide. The answer to the first question forms the substance of the article.

2003 will mark an historic year for Britain's transport system. It is the year that saw the introduction of the world's most ambitious coordinated scheme to tackle urban congestion. On 17 February 2003 traffic restraint in the form of congestion charging was introduced to Central London (Dix, 2003). A £5 daily charge to enter the central area has been accompanied by substantial investment in surface public transport and preceded by highway improvements.

In London's Mayor, Ken Livingstone, it seems the transport experts have finally found a politician who is prepared to lead the democratic will of the people.

While criticised for its failure to voice its support for the London scheme before its launch, the Government too should be applauded for its integrated transport White Paper (DETR, 1998a) which, once supported by the necessary primary legislation (DETR, 2000a), bestowed powers on local authorities to introduce pricing-based traffic restraint measures from which they are able to reinvest the revenues in further transport improvements. Applause too is due for the substantially increased level of public spending on transport planned between 2000 and 2010 (DETR, 2000b).

The introduction of traffic restraint in Central London has also not led to chaos and a motorists' uprising. Rather, at least to date, it has reduced traffic flows and improved traffic movement to the extent in fact that buses have faced the problem of arriving too early at stops rather than too late. Perhaps then the stalemate of forty years is now being broken. The experts' advice appears to have

been right all along and, while London some will argue is atypical rather than typical of other UK cities, politicians nationally and nationwide can have renewed confidence in delivering a policy that combines transport improvements with traffic restraint. London has now set a lead for others to follow.

A lot then has happened since Goodwin's lecture in 1997. There can be cause for renewed optimism in the prospect of being able to reduce if not solve congestion. Other circumstances may also be, coincidentally, conspiring to support this optimism. The importance of social capital has gained prominence at the heart of Government policy and sustainable development is now espoused by governments around the world.

The policy position

In the UK it is the Government's expressed wish to reduce social exclusion and to ensure a better quality of life for everyone, now and in the future. Such a wish encompasses the "goals of economic growth, social progress, environmental protection, and the prudent use of natural resources together, rather than at another's expense" (DEFRA, 2003). In other words, development is crucially no longer driven solely by economic imperatives. Such imperatives have, hitherto, for the transport sector dictated that traffic must be kept moving at all costs – time spent travelling and in traffic jams is deemed wasteful to the economy.

The Prime Minister has stated that "This Government's goal is a good quality of life for all. This means we can't just focus on narrow economic factors – vitally important as these are – but must also take into account the social and environmental health of our country…it is only through sustainable development that we can meet these ambitions" (ibid).

In 1999 the Government set out ten guiding principles for its Strategy to achieve sustainable development (ibid):

1. Putting people at the centre - Sustainable development must enable people to enjoy a better quality of life, now and in the future.
2. Taking a long term perspective - Sustainable development thinking cannot restrict itself to the life of a Parliament or the next decade.
3. Taking account of costs and benefits - Decisions must take account of a wide range of costs and benefits, including those which cannot easily be valued in money terms.
4. Creating an open and supportive economic system - Conditions must be created in which trade can flourish and competitiveness can act as a stimulus for growth and greater resource efficiency.
5. Combating poverty and social exclusion - Everyone should have the opportunity to fulfil their potential, through access to high quality public services, education and employment opportunities, decent housing and good local environments.
6. Respecting environmental limits - There are limits which should not be breached if serious or irreversible damage to some aspects of the environment and resources is to be avoided.
7. The precautionary principle - Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing cost- effective measures to prevent environmental degradation.
8. Using scientific knowledge - Where possible decisions should be taken in light of scientific advice or research.
9. Transparency, information, participation and access to justice - Opportunities for access to information, participation in decision-making, and access to justice should be available to all.
10. Making the polluter pay - Much environmental pollution, resource depletion and social cost occurs because those responsible are not those who bear the consequence – if the polluter is made to pay for those costs this offers an incentive to reduce harm and means that costs do not fall on society at large.

Alongside these principles sit the Government's over-arching objectives for transport (DETR, 1998b):

- to protect and enhance the built and natural *environment*;
- to improve *safety* for all travellers;
- to contribute to an efficient *economy*, and to support sustainable economic growth in appropriate locations;
- to promote *accessibility* to everyday facilities for all, especially those without a car; and
- to promote the *integration* of all forms of transport and land use planning, leading to a better, more efficient transport system.

Of course it would be naïve to assume that such laudable goals across policy areas can be pursued comprehensively and consistently over time, particularly since achieving such goals is a long term endeavour which must compete with more immediate problems and demands. As the Chairman of the Sustainable Development Commission has observed of sustainable development, "as a cross-cutting, even all-embracing concept, it will always work against the grain of Whitehall, the skyline of which remains as dominated today by its vertical policy silos as in any preceding administration. A succession of admirable efforts to get more of the 'joined-up' feel between the silos has certainly helped, but it's still the case that policy gets sorted out and budgets spent without a great deal of cross-cutting co-ordination."

A look forward
At this point it is appropriate to make some summarising observations:

- Avenues of escape from the realities we face in transport are now closed (Goodwin, 2003).
- The need and opportunity for tough but realistic transport policy has come of age.
- Social capital, i.e. 'society', now sits alongside transport high(er) on the political and public agenda.
- Policy aspirations dictate that transport must develop in such a way as to support society.
- Meeting these challenges calls for joined-up thinking and if Government is to have any prospect of achieving this then our transport experts must become more adept at making the links between transport and society.

Transport and society
The policy objectives outlined earlier can be interpreted as setting the following agenda for the future of transport:

> Our transport systems must be developed and operated in such a way as to support a vibrant economy and an equitable society in which all individuals are able to fulfil their potential and to enjoy a satisfactory quality of life. This must be achieved without affecting adversely the built and natural environment in which society exists.

This is a significant departure from previous approaches to transport. Once upon a time there appeared to be a mentality of 'transport is here to serve'. Architects and custodians of the transport system were not asked to reason why but to meet the demands society placed upon them. If more motorised mobility was its desire then success was marked and judged by the ability to deliver adequate system capacity in a cost-effective way. However, in more recent times the illusion of such a comparatively simple regime has been shattered. As society's levels of mobility have intensified and as a growing array of problems has become apparent, we are being forced into recognising that transport does not merely serve society, it shapes society, as in turn society shapes transport.

Government itself recognises the need for an integrated approach to transport to extend beyond integration within transport and between transport systems and services. It must also include the integration of transport with the environment, land-use planning and policies for education, health and

wealth creation. In short, transport is inextricably linked to society and lifestyles; and the linkage is two way.

Although awareness and acceptance of this reality is growing, our understanding of the relationships between transport and society is limited and inadequate. Politicians will wish to argue that they create evidence-based policy. However, the evidence that exists currently is incomplete and in some instances ambiguous or even misleading.

Under the 'transport is here to serve' regime, evidence has been implicitly taken to be 'that which can be counted' from which it follows that 'if you can't count it, it doesn't count'. We have for decades sought evidence that can be used to advise, usually through the use of modelling techniques, decision makers on how best to meet projected travel demand with transport supply. Precious little account has been taken of the impacts on such 'evidence' of social and technological change. Indeed neither has account been taken of the possibility of influencing or managing travel demand as opposed to taking it as a given.

