INDEPENDENT TRANSPORT COMMISSION

Traffic and Towns: The next 50 years

ITC Occasional Paper

Number Six

January 2015

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Traffic and towns: the next 50 years

Preface

One of the most important policy challenges we face is how we can effectively integrate land use and transport planning in order to improve our living conditions. When done well, this results in thriving settlements with excellent connectivity, but poorly integrated policy often leads to undesirable outcomes and a substandard urban environment. The ITC is keenly aware of these issues and part of our charitable remit is to connect these policy areas.

We are therefore delighted to present this insightful paper reflecting on the seminal Buchanan report and exploring what the future holds for traffic and our towns. When Colin Buchanan's report was released in 1963, it was at a time when it appeared that the motor car would dominate our lives and our built environment. Buchanan was aware of the challenges this posed, and framed his conclusions as a set of choices and trade-offs, cautioning against urban sprawl and warning about the costs of retrofitting existing towns.

Many of Buchanan's predictions have come to pass, but in the light of the recent fiftieth anniversary of his report, this seems an appropriate point to ask what travel in our towns might look like in another fifty years. The changes currently afoot could be as significant as those experienced in the 1960s. Peter Headicar's perceptive paper alerts us to the major shifts we are experiencing in Britain in terms of population growth, settlement patterns and travel trends. For the latter, he points to the ITC's own co-sponsored 'On the Move' research which has been exploring why car use has been stagnating in recent years at a time when inter-urban rail travel has been rapidly increasing.

This paper offers a number of conclusions that policy makers would do well to heed in an election year. In the context of moves to devolve decision-making powers to cities and localities, an opportunity is identified to take a much more ambitious stance than has hitherto been possible. We at the ITC look forward to exploring further these themes, which will also be the topic of our 2015 Annual Lecture, but in the meantime we commend this paper to all those interested in the future of transport and our towns.

Dr Matthew Niblett, Secretary-General
Independent Transport Commission

January 2015

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Acknowledgements:

This report was authored by Peter Headicar, Department of Planning at Oxford Brookes University. The author would like to offer warm thanks to readers including Professor Peter Jones, Simon Linnett and Alan Baxter CBE for their comments. The genesis of this paper can be traced to a public lecture given at Cardiff University in 2012.

The ITC would also like to record its gratitude to our Core Benefactors, a list of whom can be found on the main ITC website. The views expressed in this paper are those of the author alone and do not necessarily represent the collegiate view of the ITC.

January 2015

Cover photo: Modern urban shared street design, New Road, Brighton. Photo by DeFacto, available under a Creative Commons Share Alike license.
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Introduction

This paper is in the nature of a think-piece prompted by the 50th anniversary of *Traffic in Towns*, otherwise known as the Buchanan Report after its principal author Colin Buchanan. This immensely influential report was commissioned 'to study the long term development of roads and traffic in urban areas and their influence on the urban environment'. It was prompted by the seemingly overwhelming threat posed by the then impending onset of mass car ownership.

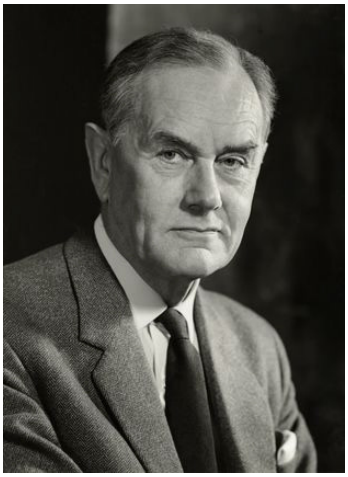

Figure 1: Sir Colin Buchanan

A defining feature of the report – one of particular significance to the Independent Transport Commission – is the way in which the subject was approached in terms of the relationship between travel and traffic on the one hand, and land use and the environment on the other. The extent to which its forecasts have been borne out by subsequent events and the manner in which its recommendations have (or have not) been translated into planning practice in the intervening years provides a ready template for understanding conditions in England's towns and cities today[1].

Reviewing the present situation within this longer-term context is timely since just when the transition to mass car ownership appears to be nearing its end (as anticipated) there is evidence that the nature of 'automobility' as a dominant mix of technology and associated social values is entering a new era (Dennis and Urry). 'The next 50 years' signals this paper's objective of highlighting possible changes over the coming decades and inviting debate on appropriate public policy stances.

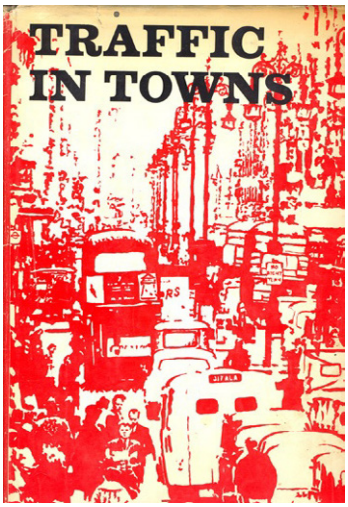

Figure 2: Traffic in Towns (1963)

Buchanan's report focused on the future of 'Traffic IN Towns'. However, failure to achieve integrated land use and transport planning in relation to movement *between* neighbouring towns has resulted in undesirable outcomes that are different in kind but arguably no less significant than those within them. In this paper a broader spatial perspective is adopted – hence my title of 'Traffic AND Towns'.

The paper is in four sections:

1. First, it summarises the context in which the *Traffic in Towns* report was written, its forecasts and recommendations;
2. Second, it contrasts the situation today, highlighting the nature and source of differences from the anticipated outcomes;
3. Third, it identifies likely longer-term changes in population, car ownership/use and settlement patterns;
4. Finally, it considers their implications for transport policy.

[1] A fuller retrospective has been written by Colin Buchanan's grandson Paul (Buchanan 2013)

The Traffic in Towns report

Traffic in towns has been problematic since before the days of the motor vehicle. It is almost inevitable that this should be so. Towns derive their economic and social rationale from the concentration of activities in one place, but as they grow the movements they generate progressively worsen conditions on streets for travellers and non-travellers alike. As motorisation became established in the inter-war period it was thought – mistakenly – that urban traffic problems could be resolved by the building of bypasses or ring roads. Traffic congestion was not the only problem. In 1939 4,500 pedestrians were killed on the nation's roads: ten times the number today even though traffic volumes were only a fraction of present day levels.

