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TRANSPORT
AND THE
DESIGN
OF
NEW SETTLEMENTS

by

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A Masters Thesis

submitted in partial fulfilment of the requirements
for the award of
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The founding, shaping, and growth of human agglomerations throughout history have been products of complex interactions of many forces. One major force has always been transportation.

V.R. Vuchic.
# TRANSPORT AND THE DESIGN OF NEW SETTLEMENTS

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PREFACE.

"...Our quality of life depends on Transport and easy access to jobs, shopping, leisure facilities and services; we need a safe, efficient and integrated transport system to support a strong and prosperous economy. But the way we travel and the continued growth in road traffic is damaging towns, harming our countryside and contributing to global warming..."¹

The form, size and structure of settlements have always been closely linked to transportation. There have been three stages of change and expansion, the Pre-Industrial Era, the Industrial Revolution of the eighteenth / nineteenth century and the Transport Revolution of the twentieth century. We are rapidly approaching a crisis point that will require major alterations in social outlook, working practices and travel. The thesis proposes to consider whether the revolution in Information Technology will act as the catalyst for the commencement of a new era in the twenty-first century?

The thesis will be developed by:

- Considering how New Settlements have been developed in history particularly with relation to Transport.
- Exploring how developments in vehicle technology, the rule of market forces and Government policy have created the transport crisis.

¹ Department of Transport, Environment and the Regions, PPG 13, Transport, March 2001 sec. 1
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- Investigating if the individual benefits of personalized transport are outweighed by the externalities that they create.
- Alternative technological and planning solutions to be examined.

This thesis that Teleworking can solve transport problems is examined in some detail and its potential for overcoming the transport problem is shown to be limited within the context of current employment and social patterns.
1. HISTORICAL LINKS BETWEEN NEW SETTLEMENT GROWTH AND TRANSPORT
TRANSPORT AND THE DESIGN OF NEW SETTLEMENTS

1.0 HISTORICAL LINKS BETWEEN NEW SETTLEMENT GROWTH AND TRANSPORT.

The relationship between Transport and the Design of New Settlements is an ancient one. The location for a settlement often being determined by its ease of accessibility as a focal centre for a region or as a trans-shipment or stopping place on a transportation route.

We will set the basic background to the development of settlements, by

• Showing that initially settlements were market and trading nodes.
• That the needs of early industry for power and transport influenced settlement location, and that
• Transport developed for the movement of goods rather than people. People being located within walking distance of work, often in purpose built settlements.

1.1 THE PRE-INDUSTRIAL ERA

The New Settlement always had its economic roots in its surroundings, the land or the sea, for instance. This has created the

"...Social characteristics of the traditional village - simplicity and smallness..." ²

TRANSPORT AND THE DESIGN OF NEW SETTLEMENTS

Some Settlements grew larger and more complex as they developed as nodal points. They became the interchange point, the local market and trading centre due to their ease of access from the local communities and other nodal points.

Larger Settlements appeared as centres of Regional Government and National Government. Whatever the size of the settlement the vast majority of the people worked from home.

This pattern was slowly and steadily developing up to around 1760, the mass of the population being rural. The year 1760

“...is taken as a broadly accepted date to herald the onset of the Industrial Revolution...”

It was at this time that population and urban growth became more closely linked.

1.2 INDUSTRIAL REVOLUTION

Solid progress in industry and mercantilism led to the development of eighteenth century towns and countryside. There was an expanding home and overseas trade stimulating output and leading to greater efficiency, as well as encouraging the inventive mind. Improvements in technology, such as steam engines to pump water and drive

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3 Lawless, P. and Brown, F., Urban Growth and Change in Britain. An Introduction. London 1986, p7
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machinery, together with new textile manufacturing machines, hastened the process of change from cottage industry to factory.

The development of canal or river transport to the ports enabled this to happen. Heavy and bulky items could only be moved by water. The inter-town roads were,

"...soft and unreliable and local routes from market to villages merely grass tracks..."  

It was essential that road communication should be improved. The parishes were responsible for the upkeep of the roads that were more often than not neglected. The establishment of the Turnpike Trusts from 1663 improved matters to a small extent. Eventually McAdam and Telford devised methods of road metalling that gave a reasonable standard of finish. The Enclosure Acts defined the width for roads to be, main roads 100ft. (30.48 m.), other roads 66ft. (20.12 m.) and inter-village roads 44ft. (13.4 m.) between the ditches.

Inland water transport was a substitute. River improvement schemes, such as the Aire-Calder in 1699 and Mersey-Irwell in 1720, started what was to become a countrywide network of canals.

"...The canal system opened up routes between sources of raw materials and the industries using them..."  

TRANSPORT AND THE DESIGN OF NEW SETTLEMENTS

At least one new town, Stourport, came about because the canal stimulated the development of industrial buildings, warehouses and houses along its banks. The nearby town of Bewdley wanting nothing to do with it and consequently lost out.

Thus a network of canals and hard paved roads developed which enabled the next stage of development to emerge. The availability of one or the other with water for power provided the ideal sites for factories that were later to develop into new settlements.

The population of the nation was growing fast at this time. It has been estimated that in 1751 the population of Great Britain as a whole was about 7.4 million, of which the majority lived in England, mostly in villages. The surge in population growth came from the 1780's onwards, growing between 1751 and 1801 by 45% to 10.73 million.

The goods were moving more easily. The people still lived within close proximity to their work and walked. Crowded living spaces, congested roadways and unhealthy living conditions were characteristic of 17th century towns.

Consequently a significant number of philanthropic industrialists constructed new settlements in rural areas for their workers, and demonstrated the benefits of a rational planning system. The criteria for the location was a nearby power source, usually water, transport links and land to develop the factory and associated housing. The recognition of the need to plan became a major factor in the future development of settlements in
TRANSPORT AND THE DESIGN OF NEW SETTLEMENTS

the UK and subsequently in most developed countries. As the following case studies will show, these New Settlements were strongly influenced by transportation considerations.

John Bellers, a Quaker economist and social reformer published in 1696 his ‘Proposals for raising a Colledge of Industry of All Useful Trades and Husbandry with Profit for the Rich and Plentiful Living for the Poor and a Good Education for Youth.’ He envisaged the formation of balanced communities of tradesmen, agricultural workers and their families computed at a minimum of 300 persons but capable of expansion to 3000. Profits would go to ‘The Founders’ and to expanding individual communities or building new ones. Colonies based upon these principles were inspirational in the founding of ‘model’ industrial communities in this country, such as Arkwright and Strutt’s Cromford (c. 1775), adjacent to the River Derwent, for power and the main London to Manchester road for transport. Cotton being imported through Manchester, transported by road to Cromford for spinning and then onwards to the markets.

The industrial ‘model’ villages were essentially purpose built to an overall plan by individual entrepreneurs or companies to house their own workforce.

6 Lawless, P., and Brown, F., Urban Growth and Change in Britain: an Introduction, & Row, London, p9
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"...they provided housing layouts, designs and standards which were normally well in advance of the housing conditions of contemporary working-class families within the growing towns..."  

At the crossroads, where the Manchester - Wilmslow road crossed the Salter's route from Northwich to Yorkshire is the medieval village of Styal. (Illus.1). The Gregs' arrived to build their mill in 1783, to take advantage of the available waterpower and the transport potential of the site. The existing population worked mainly in agriculture and outworking in the silk button trade of Macclesfield and Stockport. This local labour force was inadequate for Greg's needs. Initially he brought in child labour from the local workhouses; they accounted for one-third of the workforce between 1790 and 1840.

For the early factory masters, whose sites were often as rural and isolated as Styal, the key to success was finding and keeping a willing and capable skilled workforce. The solution was to provide accommodation, and security of livelihood. The workers were coming from greater distances so two barns were converted to provide accommodation. These formed the basis of the factory colony. The Company erected 39 new dwellings by 1827. The cottages were let to the mill workers, usually one family per cottage, for a nominal rent, which was deducted from the weekly wages.  

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9 Sekers, D., Quarry Bank and Styal, Cheshire, National Trust, 1998
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1. Styal

The Butterly Company was founded on the development of raw materials and they provided similar settlements at Codnor Park, Ironville and New Ollerton. The company built its first group of 11 cottages, Limekiln Row, at Codnor Park in 1802-3. In 1796 the company had purchased 58.1 acres (23.5 ha.) of land bounded on three sides by two arms of the canal and totally inaccessible by road. They built two rows of
TRANSFORM AND THE DESIGN OF NEW SETTLEMENTS

cottages known, most unromantically, as Furnace Row and Foundry Row. They were completed in 1813 and the foundation for the new settlement of Ironville. In 1813 the company also bought Butterley Park Farm as a good supply of cheap wholesome food for the works.  

As the Company developed it also developed further housing as estates adjacent to existing villages. The company financially supported the building of a church and school at Ripley and established a savings bank at the works for the men.

Things changed dramatically when Francis Wright joined the company in 1830.

"...There was a feeling that something should be done to ease the lot of the 'lower orders'. Francis Wright was in the fortunate position of being able to do something positive along these lines. He had the power and the money as well as the inclination.... he (also) had the time to concentrate on the well being of his workers..."  

The building of the village of Ironville was his first great achievement starting in 1834. By 1886, the freehold estates of the Butterley's covered 3000 acres (1214 ha.) and included 800 houses. Codnor Park, where the whole village belonged to the company.

TRANSPORT AND THE DESIGN OF NEW SETTLEMENTS

The Butterley Company was very involved with and dependent upon transport for the movement of goods. Their works were located adjacent to canals and later, railways. Indeed they supplied much of the material, bricks and metalwork, used to construct the railways.

Transport was still primarily for goods. The villages were all built within walking distance of the works and it was therefore irrelevant to workers. They had to wait for the advent of cheap, publicly provided transport before they could travel away from their abodes easily.

This type of development inspired in part by economic necessity and philanthropic endeavor continued through the nineteenth century and has produced some much more delightful examples than Ironville. In fact some were built with delight in mind. One such example is Saltaire, built by Sir Titus Salt entirely in the Italianate style in the 1850's. ¹²

The culmination of the efforts of this group of philanthropic employers came with Bournville, started in 1893 by George Cadbury and Port Sunlight, which commenced in 1888 under the proprietorship of W. H. Lever.

"...both men had noted the effects of slum housing conditions on industrial productivity and on human welfare; both saw the solution to each problem in terms of building a new

TRANSPORT AND THE DESIGN OF NEW SETTLEMENTS

factory in a new village; and both were advocates of houses in gardens and liberal communal open space..." 13

1.3 CONCLUSION

Initially settlements were market or trading nodes. Later the needs of early industry for power and transport influenced settlement location. Transport developed for the movement of goods not people.

Settlements were created out of their immediate surroundings and those in the more strategic positions grew faster and larger as they developed as markets and local government centres. The smaller settlements became satellites within easy reach of the node. The node would be usually placed at a place of transport interchange, for instance adjacent to water. It needed to have good communication to other nodal points.

During the eighteenth century an expansion took place in trade, stimulating and stimulated by technology. Machines and the means to power them were developed. This in turn influenced transport development, such as metalled roads and canals which were essential for the movement of the increasing quantities of goods.

Until this time people worked from home; they now worked in factories. They moved to be close to the new places of work. Their living conditions did not improve and slum

TRANSPORT AND THE DESIGN OF NEW SETTLEMENTS

conditions were rife. The work of philanthropic employers improved conditions for some, though not for many. Their foresight was influential later, influencing the Garden City Movement and Town and Country Planning.

The improvement in transport and technology benefited the few not the mass.

The underlying current in all of these developments was the proximity of a good method of transporting raw materials and subsequently distributing them after manufacture. The transport of goods was foremost; the workforce lived adjacent to the workplace and could therefore walk.
2. CITIES AT THE PRE-DAWN OF THE MOTOR CAR AGE
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2.0 CITIES AT THE PRE-DAWN OF THE MOTOR CAR AGE

The roads had not been able to keep up with the demands made upon them and their state became atrocious despite the efforts of Telford, Macadam and the Turnpike Trusts. The canal network had become restricted and overcrowded. A new technology was needed before further development could take place.

The revolutionary idea that changed the relationship between transport and new settlements was the Railway.

An expansion of the old plateways used to transport goods from pit or factory to the canal combined with the steam engines used to power the mills or pump water from the mines. Railways at the time were as much an influence as information technology is today.

We will consider the impact of

- Railways, which introduced the concept of mass transportation of people. The expansion of industry generated the need for a larger workforce and showed the possibilities of commuting over distance.
- The development of the technology of the urban/suburban tramways with feeder buses increased the possibilities for local people to live on the healthier periphery of settlements and commute to work cheaply, and how

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- Slums, environmental pollution and urban deprivation were created and how these motivated the Garden City Movement, which formed the basis for Town and Country Planning today.

2.1 RAILWAYS

The invention of the iron rail with the development of a reliable self propelled steam locomotive prepared the way for a national network of railways. Initially intended for the speedy transport of goods it was soon realized that there was a potential for the mass movement of people that it was impossible to cater for with the stagecoach system.

The railways facilitated the movement of business commuters into towns from the outskirts and workmen into major cities like London, thus creating the development of satellite settlements along the line of rails. They expanded markets and enabled the development of mass tourism with trips to the Great Exhibitions and the seaside. Towns such as Blackpool grew out of small fishing villages with the influx of trippers and holidaymakers. However their main purpose was still seen as the movement of goods.

As with the canals before them the Railways were instrumental in the creation of towns at nodal access points. An example is Coalville in Leicestershire, which developed around a halt on the Leicester and Swannington Railway, opened in 1832. It
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was located between two large Collieries, Whitwick and Snibston. The town grew to a population of 40,000 people in 1981.  

The railway companies built settlements for their own workers, such towns as Crewe, Wolverton, Horwich and Swindon developed in this way. Crewe had a population of 4,500 in 1851; this had grown to 42,000 in 1901.  

The only building on the site of New Swindon when the Great Western arrived in 1842 was a tavern. The railway and the town grew quickly. The company became concerned that shoddy speculative builders were taking the opportunity to make money by providing houses. They therefore stepped in and started building more houses of their own.  

Other settlements developed as out of town retreats for affluent businessmen who could use the railway as a means of commuting. Blairgowrie Estate on Tayside became, and still is, regarded as a highly desirable residential district. The introduction of through trains to Dundee triggered off the development.  

"... By 1890 the railways were carrying over 800 million passengers per year, and 300 million tons of freight..."  

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TRANSPORT AND THE DESIGN OF NEW SETTLEMENTS

Generally, with the exception of places like Blackpool and Coalville, the railways tended to reinforce the existing pattern of towns and cities rather than to provide a stimulus for new settlements. In doing this industry tended to be concentrated for ease of access to the railway, which also located the workers houses, which still needed to be within walking distance.

2.2 PUBLIC TRANSPORT IN TOWNS

Railways are very good at moving passengers and goods over a distance at speed. When it comes to commuters they are only economic in large conurbations with a widespread hinterland. In the smaller towns and cities it was the development of the Horse Bus and Tram, which formed the platform for expansion.

"...Urban growth, urban form and transport have always been inextricably linked together and current patterns of urban development reflect past forms of transport to a surprising extent. With a few notable exceptions, most cities prior to the advent of the nineteenth century were limited in size to perhaps 50,000 inhabitants by the absence of an effective urban transport system..." 20

The relationship between transport and suburban growth is quite complex and cannot simply be seen as a matter of 'cause and effect'. Initially the builders and developers located their settlements close to the new stations, however, they soon developed in anticipation of the arrival of the Railway. The Metropolitan Railway, which
TRANSPORT AND THE DESIGN OF NEW SETTLEMENTS

extended northwestwards from Central London, encouraged the Developers of what they termed "Metroland".

Although Stagecoaches had been plying around the country since 1640 it was not until 1829 that George Shilliber introduced the horse - drawn omnibus into London. With a capacity of 20 it ran between Paddington Green and the Bank of England. By 1850 there were nearly 1300 omnibuses in central London. Soon other large towns started their services, Sheffield in 1838, and Glasgow in 1845.

The omnibus in Sheffield came about by the need to connect the Glossop Road and the Moor to the Sheffield and Rotherham Railway opened in that year. By 1862 there were nine proprietors running local services on 15 routes. Horse tramcars, running on smooth rails, were a much more comfortable vehicle to ride in than the buses and eventually replaced them on the main routes. The first tram route in Sheffield opened in 1873 and as it expanded the horse buses were reduced to providing feeder services to the tram termini.

The suburban world became a place where everyone lived within a few minutes walk of the railway station, tram or bus stops, a few minutes walk from the shops and a few minutes walk from the fields.

21 ibid. p62
22 Vickers, J. E., From Horse Buses to Atlanteans, JEV, Sheffield, 1972, p10
23 Vickers, J. E., From Horses to Atlanteans, JEV, Sheffield, 1972, p10
TRANSPORT AND THE DESIGN OF NEW SETTLEMENTS

Lawless and Brown, consider 1900 to mark the advent of mass public transport in towns. This coincided with the refining of the necessary technology of large-scale tramway system electrification. The tendency was for the town to grow outwards from its centre following the tramlines and eventually encompassing the villages closest to the town. I would suggest that the tendency went back further than that to the advent of the horse tram. What electrification brought was a cheaper system, available to a wider selection of the community.

Leicester provides a good illustration of this process. In 1831 the population was 40,000, by 1901 it had grown to 212,000.24

"...Until the late eighteen sixties, the Stoneygate area comprised of a group of isolated houses surrounded by large gardens and open fields. The area started to develop in the sixties and early seventies and was encouraged when the tramway was laid along the London Road in 1875.

"...Even though traction was as yet only horses, it was a much easier and more comfortable journey for a business man to make down to his work in the old town, and up again at night. The horse tram opened up the whole district, a couple of miles away from the centre of the town, to those who were without private carriages of their own..." 25

24 Simmons, J., Life in Victorian Leicester, Leicestershire Museums, Leicester, 1976, p5
25 Simmons, J., Life in Victorian Leicester, Leicestershire Museums, Leicester, 1976, p15
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The adjacent area of Clarendon Park was developed in the seventies and eighties providing housing for the emerging middle class. This area also provided shops and services for itself and Stoneygate and infilled the area between Stoneygate and the Welford Road. In 1892 the boundaries of the borough were expanded to take in the outlying parishes of Aylestone, Evington, Braunstone, Humberstone, Belgrave and Knighton. 26 (Map 1.)

The trams had reached Belgrave at Christmas in 1874, 27 and were well on the way to Humberstone in 1875. By 1878 they were close to the boundary with Aylestone. The development of the town followed the tram tracks. The Leicester Tramways Company also owned horse buses providing intermediate feeder services, which was a private company. There were no official stopping places until 1902. The Company being of the opinion that discommoding the commuter might lose custom. It must have been very difficult particularly during rush hours, to keep to a timetable with passengers signalling their desire to board or disembark wherever they found it most convenient. This system has again found favour today with the introduction of hail and ride minibuses connecting outlying estates to the town centres. Official bus stops only occur on the main roads; elsewhere it is a matter of indicating to the driver that you wish to board. This may have to be reconsidered if the demand increases and larger vehicles are required.

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26 Simmons, J., Leicester Past and Present, Vol. 2 Modern City, Eyre Methuen, London, 1974, p112
27 'The Leicester Tramways', The Railway World, Vol. 11, No. 10, October 1893, p814
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In 1901 the Corporation bought out the Tramways Company, as was their right under the original agreement between the parties. They not only took over 39 tramcars, but also,

"...30 buses, 375 horses, and all the real estate and nine miles of track..."  

It is recorded by Simmons\textsuperscript{29} that in the decade following 1870 the populations of Aylestone and Belgrave doubled. Between 1881 and 1891 it doubled again in Aylestone, trebled in Knighton and rose by nearly 60\% in Belgrave. It must be said that it was not solely because of improved transport provision that the town expanded, there were other factors such as health and amenity that had a bearing. The availability of transport made the movements possible.

The effect of the transportation system was to produce a ribbon development along the main roads and then to infill in between. By the turn of the century the six parishes, incorporated into the town in 1892, were almost continuously connected with the town centre. Leicester's tramway was electrified in 1904 and the development continued. (Map 1.)

The City centres were still poor and congested, occupied by the people who could not afford to move out to the expanding suburbs. They still needed to live within walking

\textsuperscript{28} Pearson, M. W., Leicesters Trams in Retrospect. Tramway Publications, Crich, 1970, p12
\textsuperscript{29} Simmons, J., Leicester Past and Present. Vol. 2. Modern City. Eyre Methuen, London, 1974, p113
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distance of their work. Only the rich and new middle classes could afford to move out to the new areas. New ideas were needed.

Map 1 The Expansion Of Leicester 1835 –1935
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2.3 THE GARDEN CITY MOVEMENT

The coming of the Railways and Tramways was the new technology, which allowed for different sets of relationships, which were explored by the forward looking thinkers of the time. Their ideas were to have a significant influence on the development of new Towns and suburbs.

The genesis of the Movement is in a small, but important book published in 1898, 'Tomorrow: A Peaceful Path to Real Reform', re-issued in 1902 with its better known title 'Garden Cities of Tomorrow'. The book contained the ideas of Ebenezer Howard (1850 - 1928). The origins of his ideas lie in the squalid urban conditions of the Industrial Revolution and build upon the work of Salt, Cadbury and Lever. The difference was that Howard's ideas were based on land use / transport principles, which had not been necessary in single employer settlements. Frederic Osborn summarized the main components of his plan. 30

It was determined that the people and industries should be dispersed to towns of sufficient size that would provide services, variety of occupation with the level of culture needed by a balanced cross-section of modern society. The town size would be limited in order that the inhabitants could live within walking distance of work, shops, social centres, each other and within reach of open country.

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Amenities were important, the houses were to have private gardens. Adequate space was to be allotted for schools, other functional purposes, parks and parkways. With a defined town area the surrounding space was to be reserved for agriculture, giving cross benefits to the town dwellers, access for leisure, and farmers, local markets.

The town framework was to be pre-planned, which included the road layout, functional zoning and densities. To provide developmental and social identity the towns were divided into neighborhoods. To facilitate this the land ownership would be unified. The requirements would produce a small town.

Howard was writing on the eve of the century when the internal combustion engine was to transform the urban environment. In 1898, there were basically four transportation modes: foot, bicycle, public transport and private transport, the usage of which roughly fell in that order. Today, interestingly we aspire to the same order of priorities though they have reversed in actual usage.

In designing his Garden City Howard gave the pedestrian first priority, locating all facilities in order to maximize pedestrian accessibility.

He chose a radial pattern; industry located at the periphery and centrally located commerce and services. No dweller was to be more than 600 yards (548 m.) from shopping facilities, which were placed intermediately. Allotments and smallholdings
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were placed around the edge and divided from farms by a circle railway. The railway was for freight only. The maximum population for a pedestrianised form such as this was about 30,000. This was a problem, which was answered by creating a Social City comprising of six pedestrianized Garden Cities surrounding a larger Central City, all linked by a "rapid transit" rail network.

The philosophy was clear; the main mode of getting about was walking with occasional use of the Bicycle. This determined the scale and location of land uses within the city. To go beyond this, a highly efficient public transport system extended the pedestrian range, allowing the urban form to expand without destroying its pedestrian accessibility.

There are shortcomings to the plan brought about by the contradiction between the traffic dispersing pattern and the radial concentric road plan. The desire lines of people wanting to travel to work, not immediately adjacent to their neighbourhood, using public transport did not coincide with the road network. It was still quicker to walk.

"...A dispersed pattern of land uses and radial public transport routes do not mix..." 31

To prove that his theories worked, Howard formed the Garden Cities Association in 1899, and the Garden City Pioneer Company was registered in 1902.

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"...in order to survey potential sites..." 32

The land they decided upon was 35 miles out of London, between Hitchin and Baldock and it lay in the area between the road connecting these two towns and the Great Northern Railway line to Cambridge. 33 It was named Letchworth (Map 2.) and the practice of Parker and Unwin was commissioned as Architects and Planners. Work commenced in 1904. The Railway Company became involved at an early stage, obviously seeing the potential, for they agreed to erect a temporary station at once. Possibly they foresaw the commuter traffic potential. This was useful, as there were few made up roads in the vicinity and a development of this kind would be heavily dependent upon infrastructure - roads and transport facilities together with public utility services. The first road constructed was 'North Road', which connected the Baldock road to the railway. It was 60ft. (18.29 m.) between the fences. The carriageway was 16ft. (4.9 m.) flanked by 12 ft. (3.65 m.) grass verges and 10 ft. (3.05 m.) footpaths. Station Road with a 45ft. (13.72 m.) reservation followed. The highway reservations were given varied treatments, with tree-lined greensward's and pathways. They helped to create the Garden City character. Sollershott Circus, one of the first purpose built roundabouts was opened at a special ceremony in 1910. Broadway had a 100ft. (30.5 m.) reservation with a 27ft. (8.23 m.) carriageway. However, these roads did not anticipate the car, as they are too narrow.

It was intended that a tramway should be accommodated on the verges.

32 Hall, P., Cities of Tomorrow, Blackwell, Oxford, 1988, p96
33 Miller, Dr. M., Letchworth, The First Garden City, Phillimore, Chichester, 1989, p23
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"...Only the one route was proposed - to Hitchin, it was never built..."  

With the city being basically designed for pedestrians there was little need for internal public transport. Buses were introduced, though they were never really successful. The Garden City Company had to guarantee one bus company against loss as part of an agreement to extend services from Hitchin to Letchworth.  

The railway services were more successful; a temporary station was opened in 1905. Commuters to London and daytrippers to the Garden City made the station very busy. 1912 saw the opening of the permanent station.

2.4 CONCLUSION

Industrial development within towns and cities led to congestion and pollution. The technology of the railway led the way to greater movement of goods, though its affect on the movement of people over distance was as significant. The better off could now move out of the town to the country and commute. The lower classes did not have that choice.

The rise of the railways was shortly followed by the rise of the feeder horse bus and tram services. These in turn encouraged a new developing middle-class to move

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34 Potter, S., Transport Planning in Garden Cities. New Town study Unit, Open University, Milton Keynes, 1981, p38
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Map 2 Letchworth Garden City

ibid., p38
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to new homes connected to the centre and work by the new system. Leaving only the poor badly housed in the town centres.

Building upon the philanthropic work of people like Lever and Cadbury, and taking advantage of the new transport technologies the Garden City Movement developed. Although started at the time that the motorcar was coming into existence, they did not foresee or cater for the motorist. Their legacy is the influence they had on Town and Country Planning.

The ideas need to be revisited and considered as part of the strategy to rescue our environment from the damage caused by the car. The Garden City concept could be attractive for the Teleworker. Without the need to commute all they require would be within walking distance. Good cheap transport would be on hand if they wish to venture further. The cost benefits of the car would be lessened.

The verity of this premis will be considered later in this study.
3. THE IMPACT OF THE CAR
3.0 THE IMPACT OF THE CAR.

"...Private transport accounts for 86% of travel in Britain. Out of the 24 million registered vehicles, 21 million are private. Transport accounts for 16% of household expenditure, and for 33% of energy consumption...." 36

"...though the motor car became a technological reality around 1900, its price restricted its ownership to a small minority...the cars primitive technology, and the even more primitive state of the roads on which it ran, severely circumscribed its use..." 37

As David Banister has pointed out 38 the car has revolutionized the way in which we look at travel and communication. Before the advent of mass car ownership in the 1960s, people traveled short distances by foot or bicycle, while longer journeys were made by bus, occasionally by rail. Life was centred on the locality in which one lived, with work, schools, shops and all other facilities being available locally. Travel outside the community was only undertaken for special reasons such as visiting relatives or going on holiday.

As cars developed this changed, the capital cost, though significant gradually reduced in relationship to income. The marginal costs of fuel etc. are cheap and the

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38 Banister, D., Transport Planning. 2nd Edn., London 2002, p1
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costs reduce with the number of people travelling in the car. Once bought it makes economic sense for people to use their cars for all travel.