Government itself acknowledges that its transport planning and investment is based on incomplete evidence. In its Ten Year Plan (DETR, 2000b) it states that "social and technological changes will also alter patterns of behaviour in unforeseen ways" and "the likely effects of increasing Internet use on transport and work patterns are still uncertain, but potentially profound, and will need to be monitored closely".

In order to address the agenda for the future of transport as defined above, there is an urgent need to better understand the root causes of travel demand and how these are changing and can be changed over time. To do so will require that established approaches and methodologies employed to furnish decision makers with the 'facts' are challenged and where necessary replaced, revised or enhanced.

In acknowledging the importance of social context, pursuit of better understanding will need to take much greater account of certain social science disciplines such as psychology and sociology. Transport studies must move outwards from its heartlands in engineering, mathematics, computing, IT and economics.

A social sciences departure

The need for transport experts to encompass the knowledge base of social sciences merits a brief but important departure.

What is encompassed by 'social sciences'? A recent commission into the state of social sciences in Britain (Commission on the Social Sciences, 2003) acknowledged that there is "not a simple or unambiguous specification of the social sciences". It viewed social sciences as " 'disciplined curiosity about societies in which we all live' leading to the creation and sharing of social knowledge." The commission identified the following disciplinary areas as having a particularly significant element of social sciences: anthropology; business and management studies; economics and econometrics; education; geography; law; politics and international studies; psychology; social policy and administration; social work; and sociology.

What capacity is there within the social sciences to begin addressing transport issues? Collectively British social sciences research is ranked second only to that in the US. In terms of the availability of individuals, Table 1 compares the number of male and female acceptances onto full-time undergraduate university courses in different subjects for 2001.

Transport professionals have typically been drawn from the top three subject areas in Table 1 and increasingly from geography. However to date, far fewer transport professionals have their origins in politics, sociology or psychology. The transport profession remains male dominated and characterised by the theory, mental models and thought processes of engineers, mathematicians and economists.

In order to see the profession equipped to fully address the links between transport and society it would appear that more women must be attracted into transport studies.

Table 1. Acceptances to full-time under-graduate courses in different subjects in 2001 (Source: UCAS)

subject	male	female
engineering	16855	3096
mathematics	2509	1497
economics	3696	1578
geography	1369	1467
politics	1671	1185
sociology	1160	3393
psychology	433	1936

The commission's report identified a further challenge to be addressed – the social sciences are subject to weak interface management, i.e. they are ineffective in communicating their work and knowledge to policymakers and other stakeholders. It would be fair to include the transport studies community as such a stakeholder.

Aims of the article

This article cannot hope to make up for the disciplinary imbalance adopted hitherto in addressing transport. However, the intention is that it will raise awareness and contribute as a catalyst to reorienting the direction of transport research, policy and practice such that greater account is taken of society, lifestyles and social and technological change.

The focus of the article turns later to consider factors that underlie and influence travel choice, behaviour and ultimately patterns of travel and car use. Phenomena such as social norms and habitual behaviour challenge the notion that individuals' travel choices are driven (solely) by economic optimisation. We must ask where prejudice, faith, pride, loyalty, fear, keeping up appearances, peer pressure, responding to advertisements, ambition, greed and so on fit into our established 'logical' framework of transport analysis employed to deliver guidance to politicians. This part of the article delves very much into 'disciplined curiosity about society'. Prior to this, the section below provides a factual picture of that society. This portrays the complex pattern of interrelated trends that symbolise how, as individuals and collectively, our society is developing. Such trends have significant implications for travel demand and these are discussed. They also provide an important context for observing, understanding and influencing choice and behaviour. The concluding section attempts to summarise the main messages emerging from the article and makes some suggestions for the way ahead.

Social trends

The UK's Office for National Statistics periodically publishes 'Social Trends' (ONS, 2003). This flagship publication draws together statistics from a wide range of government departments and other organisations to paint "a portrait of British society" through a sequential focus on different social policy areas. Selective information is drawn from the 310 pages of the 2003 report and is presented and discussed below including consideration of implications for transport.

Social capital

OECD defines social capital as 'networks together with shared norms, values and understandings that facilitate co-operation within or among groups'. Indications are that social capital in the UK is being eroded:

- In 1959 56 per cent of adults agreed that 'most people can be trusted'. Social trust has since declined with the figure down to 45 per cent in 2000.
- The proportion of people who generally trust British governments fell from 39 per cent in 1974 to 16 per cent in 2000 with an accompanying decline in electoral turnout.

- With regard to neighbourliness, in 1984 40 per cent of people perceived their neighbourhood as one in which people 'go their own way' and 40 per cent as one where people 'helped each other'. In 1992 these figures had changed to 49 per cent and 31 per cent respectively suggesting a possible decline in community cohesion.
- Statistics show that as the length of residence in an area increases so too do social networks and social engagement.

Indications then are that we are becoming increasingly an individualised society (borne out further by later statistics on households). It is likely that such individualism is being perpetuated in part by the growing levels of car-based mobility in society (and mobility in the housing and job markets). Travelling alone inside a metal shell with windows (i.e. single occupancy car travel) is not conducive to social interaction. Increased mobility leads also to greater spatial distribution of daily activities, diminishing the apparent importance of local community cohesion for those who lead mobile existences and in turn diminishing the extent of community cohesion that remains for those unable to be as mobile and who are 'left behind'.

Voter apathy might imply an opportunity for a government to proceed with less popular but ultimately beneficial policies for the longer term. However, the decline in trust of governments when coupled with unsavoury policies and events can ignite and vocalise adverse public opinion as epitomised by the fuel tax protest of September 2000 (referred to again later).

Population
The UK population has grown from 52.8 million in 1961 to 58.8 million in 2001 (an increase of 11 per cent). 51 per cent of the population are female. Since 1961 the number of people aged 65 and over has increased by 51 per cent to 9.4 million with over three times as many (1.1 million) now aged 85 and over compared to 1961. The population's ageing trend is attributable to lower fertility rates and improving life expectancy.

With regard to migration, in the 1970s and early 1980s there was a net loss of people from the UK. This has now changed. Population growth is supported by an overall increase in net migration into the UK – 126,000 net in 2001.

A crude interpretation of these statistics is that (potential) users of the UK's transport system are getting older and increasing in number. In terms of pressures on the UK's natural and built environment it is population density rather than the absolute population size that is of significance. In 2000, the number of persons per square km in the UK was 240. This compares to 389 in the Netherlands; 231 in Germany; 108 in France and 30 in the US (UN, 2002).

Households and families
Since 1971 the number of households in Britain has increased by over 30 per cent to 24.4 million. Table 2 highlights the stark trend in the growth of smaller households. Since 1971, average household size has reduced from 2.9 people to 2.4. Divorce, decline or delay in marrying and increasing affluence are all contributory factors to this trend.

Although most children (78 per cent) still live in the traditional family household headed by a couple, over the past 30 years the proportion of lone parent households with dependent children has doubled from 3 to 6 per cent.

As household and family structures have changed so too has the role of many grandparents. They are engaged increasingly in the care of their grandchildren as the level of participation of women in the labour market has increased (see later).

