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THE CHALLENGE OF SUSTAINABLE SUBURBIA

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This is intended as a discussion paper. Although it draws on some research materials by the author and others, it is not a research paper as such, but seeks to raise and frame some key questions about transport and urban design.

Milton Keynes' transport crisis

Not only is UTSG currently celebrating its 40th birthday, but so is Milton Keynes. Milton Keynes was designated as a New Town in January 1967 and has been built to probably the most transport-oriented urban design ever seen in the UK. Today its population stands at 220,000 and, under the sustainable communities programme, it will expand by some further 150,000 over the next 30 years.

Our negative-oriented media would have adored a story of a 40-year old economic and social disaster, but inconveniently for them, Milton Keynes has turned out a success. Hence there has been scant media coverage. The local economy is booming and, on the whole, the residents of Milton Keynes are pretty happy with the place. There are inevitable downsides; some facilities are lagging behind the growth and there are (as anywhere) some less desirable housing estates, but broadly MK has got it right. It is a modern and attractive urban environment which fulfils aspirations for good quality suburban living. On a personal level I may add that I moved to live and work in Milton Keynes in 1974, when I took up one of the first PhD studentships at the fledgling Open University. I live and work in MK today and have a great pride in this place and its achievements.

But Milton Keynes has some unresolved 40 year old business, which needs dealing with for its success to continue. And this unresolved business is all about the relationship between transport and urban design. The urban design of Milton Keynes was a reaction against the high rise, high density concrete urbanism movement of the 1960s. A guiding principle was that Milton Keynes should provide its residents with 'freedom and choice' and flexibly accommodate the massive growth in wealth and consumption expected through to the 21st century. Key to this was the aim to design Milton Keynes as a flexible urban structure that could accommodate future anticipated and unanticipated economic and social changes.

Transport and Urban Design

Predominant among the anticipated changes that the *Plan for Milton Keynes* addressed was the need for the urban design to accommodate 'saturation' levels of car use without road congestion. So, in the 1970 *Plan for Milton Keynes*, consultants Llewelyn-Davies designed a town around the operational requirements of the private car, so that people could be free to use the car as much as they chose. To facilitate maximum expected use of cars for peak-hour commuting, employment and all other major traffic-generating land uses were to be highly dispersed. Traffic was to be spread as evenly as possible across a non-directional grid of dual carriageway roads spaced one kilometre apart (Fig 1). Added to this, residential densities would need to be very low with an average of 27 persons per hectare, around half that of a normal UK city.



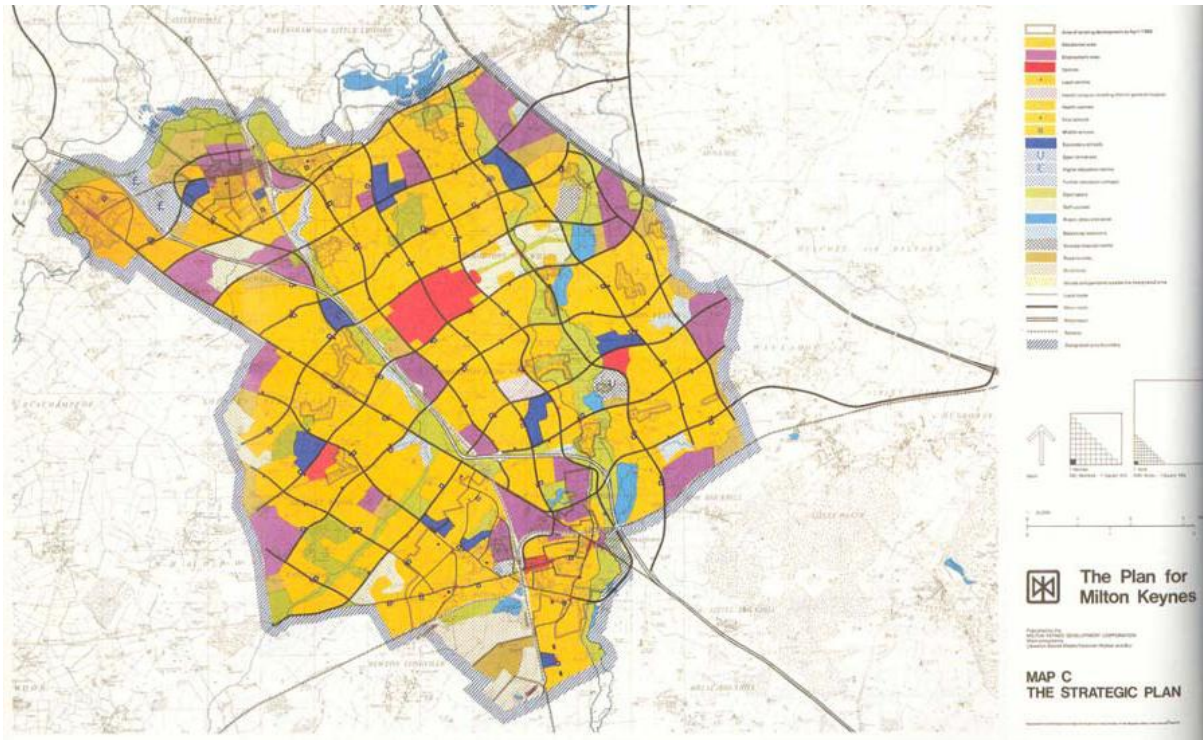
Fig 1: A typical Milton Keynes Grid Road