From the mid 1950s rising incomes enabled a rapid growth of private car ownership and the resulting increased traffic and its attendant problems prompted the commissioning of *Traffic in Towns*[2]. At the time many people were conveniently sceptical that mass car ownership would materialise – that it might become the mode of choice for the working class, for example, or that we would follow the trend already evident in the USA. However, Buchanan was of the opinion that as incomes rose most people who could afford to own a car would choose to do so and that by 2010 we would be approaching what was expected to be saturation at 0.44 cars per person. This implied something like a threefold increase in the number of cars, which was conservatively translated into a potential trebling of urban traffic.

Although there were ways in which this potential demand might be limited, Buchanan took the view that, with the majority of voters becoming members of car-owning families, it would not be politically realistic to adopt this limitation as a starting point. He also observed, fairly but perhaps a little too easily, that it would not be sensible to invest vast sums in the running of motor vehicles 'without investing equivalent sums in the proper accommodation of the traffic that results'.

To explore what might be possible the *Traffic in Towns* team carried out a series of case studies in towns of different sizes. Newly developed techniques were employed to establish the quantitative relationship between the amount and type of land use in an area and the resulting volume and pattern of traffic. To cater for these movements a set of design principles were to be adopted based on the segregation of main traffic flows from so-called 'environmental areas' (Fig. 3). Within these areas the amount of traffic would be limited to the level consistent with maintaining acceptable environmental standards – a level referred to as their 'environmental capacity'.

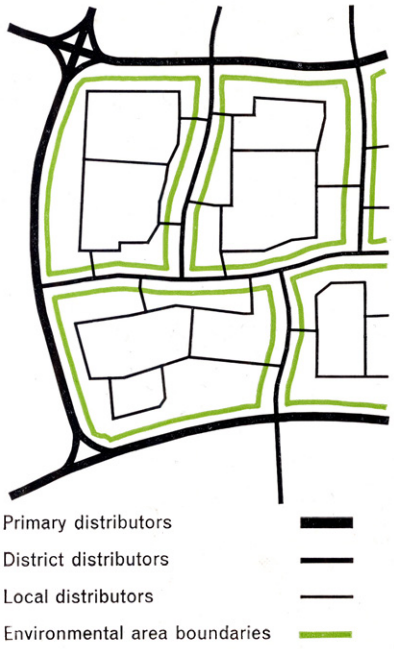

Figure 3: Buchanan's environmental areas. "*There must be areas of good environment - urban rooms - and there must be a complementary network of roads - urban corridors - for effecting the primary distribution of traffic to the environmental areas*". Traffic in Towns, para. 101

[2] "We are nourishing at immense cost a monster of great potential destructiveness. And yet we love him dearly. Regarded in its collective aspect as 'the traffic problem' the motor car is clearly a menace which can spoil our civilisation. But translated into terms of the particular vehicle that stands in our garage...or parked outside our door...we regard it as one of our most treasured possessions or dearest ambitions, an immense convenience, an expander of the dimensions of life, an instrument of emancipation, a symbol of the modern age." Report of the Traffic in Towns Steering Group, para. 55

As far as existing urban areas were concerned Buchanan believed that the application of environmental standards would determine the level of traffic it would be possible to accommodate. However, subject to the characteristics of particular localities, a higher level of motorisation could be achieved by redevelopment and highway investment in accordance with his design principles. He linked the three variables – environmental standards, motorised accessibility and the cost of prospective physical alteration – in the form of what he termed a 'rough and ready law' (Box 1).

Buchanan did not baulk at spelling out the financial implications of this:

> *"In plain words this means that if it is indeed desired to have a great deal of traffic in urban areas in decent conditions it is likely to cost a great deal of money to make the necessary alterations"*

Box 1: Buchanan's Law

"Within any urban area as it stands the establishment of environmental standards automatically determines the (motorised) accessibility, but the latter can be increased according to the amount of money that can be spent on physical alterations" para.116

In the case study of Leeds – a city with half a million population – it was anticipated that a primary network totalling 70 miles would be needed, most of it built to motorway standard. This highway building was estimated to cost £90m – twice the sum then being spent annually on major urban roads in the whole of the UK!

In more densely developed areas, notably city centres, physical segregation on a horizontal plane alone would be insufficient to cope with likely traffic demands. Buchanan therefore proposed vertical segregation in the context of comprehensive redevelopment using a synthesis of skills labelled as 'traffic architecture' (Fig. 4).

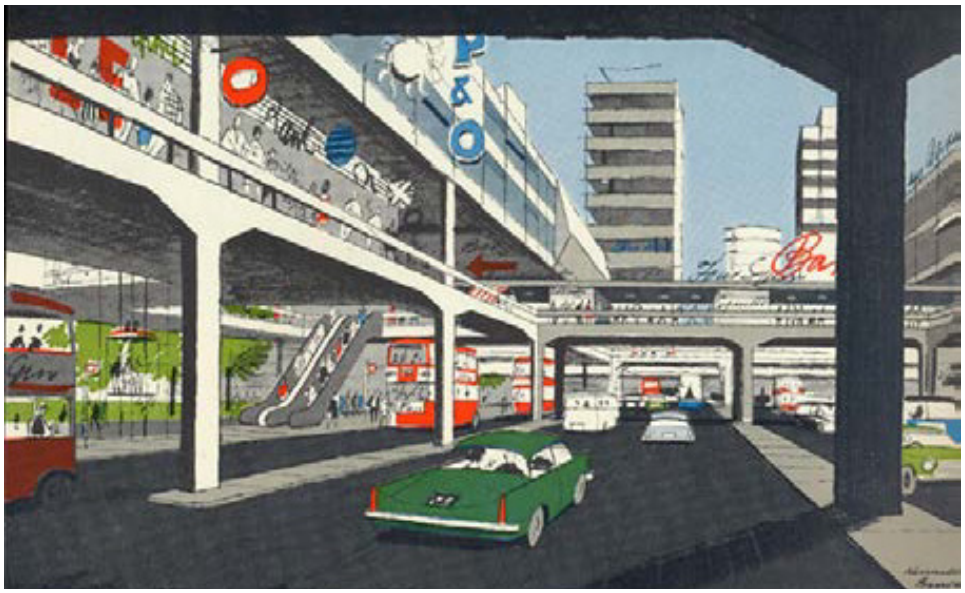

Figure 4: Vertical segregation. *"It illustrates vividly ...the awkward truth that the motor vehicle is really demanding a radically new urban form."* Traffic in Towns, para. 335

In Leeds it was discovered that even with maximum physical redevelopment of the city centre it would be impracticable to cater for the full potential demand, especially for commuting in peak hours. However, catering for only a proportion of potential demand still implied a combination of difficult and costly reconstruction AND the maintenance of an attractive public transport system (to cater for the remaining trips) AND the comprehensive control of parking in order that the necessary level of car restraint was achieved.