This increase in household numbers is a worrying trend in terms of transport. The household rather than the individual is often assumed to represent the tripmaking unit. Households are reducing in size

as well as increasing in number. Those living in larger households have greater opportunities to share journeys and combine trips. Grocery shopping for the entire household can be addressed by trips made by one individual rather than all. In principle cars owned by the household can be shared and more flexibly used in conjunction with other means of travel. The reverse is true for those in smaller households.

Table 2. Households by size in 2002 (based on ONS, 2003; Table 2.1)

	households (millions)	per cent increase since 1971
one person	7.1	111
two people	8.5	43
three people	3.9	10
four people	3.4	8
five people	1.2	-18
six or more people	0.5	-56

Labour market

Being in employment typically requires (more) travel outside the home, generates more disposable household income which permits, if needed or desired, more household expenditure on transport and can create more complex patterns of daily activity, heightening the need for flexible mobility.

More people were in employment (27.7 million) in 2002 than at any time in the last 40 years. Since 1987 the number of people in employment has increased by 2.8 million – 2.1 million of which are women who now account for 46 per cent of those employed.

The makeup of the economy has changed. The manufacturing sector has declined. Meanwhile the largest increase in the last 20 years has been in financial and business services which now accounts for about one in five jobs.

Despite the apparent gender balance now in the workforce, women represent 82 per cent of part-time workers and only 37 per cent of full-time employees. One in four employees overall now work part-time - an increase of almost a third since 1987.

In terms of mobility in the employment market a third of employees stay in a job for less than two years with over half staying for less than five years. Employees do, however, tend to eventually find long-term job matches. As at 2002, nearly six per cent of full-time employees were looking for a new job. Of these seven per cent were doing so because the journey associated with their present job is unsatisfactory.

About a quarter of working men and more than one in ten working women are working more than 50 hours a week in the UK. A fifth of workers are dissatisfied with the number of hours they work.

Nearly three million more people in employment now than in 1987 plainly exerts more demand on the transport system. However, crucially for transport, the makeup of employment has changed. Part-time workers by definition will be travelling to and/or from work at off-peak times. To focus transport provision on the morning and evening peak periods may therefore be short-sighted.

The substantial increase in female workers, whether full or part-time must also be accounted for (see later for a comparison between men and women of daily use of time). Women much more than men must juggle household and childcare responsibilities alongside their paid employment (between 1987 and 2001 the number of private and voluntary sector registered day nursery places increased by nine times). This demands greater flexibility in the patterns and timings of trips – something public transport provision is not easily able to address.

Growth in the service sector implies a greater proportion of jobs which are concerned with information handling. Unlike jobs in the manufacturing sector, such jobs are less dependent on being carried out at a given location. This presents opportunities to reshape and reduce travel associated with employment.

Income and wealth
Household disposable income per head increased in real terms (adjusted for inflation) by 125 per cent between 1971 and 2001. Social well-being is by no means synonymous with economic well-being but the latter often influences the extent to which people are able to participate in society.

Since 1980 economic inequality has been marked. As at 2000/2001, average original income (before any state intervention) of the top 20 per cent of households was 18 times greater than that of the bottom 20 per cent. Final income (after state intervention) saw this reduced to four times.

Even after state intervention, economic inequality remains. This is significant in a society in which participation in society, i.e. *access*, has become increasingly dependent upon motorised mobility. Such mobility comes at a cost. Indeed while, overall, the cost of car use in real terms is cheaper than use of public transport, the initial capital outlay means that a substantial proportion of those in the lowest household income bracket are dependent on public transport.

Average pensioner income in recent years has grown in real terms and at a faster rate than earnings. Indications then are also that the characteristically time rich retired population are becoming more cash rich. As their total share of the population also grows it might be inferred that a growing number of people are disposed to greater levels of recreational activities much of which requires (more) travel and travel to different destinations and at different times of day to the working population.

Expenditure
In the last 30 years household expenditure in real terms has increased by over 200 per cent. Transport is second only to housing, water and fuel as an expenditure category now representing 15 per cent of overall expenditure. Having accounted for inflation, UK household expenditure on transport and travel has increased by a fifth over the past decade.

As noted at the beginning of the article, we are now at a comparatively early stage of the Information Age. Household expenditure on communication currently represents only 2 per cent of overall expenditure. However, spending on communication is eight times higher than 30 years ago.

Health
The proportion of the population who are overweight or obese has been increasing. By 2001, 21 per cent of males and 23 per cent of females aged 16 and over in England were obese. 47 per cent of men and 33 per cent of women were overweight.

Obesity is a major factor associated with heart disease, diabetes and premature death. Diet and exercise are combatants of weight problems. However, regular exercise now eludes many people. Thanks to the sedentary lifestyle afforded by the car, cycling and walking are now seldom a by-product of going about one's daily routine. If they are indulged in at all it is as a 'leisure' pursuit.

Housing
Since 1901 the number of dwellings in England has increased by 238 per cent to 21.3 million (20.9 million households). This can be ascribed to the trend towards smaller households rather than the much more modest increase in population size.

Between a quarter and a third of householders would like to see the following aspects of their area improved: public transport service; local amenities, parks and leisure facilities; crime and vandalism; and opportunities and facilities for children and young people. It could be inferred from this that a substantial proportion of the population perceive a sub-standard local community environment and

therefore look to maintain a greater or to widen their spatial range of access. Something for which the car is perceived to be necessary given the level of public transport service provision.

One in ten of all households have changed residence in the last 12 months. Reasons for moving home are varied and vary by tenure. One in five in the privately rented sector move for job related reasons. Only one in ten who own with a mortgage move for this reason. Those privately renting and those owning with a mortgage each represent 36 per cent of all moves in 2001/2002.

As stated earlier, as at 2002, nearly six per cent of full-time employees were looking for a new job. This coupled with the rate of change of residence noted above underlines the highly dynamic nature of (relative) home/workplace locations with consequent implications for changing travel patterns and opportunities for effecting travel behaviour change, notably in relation to mode choice. However, it should also be noted that in 2001/2002 of those who were owner-occupiers in England who had moved in the previous year, two in three had moved less than 10 miles to their new home.

Environment

Although the UK has succeeded in reducing its emissions of CO_2 by one tenth over the last decade it remains the most significant greenhouse gas. It contributed 84 per cent of the potential warming effect of man-made emissions in the UK in 2000. Emissions from transport between 1970 and 2000 grew by 87 per cent – doubling the sector's share of overall emissions.

In 2001 91 per cent of adults were fairly or very concerned about the environment in general (over a third were very concerned). In terms of personal actions taken on a regular basis to limit adverse environmental impact, people living in smaller settlements (rural) are less likely than those in larger settlements (urban) to use public transport, cycle or walk instead of using the car.

Transport

The number of trips made per person per year has actually fallen slightly over the last decade (from 1091 in 1989-91 to 1019 in 1999-2001). However, the total distance travelled per person was almost two and half times higher in 2001 than in 1961. Cars vans and taxis accounted for 53 percent and 85 per cent of annual distance travelled in 1961 and 2001 respectively.

The implication is clear – (car) trips are getting longer, or, to put it another way, destinations are getting further away. Cars owned by households in rural areas travelled an annual distance of 16700 km compared to 13800 km for those owned by households in large urban areas. Hence patterns of ownership and use differ by location.