In summary, in a radio interview, Llewelyn-Davies referred to Milton Keynes as a 'modified Los Angeles system' - the design is basically a tidied up southern Californian urban sprawl. The end result was that every element was designed to maximise the opportunities to drive cars for all conceivable purposes.

When Milton Keynes Development Corporation published the *Plan for Milton Keynes* in 1970 (Fig. 2), it was widely acclaimed as setting an example for planning to follow. In practice it provided an excellent framework, having the flexibility to adapt from the Wilson years of its birth, refocus on attracting private investment and housing in the Thatcher era, cope with the 1980s collapse of manufacturing and exploit the 1990s service sector boom that has produced a centre much larger and containing many more employees than originally envisaged.

Fig 2: The Plan for Milton Keynes

Source: Llewelyn-Davies et al (1970)



But even though the Plan for Milton Keynes was designed to provide flexibility and freedom of choice, inevitably a city-scale urban design to facilitate one freedom can be at the expense of curtailing the freedom of others. Conflicts in design specifications are inevitable and transport provided the key design conflict for Milton Keynes. It is one that has never been successfully resolved.

The strategic transport conflict in urban design was understood at the time the Plan for Milton Keynes was prepared. Linked to the designation of Milton Keynes was a regional study of Northampton, Buckinghamshire and Bedford by the planning consultants Jamieson and Mackay. As part of this, Jamieson and Mackay examined the urban design implications of the operations of public and private transport, and concluded that they were 'diametrically opposed' (Jamieson and Mackay, 1967). They noted that, in order to minimise road congestion, it is best to disperse facilities and traffic flow. By contrast, public transport works best along 'corridors' of movement, with the main journey origin and destinations located along such corridors. Such a design also increases pedestrian accessibility compared to car-oriented designs.

These alternative approaches broadly represent the view that you can either give the operational conditions for the private car priority, and then fit public transport, pedestrian and cyclist needs in as best can be accommodated, or that the operational needs of public transport and pedestrian access determine the urban design of a town, with car travel accommodated within this structure.