As the car becomes cheaper to run in relationship to public transport the benefits having personal transport available for long and short journeys become apparent. The impact on all Settlements, be they villages, suburbs or towns, has been to give people greater choice in where they wish to live irrespective of the location of their workplace or social facilities.

This has created problems of excess and congestion and a society dependent upon the car.

As can be seen in Fig. 1, numbers began to soar in the mid 1950’s when the use of the car overtook the number of people using buses and coaches and became the most significant form of travel mode.

Based upon DETR figures, by 1950, (Fig. 3) 1 979 000 cars were licensed, this had risen to 9 971 000 in 1970 and by 2001 reached 25 126 000.

• We will consider what impact the car has had on the growth of road traffic in relation to other forms of transport and the environment.
• Rural areas as well as urban have been affected in different ways and this will be explored.
Fig. 1 Passengers by Mode 1952 - 2001

- The rise of congestion and methods used for dealing with it, and
- The growth of dependence upon the car.

3.1 TRAFFIC GROWTH

Let us consider how traffic has grown, (Fig. 2). Between 1970 and 2001 the total length of roads in Great Britain rose from 322 500km. (200 401 miles.) to 388 950km. (241 583 miles.), an increase of 66 450km. (41 273 miles.). The length of motorways more than doubled from 1 057 km. (656 miles.) to 3 470km. (2 155 miles.). In contrast
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the railways lost 2 400 km. (1 492 miles.) of route over the same period, dropping from 19 000 km. (11 808 miles.) to 16 600 km. (10 317 miles.) a loss of 15%. 39

As we can see, between 1970 and 2001, (Fig. 3) the number of cars was outstripping road growth. The number of heavy goods vehicles over the same period dropped from 545 000 to 412 000 in 1987 and has risen again to 485 000 by 1999, however during that time the axle loading and therefore the size of the vehicles had increased steadily. The number of heavy goods vehicles (HGV) has grown so much that they now comprise around 50% of commercial traffic. 40

Other negative effects created by transport including accidents, congestion, air pollution and noise. It consumes energy, land and other natural resources for the production of vehicles and infrastructure. Air and noise pollution problems persist and will worsen in urban areas with population growth, the rising rate of car ownership and increasing journey times.

Fig. 4 Freight

The location of shopping, warehousing and manufacturing at the out of town road nodal points has increased the ease of accessibility for lorries. It has also drawn the vehicles closer to the suburban developments increasing congestion and pollution.
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Fig. 2 Traffic Growth
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CARS LICENSED 1950 - 2001

Fig. 3 Cars Licensed 1950 - 1999

"...Transport is by far the major source of noise... with road traffic the chief offender. Aircraft noise comes next in terms of population exposure... Railway noise and noise
TRANSPORT AND THE DESIGN OF NEW SETTLEMENTS

from fixed sources such as industrial establishments generally affect a more limited proportion of the population...” 41

Air is an environmental and an economic resource; unhealthy air reduces man’s production potential.

“…Growing evidence is becoming available that simultaneous and sequential exposure to several pollutants not only from outside and at work, but also in garages, parking areas, inside vehicles as well as in homes and commercial premises may produce more serious health problems than traditionally expected…” 42

According to the OECD transportation makes up about half of the emissions, road traffic being the dominant source.

The Rio de Janeiro Earth summit of 1992 focused attention on the large contribution that transport makes to air pollution with its links to global warming and climate change.43

Under the Kyoto protocol, agreed in 1997, developed countries took on legally binding targets for reducing their greenhouse gas emissions to 12.5% below 1990 levels over the period 2008 – 2012. The British Government also has a more challenging

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domestic goal of reducing carbon dioxide emissions to 20% below 1990 levels by 2010.

These are matters that need to be dealt with. Closer links are required between land use development, transport and environmental management at Government level and suitable policies formulated.

The change since 1950 in the modes of transport used show a change in the habits of people as to the form of transport chosen. (Fig 1.) In particular it shows the point in the 1950's that the car became dominant.

These figures illustrate the move from rail and bus to cars and freight from rail to road. The freight figures, (Fig 4.) are interesting when we note that in 1955 the amount of goods moved by road and rail were almost equal, by 2001 the difference is dramatic with around ten times more goods being carried by road. There are however signs that since rail privatization, in 1995, that the quantity of rail borne goods has been rising again with more aggressive marketing and the opening of the Channel Tunnel rail link. Road freight, on the other hand, has been gradually rising, levelling off during the economic recessions of the 1970's and 80's. Since 1990 they have been rapidly rising.

The location of shopping, warehousing and manufacturing at the out of town road nodal points has increased the ease of accessibility for lorries. It has also drawn the vehicles closer to the suburban developments increasing congestion and pollution.
3.2 RURAL AREAS

In rural areas, as compared to the country as a whole, there is,

"...a markedly higher proportion of owner occupiers 62-65% and a markedly higher proportion of car ownership, with households in rural areas owning an average of at least one car and 30% owning two or more cars..." 45

which is significant when considering proposals for new village settlements. It could be seen to be adding to the transportation problems rather than helping to alleviate them. The people, who used to walk to local farms for work, now commute to the towns.

"...On the one hand there has been a small migration flow out of many rural areas of young people faced with rising house prices and falling employment in agriculture and seeking the employment and entertainment opportunities of the cities. On the other hand there has been a much larger inward flow of mainly older people moving out of the big towns and their suburbs. This latter movement has been largely of people leaving crowded towns in search of more peaceful areas for their retirement, and of people still in employment in the towns but willing to travel further to work in order to enjoy better living conditions by making new homes in country areas..." 46

46 Policy Studies Institute, Britain in 2010. London, 1991, p166
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The incremental mobility that many rural residents currently enjoy is causing damage to rural society and its way of life.

People are more willing to spend more time on travel, and the cheapness of car ownership makes it feasible to commute to work over greater distances. This trend exacerbates the problems of excess and congestion and works against the aim of reducing car travel.

"...Most of the traffic in the countryside is produced by urban travellers rather than rural ones. This none rural use is made up of inter-urban freight and passenger travel, urban based trips into rural areas for leisure and journeys to work, shopping and peripheral urban locations...." 47

The economics and dependence upon the benefits of the car has meant that people travel to town, or to out of town shopping centres, for shopping and other services. It is more cost effective and thus undermines the viability of country bus services, village shops, sub-post offices, schools and other local amenities. In spite of which it has been shown that of villages, 80% have a post office, 70% a general foodshop, 60% a daily bus service and 50% a school.

"...Milk is delivered to over 95% of villages at least every other day. Nearly 90% of villages are served by a mobile library, 59% have a delivery service by a butcher, and

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39% are visited by a greengrocer. On the other hand, of the villages with under 500 inhabitants, over half lack both a Doctor's surgery and a school or playgroup. Over a quarter lack a daily bus service and a general foodshop...”

People who cannot leave their Villages are therefore at a disadvantage becoming even more dependent upon expensive goods being brought in rather than being able to use Public Transport or the car to take advantage of cheaper goods in the town. Cullinane and Stokes suggest that this group accounts for 10% of the rural population or 1% of the national population. They argue that the

“...thrust of rural transport policy should be to raise accessibility, particularly for those at the lower end of the accessibility scale (i.e. those without access to cars in areas with poor public transport and those with cars who have difficulty affording them).....this should be done by encouraging more accessible facilities which enable rural inhabitants to carry out more of their activities locally.....the aim would be to enable the leading of a locally orientated lifestyle rather than an enforced one....”

This assumes that the economics can somehow be made right for rural businesses to flourish within a small market. Information Technology could help as the people could use the Internet to order a greater choice of goods for delivery at more competitive prices and also to give themselves employment by Teleworking.

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On the other hand by building more new settlements or extending existing villages in rural areas can only add to the problems caused by traffic.

3.3 TRAFFIC IN TOWNS

Illus. 2 Traffic Congestion, Leicester 1938

Town design is affected by traffic. Major road building always has the effect of destroying buildings and valuable open space.
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What are the problems caused by traffic in towns?

"...Noise, fumes, visual intrusion and community severance are well recognized...but the impact on the environment of the motorized urban transport system goes wider. To provide for large volumes of fast moving traffic requires more numerous and conspicuous signs, lights and street furniture than would otherwise be required. Parking... disturbs the environment..." \(^{51}\)

The density of the town suffers as roads are widened and spaces given over to car parking. Using Leicester as an example, an inner ring road was constructed encircling the city centre forming a barrier to anyone wishing to enter whether on foot or in a vehicle. It also isolated historic sites from the city centre, access is only gained by resorting to tunnels, windswept footbridges or by risking life and limb crossing a draughty, smelly and exposed busy road.

Despite all of the destruction wreaked upon our towns in the name of accommodating the motor car the result is always more congestion. Congestion was defined by Whitelegg, \(^{52}\) quoting Illich, as

"...a manifestation of the basic failure of motorized society to deliver the claims for it...."

He goes on to say that,

\(^{51}\) Plowden, S., Taming Traffic, Andre Deutch, London, pp12-13

\(^{52}\) Whitelegg, Dr. J., Traffic Congestion, is there a way out? Leading Edge Publishing, Hawes, 1992, p7
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"...The car cannot be justified on its own terms as a cost effective solution to a basic need and, like road building, it continues to grow — fed by a remarkable ability to convert so-called 'solutions' into major problems...."

The rise in motor traffic has also had an effect on the mobility of people without cars. They have to rely on public transport that tends to be more costly than the car. As in rural areas these people tend to be among the poorer members of society and they have to bear higher costs to travel, whilst the more affluent can take advantage of the cheapness of the motorcar.

3.4 CONCLUSION

Car ownership and travel are increasing whilst travel by public transport is on the decline. The movement of goods by road has steadily risen, though the number of vehicles involved has stayed reasonably static, the axle loading, and therefore the vehicle size has increased so that HGV's can carry more.

"...in 1983, the maximum permitted weight was raised from 32 to 38 tonnes..." 53

Railways have been steadily losing both freight and passenger traffic. Concomitant with the rise in car ownership has been the desire by their owners to travel further in them. This is reflected in the choice of house and work location and the distance between them. At the same time the Government has been spending
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Increasingly more money on their road building programme. It grew from £19 million in 1964-5 to £702 million in 1982-3\textsuperscript{54} and to £1 310 million in 1989.\textsuperscript{55}

The higher proportion of car ownership in rural areas has occurred due to the decline in rural society and its former isolated way of life replaced by the growth of the dormitory village, which is left by its occupants to travel to work and shopping in the local town, by car. It has led to a decline in public transport and locally available services. The growth of shopping centres on the periphery of towns is also exacerbating the problem.

Towns and Cities have been affected by major road building to accommodate the car. Buildings have been destroyed, valuable open space lost, noise, fumes, visual intrusion and community severance a common occurrence.

The result is congestion at critical points in the system. Methods to deal with congestion used so far only tend to increase the problems as more people take advantage of the “convenience” of the car.

This “convenience” has now been part of society for the past 50 years. For the mass of people it is seen as personalized space, convenient for getting around and cheap to run. They are so dependent upon the car that any measures against it are seen as an abuse of their civil liberties. Drastic measures are called for.

\textsuperscript{33} Trulove, P., Decision Making in Transport Planning. Longman, Harlow, 1992, p134
\textsuperscript{54} Herrington, J., The Outer City. Harper & Row, 1894, p74
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Over the past 5 years increasing concern has arisen regarding the negative aspects of car ownership, that it is a technology of limited potential. The present Government has cut back its expenditure on roads and has introduced measures raising the cost of fuel in an effort to encourage people to use other forms of transport. These efforts have received some opposition and have only been half-hearted in their application. Measures are also being taken within the planning process to ensure that new developments are placed close to transport access points such as railway stations or bus stops.

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4. PLANNING FOR THE CAR
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4.0 PLANNING FOR THE CAR.

It was the effect of Planning and Transport Policy that has brought us to our present impasse.

When the car was developing various strategies were required for its accommodation, both when mobile and stationary. New settlements were designed to accommodate the car. Older settlements suffered by on street parking and the general clutter of cars. With the development of families having up to three or four cars the newer settlements are now suffering.

- In order to establish how this came about we will look at the influence of the developers and the legislators.

4.1 LETCHWORTH

The development of Letchworth as a Garden City highlighted a number of transportation and land use problems, particularly with the increasing use of the motorcar. After the First World War the problem became more acute and we will consider the manner in which Town and County Planning and Transport Legislation was used to ease the situation.
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In Letchworth narrow lightly paved roads and culs-de-sac were used in the residential areas,

"...and the subsequent widespread use of the motor car has caused problems..." 56

However we learn from Potter 57 that Unwin, when planning Letchworth, designed the roads in the anticipation that cars would be the main form of vehicular transport upon them. He admitted that 'the extent of motor traffic will increase, and the degree to which it would ultimately become desirable to modify the character of the roads, and the planning of residential areas to accommodate myriad's of motors at forty and fifty miles per hour, was certainly not then foreseen'.

Though to provide the roads for the cars and not to bother to give the owners somewhere to park them at their home would seem to have been a major oversight.

The situation on the housing estates was such that although it had been foreseen that cars would become more and more used and that the main routes around the town were designed for them, the residential areas were not. At Birds Hill, 1906, the layout incorporated a village green and a cul-de-sac. Other homes faced directly onto Ridge Road and Birds Hill. A communal playground was included, as was a planted buffer zone to segregate the community from the factory and workshop area. Unless you lived on the peripheral roads there was nowhere to park your car. Pixmore, 1909, became a

56 Miller, Dr. M., Letchworth: The First Garden City. Phillimore, Chichester, 1989, p55
57 Potter, S., Transport in Garden Cities. New Town Study Unit, Milton Keynes, 1981, p34
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self-contained neighbourhood. Again the houses were built around greens or adjacent to the central narrow lane or peripheral roads. Allotments were used together with the greens to provide space between the properties. An institute, with sports facilities provided a focus for the community.

The main routes were more conveniently designed for bus operations, being less radial. A regional service grew as people migrated to the town for work.\textsuperscript{58} As in Letchworth it soon became apparent that commuting was becoming a major feature of the town with people leaving each day to work elsewhere, generally London, and non-residents entering the town to work.

4.2 HOMES FIT FOR HEROES.

Welwyn Garden City followed in 1919. Provision for the private car was far more extensive than at Letchworth. The lessons had been learned, reinforced by the great advances made in motorcar technology and the number men acquainted with vehicles and able to drive as a result of the Great War of 1914 - 18. All the larger houses had garages and many of the semi-detached ones also. The roads had ample capacity for the traffic volumes of the period, and in addition, the shopping streets of Parkway and Howardsgate were made sufficiently wide to allow for extensive parking along them.

\textsuperscript{58} Miller, Dr. M., \textit{Letchworth, The First Garden City}, Phillimore, Chichester, 1989, p47
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"...The First World War caused a halt to building and a temporary return to prosperity for agriculture, but soon after 1918 the position was reversed..." 59

In 1919 the slogan ‘Homes fit for Heroes’, was coming home to roost. New houses were virtually non-existent and the ranks of the skilled building workers were severely depleted. Building materials were also hard to come by. The private builder, who up to this time had produced all the housing, was finding it very difficult to cope. The people were demanding something better, more amenities and more space, they wanted a better and a happier life, as they had been promised. 60

In 1919 the Housing and Town Planning Act (9 & 10, Geo. 5) was passed, which,

"...accepted the principle of state subsidies for housing and thus began the nation-wide growth of Council House Estates..." 61

Significantly the recommendations of the ‘Report of the Committee on Questions of Building Construction in Connection with the Provision of Dwellings for the Working Classes, Cd 9191 (HMSO 1918)’ - The Tudor Walters Report - were taken cognizance of. These put forward an entirely new standard of working class housing. Houses were to have three bedrooms, a kitchen, bath and garden and be built to a density of no greater than 12 houses per acre. This meant that development could only take place on virgin land on the periphery of towns. There was, however, no allowance for the

60 Willbond, W., A Home of Our Home. Leicester City Council, Leicester, 1991, p7
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inclusion of garages with the subsequent damaging effects to nice areas when car parking was required.

"...The municipal estates grew alongside the private suburb..." 62

The motorcar was still the preserve of the well off, though it was becoming more available to the middle classes. There was an one opportunity for the working man. One of the outcomes of the War was the rapid development of the internal combustion engine and a glut of out of work trained drivers. Also there were a lot of redundant commercial size vehicles that were used as lorries or converted to buses. They formed the basis for many small companies commencing to trade in competition with the established railways for goods and the municipal tramway companies for passengers.

4.3 THE HOUSING ESTATE

"...In the twenty years after 1919 over 4.3 million dwellings were constructed in Britain..." 63

Encouraged by the financial incentives of the Housing Acts of 1923, 1925 and 1932.

The massive suburbanization that was taking place was facilitated by transport innovations. With the motorized vehicle, bus or car, there was a marked loosening of the urban spatial structure and a steady weakening of workplace - residential links. The

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trams were on the decline, being replaced by the much more flexible motorbus or its halfway house counterpart the Trolleybus. As far as the movement of goods was concerned, road transport was simply more convenient and attractive to a whole range of manufacturers, distributors and retailers.

The ideas generated by the Garden City Movement formed the basis for the layouts of these new estates. Road hierarchy was of prime importance, though the narrow lanes of Letchworth, inaccessible to the motorcar where not persevered with. Shops, churches and schools were all provided in accessible positions from the outset.

Transport improvements made these developments easier to carry out, though they were not always there from the outset. The Saffron Lane estate in Leicester was occupied during 1926 and they had to wait a year before buses were extended to the estate. Interestingly the original plan for the estate of 1924 shows a site for a railway halt that was never built.

The consequence was the expanded inter-war road construction programme, under the auspices of the new Ministry of Transport. Between 1920 and 1930 more was spent on road improvements than was collected from motor taxation. New urban roads were constructed, substantial improvements made to existing trunk roads and new trunk

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64 Willbond, W., A Home of Our Own, Leicester City Council, Leicester, 1991, p61
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roads built. Even so, the road programme never kept pace with the increase in road traffic.  

Putting the growth of motor vehicle production in Britain into context. The annual production rose from 95,000 in 1923 to over half a million by 1937. Horse drawn vehicles had virtually disappeared between 1924 and 1933. Train services suffered acute competition, particularly on shorter journeys, as both freight and passenger business declined relative to road provision.

There were exceptions. Leeds extended their tramway system into the new Middleton Estate. This purpose built estate was laid out as a town within the city for 10,000 people in the 1920s. It was complete with church, shops and cinema. The tramway was integrated into the plan from the beginning and ran on its own reserve track, as is common on the continent today. This enabled the trams to travel at higher speeds, at a higher frequency and at low fares. New vehicles were introduced with a seating capacity of 70; this compares with 56 of the contemporary motorbuses.

Another exception was Becontree, Essex. The estate was planned to accommodate 90,000 people, work commenced in 1920. By 1934 it had become,
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"...the largest single development in the world, some 35 000 houses having been erected within the area of four square miles...designed to be the greatest single private housing enterprise in Britain..."69

It was intended that as most people worked in London they would travel by train. The housing was arranged to be within easy walking distance of the station. The existing railway stations were all situated on the perimeter of the estate. Pressure was applied for better facilities and Gale Street Halt was opened on 28 June 1926, thus enabling newcomers to the estate to commute to work in London more easily. Not far away Elm Park Station was opened in 1935 to serve the new Elm Park Estate.

Potentially the opening of the Southend arterial road in 1925 provided the only source of competition to the railway. Buses and trams are essentially short distance vehicles; cars and coaches are subject to the vagaries of the rush hour hold ups and roadwork's.

The loosening of the urban spatial structure was not only just due to the relocation of residential districts. To add to the confusion industry began to develop in a random fashion on scattered sites. Heavy industry and long established manufacturers tended to continue to operate in their traditional areas. New industry took advantage of motor lorry transport, the extension of the electricity grid and less expensive land on the outskirts of towns near arterial or by-pass roads. The effect was that these roads, constructed to take fast traffic, were blocked by slow moving local industrial traffic. The

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dissociation between homes and workplaces created an even greater confusion of journey to work patterns. 70

It was by no means a nation-wide phenomenon. It occurred mostly in the Southeast and Midlands. The economic slump produced a drift of people towards these areas from the less prosperous places in the north and west.

The effects of mass-motorization were already to be seen in the New World. In the mid 1920s American cities were already suffering in a way that would not be seen in the rest of the world until the 1950s and 60s.

“...By 1923, traffic congestion in some cities was so bad that there was talk of barring cars from the downtown streets...at the end of the 1920s, they found that already car ownership was allowing the ordinary worker to live further from his work...” 71

In Germany, things were going the other way. The traditional form of road layout was coming in for heavy criticism.

“...The full width of the street in front of every front door was attacked as needlessly generous and expensive...” 72

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The Germans devised a new classification of traffic that led to layouts with a single distributor feeding a number of access roads leading to pedestrian paths that approached the individual houses. The paths were so constructed so that emergency vehicles and removal vans could use them. They also had underestimated the demand for the car as had Parker and Unwin at Letchworth twenty years earlier.

By the beginning of the Second World War we see that the emphasis of mass housing provision had moved from the realm of the private house builder and the philanthropist to the municipal overlord. This had been reinforced by legislation. New Settlements tended to be on green field sites on the periphery of towns and cities. Land uses became more dispersed and the mobility created by transportation improvements had a large part to play in this. No one had foreseen that one day the working man would also want his own personal transport. Yet the evidence and the consequences were already there on the other side of the Atlantic for all to see.

4.4 THE LEGISLATIVE BACKGROUND TO 1939

4.4.1 Planning

The potential of Traffic chaos was worsened by the introduction of further planning legislation.
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As we have seen the changes were brought about by The Housing, Town Planning, etc., Act 1919. This was only the second Act of Parliament to deal specifically with Town Planning matters. The first was The Town Planning etc., Act 1909.

It was in two parts and dealt with 'Housing of the Working Classes' in part 1 and Town Planning in part 2. Local Authorities were empowered to make a 'town planning scheme' particularly with respect to,

"...any land which is in course of development or appears likely to be used for building purposes, with the general object of securing proper sanitary conditions, amenity and convenience in connection with the laying out and use of the land and of any neighbouring land..." 73

Instead of just being able to control individual plots, the local authority could now take a broader view of development. Thus residential districts could be safeguarded against the undesirable intrusion of industrial buildings. They would be set apart in their own areas specifically set aside for industrial development only.

The consequence of this concept of zoning was that the diversification created major transport problems not envisaged at the time, which in time led to more use of the motor car to the detriment of public transport and the general environment.

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The 1919 Act, as we have seen, was the turning point and opened the door for the local authorities to have more autonomy and carry out their own developments. They were also obliged, if their population exceeded 20,000, to produce town planning schemes. Subsidies for housing were provided to increase the supply of working class houses and thus for the growth of Council Estates.

<table>
<thead>
<tr>
<th>Year</th>
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<tr>
<td>1890</td>
<td>Housing of the Working Classes Act</td>
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<tr>
<td>1909</td>
<td>Housing and Town Planning Act</td>
</tr>
<tr>
<td>1919</td>
<td>Housing and Town Planning Act</td>
</tr>
<tr>
<td>1923</td>
<td>Housing etc. Act</td>
</tr>
<tr>
<td>1924</td>
<td>Housing (Financial Provisions) Act</td>
</tr>
<tr>
<td>1925</td>
<td>The Town Planning Act</td>
</tr>
<tr>
<td>1930</td>
<td>Housing Act</td>
</tr>
<tr>
<td>1932</td>
<td>The Town and Country Planning Act</td>
</tr>
</tbody>
</table>

Fig. 5 Planning Policy to 1939

1919 also saw the establishment of The Ministry of Health, which replaced the Local Government Board as the contact for local authorities in all planning matters. This remained the situation until the establishment of The Ministry of Town and Country Planning in 1943.
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The Local Government Act of 1929 brought County Councils into the planning realm. Under the previous Acts they had only been allowed to act in place of a County District Council which had failed to prepare a town planning scheme on being ordered to do so by the Local Government Board. By the 1929 Act they could act jointly with the other local authorities and play the part of an authority responsible for enforcing and carrying into effect the provisions of the scheme. The district councils could also relinquish their powers to the county council if they so wished.

This and The Town Planning Act of 1925 (a Consolidation Act) were repealed and re-enacted as The Town and Country Planning Act 1932. This Act extended planning to cover all land including that within built up areas. In 1944, after the incorporation of the Minister of Town and Country Planning, came the Town and Country Planning Act 1944. This introduced the concept of 'positive' town planning, empowering local authorities to,

"...undertake themselves.....the actual development of their own areas..." 74

The culmination of all this work came with the Town and Country Planning Act of 1947, which we will consider later, for 1947 was a turning point in not only planning, but also in public transport.
4.4.2. Transport

Legislation concerned with transport matters appears to begin in the first century AD when,

"...wheeled vehicles were prohibited within the city of Rome during daylight hours..."  

There does not seem to have been any major legislation, other than local by-laws, concerned with the control of traffic until the General Turnpike Act of 1773. This Act consolidated all of those that had gone before. The state of the roads was so bad, in spite of the efforts of Telford and Macadam that the General Highway Act of 1836 made each parish responsible for nominating a road surveyor who was entitled to remuneration for his work. The alterations made little difference to the problems.

As with the Turnpikes and Canals, the railways required an Act of Parliament to authorize their construction. Each proposal was subject to intense debate in Parliamentary committees with all sides, both for and against, able to proffer their views. This was an early form of planning control, similar in many ways to todays’ public enquiries.

Several Acts were passed in 1840, 1842 and 1844 in an effort to impose various duties on the railway companies, over and above those required by each individual

75 Burtenshaw, D., Bateman, M, and Ashworth, G., The European City: A Western Perspective, p94
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companies Act of Incorporation. The Board of Trade was to supervise railway affairs. The 1844 Act also envisaged the possibility of nationalization for the first time.

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
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</thead>
<tbody>
<tr>
<td>1555</td>
<td>Highways Act</td>
</tr>
<tr>
<td>1663</td>
<td>First Turnpike Trust established under Private Act.</td>
</tr>
<tr>
<td>1761</td>
<td>Bridgewater canal Opened</td>
</tr>
<tr>
<td>1773</td>
<td>General Turnpike Act</td>
</tr>
<tr>
<td>1791-4</td>
<td>Canal Investment boom, 81 canal bills in parliament</td>
</tr>
<tr>
<td>1820</td>
<td>Macadam improved road surfaces</td>
</tr>
<tr>
<td>1830</td>
<td>Opening of the Liverpool and Manchester Railway</td>
</tr>
<tr>
<td>1835</td>
<td>General Highway Act</td>
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<tr>
<td>1840</td>
<td>Railway Regulation Act</td>
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<td>1842</td>
<td>Railway Act</td>
</tr>
<tr>
<td>1854</td>
<td>Railway and Canal Traffic Act</td>
</tr>
<tr>
<td>1862</td>
<td>Highways Act</td>
</tr>
<tr>
<td>1873</td>
<td>Railway Commissioners introduced</td>
</tr>
<tr>
<td>1894</td>
<td>Railway and Canal Traffic Act</td>
</tr>
<tr>
<td>1903</td>
<td>Motor Car Act</td>
</tr>
<tr>
<td>1909</td>
<td>Development and Road Improvement Fund introduced</td>
</tr>
<tr>
<td>1919</td>
<td>Creation of the Ministry of Transport</td>
</tr>
<tr>
<td>1921</td>
<td>Railway Act</td>
</tr>
<tr>
<td>1928</td>
<td>Royal Commission on Transport established to improve regulation and</td>
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</table>
control of the available means of transport and to promote their
Co-ordinated working and development

<table>
<thead>
<tr>
<th>Year</th>
<th>Act</th>
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<tr>
<td>1930</td>
<td>Road Traffic Act</td>
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<tr>
<td>1933</td>
<td>Road and Rail Traffic Act</td>
</tr>
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<td></td>
<td>London Passenger Transport Act</td>
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<tr>
<td>1934</td>
<td>Road traffic Act</td>
</tr>
<tr>
<td>1936</td>
<td>Trunk Roads Act</td>
</tr>
</tbody>
</table>

Fig. 6 Transport Policy to 1939

The Highways Act of 1862,

"...empowered justices in quarter sessions to combine parishes compulsorily into
Highway Districts, the roads to be administered by Highway Boards. The Act was
applied in a very haphazard fashion..." 76

Another Government action was the repeal of The Red Flag Act of 1865 in 1896.
Prior to this all mechanically propelled vehicles had to be preceded by a man on foot
carrying a red flag. This limited speed to 4 mph (6.4 km/h). Following the repeal motor
vehicles of less than 3 tons (3.05 tonnes) in weight were permitted to travel at a
maximum speed of 12 mph (19.3 km/h).