The number of licensed cars in Britain stood at 26 million in 2001 (four times greater than in 1961). To date men have been more likely than women to hold a driving license but the gap is closing fast. In the last 30 years the proportion of women with licenses has doubled – 60 per cent now hold licences compared to 82 per cent of men.

Individuals in the highest income quintile of households made eleven times as many business trips and five times as many commuting trips as those in the lowest quintile. Overall, nearly half the distance travelled by household cars is for commuting and business reasons.

Transport Trends (ONS, 2003) argues that "the availability of bus services is fairly good overall" on the grounds that nearly 90 per cent of households in Britain live within 13 minutes' walk of a bus stop with a service at least once an hour. However, such a measure is at best a crude proxy for the ability of individuals to use such bus services in order to adequately participate in society. The measure takes no account of physical and financial barriers to people using the bus nor does it reflect whether service routes map onto destinations in people's daily routines or whether, for the part-time worker, the hourly service is running early in the morning or late at night when they need to use it.

Buses are, nevertheless, the most widely used form of public transport (although bus travel in London accounts for a third of all passenger journeys on local buses in Britain).

Surveys of public opinion are numerous. However, politicians can take heart from some of the results. The 2001 British Social Attitudes survey found that nearly three quarters of adults considered it very or fairly important to 'cut down the number of cars on Britain's roads' (coupled by nearly all adults supporting the importance of improving public transport).

Figure 2 attempts to offer a comparison of some key (transport) trends from the time of the Buchanan Report to the present day (2001). The number of licensed *private* cars has increased by 270 per cent to 23.9 million. Passenger distance travelled per year using cars vans and taxis has increased by a similar amount (237 per cent) to 624 billion passenger km. To suggest that car ownership and use are not closely correlated in the UK would seem unreasonable. The number of households meanwhile has (only) increased by 46 per cent to 24.4 million. The proportion of households owning at least one car has doubled and now stands at 74 per cent.

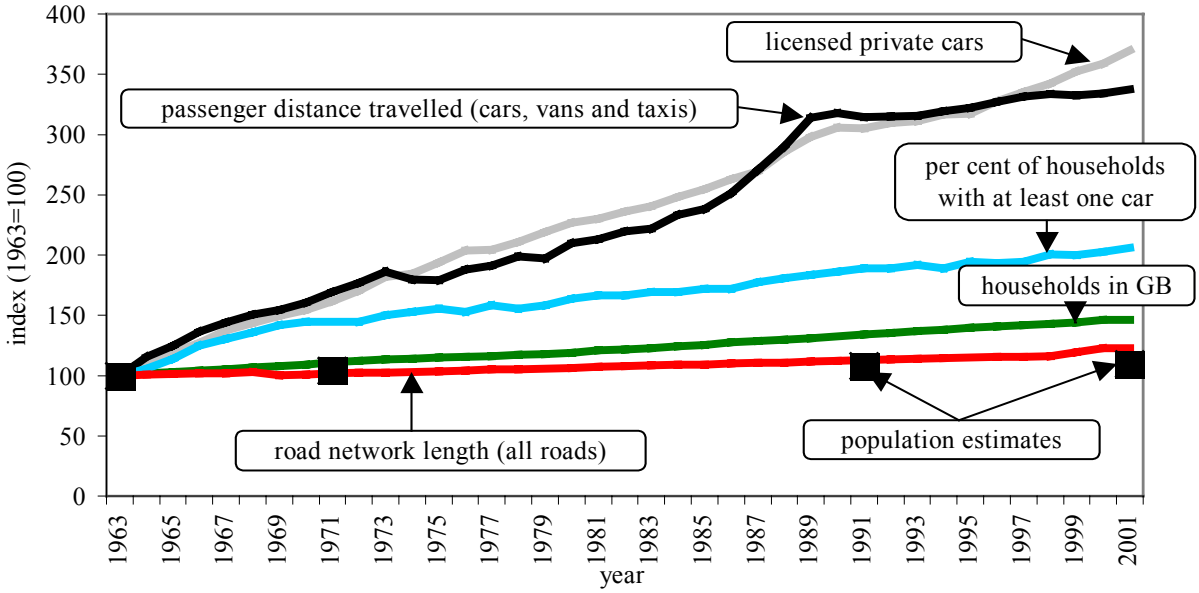

Figure 2. Normalised comparison of key transport trends 1963-2001 (Sources: ONS, 2003; and DfT, 2002)

In spite of such a massive increase in the amount of travel over the period, Britain's road network has only increased in length by a quarter. Its ability to cope under such a burden of demand must be a credit either to dual carriageways and motorways, effective traffic management, a spreading of travel across the day (to exploit temporal spare capacity) or simply the tolerance of the motoring public when it comes to sitting in traffic jams.

Lifestyles and social participation

Figure 3 shows how men and women divide their day up. Though men work or study for longer than women, this is offset by the greater level of household and family care, shopping and childcare that women engage in. Both sexes devote nearly one and a half hours to travel and to eating each day. Well over two hours each day is devoted to watching television by both sexes – more than double the amount of time for social life.

This latter point raises some interesting issues. Why is so much more time spent watching television than socialising? Perhaps it is because the former is more affordable or readily accessible. Half of television viewing is not carried out in the company of other household members. Such viewing is

apparently not performing a social function but rather it offers a form of entertainment, education or relaxation (perhaps a substitute for reading for pleasure). This in turn raises the question of whether, thanks to mobile technology, people will be able increasingly to watch television while travelling and achieve the same level of satisfaction (Lyons, 2003). Could this substitute for television watching in the home, and, by converting travel time into activity time, facilitate longer and longer journeys being made with more time spent travelling?

Access to increasingly sophisticated technology products has grown considerably in recent years. Household mobile phone ownership shot up from 17 per cent in 1996/97 to 65 per cent in 2001/02. Household access to the Internet also quadrupled over a similar period reaching 40 per cent in 2001/02.