Arthur Ling, the designer of Runcorn new town, showed a clear awareness of what we would now call transport's social exclusion effects:

"To design the town dominantly for the motor car would require the maximum expenditure on highways to cater for peak period traffic and a more extensive provision of car parking spaces at the Town Centre and in the industrial areas. In addition public transport..... would be little used and therefore it would be uneconomic to operate a frequent service. This would cause a sense of social isolation for those without the use of a car, such as children and old people and also members of the family to whom the car is not available at a particular time"

Arthur Ling: Runcorn New Town, 1967

Ling's argument was that urban design should be used to counter the social exclusion effects of high car ownership. He put this into practice in his design for Runcorn. This, and the design of some other new towns (particularly Redditch, 1966, and also Peterborough, 1970, Irvine, 1967 and the unbuilt Stonehouse, 1974), are the major British attempt at addressing the land use/transport social and economic externalities of mass car use via urban design. These plans share the same basic principals:

- segregation of networks for private and public transport making it possible to concentrate flows for public transport while dispersing car traffic;
- the size of residential areas determined by the population needed to maintain a frequent public transport service;
- residential densities increase towards public transport routes;
- low density land uses (e.g. large parks, warehousing, major roads etc.) are kept towards the edge of catchment areas so as not to increase walking distances to public transport routes and local facilities;
- the arrangement of residential areas, employment centres, shopping and other major travel generating land uses provides 'corridors' for public transport services. In some new town designs (e.g. Redditch) land uses along these corridors were considerably more mixed than was usual in new town plans.

In contrast, Milton Keynes opted fully for the car-oriented structure. What is notable is that the fundamental design problem was realised from the very beginning, but kept quite. Indeed, the official line was that the *Plan* would deliver both unrestricted, uncongested access by car and also public transport of a quality that would ensure those without a car would have no restrictions on their freedom and choice. The published plan stated that:

"The Corporation regards the provision of a good public transport system as a public responsibility of the highest priority"

The Plan for Milton Keynes, Vol 1 para 133.

Thus the published plan took the much emphasised goal to achieve freedom of choice to the town's residents, and developed this into a series of transport goals:

- A high degree of accessibility amongst all activities
- Freedom of choice between private and public transport
- High quality public transport (minibuses running at a 5 minute frequency)
- Congestion-free driving
- Transport that allowed for expansion and change

There was also a goal for 'safe pedestrian movement'.

Bendixson and Platt (1992, pp 57-60) detail how a fixed route public transport system was rejected in favour of minibuses, but in practice, as noted in Potter (1983), the land use design of Milton Keynes was so hostile for public transport operations there was no way it could support a 5 minute frequency minibus service. Furthermore, the selected design would also result in very poor access by foot and cycle. The Plan's Transport Technical Supplement (published at the same time as the main plan) admitted that:

"in the light of the selected land use plan, the provision of a competitive form of public transport does not make practical sense. This consideration of maximisation of freedom of choice has therefore been discounted. The appropriateness of providing a public transport service beyond the minimum level necessary to transport those not in a position to travel by car is solely a matter of policy."

The Plan for Milton Keynes, Technical Supplement No 7, Vol 2, p.34

This indirectly-phrased passage buried in a little-circulated technical supplement contains the admission by the designers of Milton Keynes that its urban structure was so hostile to bus operations that it was incapable of supporting more than a minimal public transport service, falling considerably short of offering an alternative to car users. The phrase 'solely a matter of policy', of course, is code for subsidy. There was also a vague reference to the possibility of a 'dial-a-bus' service (early demand responsive services were just starting in the USA at that time). It appears that, because the land use design fulfilled all the other development requirements, then it should be retained in the hope that the transport deficiencies of Milton Keynes' design could be resolved by a combination of a technical fix and cash. This perhaps is understandable in the context of 1970. A key premise of the *Plan for Milton Keynes* was that by the 21st century we would be so wealthy that there would be plenty of public money around. So perhaps the idea was that this sheer affluence would provide the 70% subsidy levels for innovative bus services appropriate for a low density settlement.

In 1975, Milton Keynes Development Corporation initiated a highly-subsidised, and popular, demand responsive 'Dial-a-Bus'. The scheme, which only covered a small part of the town, was scaled down and finally abandoned in 1980. In 1986 bus privatisation and deregulation rendered illegal the whole notion of a highly subsidised quality bus service. The 2004 Bus Strategy (Milton Keynes Council 2004), summarised post privatisation changes as follows:



Fig 3: The 1975 Milton Keynes Dial-a-Bus

"Since reaching a peak just after bus deregulation in 1986, urban bus service frequencies in Milton Keynes have declined steadily. The principal local operator has had three changes of ownership in nine years. In previous years the average age of the buses has been high, with most of them being small, difficult to access, and having a very poor image. The quality of bus services in the urban area has generally been perceived as poor. Poor service provision is largely a consequence of the low density development policy, dispersed employment areas, the grid road system, considerable free parking, high bus fares and network instability."