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In 1903 the speed limit was raised to 20 mph (32 km/h) and all drivers required to be licensed and their cars registered. The Heavy Motor-car Order of 1904 raised the maximum permitted weight for motorcars to 5 tons (5.08 tonnes). This allowed for the development of commercial vehicles. The setting up of the Central Road Board came about in 1909 with the Development and Road Improvements Fund Act. Local Authorities were assisted with money to improve old roads and to construct new.

As a result of the Great War and the enormous pressure put upon them during that time, the railways were in a terrible state. During the war they had been brought under Government control. The next logical step was nationalization, however, the Railways Act of 1921 did not quite go that far. The railway companies, of which there were 150 extant in 1921, were amalgamated to form four. 77

The most significant step forward so far on the roads was the Road Traffic Act of 1930. It contained various new requirements, such as the grant or renewal of a driving license being conditional upon a declaration of physical fitness by the applicant. The speed limit for ordinary motorcars and motorcycles was abolished, though a maximum of 30 mph (48.2 km/h) was imposed on passenger carrying heavy motor cars fitted with pneumatic tyres. The time that the driver of a heavy motor vehicle was allowed to remain on continuous duty was limited and the running of motorbuses and motor coaches was regulated. Local Authorities, outside of London, were given greater

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powers in the running of motorbuses. They were empowered to issue licenses and regulate bus services and routes,

"...with the object of ensuring public convenience and of eliminating wasteful competition..." 78

The impact of road transport was having an adverse effect upon the railways. The best paying traffic was moving on the roads. An inquiry was set up which culminated in the Salter Report of 1932. The Conference reported that mechanically propelled vehicles should pay £60 million a year towards the cost of the roads; that commercial vehicles (particularly of the heaviest type) should be subject to increased taxation; and that conditions of employment by hauliers should be regulated by a licensing system. Most significantly,

"...unsuitable traffic should be prohibited from using the roads..." 79

The outcome was the Road and Rail Traffic Act of 1933. It provided for the licensing of the owners of goods vehicles. The licenses could be withheld or revoked if the vehicles were found to be not road worthy or if the drivers' hours were excessive. A Transport Advisory Council was established to advise the Minister of Transport how to co-ordinate and improve transport facilities. The Railway Companies, whose rates of

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carriage were fixed by the Railway Clearing House, were permitted to charge Special Rates. The intention was to make them more competitive.

Driving tests and licenses for new applicants were introduced at the same time as the introduction of the 30 mph (48.2 km/h) speed limit within built up areas. The enabling legislation for this was the Road Traffic Act of 1934.

The majority of the legislation was concerned with the regulation of the uses and the safety aspects of the system.

The Second World War now intervened and it was this that was to cause the nationalization of transport and the restructuring of town and country planning in 1947.

4.5 THE POST WAR LEGAL FRAMEWORK.

4.5.1 Planning.

During the war a lot of thought had gone into how the country would be rebuilt. The physical and political impacts of the war were a major influencing factor. It was appreciated that planning would have to be regulated better. The need to plan revolved around the opportunities and the problems of the technology of the motorcar. The car had brought with it ribbon development and city centre congestion during the thirties. The Barlow Commission and Abercrombie Report investigated these.
<table>
<thead>
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<th>Year</th>
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<tr>
<td>1940</td>
<td>The Barlow Commission Report</td>
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<td>1944</td>
<td>Town and Country Planning Act</td>
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<tr>
<td>1945</td>
<td>Distribution of Industry Act</td>
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<tr>
<td>1946</td>
<td>The New Towns Act</td>
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<td>1947</td>
<td>The Town and Country Planning Act</td>
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<td>1948</td>
<td>National Parks Act</td>
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<td>1952</td>
<td>Town Development Act</td>
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<td>1961</td>
<td>Land Compensation Act</td>
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<td>1962</td>
<td>The Town and Country Planning Act</td>
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<td>1968</td>
<td>The Town and Country Planning Act</td>
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<td>1971</td>
<td>The Town and Country Planning Act</td>
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<td>1978</td>
<td>The Town and Country Amenities Act</td>
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<td>1980</td>
<td>Local Government Planning and Land Act</td>
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<td>1984</td>
<td>The Town and Country Planning Act</td>
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<td>1986</td>
<td>Housing and Planning Act</td>
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<td>1989</td>
<td>Local Government and Housing Act</td>
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<td>1997</td>
<td>Land Use Change in England, No 12, DETR</td>
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<td>1999</td>
<td>Towards an Urban Renaissance, Urban Task Force.</td>
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<td></td>
<td>Our Countryside: The Future – A Fair deal for Rural England</td>
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Fig. 7 Planning Policy since 1940
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The significant pieces of legislation are The New Towns Act of 1946, The Town and Country Planning Act and The Transport Act of 1947. These were to prove a launch pad for the development of new settlements and transport provision. The catalyst that enabled it all to work was the landslide election win of the Labour Government in 1945.

Looking at developments in planning, we have already mentioned the Barlow Report. The brief,

"...was to inquire into the present and future distribution of the industrial population; to consider what social, economic or strategic disadvantages arose from the concentration of industrial populations in certain towns, cities and regions; and to indicate what remedial measures should be taken in the national interest..." 80

The Commission reported in 1940 that it appeared that industrial development, if left to market forces would continue to concentrate in the relatively prosperous regions of the Midlands and the Southeast. This would aggravate social and economic conditions in the older industrial regions, let alone the implications in time of war of extensive bombing. The view on what remedial action should be taken was divided, though all members thought that the urgency of the problem required national action. The extent to which controls should be applied was the contentious issue. It was agreed,
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"...that a central planning authority, national in scope and character, was needed..." 81

The objectives of the national action were seen to be redevelopment of urban areas; decentralization and dispersal of industry and population from overcrowded areas; and balance of industry in each region. The Central Planning Authority was to formulate a plan, inspect all planning schemes and correlate them in the national interest. Three of the members, led by Sir Patrick Abercrombie, produced a minority report recommending that the Central Planning Authority, should prepare an outline scheme of national development and that more effective planning powers were needed under the Town and Country Planning Acts.

The Report of the Committee on Land Utilization in Rural Areas, (The Scott Report), of 1942 opened with a survey of conditions in the Countryside. This included the drift of the population into the towns and the harmful effects of urban spread. Existing planning powers were examined and found wanting. In common with the Barlow Committee a Central Planning Authority was recommended. It was maintained that industrial development should be controlled and that rural land should be protected against urban expansion. Again a minority report was produced. Professor Denison did not accept as necessary the principle that construction in the countryside should be prevented in order to maintain agriculture, he considered that the introduction of industry into rural areas would benefit the communities, and assist towards the dispersal of existing concentrations.

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The Report highlighted the fact that at the time the movement was towards the towns where the jobs were located. Cheap transport was not available or convenient. To stem the flow a methodology was required by which people could live and work in their communities. The introduction of Industry to these areas could only be on a small scale, due to the smaller number of people in rural areas and the difficulty of transport reaching outlying areas along narrow country roads. The growth of car use in fact reversed the movement back out into the country from the town, creating Dormitory villages with less industry and local services.

If the opportunity had been available to telework at the time it would have provided the right kind of Industry. People could work from home without the need to travel or transport goods.

The first Minister of Town and Country Planning was appointed in 1943. He was charged with the duty of,

"...securing consistency and continuity in the framing and execution of a national policy with respect to the use and development of land throughout England and Wales..." 82

'The Control of Land Use', was a Government White Paper issued in 1944 and proclaimed the intention to plan the use of the land for housing, schools, industry, agriculture, forestry, national parks, transport and other purposes.
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The concept of ‘positive’ planning was introduced by the Town and Country Planning Act of 1944 and the Distribution of Industry Act of 1945 enabled the Board of Trade to guide industrial development away from areas where overcrowding was threatened.

“...When the fighting in Europe came to an end in 1945, Parliament was dissolved and a few weeks before the election the Coalition was broken up.....To which party would the people of Britain entrust their hopes for the post war world ?......on 26 July 1945, the first general election after the war gave a decisive answer.....The Labour Party led by Clement Attlee was returned with.....an absolute majority over all other parties...” 83

The new Government had a lot of urgent problems to deal with - demobilizing the armed forces, establishing civilian work to replace the wartime jobs, reorganizing and re-equipping the basic industries of coal, steel, transport and power, establishing the health services, pulling down the slums and getting going on a programme of house building. Priorities needed to be established. The reconstruction of war damaged areas was a first priority. There was a problem of overspill. Professor Abercrombie recommended ‘satellite towns’. In 1946 Lewis Silkin laid down a three stage programme, dealing firstly with New Towns, then with planning and compensation-betterment and finally with the problems of the countryside. These Bills eventually reached the Statute Book as the New Towns Act 1946, The Town and Country Planning Act 1947 and the National Parks Act 1948.

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The Town and Country Planning Act of 1947

"...provided a land mark in the history of town planning legislation..." 84

Its main provisions were in the fields of financial and physical planning. The financial aspects dealt with compensation. It is with the physical that we are concerned here. The responsibility was vested in the county councils and county borough councils which replaced the 1,400 previous planning authorities. The new authorities were required to prepare and submit a 'development plan' for their area to the Minister within three years from 1 July 1948. The plans were to indicate how it was proposed to use the land in their area. It was also intended that they should be revised every five years. No owner of land, with certain exceptions was allowed to develop land without first obtaining planning permission. Appeal against a local planning authorities' decision was possible through the Minister.

"...It is impossible to exaggerate the importance of the 1947 Act for it provided the most comprehensive and radical framework for the use of land on the world..." 85

The development plan was designed to,
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"...define the sites of proposed roads, public and other buildings and works, airfields, parks, pleasure grounds, public and other open spaces, or allocate areas of land for use for agricultural, residential, industrial or other purposes..." 86

It was subsequently amended by four Acts, in 1951, 1953, 1954 and 1959 and also by the Land Compensation Act of 1961. Eventually all the planning acts were repealed and consolidated in the Town and Country Planning Act of 1962.

The next major T. & C.P. Act came in 1968 and introduced the two-tier development plan procedure. The two tiers involved a 'structure plan' and 'local plans'. A structure plan sets out and justifies broad land use policies for the area together with policies for the management of traffic and measures for the improvement of the physical environment. Local or District Plans, were intended to develop the policy and general proposals of the structure plan and to relate them to precise areas of land. Also to provide a detailed basis for development control; to provide a detailed basis for coordinating the development and other use of land; and to bring local and detailed planning issues before the public.

By the time this plan was implemented the car was well into its ascendancy. The Motorway network was expanding as the Beeching Report, which closed miles of under-used track, was decimating the Railways. Other forms of public transport were also in decline. It took into account the growing problems caused by the car, though instead of looking at alternative ways of movement it tended to encourage accommodation by

86 Cullingworth, J. B., Town and Country Planning in Britain. 8th edn. George Allen & Unwin, 1982, p77
TRANSPORT AND THE DESIGN OF NEW SETTLEMENTS

cutting large swathes of road through the built environment and building ever bigger car parks.

4.5.2 Transport

After the war the whole of the transport system, particularly the railways, was in a very poor state. Six years of lack of maintenance and investment had taken their toll. As in the Great War, the Government had taken over the railways for the duration. The post war reconstruction and the social changes taking place were going to show an increased need for a good transport system.

The 1945 Labour Government, as we have seen, had many problems to deal with. There were desperate financial problems, the balance of trade was worsening and there was still rationing. They also had a programme to nationalize and take over one quarter of British Industry as well as setting up the Welfare State and the Health Service.  

As far back as 1844, Gladstone had proposed nationalization of the railways. Winston Churchill had supported the idea in 1919 and Sir John Reith proposed a National Transport Policy in 1940. It was this policy, which was revised to become the Transport Bill. The result of which was to create an Integrated Transport System.
<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
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<tbody>
<tr>
<td>1947</td>
<td>The Transport Act</td>
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<td>1953</td>
<td>The Transport Act</td>
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<td>1955</td>
<td>Railway Modernization Plan</td>
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<td>1959</td>
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<td>1962</td>
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<td>The Beeching Report on the Reshaping of British Railways</td>
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<td>1968</td>
<td>The Transport Act</td>
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<td>1969-72</td>
<td>Passenger Transport Authorities created in 6 Metropolitan Areas</td>
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<td>1971</td>
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<td>1972</td>
<td>The Local Government Act</td>
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<td>1977</td>
<td>Transport Policy Document</td>
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<td>1978</td>
<td>Policy for Roads: England</td>
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<td>1980</td>
<td>The Transport Act</td>
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<td>1982</td>
<td>Sale of National Freight Organization</td>
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<td>1985</td>
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<td>1991</td>
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<td>PPG 13 Transport</td>
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<td></td>
<td>UK Strategy for Sustainable Strategy</td>
</tr>
</tbody>
</table>

87 Hamilton, K., 'Nationalization' Losing Track, Channel 4 Television, 1984
The fiercest opposition to the proposals came from the Road Haulage lobby, who persuaded the Conservatives to take their side, so much so, that they pledged to undo the legislation before it was even passed. The Bill became law as the Transport Act 1947 and came into force on 1st January 1948.

The Act set up the British Transport Commission that was responsible to the Minister of Transport who was in overall control. Transport Users Consultative Committees were also set up to represent the voice of the traveler. The BTC was charged with ensuring that all transport acted as one and was fully co-ordinated. Using the most suitable form of transport for each particular task.

There were problems from the outset within the new management structure. The Minister of Transport chose the individual heads of the executives and the BTC. This led to discord and hostility due to each of the heads considering themselves responsible
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to the Minister direct and not through the BTC as was the intention. Integration was therefore impeded. Another problem was that not all the buses were owned by the state, some services were run by municipal undertakings, others were in private hands. Road Haulage compensation proved difficult and time consuming as it had to be negotiated with myriad's of small company owners. They wanted payment not only for their vehicles, but also for the goodwill of the businesses.

"...With the return of the Conservative Government in 1951 priorities changed. There was a reversal of former policies. The profitable road haulage business was sold off at a loss..." 88

The new government's emphasis was on individual prosperity, more consumer goods and more private cars.

The export drive had priority. The Transport Act of 1953 sold off London Transport and the road haulage executives, and hived off the hotels. The BTC became the manager of just the Railways and the Inland Waterways. Canals, which as part of an integrated transport system could have played a part were left to rot. The railways were not the backbone of the system any more. More money was pumped into the development of the motorway network. The lorries were sold off at bargain prices, often to the people who had received compensation just a few years before. Thus the opportunity for a fully integrated transport system was lost.

88 Hamilton, K., 'Modernization' Losing Track. Channel 4 Television, 1984
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The railways were still in a poor state, and a lot of their business was being taken away from them. They were given the money to improve themselves under the Modernization Plan of 1955, but it was too late. The appointment of Sir Richard Beeching in 1961 and his subsequent plan reduced the railways to a skeleton of their former selves. A lot of the pruning was beneficial, however some was shortsighted in view of subsequent events and in the light of today's problems.

Road Traffic between towns gave rise to few problems in the late fifties, it was traffic within the towns that began to cause concern. In 1961 a Steering Group was set up in connection with the Study of the long term problems of Traffic in Towns. A study group was also set up within the Ministry, led by Colin Buchanan. Together they produced a report that was published in 1963.

It suggested the bringing together the planning and location of buildings with the management of traffic, overcoming the previous administrative separatism.

The report proposed, as a basic principle,

"...the canalization of larger traffic movements on to properly designed networks, servicing areas within which environments suitable for a civilized urban life could be developed..." 89

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89 Cullingworth, J. B., Town and Country Planning in Britain, 5th edn., George Allen & Unwin, 1982, p155
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Thus two main ideas came from the report 'primary road networks' and 'environmental areas'.

"...There must be areas of good environment - urban rooms - where people can live, work, shop, look about and move around on foot in reasonable freedom from the hazards of motor traffic, and there must be a complimentary network of roads - urban corridors - for effecting the primary distribution of traffic to the environmental areas..." 90

This was a reiteration of the Radburn Plan, (see section 5.20 and ideas put forward by Sir Alker Tripp in the 1940s. The new report advocated the ideas on a much larger scale.

"...Since the 1950s there has been a marked sharpening of interest in amenity, caused partly by the rapid rate of development, and an awareness of the inadequacy of the planning system automatically to preserve and enhance amenity..." 91

In 1967 a White Paper was published entitled 'Public Transport and Traffic'. It noted that mobility was one of the most precious achievements of modern civilization, enriching social life and widening experience. It called for a building of mobility into urban and rural life without destroying the elements of good living, and saw that transport provision could not be seen in isolation from other developments. The

91 Cullingworth, J. B., Town and Country Planning in Britain, 8th edn., George Allen & Unwin, 1982, p123
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Integration of transport into environmental planning was to be aimed for. This principle was also to be built into the T. & C.P. Act of 1968.

It was thought that major towns and cities could only be made to work effectively and provide a decent environment if a new role was found for public transport and facilities expanded for the private car.

The result was to create wholesale demolition of the fabric of towns. The inhabitants were forced to move away from the centres to the periphery or the countryside. They could do this knowing that their cars would be an available and cheap form of transport along the new roads to work. The proliferation of cars only created a worse situation with the towns and new roads becoming clogged with the extra traffic. The new role for public transport could not be found, with fewer passengers to pay fares and the traffic hold ups running services became increasingly uneconomic.

It was therefore proposed that the local authorities should be responsible for public transport as well as for planning; that they should be responsible for the improvement of the road network, investment in public transport and the balance between public and private transport. This was to be achieved by a public transport plan related to the general planning for each area. Grant-aided public transport would be financed by central government, and it was also intended that the main network of public transport would be publicly owned. The paper also pointed out how bad the traffic situation was becoming in certain areas.
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This became law as the Transport Act of 1968 and Passenger Transport Executives were formed out of the Metropolitan County Councils. It was their duty to promote the provision of a co-ordinated and efficient system of public transport in their area. The County Councils were given the same duties under the Local Government Act of 1972.

This could not work. The authorities were fighting a rearguard action against the growth of car ownership when it was too late. Having become use to the car, its convenience and cheapness, people could see no good reason to revert to public transport.

4.6 TRANSPORT POLICY

"...Public Transport provision in Britain has suffered from a lack of political consensus. Labour and Conservative Governments have differed fundamentally in their attitudes to the planning of public transport..." 92

"...Transport projects can be ascribed an economic value much more easily than health, social services or defence expenditure...The enormous battery of transport evaluatory techniques may be helpful in making decisions among transport projects, but they are no help in deciding how much the government should spend on transport. That can only be done politically..." 93

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The 1909 budget had incorporated a suggestion put forward by the Royal Automobile Club. This was for a vehicle tax, or road fund, which would pay for new roads. However, a few years later the Treasury found itself short of money, and the Chancellor of the Exchequer, Churchill, appropriated the money for other purposes. So today the money is used at the discretion of the Chancellor in his budget statement and the Secretary of State for Transport has to make a bid for money to carry out his projects along with all the other government departments.

The Secretary of State has direct responsibility through the Department of Transport for motorways and the trunk road network, as well as allocating money to local authorities for local roads. He is responsible for making grants to Passenger Transport Authorities and approves British Rail’s investment plans as well as allocating money to support unremunerative but socially necessary railways.

The Department of Trade and Industry is also becoming involved, as state owned companies are privatized. The DTI has the task of enforcing legislation on competition and has intervened in merger and purchase plans by bus companies. This is particularly in areas where there are fears of monopolies.

"...In the 1930s, long before any majority Labour government, legislation was introduced to limit competition in the bus industry. Competition between operators was then held to
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result in wasteful duplication. Under the 1985 Transport Act, the same competition was restored on the basis that it would promote efficiency...” 94

It would appear that the level of support for public transport, as in planning matters, depends upon the political agenda of the government in power on the day. Though it need not necessarily be a straight left/right divide, as it often appears. In the end it comes down to whether transport is seen as a social necessity or as a subject for market forces. The present situation seems to be an amalgam of the two. Subsidies are being given to public transport where it is considered socially necessary. On the other hand the government is conscious of the great contribution made to the exchequer by the car owner,95 and the need not to upset this source of revenue. This amounts to £20 billion a year or one tenth of all tax revenue.96 This does have to be set against the costs of damage caused by the car, by way of air pollution and accidents.

“...From 1933 to 1985, the provision of bus services was tightly regulated. To provide a new service the operator had to have a license for his vehicle, and his driver...but he also had to have a route license...” 97

An existing operator on the route could object to further licenses on that route, and usually did, therefore they were rarely granted.

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Under the Transport Act 1985, it was enacted that local authorities could no longer run their own bus companies, their fleets were to be sold off and competition promoted. The Passenger Transport Authorities also lost their role in running buses and coordinating transport. They had to invite tenders for the provision of unremunerative services that were grant supported. Otherwise a bus operator needed only to inform the authority that he was going to run a service along a particular route and the rest was left to competition.

What was going to happen could be seen from what had happened to long distance coach services after they had been deregulated in 1980. Deregulation was greeted with euphoria and competition ensued and some very low fares were charged. Now, competition only survives on a few of the busiest routes, elsewhere fares have risen sharply so that they are pitched just below the corresponding rail fares. One company, National Express, runs the majority of these routes.

Thus it has been seen that,

"...the idea that competition stimulates efficiency seems to be that competition between public transport operators does not operate over a long period of time..." 98

The introduction of competition, and mini-buses has not had any effect upon the decline in patronage and the swing to the motor car. It initially led to confusion. Gradually, due to buy outs and amalgamations the trend moved towards large private
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companies owning a number of subsidiaries spread around the country. For instance one company, Stagecoach Holdings, had a portfolio of 15 subsidiary bus companies spreading from Chichester in the South to Inverness in the North in 1992. They are among the private companies that have successfully bid for franchises having taken over Southwest Trains, The Island Line and Porterbrook Leasing on the privatized British Rail network.

By 1996 the majority of bus services where in the ownership of three major operating groups, Stagecoach, Arriva and Firstbus.

The 1968 Act introduced the Passenger Transport Authorities into the Metropolitan conurbation. They were responsible for all local rail services and urban public transport. Grants of up to 75%, the same as for new road construction were made available. This changed with the 1985 Act when bus companies were encouraged to compete with the railways to the detriment of integration. The availability of these grants led to a reconsideration of the benefits of Light Rapid Transit (trams) in many cities. The grants were retained with the introduction of the 1985 Act and trams were introduced into the Greater Manchester PTE area and in Sheffield.

The pace of change is accelerating and bringing with it detrimental affects to our built and natural environment. It has been shown that between 1970 and 1990 total annual car mileage has more than doubled, and that by 2010 car traffic will increase

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between one half and three-quarters.\textsuperscript{101} Since 1980, Britain has seen many significant changes in her transport system. High-speed trains now run on most inter-city routes, and electrification is gradually being extended to many of them. London has an orbital road, the M25, which is being increased in width in order to cope with the traffic. There have been important improvements to existing trunk roads, including relief roads and bypasses around historic towns. The perception is that the more roads you build the more they generate traffic to use them. An RIBA study\textsuperscript{102} informs us that private car ownership grew by one third between 1980 and 1990, and that at that time there were over 18 million licensed cars. They also quote the Department of Transport forecast that there will be at least 20 million by the end of the century. In fact by 1999 the figure had reached 22 785 000.\textsuperscript{103}

"...it is now a widely held belief that the way forward lies in promoting an integrated transport system...."

Avon County Council informs us.\textsuperscript{104} They also point out that,

"...there is a need to develop a sustainable transport strategy which addresses today's problems whilst protecting tomorrow's environment..."\textsuperscript{105}

\textsuperscript{101} Policy Studies Institute, Britain in 2010. London, 1991, p5
\textsuperscript{102} Policy Studies Institute, Britain in 2010. London, 1991, p189
\textsuperscript{103} Royal Institute of British Architects, Breaking the Transport Deadlock. London, 1991, p5
\textsuperscript{104} DETR, Transport Statistics Great Britain 2000. Table 3.1

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Attitudes began to change in the 1970's. Population and car ownership forecasts were continually changing, the world energy situation increased the cost of motoring, this coupled with lower economic growth and the need for restraint in public expenditure and changing public attitudes, particularly in urban areas, led to a reduction in the planned investment in roads. This gave force towards a greater priority for public transport and comprehensive transport planning.

In 1976 the Government produced a consultation document on transport policy, which set out to discuss the problems. This evolved into the 1978 Transport Act which provided for the planning and development of public passenger transport services in the counties of England and Wales. The counties were required by the Act to develop policies which would promote the provision of a co-ordinated and efficient system of public passenger transport to meet the counties needs and to prepare a passenger transport plan. These plans are taking a long time to draw up and implement and are subject to a lot of political pressure.

This is brought about by their opposing ideas of public ownership and private market forces, though there does seem to be a shift in Labour ideology at this moment in time. Politics only appears to work for the short-term philosophical or political gain rather than for the long term good, to which they only pay lip service. Action is needed rather than prevarication. It is obvious that time will be needed to implement solutions to the transport/settlement problems. A long-term plan is required and adhered to. The

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provision of public transport is a social need, market regulated or not. A median point at which all parties can operate in unison must be found.

The privatization of the rail system was botched and has led to many problems, especially relating to safety and maintenance of the network. The deregulation of the buses failed to halt a long running decline in bus use.\textsuperscript{107} Meanwhile, the demand for car use continues to rise.

"....Air travel continues to boom, despite September 11\textsuperscript{th}, causing concern about safety in the skies, and adding pressure on road and rail connections around airports...." \textsuperscript{108}

The neglect of investment in the road and rail networks over decades will mean that modernizing the transport system will take many years and cost billions of pounds. It will stretch over the terms of many governments who may say they want to deal with it but will be replaced before they can, also adding to delay.

4.7 CONCLUSION

The first world war was the initial boost for motor transport due to the rapid development of the technology and increase in reliability. This was reflected in post war housing development began to make provision for the car, especially the upper and middle classes.

\textsuperscript{107} DETR Transport Trends, He Stationary Office, London, 2001
\textsuperscript{108} Exley, S., Christie, I., Off the buses." \textit{British Social Attitudes Survey, The 19\textsuperscript{th} Report}. London, 2002, p1
Early Planning Legislation was concerned more with working class housing and therefore overlooked the car. Public Transport was developed for these people and housing location was influenced by transport routes.

Transport Policy was more concerned with the construction of new roads and improving the existing, in an effort to keep pace with the increase in road traffic.

A look at what was happening in America would have provided a good guide as to what would be happening here in the future.

British policy was reactive not proactive. Planning up to the time of the second world war had little to do with cars. Transport Policy was more concerned with licensing and speed. By 1939 the car was creating ribbon development and city centre congestion.

During the war the opportunity was taken to look at planning in the future leading to the development of new towns, transport nationalization and new Town and Country Planning Acts. The car was becoming paramount, road transport was de-nationalized to the detriment of other forms. The T&CP Act of 1968 propounded that major towns and cities could only be made to work effectively and provide a decent environment if a new role was found for public transport and facilities expanded for the private car. No new role was found for public transport, the only result was the destruction of our cities and towns to accommodate more and more cars.
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The political agenda of the government in power on the day influences both planning and transport policy. As the government changes so do the policies. This leads to short term tinkering rather than major and more drastic actions, which could sort out a problem. Actions, which would be unpopular with voters.