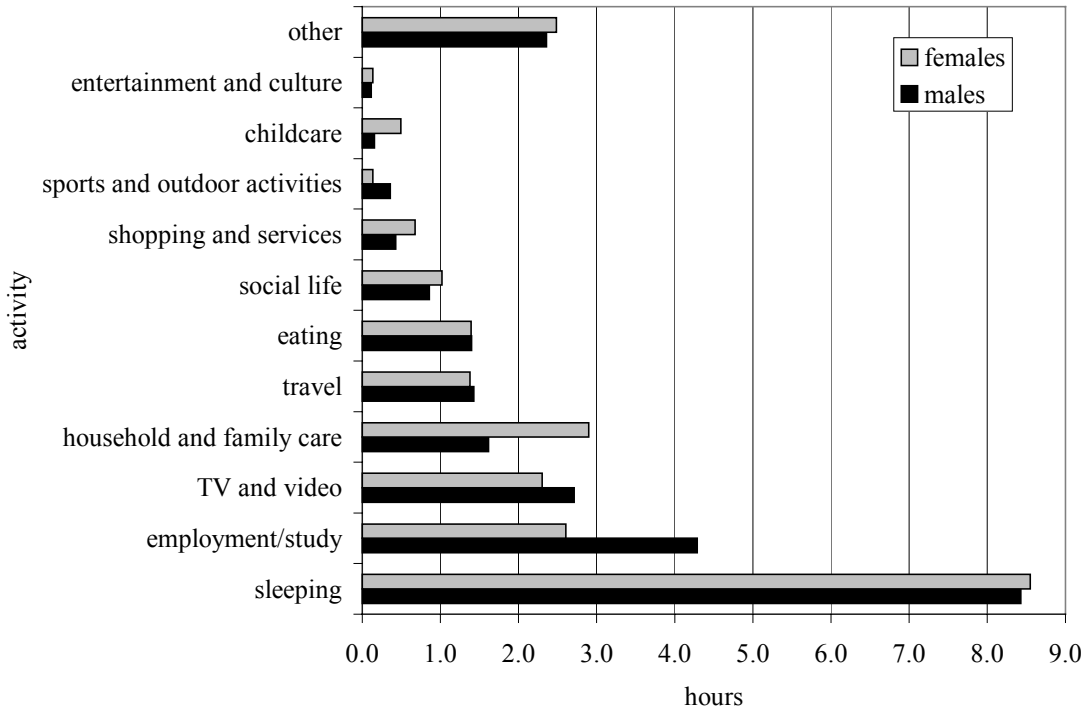

Figure 3. Daily time spent on different activities by sex (reproduced from ONS, 2003; Figure 13.2 and sourced from the UK 2000 Time Use Survey)

As a society we are spending a small but rapidly increasing amount of disposable income on communication. Creations of the Information Age such as mobile phones and Internet access are providing a new flexible means of connectivity between people, goods services and opportunities and on a very large scale. Growth of the Internet (the physical infrastructure for movement of information) has been far more rapid than previous expansion of the highway infrastructure (for movement of people). Likewise growth in home ownership of computers with Internet access (the 'vehicles' for using the Internet) has been far more rapid than the growth experienced in household car ownership.

The connectivity provided by both transport and computer networks is ultimately about providing their users with *access* enabling participation in society. This suggests strongly that, with the transport network's capacity to provide society with access now stretched close to the limit, the capacity of computer networks must now play a key role in providing access. In effect, *virtual* mobility, or more specifically virtual access should form *part of* an integrated transport strategy.

Society summed up
Social trends in the UK can be summarised as follows in terms of significant issues for us to be aware of and reacting to in transport:

- We live in an increasingly individualised and ageing society.
- Households are growing in number but reducing in size with a resultant loss of economy of scale when it comes to household mobility demands.
- The number of licensed cars has increased at a greater rate than the number of households and women will soon be as likely as men to hold a driving license.
- The number of trips we make has not increased but journey lengths have, as dependence on the car and household expenditure on mobility have increased.
- There has been a tendency to view 'women and the elderly' as a minority consideration in transport planning and policy and yet increasingly they should be the major consideration.
- We have record numbers in employment with nearly as many women as men and the former make up a large proportion of the one quarter of employees who now work part-time.
- Public transport may have served society well in the past but its ability to meet the needs and expectations of modern lifestyles is diminished.
- Potential flexibility of workplace location has increased as the number of jobs in manufacturing have declined and those in information handling have increased.
- The rate of change of job or household residence is substantial and creates an important dynamic in the system.
- Fitness is no longer a by-product of working or getting to work for many people – we sit in our cars and then sit in our offices working the longest hours in Europe.
- Disposable income, though not evenly distributed, has increased.
- Although transport accounts for a significant amount of household expenditure, household expenditure on communication has increased rapidly.
- Access to and the sophistication of mobile technologies is easing the burden of individualised mobile existences.
- Our transport system is under great strain and the Government itself has now admitted that it expects things to get worse.

Factors influencing choice and behaviour
A glimpse at social trends yields an appreciation of the complexity of the challenge we face in taking informed and calculated decisions to shape a better future for both transport and society. There are limits too to the extent to which government policy and intervention plays a part in shaping the future. Globalisation, capitalism and market forces also exert significant influence.

Consider, for example, the case of third generation mobile phones (3G). 3G with its capability to offer multimedia mobile communications (including sending and receiving video messages and photos and browsing the web) was seen as the future darling of the telecommunications industry. So much so that in 2000 the UK Treasury raised £22.5bn from its auction of 3G licences. The price tag has left leading telecoms companies with serious financial commitments. They cannot afford 3G to fail. In 2003 we are now seeing the availability of 3G handsets being intensively marketed. As the public we will be persuaded of the virtues of, and become eventually dependent upon this new form of mobile communication. That such communication substantially supports and even encourages mobile lifestyles and by implication more travel will be an issue that transport policymakers can, directly, do little about.

There remains, nevertheless, a significant amount which transport policymakers can do in terms of influencing and managing travel demand. However, this differs in one key respect from steps that have been and are taken to manage traffic (a longer standing and well-established tradition in the transport profession). Managing traffic is seen by the public in the main as trying to accommodate its mobility wishes. Managing demand by contrast is, and is seen to be, a manipulation of, or constraint upon, public wishes in relation to mobility and people's daily routines. It is, therefore, a much more politically sensitive area.

Many policy options for managing demand are now recognised. What needs greater attention is not only the social context (addressed earlier) in which such policies would be introduced, but also our understanding of public reaction and behavioural response to such measures and ultimately their effectiveness. The latter issues are particularly crucial for politicians.

We need to consider what factors influence choice and behaviour so that in turn decision makers can be (more) effectively advised on appropriate formulation and implementation of policy. Five key factors are introduced and considered below.

Social norms

What is meant by social norms? There appears precious little discussion of them in academic literature and their neglect even in the field of sociology is bemoaned (Therborn, 2002). Therborn provides a rare but valued discussion of social norms. Norms tell us what is normal and what we ought to do. They reduce uncertainty and thereby contribute to social order by implicating that those who do not conform to the norms act 'wrongly'.

Why do individuals comply with social norms? It can be because of subconscious habit or routine (returned to later). Alternatively it can be "out of a desire to belong and/or to be held in esteem and respect, or out of fear of ridicule, ostracism, dismissal or legal punishment" (ibid). Our compliance with norms is also influenced by what we believe others are doing. If we believe most are complying then we are more likely to do so ourselves than if we believe others are flouting the norms.

"Norms define the meaning of social membership, members' expected contribution to the social system, and the proper rewards of their membership and/or contribution. As such, norms are ubiquitous, and they are central to any functioning social system" (ibid).

Therborn also notes that "Changing circumstances, new experiences and new knowledge tend to call forth demands for changes or abolition of old norms and for the creation of new ones. Actors' experiences and perceptions of alternatives, and scientific findings, change foci of attention and notions of what is important or not." (ibid).

Therborn challenges and compares the economic mode of explanation of human action (centred upon utility maximising 'actors' with stable preferences) with the sociological approach (in which action depends on values, norms and interpretations). He concludes that "there are good reasons to expect that much human behaviour is motivated by variable melanges of utility maximisation and normativity" (ibid).