Given the enormous costs and disruption implied by the remodelling of existing urban areas it is interesting to explore why this particular direction of change was recommended. After all, as Buchanan acknowledged, if we were to acquire motor vehicles in large numbers and if their 'natural' consequence was the lower density, dispersed urban forms already evident in the USA then why not 'go with the flow' and plan for future development in this fashion?

Buchanan's argument against this was based on the 'special importance of the countryside to the people of this crowded island'. He did not believe that we would be prepared to see a large part of it sacrificed in order to allow for major dispersal of urban areas so as to accommodate motor traffic. Instead, with great prescience, he expounded the virtues of compactness not simply because of its minimisation of travel distances but because he thought proximity contributed to the 'variety and richness of urban life'. His enthusiasm for remodelling urban areas in the UK was in effect a counter-attack against the prospect of endless low-density sprawl of the kind he had witnessed on a study tour in the USA (Fig. 5).

Figure 5: Los Angeles, USA "*There is nothing to suggest that we would gain by spreading out our own cities, or still further spreading the conurbations, in order to reproduce the conditions of Los Angeles. All the American experience of sprawl suggests that in our small country we would do well to have no more of it*", Traffic in Towns para. 424

On its publication in 1963 *Traffic in Towns* met with enormous professional and public interest. Because its conclusions were framed in terms of 'choice' the report won support across the spectrum of opinion. At one extreme highway engineers claimed his analysis legitimised the road-building plans they had long been championing, whilst at the other fledgling conservation groups saw in his ground-breaking attention to the environment, land use and built form a way forward in confronting these self-same road plans.

Ernest Marples (the Transport Minister who commissioned the report) welcomed its general approach but, mindful of its financial implications, was notably less rapturous. He circumvented the difficult question of how much investment the Government would be prepared to sanction over the longer term by announcing that grants would be given to enable the new-style land use/transport studies to be conducted in all the country's main conurbations and cities to establish an appropriate evidence base. This enabled the bulk of public investment in road-building to be directed to the higher priority of the inter-urban motorway programme then under way. In the meantime (and almost continuously since), the Government cautioned local authorities against over-optimism in the availability of funds and counselled them to explore ways of managing the situation in ways that were not dependent on major capital investment.

By the time the land use/transport studies had been carried out and serious attention was being given to long-term urban highway networks in the early 1970s the climate of opinion surrounding large-scale redevelopment in general, and urban motorways in particular, had changed radically. The excitement of modernisation portrayed in futuristic images had been overtaken by the grimness of physical reality. Schemes whose gestation preceded the Buchanan Report were unacceptably intrusive and totally failed to achieve the design integration which the *Traffic in Towns* team advocated. Unsurprisingly local residents campaigned against the perceived destruction of their neighbourhoods, most famously in the case of London's Westway: a scheme whose origins could be traced back to 1911! (Fig. 6). The wholesale abandonment of London's proposed Ringway network of urban motorways followed a few years later and the same fate typically befell similar proposals in other cities.

Figure 6: London's Westway under construction, 1969

The Situation Today

The basic proposition underpinning the *Traffic in Towns* report – that most people would choose to own a car if they could afford one – has proved sound in the intervening years. Indeed the incentive to own and use cars is now arguably greater since so many aspects of contemporary life are predicated on car use that those who don't have access to it are often regarded – and regard themselves – as disadvantaged. Remarkably, the overall level of car ownership now prevailing in Great Britain matches almost exactly that projected in the report for its 2010 horizon year (although for rather different reasons, as will be explained later).

Whilst there have been a myriad of social and economic changes over the last 50 years the basic patterns of human activity are recognisably the same. Most people continue to live in separate dwellings in households with shared expenditures (including car ownership and use) and social ties. Most households have one or more adults with a job involving travelling to a separate place of work, still commonly for a 5-day working week and a 7-8 hour working day. The regime of school days and times around which many household routines are organised is essentially the same. Planning policy has ensured that the majority of the population continues to live and work in physically distinct towns and cities with overall densities little different from the 1960s.

Probably the biggest single innovation of recent decades – the advance in information and communications technology – has altered patterns of working, shopping and leisure but not in a way which has had a discernable impact on overall volumes of travel (Mokhtarian). For example, with respect to home-working the biggest change has come about not in the proportion of people literally working at home but in the proportion working in different places and using their home as a base (Felstead).

An intriguing conundrum therefore presents itself. On the one hand many aspects of the future have evolved as anticipated. On the other, there has been no comprehensive redevelopment of urban areas or building of urban freeways – certainly not on the scale originally thought to be required. Equally, there have been few examples of radical improvements in urban public transport or of 'restraint' measures to control the overall volume of motorised traffic in urban areas. According to Buchanan's Law we might therefore have expected traffic in towns to have come to a grinding halt long ago and for streets to have become uninhabitable because of intolerable environmental conditions.

One answer to this conundrum is that – to a degree – this is precisely what has happened. (Buchanan titled his autobiography 'I told you so'.) Whilst the worst instances have been addressed through localised measures aimed at improving traffic flow, environment and safety, there are a multitude of places where conditions are no better than they were fifty years ago. The situation in older residential areas which are now dominated by on-street parking as much as by moving traffic is definitely worse. The conclusion to be drawn is that, contrary to Buchanan's aspirations, we as a society have not valued the urban environment and the efficiency of travel sufficiently to constrain the 'freedom' to own and use private cars or to invest in adequate road networks or attractive transport alternatives.

However, there are a number of other factors which can help answer the apparent conundrum. These can be explained by looking separately at the demand and supply sides of the overall traffic equation.

On the **demand** side there has been a fundamental and unanticipated restructuring of the economy from industry to services. This has led to an overall spatial redistribution of employment (to the larger urban centres) and to the demise of industries whose heavy goods traffic previously dominated many inner urban areas. The switch to services coupled with the growth in female employment has led to a greater spread and flexibility in working hours. This has had the effect of reducing the significance of 'peak hour' travel flows as a proportion of the total (these peaks being especially problematic in the *Traffic in Towns* case studies).