Since the 1970s there has been an increasing awareness for the need to call for a more sustainable transport strategy. This prompted local authorities such as Avon and Leicestershire to produce Transport and Local Plans including measures to provide solutions and management of the problems.

At the moment transport Policy seems to lack any clear direction and there is always an underlying feeling that despite good intentions, a new phase of road development is imminent. The impasse is essentially a political one as policies, which might address the congestion and environmental issues are available, they are politically sensitive.

Meantime the growth in traffic congestion continues.
5. ARCHITECTURE AND PLANNING, FAILURES AND SUCCESSES
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5.0 ARCHITECTURE AND PLANNING, FAILURES AND SUCCESSES.

The introduction of Planning and Transport Legislation has benefited the car owner by providing the roads for him to exploit the advances in car technology. At the same time it has been detrimental to public transport by creating confusion and inconsistency of long-term strategies. There have been other influences that have affected opinion forming which we will consider in this section.

We will look at

- The influence of Architectural and Planning Theorists.

5.1 MODERN MOVEMENT IDEAS

The Modern Movement in Architecture, as it is termed, was very influential on the thinking of Planners. Architects provided ideas for high-rise building and the integration of transport into the environment. The people who instigated the theories consisted of quite a small group of people. Others took on these ideas. They tried to shape the concepts into reality for Politicians and Planners who wanted to create a new way of living at the right price. This was done with varying degrees of success. We will look into this influence in this section.

The inter-war period was a time of great upheaval in the world of Architecture and Design. The need to build a new and different world out of the ashes of the recent war
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and the rise of socialism reacted on the architectural profession who moved to higher theoretical plains. The problems were there, greater and more difficult to deal with than ever before. The Architect naturally saw himself as the best person to carry out town planning schemes, though new professions, such as the sociologists, were beginning to have a greater input. The forward looking ideas generated in Britain prior to the Great War were developed on the continent to be re-imported in the late thirties, ready to be put to good use after the next war.

The roots of the Modern Movement are in the works of William Morris and the Arts and Crafts Movement, Ebenezer Howard, through Art Nouveau to the pioneering work of Sant' Elia, Tony Garnier and Le Corbusier. Sant' Elia had some monumental ideas for large-scale cities with transport interchanges. It was Tony Garnier, who in looking at the planning of settlements developed the principle of the Industrial City in the early years of the century.\(^{109}\) It was based on the City of Lyon in France and took ideas beyond those of the Garden City. He theorized that the new cities would be based purely on industry and not completely self-supporting, as was Howard's plan. The city was based on socialist principles,

"... without walls or private property, without church or barracks, without police station or law courts; a city where all the unbuilt surface was public parkland..."\(^{110}\)


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The streets would be tree-lined and laid out on a hierarchical basis. Integrated into the residential quarters were different categories of school, sited to serve specific districts, while facilities for technical and professional education were located between the residential and industrial sectors.

A Swiss architect of this generation, and probably the most influential, who put forward ideas for new settlements was Le Corbusier. In 1922 he produced plans for a contemporary city for three million inhabitants. (Illus. 3) He foresaw the traffic problems we have now and offered a solution. The plan has major and minor axes, star intersections of orthogonal and diagonal roads. Industry is placed on the outskirts. Circulation planning is generous, though diagrammatic,

"...and the centre of the city, there are no fewer than seven superimposed levels. Of these, the uppermost is an aircraft landing - deck...the main central station is underneath..."  

Clustered dangerously close to the aircraft landing deck are the skyscraper office blocks. (Illus. 4.) The housing is grouped either in hollow squares or as setbacks,

"...that advance and retreat symmetrically on either side of the street..."  

The city is seen as a biological organism,

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Illus. 3 and 4 Plan of Cite Contemporaine – Le Corbusier

"...with a heart, (the business centre), lungs, (the parkland), and arteries, (traffic routes).

As the blood supply, traffic is given a high priority and Le Corbusier believed that the efficiency of the city depended on a rapid flow of traffic along the major routes. These routes also symbolize the dynamism of modern life, the automobile being a sublime creation within the machine age culture..."  114

The cities were never to be built, but the images created by Garnier and Le Corbusier were to have a great deal of influence on the next generation of designers all over the civilized world.

5.2 AMERICAN SOLUTIONS

In the States of the 1920s the motorcar was taking over the cities in a way that Great Britain would not see until well into the 1950s and 60s. To deal with it the Americans developed three planning principles,

(Illus. 5)

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"...the neighbourhood unit principle...the principle of the Radburn layout, which Clarence Stein and Henry Wright had developed in their plan for the garden city of the same name in 1928...and the principle of the parkway..." ¹¹⁵

Clarence Perry, a sociologist planner, using origin and destination surveys, conceived the neighbourhood unit. He first put his ideas forward at a meeting of the American Sociological Association in 1923 and further developed them and included them in a monograph for the Regional Plan for New York in 1929. What Perry held was that,

"...community cohesion could be encouraged within defined residential areas by the conscious provision of common facilities such as schools and shops within easy walking distance..." ¹¹⁶

¹¹⁵ Hall, P., Cities of Tomorrow, Blackwell, Oxford, 1988, p110
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Illus. 5 The Radburn Plan
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Its size was to be based on the catchment area of the local elementary school, and so would depend on population density. Centrally placed, and easily reached on foot would be the school and its associated playground. The shops would be placed at the junctions of several neighbourhoods. Perry argued that,

"...the automobile menace has made the definition of such neighbourhood units as imperative..." ¹¹⁷

The arterial streets would be wide enough to carry all through traffic and therefore provide logical unit boundaries. Within the neighbourhood the roads would be designed to facilitate access but discourage through traffic. It was never made quite clear how the unwanted traffic was to be kept out.

This was the problem that was to be addressed by Clarence Stein and Henry Wright in developing the Radburn Plan. The initial trial was at Sunnyside Gardens, an inner city site, on which they planned large traffic-free blocks set around vast interior spaces between 1924 and 1928. They were frustrated by the rigid restrictions imposed upon them by the city ordinances. It was found not to be possible to establish a Garden City, in this location, which was their basic purpose. The next site they looked at was further from the city and had no ordinance or road plan restrictions and gave them the opportunity to start from square one. The City Housing Corporation, a private company, bought 1 280 acres (518 ha.) on which were planned three neighbourhood units. The

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idea was to use the Sunnyside super blocks, released from the New York City grid, combine the blocks with cluster housing and to exclude all traffic.

Only one such neighbourhood block was ever completed at Radburn,

“...it allowed complete separation of pedestrian and vehicles by the use of culs-de-sac access for cars on one side of the dwellings and vehicle-free pathways and inner parks giving pedestrian access to shared common facilities on the other...” 118

The significance of Radburn was the desire to remove the car from normal daily life by banishing it to the rear of the properties. The fronts, where people met and children played were vehicle free zones and therefore safe and more conducive to social interaction. It set a standard for others to attain.

The depression stopped further development when the population had reached 1 500. This was far too low to sustain the elaborate range of community programmes and services originally envisaged. Radburn instead of becoming a garden city suburb became a commuter suburb. Two other Radburn inspired schemes were developed with Stein as consultant, Chatham village in 1932 and Baldwin Hills village in 1941.

“...the major impact of Radburn was to allow the garden city to enter the motor age...” 119

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The Parkway principle also developed in New York, dating back to 1914 when the Bronx River Parkway opened. Robert Moses developed them as part of his recreational parks plans of the 1920s. Deliberately landscaped to provide a recreational experience, in fact they were limited-access highways,

"...designed for private-car traffic only..." 120

They became used as freeways, as they were not restricted to traffic using them purely for recreation. They gave rapid access from the congested central city to the new suburbs, rural and coastal recreation areas. Rapid access gave rise to out of town shopping areas and the syndrome that meant that if you did not have a sufficiently large car park your business would suffer dramatically.

Let us look at how the principles were applied in Great Britain. The warnings were there to be seen.

5.3 WYTHENSHAWE

Unwin and Parker, whose cul-de-sac from Hampstead had been utilized by Stein, almost immediately used the Radburn plan for their development at Wythenshawe, near Manchester.

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Wythenshawe is on the outskirts of Manchester and is one of the first examples of the neighbourhood unit in England. Unwin was the consultant and he had visited America and seen the developments discussed in the last section. The land, extending to 5 587 acres (2 253 ha.) was acquired by Manchester Corporation and was incorporated into the city in 1930,

"...with the object of accommodating people employed in Manchester in a satellite town...” 121

The neighbourhood unit pattern was used from the outset, the site being divided into large sections bounded by traffic routes, each section having a school near its centre. The shopping areas were grouped, in the Perry fashion, at the main road intersections. In 1938 over 30 000 people had been housed in 7 000 Corporation and 700 private houses and it was a third of the way to the planned target of 107 000 residents. Light industries also appeared on a trading estate, but the main employment was still in the city centre.

The Parkways, which divided the neighbourhood units, were, it was explained,

"...strips of parkland and they will not be development roads. They had been planned to skirt existing parks, future recreation grounds, school playing fields, existing woodlands, coppices and spinnies, the proposed golf course, the banks and streams and everything

121 Tetlow, J. and Goss, A., Homes, Town and Traffic, Faber & Faber, London, 1965, p48
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which will enhance the charm and will widen them out into great expanses of unbuilt upon country...” 122

The main north-south artery was called the Princess Parkway; it was originally planned with junctions to the local street system, but has today been upgraded to a motorway.

Being 8 miles (12.9 km.) south of the inner city areas it was essential to provide a good bus service. The bus patronage along the corridor to Wythenshawe was probably the heaviest in the city, and it came under consideration for Manchester’s new Rapid Transit System when originally mooted and is again in the limelight as part of the extension to Manchester Airport.

“...The proposed new metro was tested as part of a transport strategy of building new roads tangential to the centre, coupled with public transport improvements on radial routes...public transport is unlikely to compete successfully with the diverse pattern of circumferential movements possible by car, whereas journeys to the city centre, where congestion may be high and parking expensive...” 123

With the coming of the M63 that connects across the bottom edge of the city, people have improved access to other destinations, previously inaccessible to non-car owners. This changed the trip distribution pattern of the population.

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Unfortunately the area today is very down at heal. The area suffers from vandalism and graffiti. The latest incoming generation does not have the same respect for the place, as did the original inhabitants. Later tower blocks and shopping centre have also spoiled it. The principle of the green space has survived.

The scene was set for the rise of the New Towns in the post-war era.

5.4 THE NEW TOWNS

"...Drawing upon the experience of the Garden City Movement, and prompted by the Town and Country Planning Association, the Government started to display interest in the notion of new towns during the 1930's..." ¹²⁴

The arguments for the new towns were simple and overwhelming. The large cities had grown too large; the improvement in housing conditions had been obtained at unwarranted social and economic cost, yet more housing was still needed. There was not only a need for major reconstruction but also a requirement to thin out congested urban areas. Peripheral expansion and thirties ribbon development was not the answer any more,

"...The basic solution...was the building of new towns by new 'ad-hoc' agencies..." ¹²⁵

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Lord Reith led the committee produced the first part of its report within three months. They came down firmly in favour of Government appointed public corporations for the towns, financed by the Exchequer. They declared that

"...they would be an essay in civilization..."  

The last part of the report was presented in July 1946. Even before this the legislation was being prepared, the New Towns Bill was introduced into Parliament in April. It received the Royal Assent on 11 November 1946. At the same time the Government announced that it had accepted Professor Abercrombie's plan which involved encouraging the movement of three-quarters of a million people into new towns within a 50 mile radius of the centre of London, each to take 60 000 people.

"...Probably the people most excited by the prospect of the adventure of developing new communities from scratch, were the architects and planners. The modern movement in architecture, struggling for acceptance in the 1930s, had become the symbol of a better, planned future. The demobilized professionals were yearning to begin..."  

Stevenage, the first new town, was announced a week after the Act was made law.

125 Cullingworth, J. B., Town and Country Planning in Britain, 8th edn., George Allen & Unwin, 1982, p241
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Twenty-eight new towns were designated in total. (Map 3 and Appendix 1) They can be split into three groups, relating to the date of designation.

Thus, Mark I new towns: designated between 1946 and 1950.


Mark III new towns: designated between 1967 and 1970. 130

Good road connection to the country’s main road network was seen as crucial to the well-being and prosperity of a new industrial town. The New Towns Committee called for access to an arterial road. All the Mark I towns were located adjacent to the trunk roads of the day. This was of course, long before the advent of the motorway network. Of the thirteen Mark I towns, eight can be considered as satellite towns for London.

The relationship of the towns to transport altered as they developed through the marks. Various factors contributed to this. There was the political consideration, the attitude of the Government towards the new towns that varied over the years. Also the control of the budget, how to distribute the money among the priorities; the fluctuations in the birth rate which affected the rate of provision of schools, nursery care and the types of houses required; and finally the proliferation of the motor car.

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Map 3 Location of the New Towns
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The increasing numbers of motorcars had the most effect on the initial design of the Mark II and Mark III towns that were built at the same time as the motorways. They became products of the motor age, money seeming to be readily forthcoming for the urban highway infrastructures.

Looking at the Mark I towns. The roads were generally set out following the recommendations of ‘Design and Layout of Roads in Built Up Areas’ published by the Ministry of Transport in 1946. The towns were also used as a vehicle for environmental improvement, stemming from Howard’s ideas of making the urban landscape physically more attractive, incorporating more greenery and countryside atmosphere. This was provided in the new towns by the provision of extensive gardens, verges and open space. With the later towns they had to,

“...wrestle with the conflicting needs of pedestrians and the increasing number of motorists...”  

The basis of the environmental planning therefore moved away from simply a concern for the arrangement of parcels of land to a greater consideration as to how to circulate people and goods and facilitate access to surrounding areas. The need was for balanced communities and most master plans had a requirement for the new town to be self contained and offer a balance between jobs and homes, social class and employment and give choice in housing and access to workplaces, leisure, shopping

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facilities etc. This is reflected in the individual master plans which tended to adopt a more linear rather than a circular shape, gradually introducing more ambitious transport policies. We will, therefore, examine an example of each of the Marks and see how attitudes and provision changed with regard to transport.

The Master Plan for Basildon, a Mark I town, (Map 4) designated in 1949, was for an ultimate population of 80 000, by 1976 it had grown to 91 890, with a revised ultimate population at that time of 130 000 which by 1994 had risen to 162 100 people. Its area was 3 160 ha. There was an indigenous population of 25 000 in the two township centres of Pitsea and Laindon. They comprised unmade roads, small bungalows and shacks. The main line railway between London and Southend-on-Sea bisected the site and two existing main roads sandwiched the area.

Five primary roads in an H-plan were the basis of the development. The busiest junction was recognized as being where three of these roads met near the town centre and a large traffic island was constructed there. It was proposed to provide new and extended bus services. It was said that a network of footpaths would be provided though no independent cycleways were envisaged. This design pre dates the massive rise in car use, the population was expected to walk or use public transport. It was still considered safe for cyclists to use the public roads and not have their own cycle ways.

Skelmersdale, (Map 5) a Mark II master plan for a town also with an ultimate population of 80 000, followed thirteen years later, by which time most peoples
perception of mobility had changed. Car ownership had trebled and it was obvious that
further increases lay ahead. A transportation study was prepared and produced a
thorough analysis of the traffic situation and forecasts for up to the year 2000. The
primary roads were laid out on a grid pattern of 1.6 km. spacing with grade separated
junctions. Secondary distributors took the form of loop roads that gave access to
residential and industrial areas. Two roads that led to the car parks and service areas
provided access to the town centre. They did not meet and therefore no through route
was created.

A separate system of footpaths was proposed and the possible need for bicycle
routes was recognized, particularly between residential areas, schools and industrial
districts. The concept was for the town to be a compact urban centre with surrounding
recreation areas. A large proportion of the population was expected to be within walking
distance of the central area and areas of open space.\textsuperscript{132} The re-routing of regional
services into the town provided local bus services. The site, 1670 ha. is located next to
the M6 motorway. As far as railway provision is concerned, the nearest station is on the
very edge of the settlement with only branch line services to Wigan and Liverpool.

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Map 4 Basildon and Map 5 Skelmersdale

Map 8: Basildon

Map 9: Skelmersdale
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For a Mark III master plan we will consider Peterborough, (Map 6) designated in 1967, the plan for which was published in 1970. The designated area included the existing built up area. The existing population of which as 81 000. The target for the new town was 160 000 which was subsequently reduced to 150 000. In 1994 the population was 158 700. The town is at a point were the north-south main Kings Cross to Edinburgh railway crosses the East-west River Nene and is close to where the A1 trunk road crosses the A47 trunk road. The industrial area is in an elongated stretch following the railway line.

The plan was to attain maximum mobility, the proposals wanted to,

"...facilitate the quick and easy movement of people and goods, even at the busiest times of the day, between, home, workplaces and centres of social and commercial activity;
to operate a fast, frequent, reliable and comfortable public transport service within easy reach of every home, workplace, service centre and main recreation area;
in the interests of economy to spread the expected traffic load as evenly as possible, so as to avoid the need for costly dual three-lane carriageways and even more expensive three level intersections;
to build safety into the system by such measures as diverting through traffic away from the city centre, keeping industrial traffic out of the new townships and insulating old and new neighbourhoods from all traffic that has no business in them;
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and to provide in the new townships (and wherever else existing development allowed) a separate system of footpaths and cycle tracks...” 133

The existing roads influenced the new primary road network that did not fall into any regular geometrical pattern. Public transport was seen as being most important. Independent bus tracks were proposed, as was priority at traffic intersections during peak hours.

“...The idea was to get the newcomers accustomed from the start to using the bus service - in particular for the journey from their home to the city centre...” 134

Both Redditch and Runcorn (Map 7) were responsible for interesting public transport experiments. Both were designated in 1964 with target populations of 84 000 and 90 000 respectively.

The 'Reddibus' system came into service in Redditch in 1976. It was the result of a household survey carried out by Redditch Development Corporation.

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"...which showed that the public were tired of having to walk long distances from bus stops to the centre, and that fare increases combined with the poor standard of bus service resulted in poor patronage..." 135

The Development Corporation, County and District Councils and the Midland Red Bus Company formed a transportation steering group, with the remit to make bus travel more attractive to the community. It was found that people wanted to either journey within Redditch or go to Birmingham, mostly for shopping. The new pattern of bus services was introduced using several bus-only routes, experimental fare structures, bus priority and traffic management schemes. Car parking charges in the town centre were increased and a publicity campaign instituted. Considerable extra passenger traffic was generated, but the bus services,

"...lost money over the first four week period of operation arising in the main from the promotional discounts..." 136

The railway service was also improved and upgraded and today has a twenty-minute headway electric train service into the centre of Birmingham and beyond.

Runcorn on the other hand went one stage further from the very start. The Master Plan prepared by Professor Arthur Ling broke with tradition by providing a continuous public transport route serving the whole town quite separate from the

highway network. The public transport route is in the form of a figure of eight that threads its way through the residential and industrial districts. Nearly all residents were intended to be within 450 m., or five minutes walking time of the nearest public transport stop. It was intended to make door to door journey times competitive with those of the private car. Another figure of eight was formed by the expressway that connects to the M62 motorway on the other side of the River Mersey and the M56 to the south of the town. The industrial areas were outside the rings and the residential units within. The main London to Liverpool railway line runs through the town though the station is at the periphery. It is located adjacent to the expressway and public transport route.

Residential districts in the new towns were planned in terms of 'neighbourhood units'. Based on a population of 3 000 to 12 000 people, it was considered that these figures would correlate with the economic provision of schools, shops, clinics, playing fields etc. Physical identity was given by dividing the units with belts of open space or main roads. There was a wide range of dwelling types, initially based on the Tudor Walters Report, but after its publication in 1961 the Parker Morris Report 'Homes for Today and Tomorrow' took over the role.

The report recognized,
TRANSPORT AND THE DESIGN OF NEW SETTLEMENTS

"...The rapid increase in the number of cars; bringing with it an imperative need for separating pedestrians from cars; higher land costs and higher densities; the need for play space for children, especially on high density estates..."  

It was pointed out that car ownership and traffic danger made the old pattern of housing estates out of date and that the street was no longer a safe place for children. It was noted that at that time, one family in three owned a car and that public transport, delivery and service vehicles used the residential streets. The Road Research Laboratory was estimating that by 1980 there would be an average of one car per household. In 1962 there were 6.5 million cars. In fact by 1980 it had risen to 15 438 000 and did not reach 18 million until 1985. The problem facing the designers in 1961 was that the growth represented the need of about 250 sq. ft. (23 sq. m.) extra land or building space for parking and access, and it was recommended that space be allowed with every new home for one car.

The report strongly recommended the segregation of pedestrian footpaths and cycleways from roads carrying motor vehicles and suggested,

"...the importance of arranging for cul-de-sac approach to residential development, so that vehicles adopt low speeds in the vicinity of homes and so that through traffic does not approach them at all..."  

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140 Department of the Environment, Homes for Today and Tomorrow, HMSO, London, 1961, 9th imp., 1975, p44
and referred the reader to the Radburn principle.

It was recognized that cars and higher densities would have an immense impact on the appearance of housing estates. It was predicted that,

"...if there is inadequate thought and care, high density estates of the future could turn out to be concrete jungles of concrete, asbestos and tarmac, housing the car but providing an environment of utter inhumanity. The various ways of accommodating the car must be integrated with the landscape and the buildings..."  

This has been shown to be true, especially of the large inner city high rise estates that are today producing many social problems. It is, however, unfair to blame the car entirely. The Highway Engineers used the parameters for road design set out in "Design for Roads in Built Up Areas" that with wide roads and extravagant provision of turning circles to give access to the largest of possible fire appliances and refuse collection lorries also had a bearing.

The recommendations were taken on board and used as basic principles for the new towns from 1967 onwards and all public authority housing from 1969, concurrent with the introduction of 'yardsticks' imposed by the Housing Subsidies Act 1967. 

141 Department of the Environment, Homes for Today and Tomorrow. HMSO, London, 1961, 9th imp., 1975, p89
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The last new town to be designated was Central Lancashire New Town in 1970.

The existing new towns,

"...have grown rapidly as a result of subsequent natural increases among second
generation 'households'..." 143

The proposals for new settlements then moved away from the town to the village.

As we have seen, new towns were expected to be self-contained. The population sizes varied between 10,000 and 250,000. It is interesting that the target populations of Mark I and II towns were similar, however for the Mark III the figures were considerably higher, though with the exception of two, Telford and Milton Keynes, they were in areas with a higher existing population.

The target populations were revised generally upwards in the case of Marks I and II and down in the case of the Mark III, ranging from the less than 30,000 to 90,000 with the former and 150,000 to 285,000 for the latter. The exception is Basildon as noted above which jumped from 80,000 to 130,000.

5.5 CHANDIGARH, UNITÉ AND CITIES IN THE SKY.

Concurrent with the new towns developments International Architectural Theoreticians were tackling the problem of communities and the provision of an
TRANSPORT AND THE DESIGN OF NEW SETTLEMENTS

unobtrusive transport infrastructure of a personalized nature. They reconsidered the 1922 proposals of Le Corbusier for the Ville Contemporaine. He envisaged a city centre of towers and a grid pattern for the roads (see Section 5.1). From that time on he was constantly looking for the opportunity to build his city. He never did as an entirety but succeeded in getting part of the way with two schemes carried out during the 1950s. These projects, the Unité d’Habitation and Chandigarh (Map 8) were very influential upon 1960s architectural thought. The first, the Unité, was called by Le Corbusier,

"...this 'home' for 1600 people (which) contains twenty-six different kinds of communal facilities..." 144

His inspiration was the utopian theme of a small, isolated and self-sufficient community, a vertical garden city. He realized that this was not completely attainable and saw the Unités as a part of his larger city schemes. His intention was to house the four million French rendered homeless by the war in a series of Unités spread all across France, keeping the landscape free of urban sprawl. The building was set out as the inverse of what would normally be expected. The roof is the landscaped garden; the streets are the internal wide access corridors and not on the ground as one would expect. The shopping centre is located on the seventh floor; the nursery school, gymnasium and swimming pool are on the roof. The whole building is lifted off the ground on piloti, so that the landscape flows underneath the building. The prototype

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was built in Marseilles as an eighteen-story slab block of 337 flats - 'a box of homes' as Le Corbusier described it. A large garage was provided for the motor cars.

The influence can be seen in the work of the Architects Department of London County Council. They introduced the Corbusian slab block model at the end of the 1950s at Alton West, Roehampton,

"...then began the era of the high towers, slimmer, less oppressive and of course more highly subsidized. 384 of them, in all, completed between 1964 and 1974..." 146

The other scheme carried out by Le Corbusier, which attracted attention, was the development of Chandigarh, (Map 8) as a new capital for the Punjab. There was a grid of fast traffic roads, which was an over provision, considering that there was,

"...a level of car ownership even lower than in Paris in 1925, which was low enough..." 147

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145 Tetlow, J., and Goss, A., Homes, Town and Traffic Faber & Faber, London, 1965, p52
146 Hall, P., Cities of Tomorrow, Blackwell, Oxford, 1988, p214
147 Hall, P., Cities of Tomorrow, Blackwell, Oxford, 1988, p214
The city did not work on a number of levels, including that of traffic management. The relationship between streets and buildings was European and took no cognizance of the North Indian climate, or culture, though in the design of the major buildings he used the traditional, 

"...‘parasol’ concept of Fatipur Sikri as a monumental coding device..." 148

The tragedy of Chandigarh was that it was,
TRANSPORT AND THE DESIGN OF NEW SETTLEMENTS

"...a city designed for automobiles in a country where many, as yet, still lack a bicycle..."

The Congres Internationeaux d'Architecture Moderne (CIAM) was created in 1928, as a forum for modern architectural debate. It was dominated from 1933 onwards by the character of Le Corbusier. It set down various statements. At the fourth congress in Athens it was pointed out that,

"...industrialization produced chaos and disorganization of modern cities, with individual means of transportation as the best example..."

They set down principles very much in line with contemporary American thought on architectural matters. Thus commenced what has become known as the 'international style'. The CIAM continued to meet until 1956 when it was succeeded by a group known as Team X, who were,

"...committed to the multi-level city..."

However, they were not as dogmatic in their ideas as CIAM had been. Alison and Peter Smithson were occupied with the notion of the 'urban fix',

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148 Hall, P., Cities of Tomorrow, Blackwell, Oxford, 1988, p214
149 Hall, P., Cities of Tomorrow, Blackwell, Oxford, 1988, p214
151 Hall, P., Cities of Tomorrow, Blackwell, Oxford, 1988, p273
TRANSPORT AND THE DESIGN OF NEW SETTLEMENTS

"...with the sense of place to be established by architecture within the 'space-endlessness of Motopia...'" 152

They did not advocate the megastructure but opted for traffic free enclaves by the use of the elevated podia.

Here we see the basis for the deck access housing estates and tower blocks of the sixties that appear to be giving such major social problems today.

In 1954 local authorities estimated that there were just over 850 000 slum properties, of which it aimed to clear 378 000 by 1960. The aim was not matched by the achievement, only 260 000 houses being dealt with.153 The solution came as a mix of housing types. It was found that it was feasible to have a good housing layout and provide 100 per cent garaging at densities of sixty persons to the acre with two storey houses. By adding in some flats, in very tall blocks and four storey walk-up maisonettes a density of 140 persons per acre was possible. It is not surprising that the local authorities embraced this philosophy so eagerly.