There are undoubtedly many norms associated with or influencing our routines and travel behaviour. It is normal to use a car almost regardless of the journey length. It is normal to be ignorant of what public transport services have to offer. It is normal to feel that travel time is wasted time and something to be minimised. It is (increasingly) normal to own more than one car. It is (or has been) normal to be apathetic towards environmental issues. Conversely it is not normal to self-inflict inconvenience by not using the car. It is not normal to make conversation with strangers on public transport. It is (increasingly) not normal to move house following a change of job. The lists could go on.

However, as Therborn implies, norms are not fixed and given. They change over time because of circumstance, experience and changing societal priorities. Sometimes change can be rapid or almost instant. The September 2000 fuel crisis changed what was normal with dramatic impacts on travel behaviour. Research during the fuel crisis (Chatterjee and Lyons, 2002) found that a third of commuters used public transport, cycled, walked or car shared instead of driving. A quarter of parents walked or cycled their children to school instead of driving and one in seven car users shopped more locally than usual for groceries, going either by car, walking or cycling. Once the crisis ended norms appeared to revert back to their former state.

One wonders if a (more moderated) form of motor fuel rationing had persisted whether changed norms might have prevailed and persisted. It might have become normal to share lifts to work; normal to cycle to the local store for top-up grocery shopping; normal to use videoconferencing for meetings; or abnormal to drive children to school.

The fuel crisis of course was not a deliberate Government policy to restrain car use. Had it been then the pain and indignation of the rapid period of change in social norms would likely have provoked (even greater) public outrage.

A key feature of the fuel crisis was that it affected huge proportions of the population. Individuals could be in no doubt that they were not alone in changing their travel behaviour. Ordinarily this is not the case. Travel awareness campaigns can do their best to change attitudes with a view to changing social norms but they generally fail to convince the individual that they personally should move in the direction advocated. This situation is referred to as a social dilemma.

Social dilemmas

For an excellent discussion of social dilemmas see Felkins, 2001. He refers collectively to social dilemmas as 'The Voter's Paradox'. This can be illustrated through a transport example.

Commuters to an urban centre have a choice of travelling by car or by public transport (let us assume that both modes share highway space and that there is ample provision of public transport services). With all or most of the commuters travelling by car they all face (collectively self-inflicted) congestion. If an individual chooses to switch from car to public transport (s)he will remove a car from the road and thereby marginally reduce the traffic level and improve the journey for all other car users and public transport users. This may well, however, be at a greater personal 'cost' to the individual concerned than the benefit they receive from the switch. If all or most car users switch to public transport then all commuters would benefit more than they would if no-one switched.

In this situation the rational car user will remain in their car. This is explained as follows. If the individual is the only one to switch then they will lose while all others will gain. If the individual switches and sufficient others do likewise then the individual will gain. If others switch and the individual does not (i.e. the individual is a freerider) then (s)he will gain. Such rational behaviour regrettably results in all commuters being (or remaining) disadvantaged.

People's behaviour is not always so strictly governed. Some will feel good in switching to public transport and thereby doing their bit to fight congestion. Others will be influenced in their actions by how they will be judged by others – driving a car to a public transport conference when there is a viable public transport alternative and when you are known to have done so by your peers might be such an example!

A means of removing the paradox is to directly reward or punish the individual for their actions. This is where congestion charging comes into its own. By being 'punished' by a £5 charge to enter Central London, the individual can stand to gain by switching from car use *irrespective* of whether or not others switch.

Habitual behaviour

Research by Kenyon and Lyons (2003) reveals that in general people are multi-modal travellers. However, this does not imply that they are particularly flexible in choosing their means of travel. Rather it means that for different purposes and different (types of) destinations, people tend to make use of different modes. It is therefore inappropriate to label individuals as 'car users', 'public transport users', 'cyclists' or 'pedestrians' because in most cases individuals are, at different times, some or all of these.

Kenyon and Lyons found that individuals are highly habitual in their travel choices to the extent that for the majority of journeys there is no choice to be made at all. It appears that for a given journey an individual will have a *primary* and *default* means of travel predetermined through habit. 'Primary' refers to their preferred and normal means of travel. 'Default' refers to the alternative means of travel they (automatically) turn to if for some reason their primary means of travel is unavailable.

Such observations tend to fly in the face of standard economic theory that has been employed for many years in interpreting and modelling travel behaviour and choice. Such theory assumes individuals to be rational, optimising agents (as noted earlier). Lee (2002) offers a critique which argues that such an approach is untenable. Human beings are not 'lightning calculators' able to continuously optimise their behaviour. Indeed it is argued that the prospect of maximising choice is becoming harder rather than easier in the Information Age. The time and/or cost of obtaining and processing data that promises increasingly to allow the individual to move towards optimisation can exceed the benefit of the move towards optimisation that can be achieved. Lee argues that such information overload "forces actors to employ habits and rules for reducing the set of search space in order to comprehend the high volume of information". Consequently individuals when making travel choices are inclined, in the face of the 'cost' of searching for the optimal outcome, to settle for a 'good enough' solution. It is in this way that travel habits are formed and indeed car dependence becomes more deeply embedded.

Our present 'economics-oriented' representation of travel choices is therefore arguably naïve or at least too simplistic.

Are we then able to challenge and change habitual behaviour? The brief critique above could spell worrying news for those in the business of providing traveller information services (many of whom will, at least in the past, have tended to be aligned to the economics-based interpretation of choice).

Kenyon and Lyons (2003) argue that information can influence choice. The challenge is in minimising the 'cost' of individuals being able to compare travel alternatives. This can then have particular merit in situations where long term habit and a 'good enough' approach to travel choices has rendered an individual's awareness or perceptions of viable and perhaps better travel alternatives outdated, misguided or simply no longer something that is part of their consciousness.

The UK Government is currently pursuing its vision for a service that could address this challenge. Transport Direct (Lyons et al, n.d.) aims to provide a one-stop-shop multi-modal traveller information service, initially via the web, to allow individuals to compare travel options across modes and to plan, book and pay for journeys and receive real-time update information. The explicit hope is that for some people, for some journeys and on some occasions this will result in changes to travel choices which include retiming of journeys, alternatives routes or ultimately the decision to use an alternative to the car.

There are also natural junctures in people's lives when greater opportunity exists to change behaviour, namely life stages or life events. At such junctures personal circumstances can typically be changed significantly. The Government's UK-Online service (www.ukonline.gov.uk/) focuses on such life events as learning to drive, having a baby, moving home, looking after someone and retirement. At these points, when individuals will be more inclined to review and appraise their options (including those for travel), there is an opportunity to target efforts to positively change behaviour and establish new, more sustainable habits.

Pain, gain and the media

As acknowledged already, human beings are creatures of habit and by implication tend to be resistant to change. Yet an often unsung and perhaps diametrically opposed characteristic of human beings is that they are incredibly versatile and adaptable to change. As creatures of habit we perceive the prospect of change as painful even if we impose it upon ourselves but particularly if it is to be forced

upon us by others. Yet often undertaking change leads to a better future state for the individual affected – in other words they gain from change or society does collectively.

The media are adept at exploiting the public's fear of change and the prospect of pain. Such things can grab the public's attention. Ever after the 'bad news' story, the media will invariably elect to dwell upon and promote the (potential) pain of planned or imminent change rather than the potential gain that may be realised following change. Gain is a 'good news' story of far less value in terms of column inches.