The second half of the 20th century was characterised by a process of 'counter-urbanisation' whereby an increasing proportion of the population chose to live in smaller towns and rural areas rather than in conurbations and cities. Meanwhile, within urban areas there has been a general pattern of decentralisation whereby a greater proportion of new public and commercial development has taken place in suburban rather than central locations. Taken together these trends have contributed to longer average journey distances and a greater proportion of trips by car but with a smaller share of total traffic occurring within inner urban areas. Since the mid 1990s, however, changes in planning policy have contributed to a stemming of both counter-urban and decentralising trends.

On the **supply** side of the overall traffic equation a combination of factors, including more sophisticated traffic signalling, area-wide traffic management schemes, localised road improvements, control of on-street parking and changes in vehicle composition and performance, have increased the effective capacity of the traditional urban road network. At the same time, the limitation of traffic volumes within larger urban centres through the availability and pricing of parking spaces has become commonplace. Complementing these restraint measures have been the improvement of rail services in London and the conurbations as well as the introduction of park-and-ride facilities in several freestanding towns.

Meanwhile, major additions and enhancements of what is nominally the inter-urban road network continued up until the 1990s. Where this forms ring-roads or bypasses around towns it has accommodated the growing volume of traffic movements to and between outer suburban areas (London's M25 is a supreme example).

Putting these factors together we can see that the product of mass motorisation is indeed a 'radically different urban form', but not of the kind advocated by Buchanan. The re-structuring that has taken place consists not so much of physical redevelopment and road-building *within* individual towns, as a reordering of the functional relationships *between* them, typically focussing on a principal city to form 'city regions'. This agglomeration process has been dependent on the greater mobility derived from increases in car ownership coupled with investment in the inter-urban road network, together reflected in disproportionate traffic growth (Fig. 7). Roads such as the M4 in Berkshire and the M62 in West Yorkshire function as the *de facto* urban freeways of their

respective city regions. An unintended consequence is that these strategic routes have become clogged with junction-hopping 'urban' journeys for which they were never designed.

The manner in which city regions have come about and the form they currently take varies from place to place according to local economic and physical geography (Hall 2009). In many areas the extent of commuting movements is partly a by-product of planning policies. Since the 1950s Green Belts and similar policies of urban containment have been applied to many larger and historic cities with their housing needs met instead in the form of suburban extensions of small and medium-sized towns in the surrounding region. These new housing estates have been built at relatively low densities and designed on the presumption of near universal car ownership. Policy guidance was revised in the 1990s to ensure that 'transport choices' are available in new developments (PPG13) but on suburban estates these are unlikely to be of a standard attractive to would-be car users. The issue of traffic generation *between* towns arising from decisions on the strategic location of new housing development has never been properly addressed (Headicar 2010).

In summary, therefore, urban transport planning over the last fifty years might be characterised as 'muddling through' (Lindblom). Other than in the heady years immediately after publication of *Traffic in Towns* no grand plans have been produced. Instead a series of compromises have evolved, often by default, between traffic and environmental conditions in towns, between the fortunes of traditional town centres and newer suburban and peripheral developments, between 'compact cities' and 'sprawl', and between large-scale road-building outside towns and a more limited and varied set of transport improvements within them. These competing considerations have been – and remain – in a state of tension. They are all dimensions of the fundamental challenge presented by mass car ownership: a challenge which will continue to be faced in the different circumstances of the next fifty years.

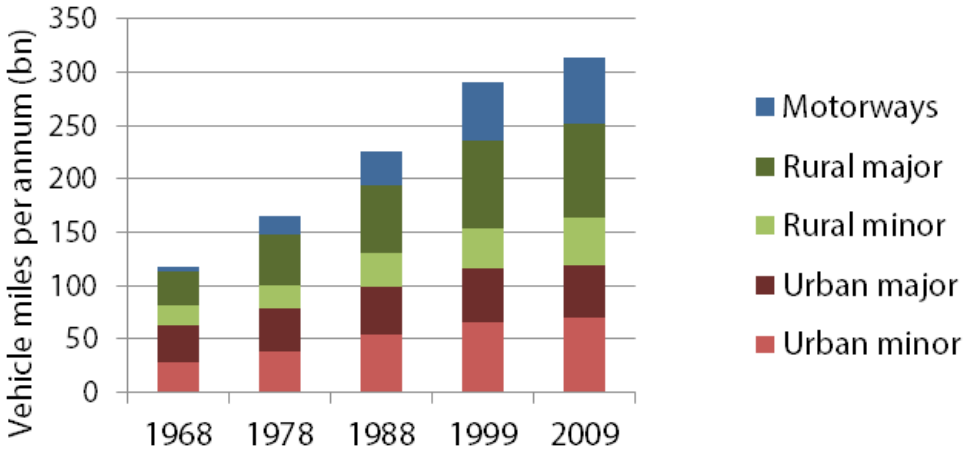

Figure 7: Motorised traffic by road class in Great Britain 1968-2009

The Next Fifty Years

A multitude of factors will influence travel and transport in urban areas over the next fifty years but the focus here is on three which were central to the original *Traffic in Towns* report: the likely changes in the scale and distribution of the population, levels of car ownership and use, and the form and pattern of settlements.

Population

Since the mid 1990s the trend in population numbers and their spatial distribution has undergone a fundamental change. This is due principally to the increase in net international migration and – because of the prevalence of young adults amongst immigrants – an increase in birth rates. The concentration of immigrants in London, and to a lesser extent in other cities, has also altered the trend in the overall spatial distribution of the population. The decade to 2011 was the first since World War 2 in which growth in conurbations and cities equalled that in less urbanised areas, thus bringing to an end the era of overall counter-urbanisation (Headicar 2013).

These recent features form the basis of official projections of the number, composition and distribution of the population. Such projections are based on assumptions concerning migration, fertility and life expectancy (and exclude the impact of possible economic or policy changes). The central assumptions produce a headline figure of 73.3m for the UK in 2037 (as compared with the 2012 base of 63.7m), including a steady additional 165,000 per annum in net immigration. The equivalent total for 2062 (i.e. fifty years on) is 79.7m for the UK. This implies a slightly slower rate of overall growth in successive decades than the 7% experienced to 2011 (Fig. 8).