The Park Hill scheme in Sheffield (Illus. 6 & 7) provides a good example of the streets in the air. It was an attempt to provide high density housing with pedestrian circulation separated from motor vehicles. 2 307 dwellings were provided on the site. The through roads are kept on the edge of the housing area. The Primary School and

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152 Hall, P., Cities of Tomorrow, Blackwell, Oxford, 1988, p276
153 Tetlow, J., and Goss, A., Homes, Town and Traffic, Faber & Faber, London, 1965, p137
playgrounds are in the centre of the scheme. Vehicular access roads are short culs-de-sac. It was intended to provide parking spaces externally for visitors, lock up garages for the residents, the roofs of which doubled as children’s playgrounds, and multi-storey circular ramped garages as demand increased. The main feature was the pedestrian street decks, 10ft. (3.05 m.) wide, open to the air and provided at every third floor. Goods and Passenger lifts served all the decks and due to the slope of the site all decks except the highest one ran out at ground level at one end. The blocks vary from four to fourteen storeys. The decks take the place of the streets, and are the place for social contact. The site also enjoys shops, a community hall, four public houses, both primary and nursery schools, laundry and a central district heating plant.

Illus. 6 Plan of Park Hill, Sheffield
TRANSPORT AND THE DESIGN OF NEW SETTLEMENTS

Upon reflection, these ideas, whilst very good in themselves, were targeted at the wrong people. Using them for social housing, for families, has been shown to be most unsuitable and has led to more social problems than they have solved. The interior streets do not provide real spaces for human interaction. Indeed, the lifts and courtyard of these would be streets have too often provided opportunities for robbery and drug abuse. The communities have become ghettos for the poor, dispossessed and social outcasts. This has meant that gradually they have become neglected and subsequently demolished.

Illus. 7 Park Hill, Sheffield
TRANSPORT AND THE DESIGN OF NEW SETTLEMENTS

5.6 CONCLUSION

From the earliest times in the designing of new settlements consideration had been given to the needs of commerce. The creation of nodal points such as Meeting and Market places needed roads of sufficient width to get people and goods to them.

We have also seen how new settlements have developed over the years and that roads are used to create a focus for a community by how they relate to and locate buildings at bends and intersections.

The expansion and improvements in transport led to the expansion of trade and commerce and the need to accommodate it within the settlements. With the expansion of technology this was mirrored in the provision of new transport forms, firstly the canals followed by the railways. These held sway until the development of the internal combustion engine and the improvements to the road surface to accommodate them.

Thus settlements developed with the transport and their shape and form was largely influences with the improvements in the movement of people and goods.

The 1920s saw the beginning of wholesale political intervention in the Housing market and the dispersal of planning uses connected by passenger transport. It also saw the development of Town and Country Planning as a means of regulating and coordinating strategy. Similarly, legislation was required to regulate the growth in road
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transport as it expanded and also saw the consolidation of the railways into four large groups.

Architecture was in a state of great flux with new ideas coming from the continent based upon socialist ideas. Grand ideas were promoted which gave rise to a new language that was to influence new settlements. They took into account the need for large-scale integration of transport systems.

From the United States came three influential planning principles, the neighbourhood unit, the Radburn layout and the Parkway.

The Second World War created such devastation in Europe that it brought the opportunity for the ideas to be implemented. Throughout the war various commissions were set up to consider the way forward post-war. The outcome was the development of the New Towns and the consolidation of Town and Country Planning with its own Ministry overseeing nationally the planning objectives of the Local Authorities.

The Labour Government of 1945 had a policy of nationalization and to this end transport was nationalized in 1947. This included the railways, road transport, both passenger and goods, and the canals. The strategy would have given us the successful integrated transport system being talked of today. Political intervention and poor management structure ensured that it would not succeed. Road transport was returned to the private domain very quickly. The growth of motorcar ownership and the decline in
the use of public transport, particularly within towns as giving cause for concern and led to a policy of expanding the road system to cope.

The 1930s idea of New Towns was revived after the war and put into action. Peripheral expansion was not now considered the way forward. These New Settlements were initially seen as satellite towns for London. They gradually appeared all over the country. After 1955 the effect of the motorcar was very influential on their design, though all master plans tried to integrate some sort of public transport system.

Architects were also quick in reviving 1930s ideology for the brave new post-war world. Their ideas were taken up enthusiastically by the local authorities as the answer to provide social housing as part of their need to rid themselves of slum properties and to house the displaced people and their cars at high densities. (Illus.8). This has created a harsh environment far from the original architectural vision.

Architectural and Planning Theorists had an influence on development and transport. The theory was innovative, however it was watered down in the execution to its detriment.

The impact of the motor car would eventually have was not fully appreciated in the development of the Garden Cities, nor was the rise in commuting both into and out of the new settlements. As each development tried to accommodate the car they found that car ownership outstripped their provision very quickly.
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Illus. 8 Heatherbrook Estate, Beaumont Leys, Leicester

The Architects, Planners and Highway Engineers have, in imposing their ideas, neglected the fact that most people appreciate the charms of the village-street. It has a sense of enclosure with a shop or pub on the corner. It is interesting to note that the Milton Keynes Corporation employed the most top architectural practices as consultants,

"...when Jeff Bishop was a member of a team employed to investigate reaction to the built environment of Milton Keynes on matters ranging from its overall 'image' to the
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design of estates and the distribution of facilities, he found that the work of the most prestige-laden architects... was with one single exception, liked least, whilst the houses, whether publicly or privately-built, that most resemble our traditional picture of a house and home were liked most..." 154

What started as an enabling system to make traffic movement easier has gradually turned to be a reactive one following the traffic bottlenecks from one black spot to the next. Gradually the system is on the verge of grinding to a halt. The people who suffer most in this are the socially dis-privileged, who are forced to live in the properties that others do not want and travel on a public transport system that is inconvenient and that they are unable to afford.

The Architects, Planners, Traffic Engineers, Sociologists and Politicians, in attempting to be prescriptive, have failed the people by being arrogant and following the least line of resistance. They have prevaricated and not followed through schemes that would be unpopular or costly to the Exchequer.

6. ALTERNATIVE PLANNING AND TRANSPORT TECHNOLOGIES
TRANSPORT AND THE DESIGN OF NEW SETTLEMENTS

6.0 ALTERNATIVE PLANNING AND TRANSPORT TECHNOLOGIES

Recent thought has been towards improving the traffic situation by using alternative strategies. Different forms of Settlement and new transport forms that are more environmentally friendly.

At the end of the nineteenth century we have noted that the technologies of the railways and tramways had not solved the problems of urban congestion. They had rather encouraged suburban spread and introduced the concept of commuting. At the end of the twentieth century planning to accommodate the technology of the motorcar has not worked and has encouraged more movement with its availability and relative cheapness. It is creating ever-increasing congestion on a mammoth scale. Alternative technologies are therefore required.

Those to be considered are:

- New Settlement Developments of the 1980s and early 90s
- What Local Authorities are attempting to do,
- New sustainable transport ideas, and
- Strategies that are non-reliant upon transport.
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6.1 NEW VILLAGE SETTLEMENTS

"...Over the past few years there has been a resurgence of interest in the UK in the concept of new settlements, with proposals and planning applications coming from various groups of housebuilders and developers..." 155

As we have seen, when existing areas become congested and problematical the tendency is for people to come up with new ideas for new settlements. In the nineteenth century they moved out of the town centres into the suburbs, following the tram tracks and bus routes. The early twentieth century saw the Garden Cities and the New towns, together with a movement of people moving out to live in dormitory villages. This movement was made increasingly easier by the use of personalized transport, the car.

Breheny, Gent and Lock, 156 in their research for the DoE into New Settlements identified five alternatives for the development of future housing needs. These are urban infill, urban extensions, key villages, multiple village extensions and new settlements. Each was assessed and weighted against economic, social and environmental criteria. Based on the weightings given to New Settlements scored well on economic and social grounds but low on the environmental, compared to urban infill which scored well on social and environmental criteria but low on the economic criteria due to high development costs. Overall New Settlements were only just lower than

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TRANSPORT AND THE DESIGN OF NEW SETTLEMENTS

urban infill and close to urban extensions. Therefore the development of New Settlements would need to be seriously considered.

This last development in the provision of new settlements differs from those that have gone before in being instigated by commercial developers and not by government agencies. They are, therefore, on a more modest scale than the New Towns and subject to the ordinary market pressures and to planning legislation. In 1991, Chris. Amos recorded 133 such proposals in his directory published in Town & Country Planning magazine. Breheny, Gent and Lock recorded 184 proposals made between 1980 and 1991. The spread of the developments concentrates on the south east with 60 proposals with numbers receding further north. Fig. 9 shows the distribution by county and Fig. 10 illustrates the spread by region and year, the peak years being 1989 and 1990.

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Fig. 9 Spread of New Settlement Proposals by Area
TRANSPORT AND THE DESIGN OF NEW SETTLEMENTS

These developments were intended to be small and car dependant. They were designed for people who wished to move out of towns into a rural area. The effect upon the environment and congestion would be negative.

It can be helpful to the developer if he can have his proposal included within a local plan, as is recognized in DoE circular 15/84 and reinforced in Policy Guidance Note PPG3. As new housing requirements are set and quotas given the new settlement is one of the options being seriously considered.

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Fig. 10 New Settlement Proposals by Year and Region
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Although there had been developments of this nature at New Ash Green in Kent and Barr Hill near Cambridge, the main inspiration of the movement was the formation of Consortium Developments Ltd., in 1984. The group was formed of ten of the country's leading housebuilders with the,

"...prime objective...to promote and create new settlements in the South east..."  

They proposed that each settlement would include sufficient land for between 5 000 and 7 000 homes, providing for an average population of between 13 000 and 18 000 people and would take around 15 years to develop. The housing would be privately developed for sale, though opportunities were to be provided for local authorities and housing associations to provide some housing for rent. It was considered that between 850 (344 ha.) and 1 000 acres (404.7 ha.) of land would be needed, allocated as follows -

- 500 - 600 acres (202 - 243 ha.) net housing including incidental open space and childrens play areas;
- 100 - 150 acres (40.5 - 60.7 ha.) for industrial and office development;
- 150 acres (60.7 ha.) for health, education, recreation and public open space;
- 100 acres (40.5 ha.) for primary roads and general landscaping.

Shopping facilities were only proposed where,

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TRANSPORT AND THE DESIGN OF NEW SETTLEMENTS

"...they did not injure the prosperity of existing shopping areas..." 159

No comment is made about the provision of public transport, and no specific comment is made about the design of the roads. If there were to be no shops a car would therefore be an imperative. It is remarked that,

"...the quality of landscaping, estate layout, and finishes which can be created in the new settlement will prove to be superior to that which results from the development of small and medium sized sites..." 160

Additional employment is promised and it is pointed out that residents in the town will be able to work in the new settlement and vice versa, or residents could commute to jobs elsewhere in the region. The anticipated employment is seen to be within the service sectors of 'high technology industry'. Again no comment is made as to how the extra traffic generated will be dealt with.

The idea of the new settlements was commercially a good one. Land costs within urban areas were increasing considerably and political opinion was becoming hostile to the peripheral expansion of existing towns and settlements. The lack of land and the presumption against development of green field sites was firing the rate of inflation. As we have also seen 71% of people in this country would like to live in a market town or village. If the land for the schools etc. was given to the authorities for them to develop


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themselves the profit potential became very attractive. The first proposal by Consortium Developments was at Tillingham Hall and although the scheme was rejected on appeal it solicited a gradual change of mind within the government. The Secretary of State said in the rejection letter that he,

"...considers that well conceived schemes of this kind in appropriate locations may have a part to play in meeting the demand for new housing, especially when the developer meets most or all of the local infrastructure costs and the need for community facilities..."

161

The discussion paper 'Housing in Rural Areas: Village Housing and New Villages' issued by the DoE in 1988 supports small new rural settlements of 200 - 1 000 dwellings and noted that there had been few such proposals except for the occasional one,

"...to utilize an existing developed site such as a redundant hospital or disused airfield..."

162

There are however other matters which make new settlement development not quite as attractive as it at first might appear. There are downsides to all proposals of this type. A green field site, especially one in the countryside, will have environmental impacts in terms of landscape, ecology, social, conservation and traffic generation. That these concerns are always discussed is due to the need in these cases to go to Appeal

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or be part of the public consultation process. This gives the opportunity to all interested parties to air their views.

The particular problem created by transport is that it is often difficult to assess the traffic that will be generated and also its ultimate destination.

"...Will improvements to the main interurban routes mean that the residents of new villages will become long-distance commuters? Or will most residents travel predominately to the nearest major centre of employment?..." 163

It is obvious, therefore, that it is important, though very difficult, to get the road infrastructure right from the very start. As to the internal road layout,

"...most local authority engineers require developers to follow rigid highway standards, with broad grass verges and wide visibility splays at junctions, which guarantee a suburban rather than an urban character..." 164

As we have seen in the case of New Towns this rather goes against the desire to create communities that are attractive, in the local vernacular and of a village scale in rural areas, and as desired by potential residents. The new settlement must be well linked to the communication network,

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"...because of planning controls, hundreds of rural locations have acquired a potential accessibility from new road building in the past thirty years which has never been reflected in building activity..." 165

On the other hand section 106 agreements could be used to provide a network where one does not exist. If a developer makes a proposal that will generate substantial traffic problems on a congested route, it is clearly reasonable for the local authority to ask the developer to make a contribution towards the costs of public works schemes.

"...At a recent public local enquiry into a proposal for a new 'village' of some 2700 houses near Loughborough on the site of a former aerodrome, the developers entered a section 106 agreement to fund ten separate new road schemes..." 166

This situation came about because the Leicestershire Structure Plan contained a policy requiring that new developments be well served by the road network. This policy has been revised since. The requirement now, as we have seen in Section 4.3 above, is that each location should have a choice of transport modes and be on one of the specified transport corridors. The principle is to deter the use of the motor car. One proposal has already been put forward that includes the provision of a station on the Ivanhoe Line. 167

167 French, S., 'Builders Lined Up for New Station', The Leicester Mercury, 17 February 1994
TRANSPORT AND THE DESIGN OF NEW SETTLEMENTS

A new settlement of this type is proposed for Micheldever in Hampshire. It is planned,

"...to build (a) 'stand-alone' town with 5 000 homes from scratch...The site comprises 870 acres of rolling farmland, next to a small industrial cum residential hamlet clustered round a station Lord Beeching did not axe...” 168

Another new settlement proposal is for Red Lodge in Suffolk, off the A11 by pass. The local plan deposit draft plan calls for,

"...a balance of land uses to provide local opportunities for employment, shopping and recreation and to minimize the need to travel out for such opportunities...” 169

The village currently has a population of 1 500 living in 690 houses, this is intended to increase to 1 500 houses by the year 2006. Movement within the settlement is to be based on the principle of a wide choice of routes within the settlement, whether by foot or vehicle. Traffic, particularly lorries, is to be discouraged from passing through. The design guide sets out to alter what is considered to be a poor image of the existing village. This is to be carried out by emphasizing the landscape character and village framework. Identifiable neighbourhoods are to be created with identifiable entrances and well defined edges. The clear establishment of a clear traffic hierarchy of primary, secondary and access roads will control the traffic. Traffic calming systems will be used

168 Milner, R., 'Starting a Town from Scratch', The Mail on Sunday, 1 Dec. 1991, p58
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to reduce traffic speed to 20 mph in residential areas and 30 mph on the access roads. Through access is to be retained for a bus travelling between Cambridge and Norwich and this appears to be the only provision for public transport. The nearest railway station is at Kennett, 2 miles away, on the branch line between Cambridge and Bury St. Edmunds, though no mention of this is made in the plan.

The proposals for new settlements are very car orientated. The gradual realization that the environmental effects could be detrimental has led to a rethink of the role of public transport or ways of ensuring people do not travel away from their settlement. This second option, as proposed at Red Lodge, is unworkable unless ways of working at home can be introduced, such as Teleworking, you cannot legislate to keep people at home, they will always want to travel whether for work or pleasure. It is therefore better to ensure that public transport is available when needed and is well promoted.

The new revised structure plans for Avon and Leicestershire are placing a greater emphasis on the importance of transport provision and its location and availability. They are pursuing policies that will integrate development with the transport infrastructure in such a way as to diminish the need for the motor car.

In order to ascertain to what extent transport has been considered in new settlement proposals a survey of seven settlements was undertaken. As so few settlements of this type have been completed and in order to obtain as broad a view as
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possible it was important to reach the people with the necessary statistics to hand. The survey was therefore carried out by sending a questionnaire, set out in Appendix 2, to the Clerks of the Parish Councils and the District Council Local Plans Officers for each of the communities. The results are tabulated in Appendix 3. Also to obtain a good spread the developments chosen where established over four decades and included established settlements, developing settlements and new proposals.

Of the seven, three were commenced in the 1960's, Barr Hill, East Goscote and New Ash Green. One, Wymeswold Airfield was proposed during the 1980's and after much negotiation, refused. Monkfield Park was approved in 1994, and the final two, Micheldever Market Town and Red Lodge are currently being considered for inclusion as part of Structure and Local Plans.

New Ash Green in Kent was developed in 1967 and had no particular provision made for transport though there was and still exists a station 2 miles (1.2 km.) away at Longfield. The lack of a reasonable bus service was one of the main concerns expressed in a survey made in 1969. By far the majority of people commuted to London, of these 3 307 went by car, 2 762 took their car to Longfield to catch the train, whereas only 1 096 travelled by bus to the station. It was shown that if earlier or later buses were provided to the station far fewer people would have used their cars. There were no bus routes to destinations to the south of the development and it was noted that almost all journeys to destinations East, West and South of the village were by car. Even today the situation is almost the same with the majority of the journeys made
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locally being made by car. One development has been the formation of a commuter club who charter a coach from a local company to take them to London on working days. The train is still the most usual way of travelling up to the Metropolis. Ideas being generated by the residents are for the integration of Public Service vehicles and school transport and for Bus/Rail ticketing to encourage travelers out of their cars. However with 95% of properties having garages and there being 1.5 cars per household it will require quite a change in peoples attitudes to make it work effectively.

The 1990 proposal to develop Wymeswold Airfield in Leicestershire was very much orientated around the car. It was assumed that buses would be provided though not planned for, and indeed an intermittent bus service does pass through adjacent villages. The nearest railway station is 4 km. (2.4 miles) away. As part of the package a s.106 agreement was negotiated. The intention was to build bypasses to the adjacent villages of Hoton and Burton-on-the-Wolds as well as new road links to the nearby town of Loughborough. This formed the transportation strategy for the development.

Highway Planners have been involved in Red Lodge as well as with four of the others. This would suggest therefore that at Red Lodge the Highway strategy framework has been set in advance, (Map 9) and is based upon the existing road hierarchy. This leaves scope for good design in the creation of the environment in between.
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All the proposals offer local shopping and employment, with most having a supermarket style development.

Looking at transport, it is interesting to look at the original proposals, and compare them with todays' aspirations. East Goscote started in 1965 had a bus service from the start and invested in a new road system. Even though a passenger carrying railway line formed one boundary of the development, no station was proposed. The nearest adjacent station had been closed in 1961. A Local Authority survey of residents, made in 1978, showed a need for better public transport and a railway station was amongst the top ten requirements. It is proposed to open a new station here as part of the Ivanhoe Line development in the future, though the proposed date keeps slipping back, and in 2002 it is still in the future.

On the other hand Monkfield Park in Cambridgeshire, approved by the Local Authority in 1994, is to be provided with a bus service as part of a s.106 agreement. This scheme is presently having a masterplan prepared.

Of current proposals Micheldever Station Market Town is centred on an existing Hampshire railway station. It is intended that people will walk or cycle around the town. Buses will be encouraged with bus stops conveniently placed for all the housing. Even so it is intended to provide garages at the average rate for marketed houses and at less than average for the 20% of affordable houses proposed.
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Red Lodge proposes to only encourage public transport. It is claimed that the present service is limited and that the current population is reliant on the car. The nearest railway station is 2 miles (1.2 km.) away, the buses stopping within 800m of the village. Traffic calming methods are intended to keep through traffic out, though 1.4 cars are expected per household, and 70% of houses are expected to have garages.

The sites chosen are generally, green field, old airfields, etc., or on the periphery of existing villages. These tend to be areas where land is the cheapest. The early proposals were very much car orientated with the developers keen to enter into agreements for developing the local road systems. The environmental effects of this and the Highway Engineers insistence on wide verges and long visibility splays were deemed more suitable for urban development and therefore not suitable for the rural environment. Later proposals have been more transport considerate with a desire to address the problems and build near railway stations or by sending buses through them along traffic calmed routes. It is also of note that earlier developments are now calling for better public transport by the provision of railway stations and bus services.

The New Settlement proposals of the 1970’s and 80’s do not comply with the present policies as laid out in PPG 13 published in March 2001 due to their reliance on the motor car to a large extent, their impact upon the landscape, ecology, social life, conservation and traffic generation. The new policy has moved towards the development of Brown-field sites in Urban Areas and existing villages acting as focal points for housing, transport and other services.
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However it may be worth reconsidering them on a smaller scale if teleworking becomes more prevalent and less commuting is undertaken, providing it can be shown that they do not impact on traffic generation.

6.2 TRAFFIC

Up to this point as communities have needed to improve or expand, the transport system has developed in concert, with growing emphasis on the use of the car. The changes of emphasis between the Mark I and III New Towns of Skelmersdale and Peterborough show this. Acting as an enabler it has created opportunities for the community and the individual. We are approaching saturation point where instead of enabling it is beginning to cripple the commerce of the country and the health and well being of the people.

"...The right sort of surroundings can create a good community spirit. Too many areas of our towns and cities have suffered from the mentality of planners who zoned everything, keeping work and homes apart and encouraging commuting..." 170

We have observed that this state of affairs has come about through the growth and ease of use of, firstly public transport and then the motor car.

170 DoTER, PPG 13, Transport, March 2001, Sec. 6
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The need to build a better standard of housing away from the polluting factories and the desire to make a better more civilized life for people has also made a contribution. Originally, in the Garden City, the mode of movement was intended to be by foot, but as settlements expanded, mechanical transport became easier and the range of employment opportunities increased, travel distances expanded in proportion.

"...Personal mobility is one of the most sought after goals for most people, who want to travel to get to more attractive jobs, to better shops, to places of recreation and entertainment, to visit friends and relatives and, in some cases, to do so from more congenial homes in peaceful rural areas..." 171

6.3 THE LOCAL AUTHORITY INPUT.

"...All councils are now being urged by the government to increase capital spending, especially on infrastructure, roads..." 172

This statement would appear to imply that the local authorities are just a channel for government policies, or that the Government is trying to pass the burden of costs from the Exchequer to the Rates.

When it comes to planning the local authorities are in the front line. They have the power to produce structure and local plans, which influence the development of their

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area. These plans have to be agreed by the DoE but they are a reflection of the needs of the local communities. Of the areas dealt with by their plans, new settlements and transport matters are the two with which we are particularly interested. It is quite common these days for the Planning and Transportation departments to be combined.

The Public Transport Plan produced by Essex County Council in 1979 looks at how they saw their transport system developing over five years following 1980/1. 173

They saw the economic significance of public transport as being threefold in that it consumed an increasingly large proportion of the overall expenditure devoted to transport. Its role was seen as vital in the carriage of people for work and other business purposes, they quote the 1971 census as showing that 28% of work journeys were made predominately by public transport. This would suggest that the other 72% were by foot, bicycle or the car. It was seen to represent an increasingly efficient mode of travel, on terms of energy demand and land resources.

Socially public transport was seen as becoming more and more necessary as services and amenities, such as hospitals, surgeries and post offices were, and still are, becoming increasingly centralized. As communities were becoming deprived of facilities the residents needed to travel more, also the centralization did not necessarily mean central to the city or town. It was just as likely that they would be built on the periphery of the urban area were land costs were less. This creates no problem for the car owner. It was found that even though car ownership was increasing, that there were still a lot of
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people, generally the old, poor or infirm, who could not afford a car. The local health authority put forward the view that it could be damaging to a person’s treatment to have to wait for infrequent bus services, especially in inclement weather.

The bus network comprised of three National Bus Undertakings (all of which were soon to be deregulated), the London Transport Executive and 20 independent concerns. The government and local authority companies ran the majority of the services, whereas the independent companies tended to serve predominantly rural areas, some providing only market day services.

Other social transport services were provided by car services, provided free of charge to the elderly and handicapped. A post-bus service also ran through the Stour Valley villages and a system of ‘voluntary’ community mini-bus services was being promoted.

The county benefited well from rail services to London,

"... 53% of the 81 rail stations remaining in Essex are within 60 minutes travelling time from the City of London..." 174

When assessing future needs research into the then present and potential demand for public transport in both rural and urban areas was carried out. This was

173 Essex County Council, Public Transport Plan, 1980/1, Essex, 1979
174 Essex County Council, Public Transport Plan, 1980/1, Para. 1.4.2 p8
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considered necessary to ascertain the actual need as opposed to the assumed demand, especially were grant aid was being sought. An overall strategy was set out,

"...The strategy is based on making the maximum use of existing transport networks, since it seems likely that future resources for transport are likely to be limited. The main policies and proposals put forward are, therefore, designed to overcome existing problems and those which will occur due to committed development in the most cost effective way. Broadly the strategy is for the development of a functional road hierarchy, the maintenance of the public transport systems and the increased use of traffic management, especially in urban areas..." 175

One of the problems they saw was that land uses were poorly related to one another, so longer journeys than necessary had to be made. They intended therefore to minimize the need to travel by ensuring that new developments were located in accessible places in relation to each other and to existing and proposed systems of transport.

With new developments they sought to develop public transport by subsidizing the services from the start until they became financially self-sufficient. They supported the co-ordination of the various transport systems and encouraged the movement of bulk freight by rail. Standards of service for rural areas were set following a survey that showed that the deeper rural areas had little demand for public transport for work or recreational purposes. The principle needs were for shopping, collecting pensions and
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prescriptions as well as visiting relatives. It was suggested that a village of between 200 and 1000 people the aim should be to provide a bus facility at least once a week to connect the village centre with the nearest market town. In Parishes of over 1000 people the facility was to be provided on at least five shopping days of the week, and at least one late evening journey from the nearest town or local railhead. On the other hand they were prepared, subject to a survey of needs, to look at self-help transport schemes such as social cars and community buses.

These proposals were put forward in 1979, since then deregulation of the bus companies has occurred and the use of the private car has increased even more.

A more contemporary plan to consider is The County of Avon Transport Plan that was produced in 1993 to set out policy for the twenty years to 2013.

"...it is now a widely held belief that the way forward lies with promoting an integrated transport system and this approach has been embraced in the Transport Plan..." 176

It is appreciated that this will be dependent upon the goodwill of the local community and business sectors in recognizing the need for a change of lifestyle and attitude towards travel. A change in the existing legal, planning and financial framework for the co-ordination and provision of transport infrastructures and services is also necessary. It is recognized that there is a need to,

175 Essex County Council, Public Transport Plan, 1980/1. Para. 3.1.1. p21
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"...develop a sustainable transport strategy which addresses today's problems whilst protecting tomorrow's environment..." 177

They have set themselves the problem of how to break the pattern of increasing car use, long and dispersed journeys and how to stop the long-term decline of public transport services. Their first step was to set out a series of visions,

"...

- Safety...Vision: A transport system that is safe for all users.
- Environment...Vision: A transport system which: - is environmentally sustainable; serves, rather than dominates, the built environment and local communities; provides opportunities for environmental improvement.
- Accessibility and Movement...Vision: A transport system that: - provides a greater range of transport choices; provides good accessibility for all to employment, health, educational, shopping, social and leisure facilities; provides for the efficient movement of people and goods, whilst minimizing the use of irreplaceable natural resources.
- Development...Vision: A transport system that supports sustainable development, prosperity and urban renewal.
- Security...Vision: A transport system that provides security for all users..." 178

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Certain objectives and targets are set in each category, for instance in the environment category the target is to reduce CO2 emissions to the level of that of 1990 by 2000 and 10% below those figures by 2013. As far as Accessibility and Movement is concerned, the objectives include providing a greater range of transport use and the more efficient movement of people and goods. The target is to reduce the car share of total journeys to no more than 50%. Minimizing travel distances and the adoption of commuter plans by organizations employing more than 100 people are the objectives and targets applied to development.