Consider an example of a family moving house. The pressure to move has been created by the offer of a new job to the head of the household. This brings with it an increased household income and the opportunity to live in a nicer dwelling (the gain). The parents recognise or at least perceive that once the move is complete they will have attained a better quality of life. As such they are prepared to endure the pain (real not perceived) of the moving process – dealing with estate agents, house hunting and the cost and logistical nightmare of moving.

The children, meanwhile, perceive from the moment news of the intended move is announced that their lives will suffer – the familiarity and security of what they know will be taken away, they will lose their friends and they will have to go to a new, strange and unwelcoming school.

The reality beyond the move for the children is that they love their new home, they make new friends quickly and have done some growing up in the process. All members of the household have attained a gain which was, on reflection, worth the pain.

This example differs in one key respect from that of the politician preparing to introduce traffic restraint measures. The agents at work in manipulating the attitudes and perceptions of those who are fearing the pain of change are performing different roles. In the example of the house move, the children's parents and other friends and relatives offer the children repeated reassurances about the move – focusing on the gain rather than the pain. The Government and indeed the public are afforded no such reassurances from the local and national media when new restrictive transport measures are proposed or are being introduced – focus is on the pain rather than the gain.

Human versatility and adaptability to change is a huge opportunity that is seldom exploited by decision makers and politicians in transport. Three alternative or complementary lines of approach would be required to change this situation:

1. Educate the public to be able to see through the media hype and have faith in a gain with (possible) pain culture.
2. Work with the media to identify ways in which promotion of the gain rather than the pain can be made newsworthy (and preferably more so than news (only) of the pain).
3. Notwithstanding the timescales of politics, adopt a resolute approach to introducing change with a preparedness to 'ride the storm' of media hype and public opinion and a firm belief that the post-change gain will restore and even begin to build public confidence.

At the very least, we have now seen evidence that the third line of approach can work. The Mayor of London came under intense public and media pressure in the run up to introducing congestion charging in Central London. On the morning of its introduction (Monday 17 February 2003), The Times carried the headline 'Late payers spark fears of traffic charge chaos'. The Daily Mirror headlined the issue with 'Mayhem Fear as Congestion Charge Arrives'. Meanwhile the Sun was providing cut-out number plates for its readers showing '5OD U KEN'. The following morning the corresponding headline from The Times was 'The day the lights turned green' and the Daily Mirror proclaimed 'Not a Jam in Sight as Feared Plan Begins'. Since then in the wake of the scheme being hailed largely as a success, the media has shown a distinct lack of interest.

Functional thinking

Geels and Smit (2000) offer a highly instructive insight into why many visions about transport futures have been wrong. They have focused specifically on transport technologies. Table 3 summarises the pitfalls and lessons.

The Table below provides an important reality check to those who are engaged in the research, promotion or industry of transport technologies. Terms used in this field such as 'Intelligent Transport Systems' and 'Advanced Traveller Information Systems' are prone to be misleading. Strictly speaking the terms 'intelligent' and 'advanced' refer to the technological sophistication of the applications and solutions being advocated though they can wrongly infer that such solutions will be *effective* (Lyons, 2002).

Table 3. Key features that have shaped images of the future role of new technologies in transport (adapted from Geels and Smit, 2000)

Contemporary concerns and hopes	Perceptions of the future are shaped and coloured by current problems and aspirations resulting in optimistic rather than plausible scenarios
New technological trajectories	The pathway of technological innovation and product development may significantly change introducing new possibilities and expectations concerning the role in, and impacts on society of the technology
New for old substitution	The role of a new technology is often phrased in terms of replacing or substituting the old technology whilst in reality old and new technologies often co-exist, serving different markets, circumstances or purposes.
Social practices neutral	It is often wrongly assumed that the pool of social practices and needs remains unchanged thereby implying that new technology will (only) substitute certain social practices. In reality the pool of social practices can increase.
Narrow functional thinking	Through only functional thinking, new technologies can be judged capable of enabling the purpose of an activity to be fulfilled. This neglects to consider other social and psychological aspects of an activity that may not be addressed.
Societal embedding	The process of societal embedding of new technologies can be viewed an unproblematic when in practice many social and institutional adjustment processes have to take place which may not be straightforward and can take some time to achieve.
Hopeful monstrosities	Promoters in particular of an emerging technology can voice unrealistically high expectations. This may be to serve the purpose of creating a 'breathing space' for investment and development to continue. It may also be a consequence of neglecting the co-evolution of technology and society, and underestimating the practical difficulties and resulting slowness of processes of societal embedding of technology.

This is not to devalue the role of new technologies since they will undoubtedly, for better or worse, be significant in the future of transport. Sometimes these 'intelligent' systems are indeed effective. The intention rather is to sound a cautionary note concerning the decisions we make and the approaches we adopt when seeking to take advantage of what technology has to offer.

Although the commentary in Table 3 relates particularly to future transport technologies it raises issues of significance more generally for planners and policymakers who are working to influence future travel behaviour. One point in particular in the Table merits further discussion in this article, namely the often narrow functional thinking that is applied in relation to (planned) developments.

Consider for example the trip to the grocery store. Thinking functionally then the purpose of such a trip is to replenish household supplies. With the advent of the Internet, this function can now be fulfilled without leaving one's home thanks to online shopping. However, for many people going shopping is an excuse to get out of the house, to meet people and even to socialise. Teleshopping fails to meet this need. Social needs also vary between the sexes. According to the UK 2000 Time Use Survey (reported in ONS, 2003), 48 per cent of men *like* non-food shopping and 38 per cent like going to the shops to buy food. This compares to 75 per cent and 51 per cent of women respectively.

Social need can raise a number of other questions for transport. For example why is it that in a survey of over 1000 commuters in the US (Mokhtarian and Solomon, 2001) the average reported *ideal* one-way commute time was not zero but 16 minutes? One suggested reason is that people value a transition time between work and home.

In the case of males the reason may be even more rudimentary still. In his well know work 'Men are from Mars, Women are from Venus', Gray (1993) highlights and explores the distinctly different nature and styles of communication of men and women (analogous perhaps with the degree of communication or lack of it between the engineers and economists and the sociologists!). He refers to men needing to retreat into their caves for undisturbed time to think and reflect. For modern man without a cave at his disposal, viable substitutes are the toilet or the sealed environment of their motor car. The daily commute therefore may be enabling an important social function to be satisfied.

Conclusion

This article has sought firstly to endorse the need now for tough but realistic policies and actions for transport. It has highlighted the broader social policy context in which transport now sits and the principles of sustainable development that cut across all policy areas.

Against this backdrop the case has been made that if transport is to develop in such a way as to support society then transport experts must become more adept at making and understanding the links between transport and society. Achieving this will necessitate a greater engagement of the transport studies community with the social sciences and notably disciplines such as sociology and psychology.

The article has attempted to paint a picture of past and present UK society and to consider the transport and travel implications. Lastly it has sought, from the social sciences perspective, to identify and interpret some of the key sociological factors at work in relation to human actions and behaviour with a view to identifying opportunities to positively influence travel behaviour.