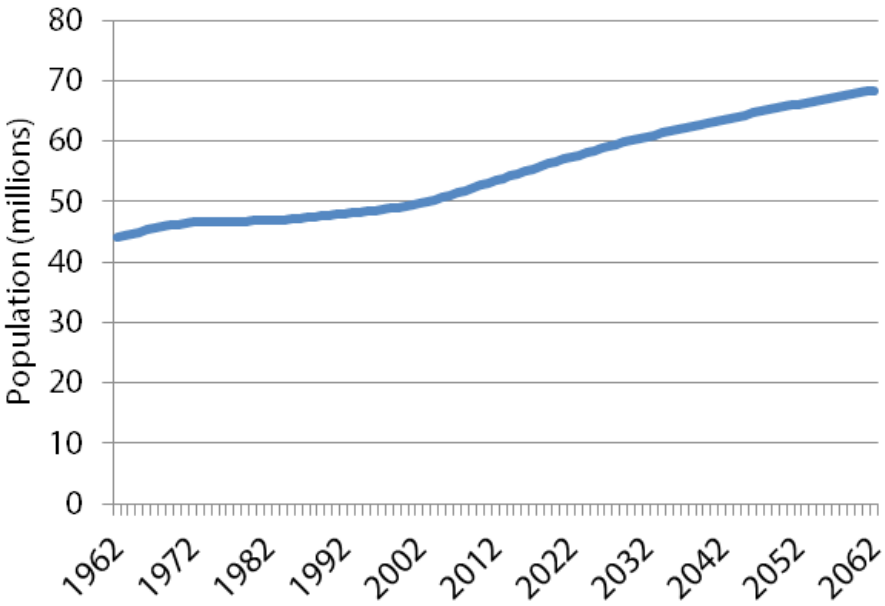

Figure 8: England's population, actual and projected (1962-2062)
Source: ONS 2012-based projection (2014)

On the basis of demographic features alone there is little overall shift in the projected spatial distribution of the population between more and less urbanised areas. However the trend of greater differentiation amongst younger and older adults between cities and less urbanised areas is expected to continue. There is also a projected continuation of the shift in population regionally. Over the next 25 years the proportion of people living in the 'Greater South-East', i.e. the London, Eastern and South-Eastern regions, is expected to increase from 41% to 45%.

Car Ownership and Use

The original forecast of car ownership in *Traffic in Towns* assumed a future of continuous economic growth with the result that the increase in ownership would begin to slow from the 1980s and arrive at a plateau by 2010 as 'saturation' was reached. In the event, economic growth has been more intermittent and the overall rate of increase slower. Growth in single-person households and in licence holding by women has, however, raised the expected per capita saturation levels although the post-2008 recession has halted any further increase in the short-term (Fig. 9).

However, closer inspection reveals a more complex picture. Overall, per capita car ownership actually ceased to rise from 2005 (i.e. before the onset of the recession) whilst ownership amongst residents of London had begun to *fall* several years previously. Obtaining a driving licence (effectively a pre-requisite for car ownership) has also fallen amongst younger adults after the mid-1990s. The costs of learning to drive and of owning and insuring a car have emerged as the principal causal factors. More recently, attitudinal research has pointed to the declining value and social status attached to car ownership amongst young adults (this research will be published by the ITC in 2015). At the other end of the scale, the ageing of adults who acquired licences when they were younger is adding to licence-holding and car ownership amongst people in their 60s and 70s (NTS 2014).

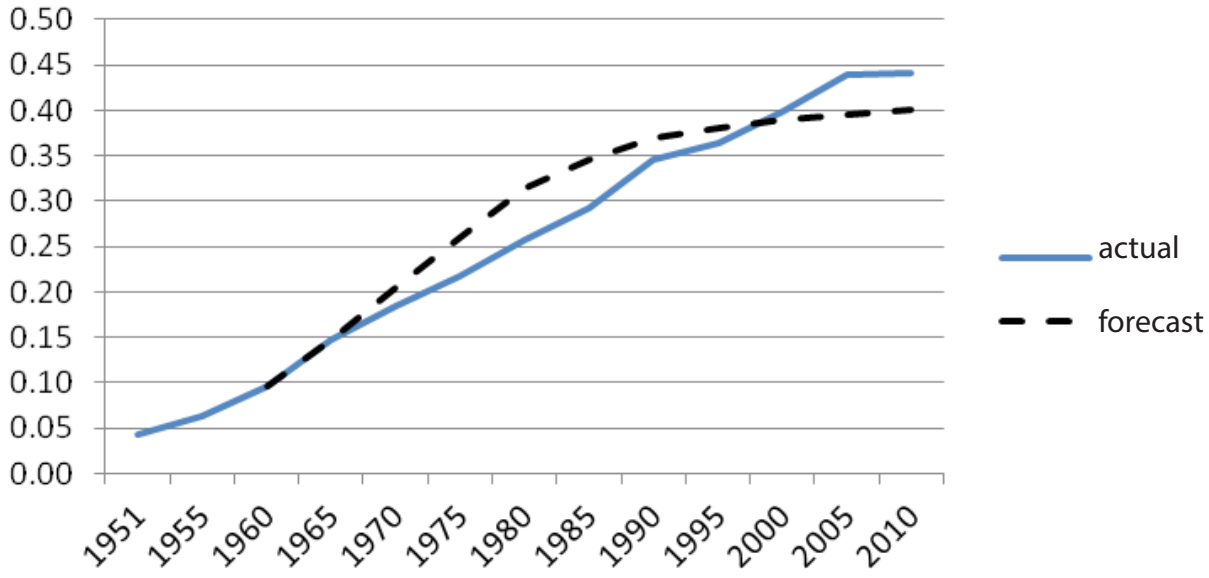

Figure 9: Cars per head actual and forecast, 1951-2010

In England an important divergence has also been identified in car ownership trends between different types of urban area, with those in the Greater South East and main provincial centres showing little if any growth, but former industrial areas in the Midlands and North showing continued increases (Headicar 2014).

Unsurprisingly, trends in car use reflect these changes in ownership patterns. Overall, expressed as car driver miles per person, car use ceased its long-term rise in the mid 1990s and thereafter remained broadly stable until 2007. (See Fig. 10) This phenomenon – which has come to be referred to as 'peak car' – has been observed in many developed countries (Millard-Bell and Schipper). However, beneath the overall trend is a complex mix of differences by age, gender, trip purpose and settlement size which have been explored in research co-sponsored by the ITC (Le Vine and Jones). In Britain, the consequences of changing tax arrangements governing company car ownership and use have been shown to have had prime importance in accounting for the overall stability in per capita driver mileage during the decade after 1995/7. This research is continuing in order to examine trends during the period since 2007 (and will be published later in 2015).