The measures proposed to break the pattern of increasing car use are - Firstly, to encourage alternatives through transport supply. In the short-term (the next five years) park and ride schemes using buses and bus priority measures in urban and rural areas are to be introduced, backed up by better and more accessible information. In the medium term (the following five years) introducing a Rapid Transport Network and in the long term (the final ten years to 2013) an expansion of the Rapid Transit. During the whole period the local rail network is to be upgraded, as well as the provision of extensive cycleways, better pedestrian facilities and improvements for motorcyclists. Secondly, car use will be discouraged through travel demand management. This is seen as being done by traffic calming, parking controls, pedestrianisation and lobbying the government to relate the cost of motoring to use rather than ownership. Land use policies will be used to reduce the need for motorized travel and businesses will be encouraged to adopt commuter plans. It is intended that some new roads will be provided, but these are mainly by-pass schemes to assist the environment. The

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Objective of minimizing travel distances from home to workplaces will mean that areas of housing development will tend to be on the fringes of existing built up areas or as part of the regeneration of the inner areas. The prospect for new village settlements is therefore very slight. This is far reaching plan and quite innovative, it is, though, very much dependant upon an unlikely change of heart by the national government.

Not being quite so far ranging but also bringing forward some interesting ideas is the Leicestershire Structure Plan, which sets out its plans up to the year 2006. This plan is similar in that it looks at ways of improving public transport and reducing car use. However it is less radical. The ‘modus operandi’ is geared more towards improving and utilizing the existing transport system, particularly the railways. The overall strategy is set out so that,

"...Most development is located where a choice of transport modes is available...built development in the countryside is minimized and the use of vacant and under used land and buildings within and adjacent to built up areas is maximized...(and) there is a mix of housing and compatible employment uses in each locality so that travel to work journeys can be minimized..." 179

The proposal is that all the land for major new development, employment or residential, will be allocated along the railway lines radiating from Leicester. Development can only take place elsewhere if there is a choice of transport modes available and a dedicated transport route.
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To facilitate the proposals the County Council is sponsoring the opening of fifteen stations and an hourly train service under the title of the 'Ivanhoe Line'. The plan was approved by the Secretary of State in 1992. It includes for all new developments to be within walking distance (1km.) of a station. The first stations, between Leicester and Loughborough, opened in May 1994. As a safeguard for the future, in Transport Policy No. 11 we read that,

"...Planning Permission will not normally be granted for development likely to impair the continuity of routes of disused railway lines and canals which have a potential for re-use as transport corridors..." 180

Other transport policies include road improvements for better safety and enhancement of the environment. To minimize the impact of traffic in shopping, residential and other areas, thus improving the environment for the pedestrian. Vehicle parking provision is to be reduced to encourage public transport use. The bus companies will be helped to improve their efficiency and quality and have through priority and access arrangements. Development of course, will only be allowed on a bus route. Bicycle and pedestrian routes will have to be incorporated into new developments.

Heavy lorries are to be restricted from using unsuitable roads. This could mean more road building or improvement in order to protect the environment of residential areas and move traffic quickly away from locations known to generate a lot of traffic.

179 Leicestershire County Council, Leicestershire Structure Plan, Written Statement, Jan.1991, p1
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In March 2001, the Government issued PPG13, giving planning guidance on transport to local planning authorities. It recognized that

"...Our quality of life depends on transport and easy access to jobs, shopping, leisure facilities and services: we need a safe, efficient and integrated transport system to support a strong and prosperous economy. But the way we travel and the continued growth in road traffic is damaging our towns, harming our countryside and contributing to global warming...." 181

They see integration as not being just within and between different types of transport but as also encompassing policies for the environment, land use planning and policies for education, health and wealth creation.

Land use Planning is to have a key role,

"...by shaping the pattern of development and influencing the location, scale, density, design and mix of land uses, planning can help to reduce the need to travel, reduce the length of journeys and make it easier for people to access jobs, shopping, leisure facilities and services by public transport, walking and cycling...."

To deliver the objectives they set out what local authorities should do in preparing development plans and considering planning applications. These are set out in para.6:-

181 DETR PPG13 Transport, 2001, secn. 1
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- Actively manage the pattern of urban growth to make the fullest use of public transport, and focus major generators of travel demand in city, town and district centers and near to major public transport interchanges;
- Locate day to day facilities which need to be near their clients in local centres so that they are accessible by walking or cycling;
- Accommodate housing principally within existing urban areas, planning for increased intensity of development for both housing and other uses at locations which are highly accessible by public transport, walking and cycling;
- Ensure that development comprising jobs, shopping, leisure and services offers a realistic choice of access by public transport, walking and cycling, recognizing that this may be less achievable in some rural areas;
- In rural areas, locate most development for housing, jobs, shopping, leisure and services in local service centers which are designated in the development plans to act as focal points for housing, transport and other services, and encourage better transport provision in the countryside;
- Ensure that strategies in the development and local transport plans complement each other and that considerations of development plan allocations and local transport investment priorities are closely linked;
- Use parking policies, alongside other planning and transport measures, to promote sustainable transport choices and reduce reliance on the car for work and other journeys;
TRANSPORT AND THE DESIGN OF NEW SETTLEMENTS

- Give priority to people over ease of traffic movement and plan to provide more road space to pedestrians, cyclists and public transport in town centers, local neighbourhood and other areas with a mix of land uses;
- Ensure that the needs of disabled people – as pedestrians, public transport users and motorists – are taken into account in the implementation of planning policies and traffic management schemes, and in the design of individual developments;
- Consider how best to reduce crime and the fear of crime, and seek by the design and layout of development and areas, to secure community safety; and
- Protect sites and routes which could be critical in developing infrastructure to widen transport choices for both passenger and freight movements.

The Planning Policy on housing as set out in PPG 3 (March 2000) reinforces PPG 13 in that it promotes more sustainable development and better use of previously developed land. The focus for additional housing should be existing towns and cities. It also calls for was to exploit and deliver accessibility by public transport to jobs, leisure and local services. Reduction of car dependence is a requirement.

It is clear from the forgoing that the New Settlement pattern of development would not comply with these policies.

PPG13 does recognize that the introduction of Information Technology will have an effect on development and potentially could reduce daily commuting or spread it due to more flexible working arrangements,
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6.4 TRANSPORT

The growth of motorcar use is getting to the point where it cannot be sustained for much longer, particularly within the urban areas.

It is reported that,

"...The number of cars in Leicestershire could increase by 50% over the next 30 years and traffic on the roads could double...in 1971 29% of all journeys in Central Leicestershire were by public transport. In 1995 the figure was 10%...”

On the other hand in rural areas there is little choice available. The fact that you own a car means that you would wish to take advantage of the facility and use it on every possible occasion, in spite of the fact that it leads to frustration, congestion and pollution. Obviously a serious change of attitude is needed. In terms of land area requirements,

"...A strip of land 3.50m. wide in an urban area can carry in one hour, with the degree of utilization common in peak hours, the following numbers of people moving in one direction: 700 cars with an average occupancy of 1.5, 1 050 persons,
150 articulated buses, 160 places each, average load factor 75%,
18 000 persons,
TRANSPORT AND THE DESIGN OF NEW SETTLEMENTS

40 suburban railway trains, 1 300 persons each, average load factor 75%, 40 000 persons..." 183

On these figures the advantages of public transport to the well being of the community are clear. On the other hand there are disadvantages to the individual.

As long as I keep my motorcar in good order it will carry me from my front door to wherever I wish to go. I do not have the inconvenience of making my way, during inclement weather, to the nearest bus stop or railway station, and have a similar hassle at the other end of my journey. Even if my destination is reached, parking is found to be difficult or expensive the convenience of entering my own vehicle on my own doorstep is difficult to overcome.

Government policy will have to be instrumental in reducing car use. As we have already seen, local authorities, in their structure plans, have come to this realization and the government has produced guidance in PPG3 and PPG 13. In the long term there will be no choice if the global warming factor has a bearing,

"...it is looking increasingly probable that it will lead to major policy changes in many areas, almost all of them likely to reduce car use than to increase it..." 184

182 Caltrans, Transport in Central Leicestershire, the Future, A Draft Transport Strategy to 2011, Leicestershire County Council, 1996
TRANSPORT AND THE DESIGN OF NEW SETTLEMENTS

In the meantime possible actions that could be taken include, more expensive parking, road pricing in congested areas, dearer petrol, less favourable tax treatment, lower speed limits, tougher alcohol limits, better provision for pedestrians and cyclists as well as improved standards and lower charges for public transport services.

The Policy Studies Institute considers that by 2010 the most probable outcome is that,

"...car use in city centres and for long distance commuting will be reduced; but use for driving to stations, local shopping and some social and recreational activities will remain attractive, if more expensive than hitherto..." 185

That this message is getting through can be seen in the County of Avon Transport Plan, discussed in Section 6.3. Their proposals definitely err on the promotion of public transport in preference to the more individualized modes, however, if accepted the question must remain as to whether they will be acted upon.

Banister and Marshall 186 consider that there are various travel substitution and switching methods that can result in traffic reduction.

They offer three methods of substitution in reducing the number of trips,

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- By linking trips, that is replacing a series of single purpose trips by a single trip combining different purposes,
- By technology, the trip is removed, the activity taking place using electronic communication, and
- By trip modification, such as substituting a single goods delivery round for a series of shoppers trips, ordering goods online.

Switching also has three methods,

- Mode switching, a series of single occupancy vehicle trips is replaced by one higher occupancy vehicle trip – car sharing, bus, train, etc. These reduce the number of car trips,
- Destination switching, an activity is switched from a distant location to a more local destination, reducing the distance traveled, and
- Time switching, avoiding trips at congested periods, less vehicle hours per trip.

What options are available in the public transport realm?

"...road transport requires as a rule eight times as much power - current, coal, oil or petrol - as rail transport..." 187

This is due to the vehicle on tracks following a fixed line on a running surface

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120 mm. width with little rolling resistance. A road on the other hand has to be drivable over its whole width and therefore needs to be able to withstand the maximum wheel pressure at every point, an expensive construction to achieve. Technically railways have an advantage as well as in the number of passengers they carry. Obversely, the very fact that they run on fixed lines works against them. Stops are limited and fixed which renders them inflexible in terms of picking up and setting down points. The stations act as nodal points by which other transport modes deposit the passengers at the station for onward travelling.

"...The only way that suburban rail services can offer good access to major new developments is for the land use planners to provide the conditions for developers to take sites adjacent to existing stations..." 168

Alternatively, new stations can be opened on the existing lines as proposed in the Leicestershire County Council Structure Plan.

The compromise solution is the use of the Rapid Transit System, or Light Rapid Transit (Illus. 9) as it is sometimes referred to. They have the freedom to make small adjustments, run on or adjacent to the public highway, traverse sharper curves to reach the very centre of towns and cities. They are also cheaper to construct and are disabled people friendly. It is claimed that they are both user and non-user friendly,

"...It is probably the most comfortable, attractive, speedy, reliable and efficient mode of urban transport for everyday journeys...it relieves congestion and thus helps those who
TRANSPORT AND THE DESIGN OF NEW SETTLEMENTS

do not actually travel on it. Its environmental qualities enable a whole new way of life in crowded city streets, free from car noise and fumes..."  

They are however a basically urban system, the fact that the trams make frequent stops means that journey times are lengthened with distance from the centre. (Illus. 9) Thus in rural areas rail with higher speed and less frequent stops has the edge.

The European Conference of Ministers of Transport certainly sees rail transport taking over as,

189 Taplin, M., and Fox, P., 'Editorial' Light Rail Review 1, LRTA/Platform 5, Sheffield, 1989, p2
TRANSPORT AND THE DESIGN OF NEW SETTLEMENTS

"...the only way to solve congestion problems...once the traffic demand on trunk routes can no longer be met by the car bus combination..." 190

The motorbus is subject to congestion caused by other traffic on the road. It is more flexible than the tram being able to divert off route if necessary. Therefore, from the rural new settlement travellers' point of view it is probably the most convenient. It is able to reach the village centres to pick up and set down as well as at intermediate stops. Between settlements it is able to run at fairly high speed. It is when it enters the urban areas that it becomes prone to hold ups. With the reduction of car travel produced by the measures discussed above and the introduction of bus only lanes this problem should be relieved to a great extent. The re-introduction of the mini-bus has meant smaller capacity vehicles have been able to reach areas more frequently and introduced services into places not designed for the full size bus. This trend looks set to continue and to be expanded. In some areas they have been so successful that larger capacity vehicles have had to be used.

New forms of public transport are being developed and may have a place in the future. Magnetic levitation systems,

"...in which the traditional and limiting wheel on rail contact is eliminated..." 191

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190 European Conference of Ministers of Transport, Guided Transport in 2040, ECMT,1992, p57
191 'German Fast Tracks, Concrete Precision', Concrete Quarterly, No. CQ 163, Winter 1989, p28
TRANSPORT AND THE DESIGN OF NEW SETTLEMENTS

are being used as people movers at Gatwick airport. The Germans are developing the system further to produce one where the vehicles will travel at up to 500 km/h. over long distances in competition with the Aeroplane. It also has possibilities for urban use especially when the trackless system presently used for robots moving around factories and warehouses is developed further.

A system that has possibilities is the 'people mover'. (Illus. 10) Although running on tracks it does not need an overhead or third rail supply but runs on kinetic energy generated by a flywheel. The vehicle has a battery only for emergency use. The flywheel is energized at each stop if necessary, however although energy is used in starting and on uphill gradients, recharging takes place upon braking and running downhill. On level track it is considered possible to run up to five kilometres without recharge. It therefore, is environmentally friendly and energy saving.

“...The minitram is not intended to be a high speed, high tech. vehicle, its niche is considered to be at a less glamorous end of the 'people mover' market running on a little - and - often basis and at a speed of probably not more than 25 - 30 mph...”

Travelators, or moving pavements, as running in many large airports could well be used to move people about within confined local areas.

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192 'Black Country People Mover', Omnibus, No.100, November 1992
The other mode of transport that is having a detrimental effect upon the environment and settlements is that concerned with the movement of freight. There is no doubt that in an industrialized manufacturing nation the movement of freight is important. The EEC wants a standardized maximum permitted weight of 44 tonnes. Presently 38 tonnes is the limit, with 40 tonnes allowed for vehicles delivering to rail terminals.

As with passengers the railway is the most economic for the transport of bulk goods over distance,

"...maximum loads of road combination and a goods train are:
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Goods train on rails: $650m \times 8 \text{ tons/m.} = 5200 \text{ tons}$

Road Tractor / Trailer: $18m. \times 2 \text{ tons/m.} = 36 \text{ tons}$...

The train can therefore replace 145 road vehicles, and only needs one driver. On the other hand the railway is handicapped by the need to trans-ship goods at fixed points. Thus reducing the railways cost effectiveness for short-haul movement, though not for long distance work.

"...Not all heavy goods vehicles need to penetrate beyond the city boundaries. Paris, for example, has built freight complexes on the peripheral roads, where loads are broken down into smaller delivery sizes, destined for different parts of the city and carried on smaller trucks... The system works in both directions..." 

Why does the freight complex have to transfer goods only between road vehicles? There is no reason why these depots should not cater for all forms of freight traffic, forming a nation-wide complex. The goods would be transferred to the most efficient form of transport for the onward journey. The argument against them is ‘time’, however we need to decide which is the most important, speed of delivery for Industrial health, or the saving to the environment and the good health of the nation. We also need to consider who will operate and manage the facilities, will they be Local Authority run as a public utility, or managed by private enterprise. The depots will have to come eventually as will traffic management to restrict the routes of HGVs away from...

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settlements, thus restricting their flexibility. Both Leicestershire and Avon, in their plans, mitigate in favour of these changes.

The opening of the Channel tunnel has already led to the opening of inland transport interchanges such as the one at Daventry. It is conveniently placed adjacent to the M1/M6 junction and is rail linked direct to the continent.

6.5 CONCLUSION

In conclusion it would appear that we have no alternative than to make major changes in the transport infrastructure, and that damage limitation must start now. We must move away from personalized private transport and the movement of goods entirely by road to a more environmentally friendly system.

"...It is of course too early to say what the general image of the 21st century will be, but at this moment the most likely development is that several modes of transport will work in parallel to cope with demand..." 195

The idea of privately developed New Settlements in rural areas has not worked, though a great deal of enthusiasm for them was generated. Their adverse impacts are not in line with the latest government policies or the more ecologically sustainable wishes of the people.
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Local Authorities are trying to incorporate integrated transport methodologies into their Local Structure Plans. These though are subject to the vagaries of politics, economics and the pressure of developers. An investigation into their effectiveness will need to be carried out in due course, though not as part of this thesis.

New sustainable transport methodologies are being put forward, some, such as trams are old ones brought up to date. Even the car is becoming greener and cleaner, but not sufficiently. This though has the effect upon the numbers on the road and the congestion they cause. To utilize radical new ideas and incorporate them into transport systems needs goodwill, faith and money.

One method of cutting down on Transport is for people to work from home. A new way of doing this has be brought about by the use of Computers and known as Teleworking.

European Conference of Ministers of Transport, Guided Transport in 2040, ECMT, 1992, p30
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Illus. 11 Traffic Congestion, London, 1995
7. TELEWORKING AND SOCIAL CHANGE
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7.0 TELEWORKING AND SOCIAL CHANGE

Prior to the Industrial Revolution it was customary to work from home. With industrialization the workers would live within walking distance of their work. The advent of public transport allowed some better off people to move out and commute daily. At the end of the twentieth Century the car is so prevalent that most people travel long distances to work. As we have seen this is causing problems.

It has been clearly shown that, while significant to the development of New Settlements, to continue to try to accommodate the car has its limitations. An alternative option is to utilize the technology of the Information Superhighway so that the need to travel for business purposes is reduced or in some cases eliminated altogether.

This is commonly known as Teleworking. Its benefits are it is not site specific, and can be carried out anywhere. It means that people can do at home what can be done there using email attachments. The nature of the work is varied, companies can take advantage to move out of expensive offices and only provide a meeting place.

PPG 13 recognizes the future potential importance of Teleworking to development planning and its possible assistance in achieving their aim of reducing ravel, especially by car.

We will look into:
TRANSPORT AND THE DESIGN OF NEW SETTLEMENTS

- Whether Teleworking is the way forward for the future,
- In particular will it reduce the need to travel, and
- How is it viewed by the people working in this mode?

7.1 THE BACKGROUND THEORY

As we have seen, the situation is developing where we are approaching a position when society will have to change its perceptions of work, mobility, purlieus and even the very structure of society itself. As was predicted as far back as 1981 by Alvin Toffler:

"...A new civilization is emerging in our lives, and blind men everywhere are trying to suppress it. This new civilization brings with it new family styles; changed ways of working, loving and living; new political conflicts; and beyond all this an altered consciousness as well... The dawn of this new civilization is the single most explosive fact of our lifetime..." 197

Is this an extreme view, or is there nothing in it, or does the reality occur somewhere in between? He carries on to discuss the impact of the computer on the future and suggests that:198

196 DETR PPG 13 Transport, DETR 2001, para. 33-4
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"...powerful forces are converging to promote the electronic cottage. The most immediately apparent is the economic trade-off between transportation and telecommunication. Most high-technology nations are now experiencing a transportation crisis, with mass transit systems strained to breaking point, roads and highways clogged, parking spaces rare, pollution a serious problem, strikes and breakdown almost routine, and costs skyrocketing..."

He was picking up on what Ursula Huws\textsuperscript{199} informs us has been developing since the early 1970s, when working at a distance using telecommunications links as a substitute for commuting was being considered in the wake of the energy crisis.

In the intervening twenty years since this was written, what has changed? Certainly the computer has become a part of the life of the majority of people. Has it affected the way they work, their location and transportation needs and which way will the trend develop in the future?

"...tele-communications allows work at home in 'electronic cottages', while firms become entirely footloose in their location, freeing their operations by the flexibility of information systems and by the density and speed of transportation network, people can stay at home, and yet be open to an entire world of images, sounds and communication flows,

\textsuperscript{199} Huws, U., Teleworking in Britain, A Report to the Employment Department, Research Series No. 18, Analytica, 1993, p1.
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and potentially interactive, thus superseding the needs for cities as we have known them until the coming of the information age..."  

even the European Council of Ministers said that,

"...present day communications technologies could to some extent obviate the need for people to travel at all..."  

This new way of working is commonly referred to as “Teleworking”, though various pseudonyms or near-pseudonyms such as ‘telecommuting’, ‘networking’, ‘flexplace’, or ‘the electronic cottage’ have been used to describe different types of work of a similar nature.  

According to a report in 1996, a study by market researcher Small World Connections showed that there had been a fivefold increase in teleworking in the U.K. over the previous five years. ECaTT, a European project “Benchmarking Progress on Electronic Commerce and New Methods of Work”, have shown that in 1999 around 8% of the U.K. workforce were involved with Teleworking. Another source, SW2000, report though that from their research the figure for 1998 was 14%. Another study

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202 Huws, U., Teleworking in Britain, Research Series No. 18, Employment Dept., 1993, p3
203 Mohammed, A., U.K. Teleworking on the Rise, ZDNet U.K.
204 ECaTT, Teleworking, How Many Teleworkers? European Telework Online
TRANSPORT AND THE DESIGN OF NEW SETTLEMENTS

predicts that by 2010, 52% of the population will be teleworking.\textsuperscript{206} The numbers are certainly rising as can be seen from the graph compiled from the Labour Force Survey by Analytica.\textsuperscript{207} In 1997 there were 987 000 Teleworkers, this had risen to 1.5 million in 2000.

\begin{figure}[h]
\centering
\includegraphics[width=0.5\textwidth]{teleworkers_graph.png}
\caption{Teleworkers 1997 - 2000}
\end{figure}

What is teleworking? There appear to be a number of definitions that might account for the differences in nomenclature. One of the common denominators is the use of,

\begin{quote}
"...telecommunications to enable one party to send to or receive from another, data, text, pictures, files and so on. The distance between the supplier and the provider or the worker and the client is the main thing that characterizes teleworking."
\end{quote}

\textsuperscript{206} Home or Away? Teleworking Today. http://www.si-cbx.com/teleworking/twbody.html
\textsuperscript{207} Teleworking in the Labour Force. http://www.analytica.dial.pipex.com
TRANSPORT AND THE DESIGN OF NEW SETTLEMENTS

Another common feature of teleworking is the use of the home...those who are self employed predominantly based at home, others spend some of their time working at home and the rest working at a conventional office base...” 208

Working at home was prevalent in village communities over several hundred years and declined only during the industrial revolution, the era of mass employment and rural depopulation. The introduction of personal computers, fax machines and the Internet over the past 30 years has made it possible to work from home again.

The parameters that define a teleworker are:

- they are based at home, a public Telecottage or operate remotely from a vehicle, for at least 50% of the time.
- have a direct contract with the employer or clients.
- use both a telecommunicating device and a computing device in the course of carrying out their work.
- would not be able to work remotely without the technology.

The Policy Studies Institute is not convinced that a boom in teleworking will happen,

...It seems unlikely that in the absence of powerful incentives over the next two decades computer-based homeworking will attract more than a small proportion of the workforce, because of the loss of social contacts involved, the impairment of career prospects, the strains on domestic life and the unsuitability of most jobs for doing them at a distance..."

They see the possible development as the adoption of home working for part of the week and the setting up of ‘halfway house’ telework centres in localities from which employees can communicate with their organizations.

Starting as a Teleworker is not expensive, assuming that your employer does not supply your equipment; the costs have dropped from £6 140 in 1991 to £1 662 in 1996. This is even lower today.

What does a teleworker need to operate efficiently? Stephen Bostock lists these as:

"...

- An office area at home, separate telephone or business line, answering machine, facilities for office environment.
- Fax (66% of fax(es) are bought for small businesses or home).
- PC and software with printer. Data Security and privacy. Problems: security on PC - used for work only? Viruses, monitoring and control of PC.

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TRANSPORT AND THE DESIGN OF NEW SETTLEMENTS

- Good telecommunications: modem, software for communications with colleagues, database, yellow pages, Telecom Gold, e-mail, financial data...
- A different type of contract.
- Administrative support in head office; regular meetings at first prevents isolation.

"Why people need to be in close proximity when working together:

- Face to face communication, the need to discuss problems with the problem directly in front of them,
- To be immediately available for meetings,
- To socialize,
- To have a life away from the home or the office, keeping the two completely separate.
- To minimize damage to sensitive material from Hackers and Viruses.

What are the perceived advantages of Teleworking:

1/ Savings in time and cost of commuting, when one considers that,

"...the average commuter spends 190 minutes a week travelling to and from work...(and) spends £3.17 a day travelling to work..." 212

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it can be seen that there are considerable savings to be made. It is estimated that the annual expenditure on commuting is £3.5 billion.\textsuperscript{213} This creates enormous benefits in reducing the on-costs applied to a particular job. If people only work from home on two days of the week it would result in a 40\% reduction in traffic. The News of the World article referred to above claims that,

"...people who stop commuting save an average £1 000 a year and gain an extra ten days a year to plough back into work or to use as precious free time..."

A BBC News item of 28 June 2000 quoted an RAC report that has statistics to show that,

"...within a decade, working from home could cut commuting by 15\% while Internet shopping could reduce car trips by another 10\%..." \textsuperscript{214}

2/ It is green, by reducing travel and atmospheric emissions.

3/ The ability of the worker to set their own more flexible working hours, set around their own needs, to deliver and collect children from school and improve their social life, for instance.

4/ The Teleworker is free to live in his/her preferred location, realizing their dream to live in the countryside.

\textsuperscript{211} Bostock, S., Teleworking/Tele commuting, http://www.keele.ac.uk
\textsuperscript{213} Bostock, S., Teleworking/Telecommuting, http://www.keele.ac.uk 1995
\textsuperscript{214} BBC News, Teleworking Boost to UK's roads, 28 June 2000
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5/ For disabled people in the working age range, teleworking can open up new opportunities for employment and can help to overcome some of the barriers that they may experience in conventional workplaces, because the

"...The type of work undertaken at home is typically report writing and the completion of jobs requiring peace and quiet..." 215

In 1998 9% of Teleworkers were disabled.216

"...With the use of the new technology and the availability of the required training, disability is not an issue..." 217

The main disadvantages cited by the groups researched by Huws218 were:

- Difficulties in managing Teleworkers
- Social isolation
- Communications problems, no face to face communication, and
- Unavailability for meetings at a moments notice.

Haddon and Silverstone219 in their research found that the attractions of office based work are still sometimes identified as a major reason for wanting to give up Teleworking.

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216 Huws, U., Jagger, N. and O'Regan, S., Teleworking and Globalization, Inst. of Employment Studies, 1999
TRANSPORT AND THE DESIGN OF NEW SETTLEMENTS

"...Our work culture dies hard..."

Their aim was to

"...to identify how and why Telework comes to effect, and is also affected by, the
dynamics of life in the family and household..."

They found that experiences of Teleworking varied. There were differences
between the employed and self-employed, or between professional or clerical
levels of work. The variety also influenced by other, less visible forces; the
particular dynamics of gender, household politics, the management of time
and space, and the integration or lack of integration of the household in wider
networks.

The future of Teleworking is in their view not guaranteed due to the
Variation in experience and the degrees of success and failure found within their
research of 21 case studies.

Control was considered to be the crux of successful management of Teleworking.
By this they refer, not just to management of the dispersed workforce by the central
workforce. They also include the internal problems of control within the household and
family. How the household is structured and run can have a critical effect on whether

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Teleworking is accepted or not. By their nature Teleworking households all share a commitment to the functional use of information and communication technologies. The computer, telephones and so on become a means of entertainment and social interaction. The claims of work must be paramount.

"...No household in our sample has succeeded in isolating Teleworking from the rest of what goes on at home..." 220

Isolation they found to be an important issue. That is isolation both inside and outside the home. They found that this was not always the case and that young women who were confined to the house found opportunities through Teleworking for reintegration into the world of relationships and meetings. On the other hand the person who withdraws to the home after working in an office can find it harder to overcome the feeling of isolation. Isolation affected people in different ways and depends upon the psychology of the individual and their circumstances.