One could not hope to do justice to such a vast topic as 'transport and society' in a single article and a number of areas and issues should not be deemed unimportant by virtue of their brief or absent coverage. For example the importance of the distinction between mobility and access when considering transport developments cannot be overstated. This in turn leads to the complex topic of social exclusion and its relationship with transport which is the subject of a recent report by the Government's Social Exclusion Unit (SEU, 2003). The need to recognise and act upon the interactions between land use and transport is of similar importance to the interactions between transport and society. There has also not been space to challenge the longstanding approach to, and assumptions made in, the economic appraisal process in the UK in relation to transport schemes.

The article has perhaps succeeded in complicating our interpretation of transport rather than narrowing down from the existing pool of knowledge to the point of offering specific advice to the policymakers. For this no apology is made. It is, however, acknowledged that ultimately this will be an important consideration to be borne in mind. For knowledge and understanding to be effective it must be made accessible to decision makers and conveyed in such a way that enables them to act upon it.

The article has dwelt upon a holistic view of transport and society. For real political progress to be made there may well need to be compromise that sees a more simplified and narrowly defined

interpretation put forward. Nevertheless a reminder is needed that if politicians wish to formulate evidence based policy then there is much work still to be done in furnishing them with suitable evidence.

It is the author's belief that future success lies in taking bold steps to ensure car use is rationalised. This does not imply that car use as a whole is bad. Rather it emphasises that as a society we need to limit car use to the journeys and circumstances for which it is the most sensible means of travel.

For the reasons outlined in this article it is also the author's belief that rationalising car use cannot be left to the individual. The prevalence of social norms and The Voter's Paradox dictates that Government must take the lead. To this end the congestion charging scheme in London is to be applauded. It has succeeded in administering a collective 'kick up the backside' to the City's motorists with favourable effect.

Traffic restraint will not be needed at all times and places. When and where it is deemed necessary it will be crucial that politicians feel able to provide consistent and full support. We still have much to do in rising to the challenge of how to keep the public and media on side when tough but effective decisions are called for.

Let us hope that the written words of the experts today will not, in a further forty years from now, be seen to have fallen on deaf political ears. Buchanan and his team could not have foreseen the arrival of the Information Age or certainly not in the form it has taken nor in terms of the speed in which it has been evolving. For the coming forty years not only is it hoped that decision makers will be more far sighted and resolute in acting upon the advice of their transport experts, but also that they will seek to harness the opportunities of non-corporeal means of access that the Information Age has brought. Future transport must have accessibility not mobility at its heart.

References

Buchanan, C. et al (1963). Traffic in Towns. HMSO.

Chatterjee, K. and Lyons, G. (2002). Travel Behaviour of Car Users During the UK Fuel Crisis and Insights into Car Dependence. In Lyons, G. and Chatterjee, K. (eds.) *Transport Lessons from the Fuel Tax Protests of 2000*, Ashgate, 123-160.

Commission on the Social Sciences (2003). *Great Expectations: the Social Sciences in Britain*. March, Academy of Learned Societies for the Social Sciences. Available (as at 15/04/03): http://www.soc.surrey.ac.uk/~scs1ng/C.Univ-Gt.Expectations.pdf

DfT (2002). *Transport Statistics Great Britain: 2002 Edition*. Department for Transport, October, TSO, London. Available (as at 16/04/03): http://www.transtat.dft.gov.uk/tables/tsgb02/

DEFRA (2003). *Achieving a better quality of life – review of progress towards sustainable development*. Government annual report 2002, Department for Environment, Food & Rural Affairs. Available (as at 15/04/03): http://www.sustainable-development.gov.uk/ar2002/index.htm

DETR (1998). *A New Deal for Transport- Better for Everyone*. Transport White Paper, TSO, London. Available (as at 15/04/03): http://www.dft.gov.uk/itwp/paper/index.htm

DETR (1998b). *Guidance on the new approach to appraisal*. TSO, London. Available (as at 15/04/03): http://www.dft.gov.uk/itwp/appraisal/guidance/

DETR (2000a). *Transport Act 2000*. TSO, London.

DETR (2000b). *Transport 2010: The Ten Year Plan*. July, TSO, London.

Dix, M. (2003). Congestion Charging in Central London. in Thomas, S. (Ed) *Sharing in Success – Good News in Passenger Transport*, Chapter 3, CICC, Cambridge.

Felkins, L. (2001). *An Introduction to the Theory of Social Dilemmas*. Available (as at 15/04/03): http://www.magnolia.net/~leonf/sd/sd-1.html

Geels, F.W. and Smit, W.A. (2000). Failed technology futures: pitfalls and lessons from a historical survey. *Futures*, 32(2000), 867-885.

Goodwin, P.B. (1997). *Solving Congestion (when we must not build roads, increase spending, lose votes, damage the economy or harm the environment, and will never find equilibrium)*. Inaugural

Lecture for the Professorship of Transport Policy, University College London, 23 October. Available (as at 15/04/03): http://www.cts.ucl.ac.uk/tsu/pbginau.htm

Goodwin, P.B. (2003). Towards a Genuinely Sustainable Transport Agenda for the UK. in Docherty, I. and Shaw, J. (eds.) *A New Deal for Transport*, Blackwells, in press.

Gray, J. (1993). Men are from Mars, Women are from Venus. HarperCollins Publishers, London.

Kenyon, S. and Lyons, G. (2003). The Value of Integrated Multimodal Information and its Potential Contribution to Modal Change. *Transportation Research Part F - Traffic Psychology and Behaviour*, 5(4), 267-287.

Lee, W. (2002). *The challenge of institutional theory to neo-classical view on optimising behaviour*. Available (as at 15/04/03): www.doc.ic.ac.uk/~wwhl/download/management-essay.pdf

Lyons, G. (2001). From Advanced Towards Effective Traveller Information Systems. In: Hensher, D. Ed. *Travel Behaviour Research The Leading Edge*, Chapter 47, 813-826, International Association of Travel Behaviour Research, Pergamon.

Lyons, G. (2003). Future mobility - it's about time. *Proc. 35th Universities Transport Study Group Conference*, January, Loughborough.

Lyons, G., Harman, R., Austin, J. and Duff, A. (forthcoming). Integrated Traveller Information - Transport Direct. Forthcoming in Hine, J. and Preston, J. (eds.) *Integrated Futures and Transport Choices: UK Transport Policy Beyond the 2000 Transport Act*, Aldershot, Ashgate.

Mokhtarian, P.L. and Salomon, I. (2001). How derived is the demand for travel? Some conceptual and measurement considerations. *Transportation Research A*, 35, 695-719.

Morton, H.V. (Ed) (1934). *The Pageant of the Century*. Odhams Press Ltd, London.

ONS (2003). *Social Trends*. No. 33 – 2003 edition, Office for National Statistics, TSO, London.

SEU (2003). *Making the Connections: Final Report on Transport and Social Exclusion*. February, Social Exclusion Unit.

Therborn, G. (2002). Back to Norms! On the Scope and Dynamics of Norms and Normative Action. *Current Sociology*, 50(6), 863-880, SAGE.

TPS (2002). *Confronting Realities*. Transport Planning Society website. Available (as at 15/04/03): http://www.tps.org.uk/activities/policy/policy.htm

UN (2002). *World Population Prospects: The 2002 Revision*. United Nations Population Division. Available (as at 15/04/03): http://esa.un.org/unpp/