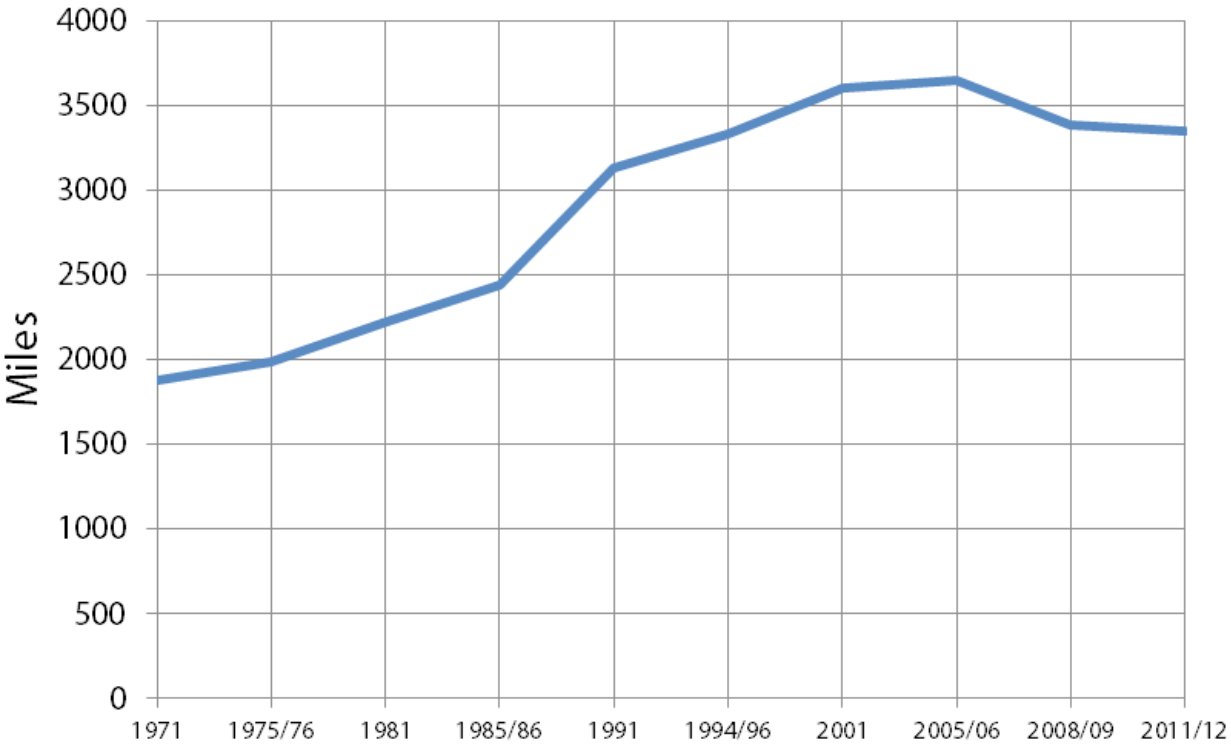

Figure 10: Peak Car?. Car driver miles per person per year: England 1971- 2011
Source: National Travel Survey plus estimates for decennial years

The interaction of many contributory factors (and limited understanding of the causes of change in each of them) has resulted in lively debate over possible future levels of car ownership and use (Lyons and Goodwin). The scale of the 2008 financial crisis and its longer-term consequences, particularly for the life-styles, attitudes and prospects of today's younger adults, has added a new dimension of uncertainty.

The National Road Transport Forecasts produced by the Department of Transport are based on official projections of population, economic activity and fuel costs and on observed long-term relationships between these and car ownership and use. Increased demand for car use is scaled down according to the dampening effect of slower average speeds on the road network. The central forecast published in 2013 is for an increase of 37% in car traffic on roads not forming part of the Strategic Road Network between 2010 and 2040 (and of 41% in all classes of traffic). In these circumstances average vehicle speeds would fall by 9% and 14% of traffic would be operating in 'very congested' conditions (See Fig. 11).

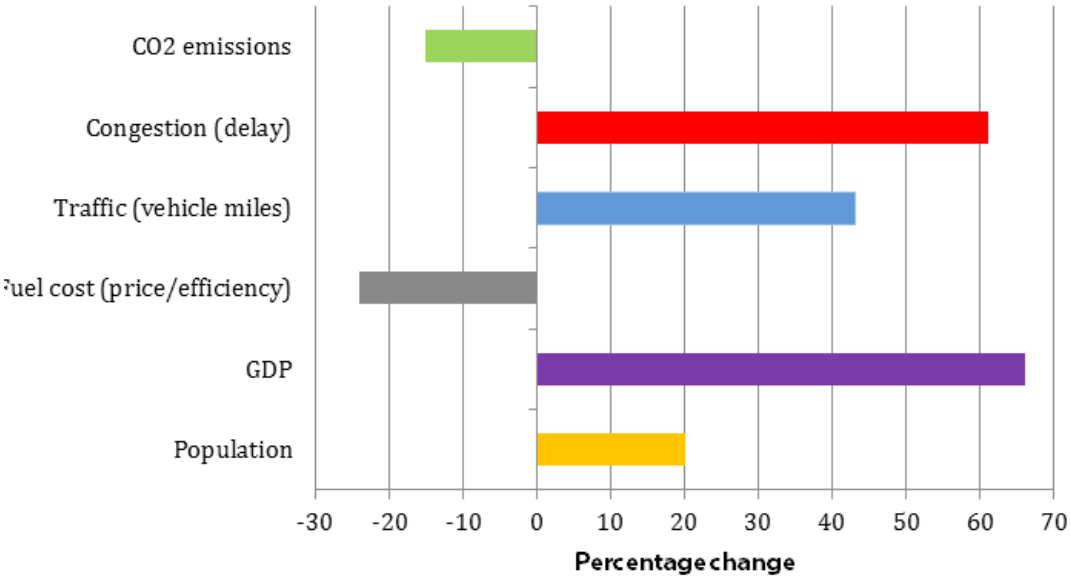

Figure 11: National Road Traffic Forecast, England 2013
(change 2010-2040; central forecast)

There are reasons for suggesting that the Department's traffic forecasts may prove to be over-estimates if the impending intensification of population and activity in cities has the effect of lowering (or at least limiting) per capita car ownership and use in the manner already seen in London. This can be expected independently of the deterrent effect of worsening traffic conditions. Rather, as car use becomes less practicable for day-to-day journeys (e.g. because of parking limitations or cost) and/or less necessary (because of improving alternatives) the utility derived from owning a car is reduced. Put another way, the perceived cost of owning and maintaining a car simply for occasional journeys is higher (See Fig. 12 overleaf).