Flexibility, the opportunity to work from home or not and also the choice of when to work, was found to be a myth due to the constraints placed upon the Teleworker by public time and the need to work when others are working. The other constraint is due to the demands of the domestic day or week. They considered that:

219 Haddon, L., and Silverstone, R., SPRU CICT Report Series No. 10 - Teleworking in the 1990s, A View from the Home, University of Sussex, 1993, p144
220 Haddon, L., & Silverstone, R., SPRU CICT Report Series No. 10 - Teleworking in the 1990s, A View from the Home, University of Sussex, 1993, p144
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"...teleworking offers genuine choice for some. For many more that choice is a compromised one. For yet others, it is one that can only be made provisionally. And for still yet others it is no choice at all..."

They concluded that the industrialization of work has proceeded more or less in a single direction, forcing workers of all shapes and sizes into factories and offices, towns and cities. Teleworking, they consider, offers a choice; that the future of work is going to be much more complex and varied future and that Teleworking will develop unevenly.

This report brings out some interesting points, which will be tested against the responses gathered in the following case studies.

The work of Mokhtarian, Handy and Saloman brings together research into the Travel, Energy and Air Quality impacts of Telecommuting. The article examines the empirical findings of eight studies. It should be noted that seven are from the United States and the other from the Netherlands, and from the point of view of this thesis they should be considered in the light of this. The United Kingdom is a totally different place to America, being smaller and more compact. It could be argued that travel patterns in the U.K. would be closer to those of Holland.

The article demonstrates:
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"...the complex relationship between telecommuting and its travel, air quality and energy impacts, and illustrate the need for a careful linkage between them...”

They found that:

- Only drive-alone vehicle-miles counted as transportation, energy and air quality impacts,
- That to obtain an overall picture they needed to look at the impact of telecommuting on total travel not just commuting travel. Some non-commute travel may be stimulated by the ability to telecommute, more visits to local shops rather than calling in during the commute. They also thought that the studies might be suggesting that the early telecommuters were long-distance commuters with a strong motivation to reduce their overall travel, than later adopters will be.
- In terms of commute distance the early adopters are unrepresentative of the general population. The authors believe that people will adopt telecommuting for a variety of reasons of which transportation is only one. This will mean that the average commute distances will reduce over time. The future transportation impacts of telecommuting will be smaller than predicted by their data.
- Not all telecommuters reduce travel. Telecommuting can occur for part of the day, a commute trip is still made, albeit off peak. This has some transportation, energy and air quality benefits, but not as much as total elimination of the trip altogether.

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- Relative reductions in energy consumption and emissions will generally be smaller than relative reductions in vehicle miles travelled, due to the disproportionate contribution of cold starts to these factors, and due to the fact that average speeds for trips made on telecommuting days, more non-freeway travel, are lower (therefore generating emissions at a higher rate) than on non-telecommuting days. They also pointed out that technological advances lead to further improvements in vehicle fuel efficiency and emissions; the reductions in fuel and emissions attributable to telecommuting will diminish.

- The increased energy used in the home needs to be deducted from the transport savings. They observed that travel energy savings should be deflated by 19% to account for increases in home energy usage.

British Telecom has been developing Telework within its organization since 1990. They call it the "workabout" scheme, which by 2002 had 5000 of its 108 000 workers registered on the scheme. Hopkinson, James and Maruyama carried out a survey as part of a European Project on Sustainable Teleworking.222

The findings revealed that for:

- BT and Workabout registrants Teleworking appears to be a beneficial activity, which is also creating economic, environmental and social benefits. Most staff

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TRANSPORT AND THE DESIGN OF NEW SETTLEMENTS

say that they are enjoying an improved quality of life, reduced stress from commuting, feeling more productive and other benefits. BT are benefiting from higher employee productivity, morale and lower absenteeism.

- They claim broader benefits in that reduced commuting travel translates into less pollution and reduced fossil fuel consumption. No figures or basis for this assumption are given and as we have seen in the Mokhtarian research, this is not so much a benefit as one would like to presume and other factors than reduced commuting need to be factored into the equation. Other benefits they see are that their employees put more time into the local community and economy. They also have a small number of disabled and other disadvantaged employees who can remain in employment.

- The survey has established a number of different types of Teleworking, having differing patterns of impact. They have noticed that in-work travel has increased in some cases and that commuting savings are being offset by additional personal journeys by almost half of the Teleworkers and/or their households. A large proportion of commute savings they have found are in public transport rather than car journeys. These are not savings as the public transport services will run anyway.

This is an interesting report based on an online survey of the staff. It only covers the employees of one company, BT. In that case one must assume that there would be a bias towards the respondents giving the answers that the company wants to hear. No information is given as to the location of the staff or distances traveled. The wording of
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the report suggests that most of the respondents are London based, which would account for the reductions in weekly commuting being greater for rail travelers than car users.

In considering the above research it shows that Teleworking is not as straightforward as the explosive fact and cure all approach of Toffler was predicting. Rather it is providing a new flexibility within the existing work ethic. The management of Teleworkers and Teleworkers self-management is producing problems, which dampen the original utopia suggested. It is not clear whether or not there will be much saving in transport costs, commuting time or any pay back by way of environmental benefits, due to the effects of externalities not originally considered. The work on this was based on this was based on research in America and the Netherlands and may not apply to the U.K. No consideration was given to the promotion of public transport for non-commuting trips as a way of replacing car journeys. The results of the B.T. survey cannot be seen as representative of the wider variety of Teleworkers in this country as it is a single company survey.

7.2 THE IMPACT OF TELEWORKING - A Series of Case Studies.

7.2.1 METHOD OF RESEARCH

With the exception of the B.T. survey, the other research was carried out in the early 1990s. The aim of this study will be to utilize case studies, based on the East
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Midlands of England. It will use a variety of workers from differing fields who use Telework. The first group was interviewed in 1996-7 and the second group in 2003. This will show if there has been any change in perception between the two research periods.

The decision to use interviews rather than a questionnaire was made in order to obtain an understanding of the social reality through an interaction at a personal level in a natural setting. This was done to put the respondents at their ease and to elicit a real response rather than one based upon what the respondent thought the interviewer wanted to hear.

Following the steps as set out in qualitative research as set out by Bryman,223 a series of general research questions were devised and are set out in Appendix 4. This was followed by the selection of the subjects. It soon became evident that it was going to be extremely difficult to actually locate suitable research participants. Eventually two were found at a poorly attended meeting arranged by the Teleworkers Association. The Field Service Technician was engaged in fixing an electrical item in my home and the others I found by word of mouth.

Informal interviews were held with each respondent at their home. This qualitative approach provides the respondent with the chance to speak freely and in depth. They are able to make observations in passing and are therefore not as restricted as they would be filling in a questionnaire. The information given is more likely to be based on
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what the respondent really thinks rather than what they think is the answer you want to hear.

The respondents to the first case study came from a variety of backgrounds including a clerical worker, Valerie, her husband Paul, a catering manager, Grant, an architect, Two service engineers, Peter and George with his wife, Glennis, a Field Service Technician, Howard and a Company Secretary, Jeremy.

Each interview was recorded to maintain the flow of discussion. These were later transcribed for analysis and interpretation.

A similar methodology was used for the second group of studies in order to make the results comparable. Again, the group was selected from a diverse group of backgrounds similar to the former to maintain compatability and comparability.

7.2.2 TYPE OF COMMUNICATION METHODS.

The respondents in the sample where all self employed with the exceptions of Howard and Paul. The point that Stanworth makes, about the type of work undertaken at home, is probably true of the people who spend the majority of their time at a central office. Once you commence working from home on a more or less full time basis, home becomes your office and therefore your point of contact, where you can be disturbed just as much if not more so, and it can become a problem.

George and Jeremy tended to separate home and office by using separate parts of the house with strict business hours. The problems occur when people know your private telephone number whereby if the machine answers the business number they know that there is a good chance that you will be contactable on your home number. Owning an answerphone does not therefore guarantee your privacy.

All of the respondents used computer systems in some way or other. Grant used his essentially for letters, was not interested in Computer Aided Draughting (CAD) and preferred social interaction as opposed to contact by computer. His fax machine he considered to be his most useful asset.

On the other hand, Peter made a lot of use of his computer for drawing as well as for letter writing, spreadsheets, database and so on. He uses a modem attachment that he uses to send and receive faxes and is on the Internet as well. His next objective is to get a website and use it for marketing.

George and Glennis are in the same business as Peter and do use the computer, though mainly for word processing. They are considering using CAD. The Internet is used for faxes and they have an E-mail address. They too, see the fax as indispensable.

Valerie, who is disabled, set herself up with a computer system and did a Word Processing and Secretarial course and wants to specialize in medical and legal
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documents, an area her nursing training gives her a special interest in. She is not connected to the Internet at present but sees that as her company expands it will become necessary. Her husband, Peter, who is employed as a Catering Manager for a national company, would also like to work from home. He feels that 50% of his work could be done from home easily, instead he sits in his office 20 miles away working on his computer.

Howard uses a Laptop for his work, which is fitted with a modem. Using a freephone number he can plug this into the telephone socket at home or wherever he is working, to download information on such matters as his work schedule or to order parts for the errant electrical goods he is working on. The family has a PC at home that is for private use and not used in any way for his work.

Jeremy and his co-director in Preston carry on a business processing Wills and have a nation-wide network of agents. He has his study in which he keeps his computer equipment. Constant contact is maintained with his partner by fax or E-mail and they are in regular telephone contact. They only meet every six weeks or so to deal with things they need to sit around and discuss. Their agents work entirely from home communicating by fax or telephone though they have set the company a goal to get them all onto E-mail and to be able to remotely interrogate their computers.
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The actual types of work are therefore much more varied than just ‘report writing’ and create a complex web of management and developing communication problems for the participants to address as their businesses expand and contract.

7.2.3 SAVINGS IN TIME AND COST OF COMMUTING

These are certainly considered as a benefit by all the interviewees though all, with the exception of Valerie needed transport for their business at some time or other. Howard used his vehicle as a travelling workshop and office because he was out on the road for the majority of the day. To visit his controlling department each day in Nottingham would be inefficient.

He actually only goes to Nottingham every two or three months for a meeting of all the Engineers in the East Midlands area. Communication is by telephone, pager or message on his laptop. He thought that there would be advantages in not travelling to Nottingham everyday when the company started the system. Now he feels the company are taking advantage of the time saved by disproportionately increasing his workload. He works a 9.5 hour day but considers that when you take into account travelling time to the office for other people the hours work out about the same. The difference being that during that travelling time he is working.

There is no saving for Grant, as he and his wife share a car that he has to use in-between taking and fetching her to and from work at an office in the city. This actually
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increases commuting time, as he has to go to and from her office twice in the day and at
the most critical rush hour times.

George and Glennis have an office at the side of their house. George feels that
he would benefit from travelling a few miles to work to create a break between home
and office.

Peter found that it worked to advantage with employers. His main work being for
a client in Nottingham he was saving an 88-mile round trip with all the time and
expenses that that entailed. He could therefore charge a lower fee.

Jeremy initially chose the village in which he lives because it is equidistant from
Peterborough, Nottingham and Leicester and therefore easy for commuting to potential
job opportunities. He is still doing a lot of travelling which generally means passing
through or close to one of these places so he had not considered that he was making
savings in time or commuting costs.

The general view among the group was that they could see the advantages to not
commuting on the basis of time and cost. Most still had to travel to a certain extent and
therefore the savings at present are not as great as might be envisaged.

Stan Lester, who posted a message on the Internet would agree with the above.
He moved from a city centre job to run his own consultancy from home in a small market
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town. He has clients all over the U.K. and reckons to be office based about 33% of the time. He does have to travel, mostly by car, as this is the most convenient compared to other forms. His mileage, though, has remained at 20% of what it was when he commuted.224

7.2.4 IT IS GREEN

There are negative effects created by transport such as accidents, congestion, air pollution and noise. Road transport being the dominant source of the transportation contribution to air pollutants. Therefore any way that transport can be reduced has got to be a benefit to the environment. Two of the ways that this can be achieved are,

1/ Reducing the amount of commuting, dealt with in the previous section and,
2/ Encouraging the use of public transport as an alternative to the car.

How does this apply to our interviewees? We have already seen that there are some advantages in not commuting and as more and more people work from home it could improve atmospheric pollutant levels. What do the group feel about using public transport as an alternative to the car?

Peter cannot do without the car at the moment though he feels that he ought to make more use of other forms of transport. He lives in Lutterworth, a market town between Leicester and Rugby. There is a bus service to both places but not

224 Lester, S., Teleworking and Transport, 4 Feb. 1998
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conveniently timed for his needs and the railway services. They are not available late in the evening. His view is that more co-ordination is required before he can seriously contemplate moving away from his car.

On the other hand Valerie, living on the outskirts of Leicester has a good public transport service into the city centre. She finds it difficult if she has to go to places on the city's edge because in each case she would have to travel via the city centre. She finds that public transport is a bit dilapidated and going over speed bumps is uncomfortable for a disabled person. For general use, however, Valerie tended to use the car and being disabled benefits from lessened parking restrictions.

Paul needs to visit various locations in order to control his staff, this he invariably does by car. He finds that there isn't public transport that is flexible or there never seems to be a direct link from where he is to where he wants to be. He does use the train when he has to go a very long distance, particularly London. He cited his days in the Air Force in the eighties when he experienced foreign transport systems in Holland and Germany. He tells us that their built systems and taxi services are all geared price wise and serve the community much better. In his view, even the rural areas of all parts of Germany and Holland get a better service than the City of Leicester. It is subsidized by the taxpayer, however, it was a definite rival for the car, and is going to be more ready in the future as more cars are taken off the road network.
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Grant also lives on the periphery of the city but tends to use the car and feels that he would be in trouble without it. There is a bus service into the town, where he rarely wishes to go, and hardly ever to any other place he may wish to visit.

On the matter of one day the car has to go. He felt that it is deterministic because people will not be forced out of their own private transport, they may be priced out of it by the cost of city centre parking or whatever. He recalled the fifties structure plan for Leicester which had a major transport system concept which did not get off the ground. So his view was that he could not operate effectively without his car and it would be very difficult to produce an alternative that would be suitable.

Howard definitely could not operate without his van that carries all of his equipment and said that he would be completely stumped without it. When questioned about public transport he couldn’t remember the last time he had made use of it.

George uses his car for work. He needs the flexibility of being able to move around to various places during the day to diverse parts of the country. One of the problems that George encounters when travelling around the country is parking. He feels that this is a minor problem when one considers the extra time and costs involved in using public transport. He thought that 400 miles was more than enough to drive on a round trip for the day so that if he travels to Glasgow he tends to fly. He finds it more cost effective not having to stay away for the night and has a preference for getting home at night.
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When asked about local transport, George's response was that he does all of his travelling by car on the grounds of convenience. Even when asked, if the system was improved would you use it, his response was that it is a good system now and he doesn't use it.

Jeremy also considered himself reliant upon the car, the nearest railway station being 3 miles away and there being only a sparse bus service along the main road that runs along the edge of the village.

It therefore comes down to the convenience of the car as well as the cost in time and the ease of availability. The problem before the traffic planners is easy to see. How to make public transport cost effective and attractive. Although our group could all see the problems increasing and knew the answer none of them were all that keen to change from their cars. Motoring would have to be extremely expensive before people would begin to change in large numbers to public transport.

7.2.5 HOURS OF WORK AND SOCIAL EFFECT.

How do people manage their time when they are not restricted by office hours? Are they restricted by office hours? Each of the group was asked how they organized their day and how, if at all, their lifestyle had been altered.
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Peter considered his workload to be a matter of boom or bust, either having a lot of work when he puts in long hours or he has little work and more leisure time. He likes to spread his day by working in the morning, making visits during the afternoon and, if necessary, working in the evening. He finds that the people he is working with work a normal day and that he has to fit in with them.

On the question of social life Peter didn’t think it had been affected very much. In discussing a general social life away from the office Peter had not noticed that he was going out any more than he had before, or making any more local contacts. He felt that he spent more time in contact with Teleworking people and found the Teleworkers Association useful for discussing technical problems.

Flexibility was the main requirement for Valerie. She likes to start early and work whilst her children are at school.

Grant has a number of interests outside his practice, particularly the National Historic Garden Trust so is pleased with the flexibility he enjoys, allowing him time to go to conferences. He also likes to start early in the morning to do his administrative work. He also tends to see his clients in the evening as this suits their convenience. Although working long hours he still finds it a less stressful way to work.
Howard has a more rigid timetable. He has certain times when he is expected to call in to obtain details of his workload and finds that he has very little time to spare. His office does not contact him at home out of office hours other than by the modem.

George and Glennis have been in business for 13 years and for all but one of those years, when they rented a small office in the city centre, they have worked from home. They find that their problem is not in getting started it is more a problem of being able to stop. The tendency is to carry on until the work is completed; though it rarely is. They make a special effort to go away for at least one weekend a month. They have to go away for if they stayed there would be too many disturbances and they would not get a break.

Jeremy does not make any conscious effort to be flexible with his office hours, and also finds it difficult to stop. For the benefit of the outside world he works normal office hours, tending to switch on the answering machine at 5.30pm.

7.2.6 LIVING IN THE PREFERRED LOCATION.

The fulfillment of the dream to live in a rural environment, village or small market town is often seen as a spin off of Teleworking. It is easy to see how it can be attractive to those already living in these areas, what of the towns people, is it really that attractive and a sufficient reason to move home?
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Peter lives in a market town on the borders of Leicestershire, Warwickshire and Northamptonshire. Teleworking does not affect his choice of location. He likes where he is; it has all the amenities his family requires. He did not consider that location had any thing to do with the mode of working and that there are other considerations that determine where you choose to live. These included such items as availability of shopping, access to motorways and consideration of the needs of the other members of the family.

Valerie and Paul would consider moving when the children have finished school. They would prefer to move out to a more rural location but are cogniscent of the potential transport problems in doing so.

Grant, on the other hand, was quite definite that he would not move away. He has a network of clients, business contacts and friends locally. He appreciates that if he left he could keep in contact by modem. His preference is to know them rather than to contact them.

Howard again was content to stay where he is in one of the satellite villages of the greater Leicester area. He wanted to be within a reasonable distance of schools, shops and the city centre.

George and Glennis considered their location as both a business and a family consideration. They like the locally available facilities and the ease with which they can
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travel to wherever they need to go using the motorway system. They have two teenage boys and whilst it appeals to them to be out in the countryside. They are at an age now when they want all sorts of activities.

Jeremy already lives in a rural village and as we have seen the main reason for his moving there was the fact that it is in easy commuting distance of three major employment centres and this he also considers a big consideration for Teleworking. He is not considering moving immediately though he might retire to a different part of the country later. At present he considers that to move would handicap the flexibility offered by his present location in terms of access, schools, etc.

It is clear therefore that the opportunity to move is not a major consideration, other convenience and social requirements come into play. An article by Ursula Huws in 1997, showed that her research had found that using,

"a cluster analysis technique to plot which type of telematically-supported activity is most likely to be relocated in which type of region and concluded that a new industrial geography is emerging, in which those rural regions which fringe the growth centres of the new high-tech industries are likely to prosper, but remote areas, particularly those which lack ISDN networks, are in danger of becoming trapped in the downward spiral of low-skill, low wage employment and relative economic decline..." 225
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7.2.7 BENEFITS FOR THE DISABLED.

Valerie was the only disabled person interviewed using Teleworking because even though disabled she needed to work. The work she does being mainly word processing and is ideally suited to her condition and requirements. She has so far been unable to break into the specialist medical report writing work she would like to do and for which she feels she has the specialist knowledge necessary.

It is an ideal way of working for people who are disabled. She cannot go very far, being only able to walk a short distance. It is important for her to be able to stay at home within an environment where she has control.

7.2.8 OTHER COMMENTS.

During the course of the discussions a number of other points were made which appertain to Teleworking. The first one is the stigma of working from home. George and Glennis raised the matter. They had a deliberate policy of keeping the fact that they worked from home quiet. They feel that they work harder than most people in an office do yet people have the impression that because they work from home they must be sitting around in the garden all day.

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Jeremy was also concerned about the stigma. He would not volunteer the fact to a business client and would, more likely, talk about the company's head office in Preston because people feel more confident and secure about it.

Jeremy was also concerned not to attract the attention of the Planning Department as there had been a lot of local argument and unpleasantness about businesses being run from home.

One of the questions asked of each of the interviewees concerned their feelings as to whether they felt that Teleworking is in the vanguard of a new way of working and employment patterns.

Peter thought that it was picking up and more people would become involved gradually. He talked of a discussion he had with an employee of the local council who told him that they were considering the matter quite seriously as a way of saving money.

Valerie didn't think that Teleworking was for the majority, a lot of education being needed before it would become acceptable to employers to let the employees out of their sight.

Grant, on the other hand didn't see himself as being at the forefront at all he just found it was a very comfortable way for him personally operates.
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Howard thought that a lot more people, particularly in his line of business, would be working as he does in the future, though they are having a few teething problems with the laptops.

George and Glennis were in two minds; they were very concerned about the stigma that they see as a great problem.

Without doubt Jeremy was most determined that for his business it is the best way forward and although they have a nominal head office it was only very small compared with the number of people the company employs. He was also very keen to use the services of other people working in a similar fashion including a local lady who does Telemarketing for him.

Peter also kept in touch with other Teleworkers, and is a keen supporter of the local Teleworkers Association. Together with three other fellow services engineers they have set up a loose consortium so that as a group they can tackle larger projects as and when they arise. He is also involved with a local Telecottage that he considers useful for training and discussing ongoing problems.
7.3 UPDATE AND FURTHER RESEARCH

In 2003 the respondents were again approached to see what changes had been made in the interim. Another group of Teleworkers were also interviewed to establish if the method of working had advanced and whether or not opinions were changing.

7.3.1. UPDATE

Of the six originally interviewed only three are still Teleworking as before. The others do not Telework anymore for various reasons.

As a disabled person Valerie was trying to set up to work from home. She found it difficult to sustain sufficient work and could not obtain assistance in setting up. This she said was because no information was to help her with costing and marketing. She has since obtained employment at a local hospital, her area of expertise being in the medical field. The Hospital has taken cognizance of her disabilities and provided her with dedicated parking and specialist equipment. She finds that she is much happier having the interaction with her new colleagues and in the hospital environment.

Her husband Peter, a Catering Manager, now works from home about 25% of his time. Although he still has to visit the various sites under his control more of his clerical work is done from home and emailed to his head office. He does not save any time as
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such but likes the idea of being able to do it at home surrounded by his family rather than alone in an office.

Grant is now semi-retired and does little architectural work, preferring to concentrate on lecturing. He does this as a visiting lecturer at various institutions. His work for the Garden Trust also takes up a lot of his time. He still operates from home and uses his PC for letters and lecture notes.

Jeremy has given up his business and left the area. I was unable to re-establish contact with him.

The others in the group are still working in the same way that they were. They were asked what, if any, changes they had made or observed.

Howard, the Field Services Engineer, remarked that his Laptop Computer was now better, and easier to use, and capable of storing more information. He is now able to access more information he needs to carry out his work over the internet which means that it is more up to date. He has noted that a lot more people in his line of business are operating in the same way that he is. He is still out on the road for much of his working day and finds that the traffic is becoming more congested within the urban areas. He has not moved house yet, though he is looking for a bungalow in the same area as his wife’s condition is deteriorating. They do not want to leave the area where their friends and amenities are.
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George and Glennis are also in the same house carrying on their business, which has expanded. They are now fully equipped with a CAD system for Drawings, which are now sent out increasingly by email. They have found that it makes life easier as the information and decisions are transmitted more quickly and when drawn less likely to misinterpretation. Hey still try to maintain the discipline of making time for themselves. George has found that because of emails he has to attend fewer meetings. This does not mean less traveling as he has more work and has to visit more sites, which can be anywhere in the country. They have also found that as they have become more established they are not bothered so much out of office hours.

Peter has also benefited from updating his equipment and making better use of the email for contact. This he says means that he does not do so much traveling and has more time at home. He has also set up a web site as a marketing tool, though he is not sure that he has gained any extra work from it. One problem he perceives is that his clients expect his fees to be very low because he works from home and has fewer overheads. He finds this a difficult problem to overcome as he finds it expensive to be continually upgrading and maintaining his machine. He has major difficulties if his machine or his ISP are down.

Can we draw any conclusion from this? Bearing in mind the small group interviewed it shows that it can work for some people and not for others. The person who tried to set up doing clerical work found it difficult to penetrate the market to get going. Others found that once going it worked for them, though they had to keep up
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with the technology as it developed to maintain their position working with larger, better-financed companies. If you work for a large company and it suits their business operation, they will keep you up to date technically, however you can become divorced from the company of your fellow workers and it can impact upon your social life if you have to spend part of your evening reporting in on the days work and receiving your list for the next day. It could also suggest that Teleworking is a flexible methodology that could be taken up and put down as and when it suited the individual or business, such as in times of recession.

It is therefore prudent to look at another group of Teleworkers to investigate their views and experiences.

7.3.2 THE NEW GROUP

A similar method of interview was used based on the subjects for discussion set out in Appendix 4. As with the first group it was not easy to locate suitable people for to talk to. Why should this be? It is possible that there are:-

- Not many people Telework in this area of the country.
- Those that are may be embarrassed by it, not seeing it as important or as a failure to find 'proper' work.
- They work privately and do not let it be known that they Telework.
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I have been unable to find anyone that advertises themselves as a Teleworker, though there is plenty of discussion of the subject on the internet. Various methods were used to make contact:

- Word of mouth, this proved to be the most successful and all of those eventually interviewed were found this way.
- The Teleworking Association was approached, without success.
- Various computer maintenance companies were approached and asked to contact any clients they had who Teleworked, to see if they were willing to participate. Nothing was forthcoming from this source, though they all claimed to have Teleworkers on their books.

The respondents selected, were from varied backgrounds as before in order to achieve an overview. They were Jane, a Company Secretary, Malcolm, an Architect, Trevor, a Services Engineer, Jill, a Typist, Tina, a Company representative and Alan, an Electrical Contractor.

7.3.3 TYPE OF COMMUNICATION METHODS

As before four of the group were self-employed and the other two, Jane and Tina, employed. All had an office set aside within their house.
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All used computers to a large extent, probably more than the previous group; all
appeared to be very computer literate. Jane uses hers mainly for letters and is using
e-mail more and more. Most letters she said still go by post but, a quick message can
be sent by e-mail and answered much more quickly. She does not do the accounts,
these are handled by an Accountant. Alan, is the same. His use of e-mail is more limited,
the vast amount of his correspondence going by post. He did point out that he does a
lot of work with Local Authorities who are using e-mails more and more for contact. He
therefore expects their use to rise.

Jill uses her computer to carry out work for other people. It tends to arrive as a
handwritten draft for typing. She does send it back by e-mail, wherever possible, for
correction. This, she says, saves time for both parties. She has also installed a fax
recently. This helps people contact her quickly with changes, additional pages and so
on. Whereas Tina uses the e-mail facility on her computer to make a regular connection
with her Head Office which is 200 miles away from her home. It also helps her to keep
her records up to date. She also said that she finds her mobile of great use to keep in
touch when out on the road, this is also true of Trevor.

Both Malcolm and Trevor use CAD systems as part of their business, their
computers also handling the correspondence, accounts, typing specifications and so on.
Both use the e-mail to transmit and receive drawings. This saves them both time and
effort. They also use faxes to a great extent. Trevor pointed out that emails are fine but
documents of a legal nature needing a signature need to be originals and therefore have to go by post.

All the respondents used the telephone. Alan was the only one with a dedicated business line, all the others rely on their home ‘phone. They all also used mobiles which they found indispensable for keeping in constant touch with their clients.

7.3.4 SAVINGS IN TIME AND COMMUTING

On the whole the group did not see much in the way of saving time because all still needed transport, the car, in one way or another for work. So even though they do not commute to an office they found that they needed their car just as much.

Jill found the advantage she gained was that she was able to arrange her visits outside of the rush hours. On the other hand this had the disadvantage of her finding car parks already full. Malcolm did try to take advantage by starting early. He found that he was constantly being interrupted during the day. The time he needed was later in the day as he can only visit his clients during the evening.

For Tina there is no saving at all. She is on the road most days, starting early and arriving home late. She travels up to 1500 miles per week.
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7.3.5 IT IS GREEN

The group, were asked to consider their views on the environmental issues around car use and were asked their views on the use of public transport.

Apart from Malcolm and Trevor, who have to consider environmental issues daily as part of their work, none of the others had really considered the matter. The view of environmental issues was that they did their bit by putting their glass and papers into the recycle bins. Jill was the only one who utilized public transport for business purposes. That is only when she has business in the town centre were parking is particularly difficult. All had easy access to bus services within a short distance of their home.

The consensus is that it would be impossible to carry on their business without the use of a car. Tina in particular has many visits to do and found the idea of using public transport as completely impractical. Trevor travels from Sheffield to Leicester at least twice a week and has looked into the possibility of using the train. He found that the train journey was very quick, the problem for him was getting to the station in Sheffield and then from the station in Leicester to the Hospital which is on the outskirts of the city. By the time he reached the station he could be a long way down the motorway towards Leicester. Although he sometimes has lengthy hold ups on the motorway, particularly as he has to travel at the busiest time, the car is still more convenient and quicker than traveling by train. Whichever way he says, it makes for a long and tedious day. When asked if he really needed to travel, and if their was another...
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way he could communicate, his response was that he needed to be on site to make his inspections and discuss matters with the client and the contractor on the job.

The view was expressed that it would take something quite dramatic to stop them using their cars and switching to public transport. Jane suggested that will price the use of cars in such a way as they become the domain of the richer people to the detriment of those on lower incomes. So the cost of a better environment would be paid for by the less well off who will then be forced onto public transport.

A common theme was that the car is outside the door, you can use it to go wherever you want whenever you want.

7.3.6 HOURS OF WORK AND SOCIAL EFFECT

The group were asked about there hours of work and what effect they have on their social life.

Jane found that she had to be flexible to fall in with the requirements of her husband and the needs of her children. She finds the life monotonous and tries to get out of the house/office to meet people. She finds that when she is in the house she is being constantly disturbed by people calling in, or by the children requiring attention. This disturbs her concentration. She also misses the comradeship of working in the office.
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Jill is also working flexibly. She has to meet deadlines for her clients. She will work flat out day and night to have the work complete and give her time to enjoy her circle of friends and weekends away. As a Bridge Player she is committed and hates to miss her weekly game. If she was employed in an office this would not create a problem.

Trevor’s passion is fishing and he has a caravan near the coast where he goes twice a month. He says he does not have as much free time as he had when employed. He finds that often after having visited site he needs to carry out some work in the evening. He and his wife have to set aside time to go away and stick to it. He tells me that even when he is away the mobile will ring with someone having a business query.

Tina’s works long hours, she does not mind that as she enjoys her job. She realizes that a social life during the week is going to be difficult; so she manages her time to make sure that she finishes at a reasonable time on a Friday in order to make the best use of the weekend. She also has to go to meetings at her Head Office where she meets her colleagues. These tend to become social as well as business events.

Alan’s business has been established for some time and it has settled down into normal business hours. He finds that he is able to organize the business around what he would like to do rather than the other way around. Being an employer he also has the advantage of knowing that the business can continue when he goes on holiday.
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Malcolm tries to be disciplined about his hours of work. He finds regularity to be not always possible as he can only meet his clients in the evenings or at weekends. He and his wife go through the calendar and mark days when they want to do something and go somewhere.

So generally the Teleworkers worked different hours, sometimes longer. They have to be more flexible than they would be working in an office. The experience of Alan would suggest that once well established and on a firm footing it is possible to work more regular hours.

7.3.7 LIVING IN THE PREFERRED LOCATION

All of the respondents had reasons for living where they are and these were informed by other factors than Teleworking. None of them would relocate because of Teleworking. They have other reasons, which would make them move, for example, Tina would like to move to a place in the country where she could keep her horses.

Everybody else was more interested in being close to clients and amenities such as shopping, schools and community facilities. Strangely, they all thought it important to remain close to public transport access.
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7.3.8 BENEFITS FOR THE DISABLED

The disabled were not represented in this group. Jane considered that Teleworking was a boon to the disabled saying that it would help them build their confidence, especially by learning how to use the computer. On the other hand it seems a shame to isolate the disabled and not giving them the companionship of other workers.

7.3.9 OTHER COMMENTS

As with the previous interviewees one matter was raised by most. This was the fact that there is an impression that people working from home spend most of their time working in the garden and drinking tea.

Jill found that although she is doing quite well working from home she does not feel that she is doing a ‘proper’ job. She is keen to return to an office environment. Jane also misses the fact that she is not working with other people. Tina also looked forward to going to her head office to meet her colleagues.

When asked if they considered that Teleworking was in the vanguard of a new way of working. No one in the group had ever considered the question. They had not even thought of themselves as Teleworkers, just people who for various reasons work from home.
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7.4 CONCLUSION

Whilst it is always difficult to see into the future it is becoming obvious that for the sake of the country, economy and the workforce changes must be made, however disagreeable this may be to society in its present state. The government is recognizing this and is looking at ways of protecting Teleworkers with changes to Employment Law, and by incorporating it for consideration in Transport and Planning Policy.

There are new forms of transport developing. These have got to be attractive to the user and run as and when needed. Legislating to reduce car use may work to a degree, though what is more likely to happen is that society will pay lip service to the principle and carry on as before. The people will support the call for more public transport and a decrease in motor traffic, meanwhile thinking that the facilities will be used by everybody else; thus leaving them free to carry on using their car. It is obvious from the interviews that it is going to be extremely difficult to persuade people away from their cars.

We have seen that railways are the most efficient people and freight movers over long distances, whereas the Light Rapid Transit is excellent within the urban context. In rural areas the bus, either feeding the railway stations or the local urban centres has the edge.
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Changes are also happening in society and its attitude to work. People are increasingly working from home using modern computer technology for communication purposes. This allows them to manage their time better and if it becomes more prevalent will reduce rush hours and spread travelling times. As we have seen it does not diminish the need for personalized transport. This kind of working cannot be carried out in total isolation and workers will need to visit offices on occasion and will require more in the way of outside leisure interests. The chance should be taken to promote better public transport which is less used outside peak hours for these journeys.

The concept that the Public Telecottage is put forward as the halfway house where people can work together in close proximity to their homes. In 1995, The Teleworker\textsuperscript{226} Listed 141 Telecottages. This had reduced to 91 by 2003, suggesting that the idea has not found to be so attractive.\textsuperscript{227}

Teleworking is better adapted to clerical functions and cannot carry out manufacturing. Research by Analytica in 1997 found that of people who were Teleworkers in their main job around one third work in Banking, Finance and the Insurance Sector. One in six people worked in Public Administration, Education and Health and almost 70% were in three occupational groups - Managers and Administrators, Professionals and Associated Professional occupations. There will therefore always be some requirement for transport and larger places of work, though.

\textsuperscript{227} "Telecottages" The Telework Association, http://www.tca.org.uk/map/tcott.htm 10/02/03
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not necessarily offices. It does not suit all people. The stigma that has been reported will take a long time to overcome.

Teleworking will therefore help to ease the situation. It will not solve all the problems alone. The transition will take a long time and require commitment from Government, to facilitate good alternative transport systems and a more flexible Planning framework, and from the business sector to provide a more flexible and reactive management regime. It will act as one of the ways in which traffic can be reduced or spread. Its impact will not be significant. The place in which people choose to live will not be greatly affected by Teleworking. People want to live where it is most convenient for their social as well as their business lives. Working from home will not be seen as important as other externalities, such as schools, leisure facilities and shopping.

The flexibility that Teleworking gives will benefit two groups of people, the sole trader, working from home anyway, and the large business that will benefit from productivity related to better time management.

The research methodology utilized, of using case study interviews, gave interesting results, which showed the difference between the perceived advantages and disadvantages. It does not apply any quantitative values to the subject. It reveals the general parameters that can be used to apply other research methodologies, such as thos of Mokhtarian, Handy and Saloman to the British experience. Firstly it will be necessary to locate Teleworkers to use as respondents.
8. NEW SETTLEMENT POLICY REVISITED
8.0 NEW SETTLEMENT POLICY REVISITED.

The relationship between Transport and the Design of New Settlements is an ancient one and has always been influenced by changes in transport technology. The location for a settlement and its ultimate success is determined by its accessibility.

Urban design and transport have complimented one another from the earliest times and until the advent of the car were mainly concerned with the movement of goods, rather than people. In the main, the villages and towns were developed so that the places of work were within walking distance of the residential areas. This eventually led to a very squalid state of affairs with large numbers of people living in very close proximity to the works; in damp low lying areas with little sanitation or fresh air.

The Garden City Movement tried to address this situation and improve matters. It introduced the principle of zoning activities and integrating transport. It was still intended that the workpeople would walk to their work. However, although they foresaw to an extent the coming of the car they did not anticipate its impact.

The zoning principle was taken on board as part of the new planning legislation. For a time this did not cause too many problems as the people moved to better housing and commuted to work by the now cheaply available public transport system, indeed they were encouraged to do so.
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It was in America that the 'automobile menace' was first noted. Their answer was the creation of Radburn neighbourhood units. The unit size was based on the catchment area of a local elementary school and would therefore relate to population density. Centrally placed and easily reached on foot would be the school and its associated playground. The shops would be placed at the junctions of several neighbourhoods. This has not proved to be a long-term solution due to the convenience of using the car to take the kids to school or to go shopping.

The bringing together of the planning and the location of buildings with the management of traffic, overcoming the previous administrative separatism led to efforts to try to integrate the car. The government's increasing emphasis on individual prosperity, more consumer goods and private cars has only exacerbated the problems of congestion and pollution.

The development of New Towns in the post-war period to accommodate people and their cars on green field sites away from existing cities was quickly outstripped by the growth in car ownership, even as they were being constructed. The design of existing towns was also affected by major road building that always has the affect of destroying buildings and valuable open space.

The Prince of Wales in his book 'A Vision of Britain' noted that the right sort of surroundings can create a good community spirit and pointed out that too many areas of towns and cities have suffered from planners zoning everything.
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The negative effects that we suffer today, created by transport include accidents, congestion, air pollution and noise. It consumes energy, land and other natural resources for the production of vehicles and infrastructure. Air and noise pollution problems persist and will worsen in urban areas with population growth, the rising rate of car ownership, increased journey times and the failure of design technology to perform to specification.

There is also another downside to the rise in car ownership and that is the effect on the mobility of people without cars. They have to rely on public transport that tends to be more costly than the car and not as convenient. These people also tend to be among the poorer members of society and the least able to bear the higher costs to travel, whilst the more affluent take advantage of the cheapness and convenience of the motor car.

The growth in motorcar use is getting to the point where it cannot be sustained for much longer, particularly within the urban areas. What is required is a change of attitude as suggested by Alvin Toffler. The problem is how do you persuade the person who tells you that as long as his car is in good order it will carry them from the front door to wherever they wish to go. They will inform you that, they do not have the inconvenience of making their way, during inclement weather, to the nearest bus stop or railway station, and have a similar hassle at the other end of their journey. Even when the destination is reached the parking proves difficult or expensive it still does not outweigh the convenience of driving your own vehicle from your own doorstep. The car
to him is convenient and cheap. It will be necessary to work out how much the motorist can stand by the way of costs before he will abandon the convenience, and how they can be persuaded to reduce their travel or use alternative modes.

The options available can be split into three categories, as set out by Stokes, Goodwin and Kenny:228:

A. **Cater for Growth.** — policies such as increasing road building to meet the continuing demand.

B. **Damage Limitation Strategies.** — Mitigation policies such as environmental and road pricing; encouraging development on less environmentally damaging sites.

C. **Trend Reversing Strategies.** — added to the damage limitation strategies and include halting urban decay, actively promoting alternatives to car use.

The key Transport and Physical Planning Strategies and their potential impact upon travel behavior and urban development are set out in the following table.

<table>
<thead>
<tr>
<th>Transport/Physical Planning Policy</th>
<th>Impact on Travel Behavior</th>
<th>Impact on Urban Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public transport investment, Priority and road space.</td>
<td>Will work to reduce traffic in conjunction with other strategies, cuts journey times for users.</td>
<td>Will reduce reliance on car if car made unattractive, needs to be part of an integrated system.</td>
</tr>
<tr>
<td>Traffic Calming</td>
<td>Slows traffic, eliminates short cuts for drivers, reduces street capacity</td>
<td>Increase in noise levels on sleeping policemen as cars accelerate and decelerate. Reduces accidents. Increased environmental pollution. Not practical on public transport routes.</td>
</tr>
<tr>
<td>Light Rail Service</td>
<td>Ideal for densely populated areas as part of an integrated system.</td>
<td>Attractive to users, if destination cannot be reached any other way. Can create ribbon development and use former rail tracks to reduce land take up.</td>
</tr>
<tr>
<td>Parking Capacity</td>
<td>Reduction will restrict car use, encourage drivers to switch to other modes, increase parking will increase congestion.</td>
<td>Parking removed to urban park and ride sites will relocate the congestion and pollution problems to urban areas.</td>
</tr>
<tr>
<td>Road narrowing, closures, Pedestrianisation, area access controls</td>
<td>Reduces road space available to cars, increase congestion to encourage mode switching.</td>
<td>Restricts areas for mode change, good for walking and cycling strategies.</td>
</tr>
</tbody>
</table>
## TRANSPORT AND THE DESIGN OF NEW SETTLEMENTS

<table>
<thead>
<tr>
<th><strong>Development Location</strong></th>
<th><strong>Reduce distances, encourages walking, cycling and the use of public transport.</strong></th>
<th><strong>Create community environment</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bicycle priority and road space</strong></td>
<td>Useful for short distances up to 5 km</td>
<td>Environmentally friendly, good for general health.</td>
</tr>
<tr>
<td><strong>Walking priority</strong></td>
<td>Used for shortcuts or pollution free areas</td>
<td>Environmentally friendly, good for general health.</td>
</tr>
<tr>
<td><strong>Predict and provide</strong></td>
<td>Plans to predict demand and meet it, usually by road building. Tends to increase demand.</td>
<td>Increases land demand for roads, creates large unusable open spaces, more cars, environmentally damaging.</td>
</tr>
<tr>
<td><strong>Allow congestion to find its own level</strong></td>
<td>Do nothing approach, grid lock</td>
<td>Environmental impact would be disastrous.</td>
</tr>
<tr>
<td><strong>Road pricing</strong></td>
<td>Makes cost of travel reflect true cost. Would favour public transport.</td>
<td>Improvements in public transport and the environment</td>
</tr>
<tr>
<td><strong>Intermodality, Integrated transport system</strong></td>
<td>Allows continuity of journey by public transport.</td>
<td>Will create localized transport nodes, focus for the community.</td>
</tr>
<tr>
<td><strong>Provision of Park and Ride Services</strong></td>
<td>Creates large car parks in semi-urban areas. Takes traffic out of the city centre</td>
<td>Takes large areas of development land, relocates congestion and pollution from centre to housing areas.</td>
</tr>
<tr>
<td>Measure</td>
<td>Benefit</td>
<td>Drawback</td>
</tr>
<tr>
<td>---------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Car sharing / pooling</td>
<td>Needs personal co-operation and organization. Reduces car travel</td>
<td>Does not reduce numbers of cars significantly, as they are not used for non-work related purposes.</td>
</tr>
<tr>
<td>Teleworking</td>
<td>Reduces commute to small extent, could increase non-commute travel. Used as a broader group of measures.</td>
<td>Houses need to be redesigned, encourages local communities and facilities, especially within walking or cycling distance.</td>
</tr>
<tr>
<td>Teleshopping</td>
<td>Reduces trips to shopping centres</td>
<td>Cars replaced by delivery vehicles</td>
</tr>
<tr>
<td>Slow travel speeds to encourage shorter journeys</td>
<td>Reduces overall mileage, move to public transport for longer journeys if quicker.</td>
<td>Does not affect urban development, could reduce rural congestion.</td>
</tr>
<tr>
<td>Infomatics – provision of electronic information to guide and control traffic</td>
<td>Eases flows</td>
<td>None</td>
</tr>
<tr>
<td>Committed payments – developers make contribution to park &amp; ride schemes in lieu of providing parking spaces in towns</td>
<td>Restricts car parking in towns, encourages use of alternatives.</td>
<td>Influences development in town centres and in urban areas around park and ride areas.</td>
</tr>
<tr>
<td>Company work hours policy, adjust work hours to avoid peak hours.</td>
<td>Evens out traffic flow, reduces traveling time and pollution.</td>
<td>Reduces need to invest in transport capacity. Compliments teleactivities.</td>
</tr>
<tr>
<td>Demand responsive transport, adjusting route and schedules according to individual requests</td>
<td>Uses smaller, more economic vehicles on routes with low patronage.</td>
<td>More attractive to users than normal public transport as it provided door to door travel. Is it practical?</td>
</tr>
</tbody>
</table>
Will Teleworking make a difference?

Another way of working, which could change car usage, is Teleworking. The adoption of this method of work could have far reaching affects on society. To work from home or a purpose built local Telecottage using electronic communication methods is an attractive idea to many. It is already happening to an extent with people who work in the field being contacted by mobile phone or modem rather than them visiting a control point to receive their instructions. Other companies have agents who work from home, marketing or giving out information.

Anyone who has to spend any of their time carrying out administrative clerical work can benefit from teleworking as do people who are disabled, house bound or have to work around childrens' school hours.

It is growing and will become important as employers realize the financial benefits to be gained and learn to trust their employees.
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There are disadvantages:

- the lack of social intercourse with fellow workers and society at large,
- non-availability for spur of the moment meetings and not being immediately controllable,
- the inability to split life into the two compartments of home and work,
- the stigma of being seen as lazy,
- the surfeit of empty office buildings that will occur with the subsequent loss of rate revenue.

It can be seen from the interviews that with the interviewees their transport needs have seen little change. They do not see themselves as giving up their cars on grounds of time saved and flexibility. Although they do not commute they still need to travel extensively to meetings or on site visits and they cannot accomplish this satisfactorily with the present transport system. Most were happy to stay living where they are because of locally available facilities, particularly for their children. They would only move later once the children have gone or upon retirement, even then they did not want to give up their facilities. They also found that they had to work normal working hours to keep in contact with their clients who work in offices. In fact, they seemed to work extended hours because even if they split the office off into a separate part of the house, clients or employers know that they are available on their home number and have work
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information available. For others the only time that they could meet their clients was
during the evening.

It will be gathered from this that the only real saving will be in terms of some
lessening in commuter travelling and a spreading of journey times as people spend less
time in the office. Other changes in travel patterns will occur due to people becoming
more remote from their controlling offices. Journeys will therefore tend to be over longer
distances, which should benefit the railways, or meetings will take place regionally at a
hotel or other centre with conference facilities.

At the end of the day teleworking is not going to make the contribution that some
would like it to do, however, as part of an overall strategy for transport and
environmental improvement it has a part to play in collaboration with other policies.

How will future settlement provision be provided?

There is obviously going to be a degree of change though not the major one that
some people are predicting. There is a need to cater for the changes and the way to do
this is to:

1/ Integrate the public and commercial transportation systems, this has been done
before, the 1947 Transport Act tried to do just that, however we are moving away from
state control when state control would seem to be the ideal solution,
TRANSPORT AND THE DESIGN OF NEW SETTLEMENTS

2/ Improve and subsidize the public transport system to encourage people to use it in preference to their cars, make cars expensive to use,

3/ Design new homes that cater for the Teleworkers office needs,

4/ Build more Telecottages/Cyber Cafes, the users can have the social and back up companionship of their fellows,

5/ Incorporate schools, shops and other services accessible by walking into local communities to reduce the number of parents taking children to school by car,

6/ Redesign office blocks to form city centre homes for people complete with teleworking facilities.

7/ Improve education, particularly in the practical uses of computers, and the benefits of a car free clean environment.

Having said all of this I do not see the isolated New Settlement idea as being very attractive to people, even with a public transport link. Even if built they could not be just a housing estate in the countryside. The capacity must be available to attain a degree of self-sufficiency in supporting shops, schools and other community facilities. The best location for them therefore is on the edge of existing urban areas or on brown field sites, where they can take advantage of existing services and facilities. The Teleworkers interviewed have suggested that this is their preference. It also confirms the views of PPG13229 and the findings of Breheny, Gent and Lock.230

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229 PPG13 Transport. DETR March 2001, Sec'n 6
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The town or city will still remain the nucleus for social and business life and will need to adapt itself to societies changing requirements. As factories and office buildings are abandoned for their design purposes and fall into disuse they will be converted to living accommodation for people who wish to live in the centre. This trend is already happening. Transport facilities are better here than anywhere so for a society without cars they must be attractive. People needing cars will live on the periphery of the city, accessible to the trunk roads to move around the country and close to public transport systems into the centre. To live in the country as a dormitory will become increasingly expensive and awkward and it will return to its agricultural roots.

The future is stretched out before us; we must change or suffer the consequences of pollution, noise and inhumane living conditions. We must find a way of aspiring to a society bathed in fresh air and the intimacy of human living and civilization. This is what man has always dreamed of.
APPENDIX 1

New Town Particulars
<table>
<thead>
<tr>
<th>TYPE</th>
<th>YEAR OF DESIGNATION</th>
<th>AREA IN HECTARES</th>
<th>POPULATION AT DESIGNATION</th>
<th>ORIGINAL TARGET POPULATION</th>
<th>POP. 1976</th>
<th>POP. 1994</th>
<th>REVISED TARGET POP.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stevenage I</td>
<td>1946</td>
<td>2532</td>
<td>6700</td>
<td>60000</td>
<td>74000</td>
<td>75900</td>
<td>80000</td>
</tr>
<tr>
<td>Crawley I</td>
<td>1947</td>
<td>2396</td>
<td>9100</td>
<td>50000</td>
<td>75000</td>
<td>90000</td>
<td>85000</td>
</tr>
<tr>
<td>Hemel Hempstead I</td>
<td>1947</td>
<td>2391</td>
<td>21000</td>
<td>60000</td>
<td>78000 (1991) 79040</td>
<td>85000</td>
<td></td>
</tr>
<tr>
<td>Harlow I</td>
<td>1947</td>
<td>2588</td>
<td>4500</td>
<td>60000</td>
<td>81000</td>
<td>73100</td>
<td>80000</td>
</tr>
<tr>
<td>Aycliffe I</td>
<td>1947</td>
<td>1254</td>
<td>60</td>
<td>10000</td>
<td>26500 (1989) 24700</td>
<td>45000</td>
<td></td>
</tr>
<tr>
<td>East Kilbride I</td>
<td>1947</td>
<td>4148</td>
<td>2400</td>
<td>45000</td>
<td>76200 (1991) 69800</td>
<td>90000</td>
<td></td>
</tr>
<tr>
<td>Peterlee I</td>
<td>1948</td>
<td>1133</td>
<td>200</td>
<td>30000</td>
<td>27500 (1987) 22200</td>
<td>30000</td>
<td></td>
</tr>
<tr>
<td>Hatfield I</td>
<td>1948</td>
<td>947</td>
<td>8500</td>
<td>25000</td>
<td>26000</td>
<td>25042</td>
<td>29000</td>
</tr>
<tr>
<td>Welwyn I</td>
<td>1948</td>
<td>1747</td>
<td>18500</td>
<td>38500</td>
<td>41000</td>
<td>94700</td>
<td>50000</td>
</tr>
<tr>
<td>Glenrothes I</td>
<td>1948</td>
<td>223</td>
<td>1100</td>
<td>55000</td>
<td>33700 (1990) 38500</td>
<td>70000</td>
<td></td>
</tr>
<tr>
<td>Basildon I</td>
<td>1949</td>
<td>3165</td>
<td>25000</td>
<td>80000</td>
<td>91890</td>
<td>162100</td>
<td>130000</td>
</tr>
<tr>
<td>Bracknell I</td>
<td>1949</td>
<td>1337</td>
<td>5149</td>
<td>25000</td>
<td>40000</td>
<td>104600</td>
<td>60000</td>
</tr>
<tr>
<td>Cwmbran I</td>
<td>1949</td>
<td>1278</td>
<td>12000</td>
<td>35000</td>
<td>55000</td>
<td>81000</td>
<td>55000</td>
</tr>
<tr>
<td>Corby I</td>
<td>1950</td>
<td>1791</td>
<td>15700</td>
<td>40000</td>
<td>70000</td>
<td>52800</td>
<td>70000</td>
</tr>
<tr>
<td>Cumbernauld II</td>
<td>1955</td>
<td>3152</td>
<td>3000</td>
<td>50000</td>
<td>45000 (1991) 50900</td>
<td>70000</td>
<td></td>
</tr>
<tr>
<td>Skelmersdale II</td>
<td>1961</td>
<td>1669</td>
<td>10000</td>
<td>80000</td>
<td>41000 (1991) 42000</td>
<td>61000</td>
<td></td>
</tr>
<tr>
<td>Redditch II</td>
<td>1964</td>
<td>2906</td>
<td>32000</td>
<td>84000</td>
<td>53200</td>
<td>78400</td>
<td>84000</td>
</tr>
<tr>
<td>Runcorn II</td>
<td>1964</td>
<td>2930</td>
<td>28500</td>
<td>90000</td>
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NEW TOWN PARTICULARS
APPENDIX 2
New Settlement Questionnaire
THE EFFECT OF TRANSPORT ON NEW SETTLEMENTS

QUESTIONNAIRE
February 1995

PART 1 – THE DEVELOPMENT

1. How many households are there within the New Settlement?

2. Was an Architect involved with the Masterplan for the Development?

3. Was a Highway Planner employed by the Developer or was the road layout developed in co-operation with the Local Authority?

4. Was Planning Approval gained from the Local Authority or upon appeal to the Department of the Environment?

5. Is there provision within the Development for Employment, and if so approx. how many people are employed?

6. Is there provision for shopping, are they small local shops, or supermarket developments?

7. What is the proportion of residents, by age,

   0 -18
   18-50
   50-65
   65+
PART 2 – TRANSPORT

8. When the development was first proposed what provision was made for the integration of transport, both public and personal?

9. When Planning Permission was obtained had his changed?

10. Was a Design Brief formulated for the Detail Development and did this include a Transportation Strategy? That is –

Routes for bus services,

Provision of a Railway Station,

A specified number of car parking spaces per dwelling.

11. How far from the average resident is the nearest,

i. Bus Stop,

ii. Railway Station.

12. Was provision made for a separate segregated footpath and cycleway system and has this been successful?

13. What Public Transport services do you presently enjoy?

14. Are there plans to change this in the future, and will it be

i. an improvement in services, or
ii. a decrease in services?

15. What is the approx. number of cars per household?

16. What proportion of houses have a garage?

17. Where do the majority of people commute to for work, how far away is it, and how do the majority travel there?

18. Where do the majority of people shop, how far away is it and how do the majority travel there?

19. Who operates your local bus services, where do they travel to and are they Local Authority public services or self-financing?

20. What would you like to see done to improve matters?

21. Any further comments.

Any Maps, Local Rail or Bus service timetables would be much appreciated.
APPENDIX 3
Questionnaire Responses
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<th>Year of proposal/ Architects Masterplan</th>
<th>Highway Planner</th>
<th>Planning Application</th>
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APPENDIX 4

Interview Subjects for Teleworkers to Discuss
GENERAL RESEARCH QUESTIONS FOR TELEWORKERS TO DISCUSS.

1. Types of Communication Methods – email, fax, telephone etc.
2. Savings in Time and Cost of Commuting.
3. Is it Green – effect on the local/global environment?
4. Hours of Work and Social Effects.
5. Living in a Preferred Location.
7. Other Comments.
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