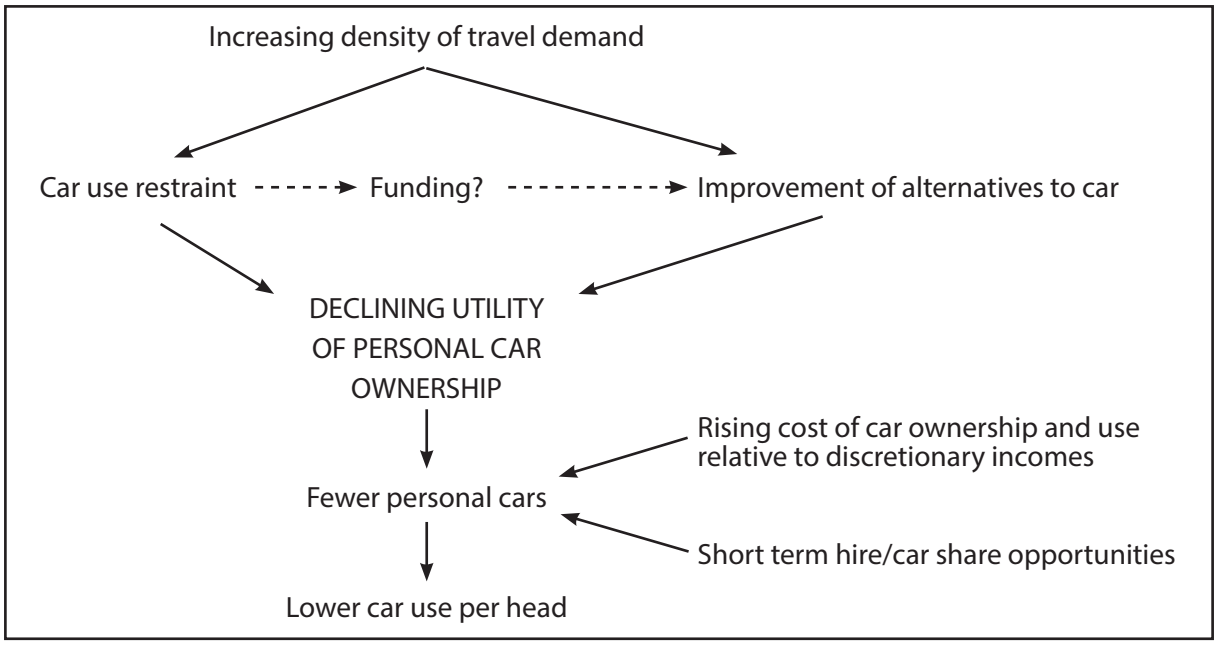

Figure 12: Denser Cities - More sustainable travel via lower personal car ownership

Meanwhile, because of rising house prices and rents (for which no long-term remedy is in sight) the discretionary income available for car ownership is being squeezed. As renting and leasing become more common practices, so utilising cars from a variety of sources when needed is likely to be more widely adopted. These sources include obtaining lifts or car-sharing amongst families or friends, hiring taxis or minicabs, car clubs for short-term hire and conventional hire for longer journeys. In this situation the cost and suitability of options are evaluated on a journey-by-journey basis (rather than car use being viewed as the default mode by car owners). Mobile phones and apps offering real-time travel information and bookings aid this process.

There are other emerging factors pointing in a similar direction. The transition to low-emission vehicles is altering the balance between the capital and running costs of motoring. More expensive cars are less likely to be 'owned' in circumstances where they are not going to be used intensively. The different cost, range and charging features of battery-driven cars will exert a new influence on consumer choices. For residents of larger urban areas financial incentives are likely to confine ownership to smaller-sized models with a limited range (for use on local journeys) and to encourage other options when longer-distance journeys need to be made.

The consequential fall in fuel duty revenue to the Exchequer is prompting consideration of possible alternative forms of tax or charges on motoring (another research area the ITC is investigating). In cities, additional charges may also be introduced as part of a regime of local transport management that hypothecates the revenues to fund schemes promoting sustainable travel. Such developments will signal more clearly the financial implications of people's transport choices and further encourage a more discriminating approach to car ownership and use.

Recently, a great deal of interest has been aroused by trials of 'driver-less' cars. In their fully developed form these could have transformative implications in certain niche roles (e.g. as taxis, or providing mobility for disabled people). If adopted widely they would also potentially increase the traffic capacity of highway networks. However, these are both very speculative propositions and of greater significance in the near future is the wider adoption of 'driver aids' already built into more expensive conventional cars. These are likely to be developed into vehicles which allow for partial automation in certain situations (Le Vine and Polak).

In summary, there are a number of reasons for believing that per capita car ownership and use will stabilise or fall in cities whilst continuing to rise elsewhere. The extent to which both of these occur will be influenced by public policy as discussed in the final section.

Settlement patterns

The spatial element of the population projections discussed earlier will be subject to local variation due to changes in employment opportunities and rates of new house-building and conversions relative to demand. House price differentials will also condition movements within and between local market areas. In pressurised areas the long-term shortfall in housing supply, especially in social and 'affordable' accommodation, will lead to more intensive occupation of existing properties and also to the displacement of households to less costly areas.

The policy-backed trend towards greater intensity of development within existing urban areas is unlikely to be rescinded. Substantial areas of development on green-field sites will nevertheless continue to be required. However, the spatial inertia that characterises British planning practice means that the distribution of this development will continue to reflect traditional patterns of urban settlement (i.e. peripheral expansion of small and medium-sized freestanding towns) rather than the significance of the more dynamic cities. Notwithstanding recent publicity over possible 'garden cities' few new settlements of any size are likely to materialise because of local public opposition and high infrastructure costs[3].

The fulfilment of cities' housing needs continues to be inhibited by long-standing Green Belt designations which prevent their outward growth and by the antipathy of adjoining local authorities. In the extreme case of London virtually all its projected 2.4 million (28%) population growth to 2037 will have to be met through more intensive development and occupation within the GLA area, or via the displacement of households elsewhere. The extension of London's influence far along the well-established radial corridors, as reflected in both daily and more occasional commuting, seems certain to continue.

[3] Note, however, the alternative prospectus put forward in the recent winning submission for the Wolfson 2014 Economics Essay Prize (Rudlin and Falk). This proposes that large scale developments should be planned as extensions to forty existing freestanding cities using original garden city principles (i.e. employing land-value capture to fund investment in public facilities including sustainable transport). If such a proposal were adopted it would have a significant impact in reducing the additional car use which may otherwise be expected to occur outside London and the conurbations.

Implications for Transport Policy

This paper has highlighted the way in which the ownership and use of cars is likely to assume different proportions across various types of urban area to a greater extent than exists today. This presents a challenge to the formulation and presentation of national policy which is readily caricatured as being 'pro' or 'anti' car. However, a generational shift in the symbolic value attached to car ownership and use suggests that, over time, a more balanced view will come to prevail. The 'smart' approach will be to employ a mix of modes with the transport offer varying from place to place and people selecting from within it according to their needs and preferences.

In our larger urban areas and on the nation's rail network the provision of acceptable alternatives to car use has already become a dominant theme. However, there remains a substantial deficit arising from decades of development and transport investment predicated on extensive car use. For many journeys, particularly those with suburban origins or destinations, the notion of 'choice' remains a fiction for people who have car use as their benchmark. Without the provision of real choice, policy measures which add to the cost or inconvenience of motoring (even if ostensibly to improve traffic conditions) are perceived as punitive and hence are resisted vigorously. The sensitivity of this issue also inhibits policy development in relation to carbon reduction with the Government's strategy relying overwhelmingly on technological rather than behavioural change.

Population growth represents an 'escalator' as far as increased traffic and carbon emissions are concerned and transport policy will need to strive to overcome this. In addition, the accompanying increase in business and freight traffic is not susceptible to comparable shifts in mode, although ways of limiting the rapid rise in van deliveries remain to be explored (Gazzard). Further reductions in per capita car use via improvements in the 'non-car offer' are therefore needed if overall traffic levels are to be contained (see Box 2).

Box 2: Responding to the escalator of population growth

Improving the non-car offer contributes in three ways:

1) It enhances the opportunities available for people who, for one reason or another, cannot afford or are unable to own and drive cars. (About 30% of the adult population never drive and, aside from the social benefit, these people will be less reliant on escorted trips as car passengers which add to total traffic);

2) It provides an incentive for drivers to forgo, lessen or defer personal car ownership. (Introducing preferential facilities or discounted charges for parking shared or hired vehicles would encourage this 'halfway house' to utilising cars);

3) It creates opportunities for car owners to relinquish personal car use for all or part of individual journeys. (Achieving such transfers in practice, however, requires complementary improvements in information, ticketing, interchange facilities etc which contribute to the actual and perceived convenience of 'door to door' inter-modal travel. See DfT 2013).

However, a chicken and egg conundrum arises in that, except for rail-served corridors, the roadspace required to create improvements for modes other than the car is occupied by the very traffic they are aimed at reducing! The potential for 'public realm' improvements requiring the reallocation of roadspace is constrained similarly. A contemporary version of Buchanan's Law can therefore be identified: framed not in terms of the relationship between motorised accessibility and the scale of urban redevelopment but in the conditions available for different categories of road user within existing streets. The nirvana of quality urban environments created in conjunction with new tram or light rail systems of the kind achieved in many continental cities (Hall 2014) would require levels of spending on urban public transport not countenanced hitherto outside London.

It seems likely that the current cross-party interest in devolving decision-making on local infrastructure will both prompt and enable some provincial city regions to adopt a more ambitious stance than hitherto. New ways of funding public transport investment remain to be exploited (Ubbels et al). Business rates could be levied for transformational projects (as has occurred with CrossRail in London), or for programmes of local transport investment more generally (as with Versement Transports, a ring-fenced local tax that has funded improvements in many French cities). Alternatively, cities could follow the lead taken by Nottingham in introducing a Workplace Parking Levy which achieves the twin objectives of discouraging car commuting and contributing to the funding of extensions to the city's tram network.

In provincial cities a large proportion of road users are people who travel in by car from surrounding towns and villages. There appears to be untapped potential for reducing such traffic by providing more in the way of genuine modal choice. Where these places are connected by rail it is commonplace for car owners to travel via the station nearest their home. But there is no equivalent practice in relation to bus services, partly because the speed and quality of such services has not traditionally been aimed at this inter-urban market.

Road-based services have the advantage that they are potentially better placed to cater for the increasing number of trips generated from suburban (home) origins in one town to suburban destinations in another. However, these links cannot normally be provided directly from end to end (any more than they can by rail). Hence the provision of interchange opportunities is critical. A serious attempt to penetrate this market would therefore imply investment in 'hubs' on the edge of towns and cities (close to the connecting main road). These would offer facilities for transfer to/from a variety of modes to serve individuals' access and egress requirements at either end. Logically, this would form part of a broader programme to promote more sustainable use of the nation's inter-urban highway network[4].

[4] I develop this argument in more detail in the final chapter of Headicar 2009.

Conclusion

The mixture of opportunities and threats set out in this paper offers an interesting parallel with the prospects presented in the *Traffic in Towns* report just over fifty years ago. Unfortunately, there is no contemporary equivalent of the report to stimulate public interest and debate at the national level. It is also regrettable that the institutional capacity to forge spatially coherent land use/transport strategies across city-regions was seriously damaged by the abolition of all regional economic and planning mechanisms outside London in 2010. This void is beginning to be filled – albeit slowly and imperfectly – as Local Enterprise Partnerships assume leadership in delivering the Government's economic development aspirations. The opportunity to establish Combined Authorities is also helping to coordinate local authority action in the conurbations. However marrying these arrangements with the 'localist' regime now set for individual planning authorities, and with the fractured array of public and private bodies with transport responsibilities, will continue to inhibit the planning and delivery of integrated spatial strategies.

In the circumstances of his time Buchanan was careful to present what he saw were uncomfortable truths and to challenge policy-makers to make difficult choices. If not 'traffic in towns' then 'sustainable travel and the future of city regions' merits similar treatment today.

Peter Headicar for the Independent Transport Commission
January 2015

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Independent Transport Commission
January 2015

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