Today, bus services in Milton Keynes are about the poorest for any town of its size. Operators try their best to run commercial radial services in a town which has no transport corridors, with core route daytime frequencies between 15 and 30 minutes, going down to hourly after 6pm and no night services at all. As well as Milton Keynes' design being inherently hostile to public transport, it is hostile to pedestrians and cyclists as well. Walking trips are very low (below half the national average) and even with segregated footpath/cycleways and much promotion, cycling is barely at the national average (a careful examination of the wording used in the *Plan for Milton Keynes* reveals that *access by walk and cycle* was not a goal, but the achievement of *safe cycle and pedestrian movement*). The low density and dispersed design simply makes trips too long to walk and cycle. The low density of development in Milton Keynes means that the catchment areas for local facilities are small, so only very basic services like a shop or two, a school for children up to 12, playing fields and a community hall are within walking distance. The end result is that Milton Keynes has a level of car use and dependency that is more characteristic of a small town or rural shire than an aspiring city.

In the 1997 Milton Keynes Travel Survey, 78% of commuting trips were by car, with even then 40% of school trips by car. Bus took a 4% share of work trips and cycle 3%. Only 11% walked to work. For towns the size of Milton Keynes, the National Travel Survey for the same period had about 60% of trips by car, 7% by public transport, 3% bicycle and 30% walk.

A combination of the car-friendly design and the economic success of MK is even starting to overwhelm the grid roads in a casebook SACTRA manner. As early as 1994 a Buckinghamshire County Council transport study showed that car use in Milton Keynes would exceed the capacity of its road system within the first few years of the 21st century. Today, traffic queues regularly featuring on the 'uncongestable' network. Transport realities are starting to encroach even upon Milton Keynes. This is a legacy that will be extremely difficult to remedy.

Today, there is no way that anything like the urban design of Milton Keynes would be considered as a remotely appropriate for current and future needs. Indeed, the urban design of Milton Keynes would now be viewed as environmentally irresponsible, economically extravagant and socially divisive. To professional transport planners it is therefore not surprising that proposals for the town's expansion, under the agency of the private/public Milton Keynes Partnership, involve medium-density developments in new areas served not by 70 mph grid roads but 20-30mph 'city streets' containing bus priority measures and maximising facilities within walking and cycling distance. There has been a shift across to the opposite side of Jamieson and Mackay's transport/urban design spectrum. For the existing car-oriented development, densification along key corridors is proposed, with some grid roads to be reworked as public transport corridors.

These proposals, shifting so dramatically from the old design principles of Milton Keynes, have sparked a big local debate. Far from welcoming the shift to a more sustainable approach, a widespread view is that the MK Partnership will throw away all that has made Milton Keynes good and successful, and many advocate retaining the ethos of a 'city built for the car'. A counter expansion plan has been proposed for a continuation of low density development and grid roads spreading half way to Bedford, even though there is no way such an unsustainable, green field-hungry, expansion would be approved by any government.

A more informed and realistic critique is, however, starting to emerge that recognises the unsustainability of Milton Keynes' design, but fears the loss of the flexible and adaptive 'liveable suburbia' nature that has made Milton Keynes so successful. There is something in this; there is a danger of ending up with the worst of both worlds. The densification in the existing areas might just about improve the buses to provide a reasonable service for those without cars, but will fall massively short of anything capable of attracting car users. You might lose what makes Milton Keynes work, while failing to get far enough towards a sustainable community

Barriers to Sustainable Suburbia

So, at the same time as Milton Keynes is celebrating 40 years of success, it highlights a transport policy dilemma that is a challenge to transport and planning professionals as a whole. In all but transport sustainability Milton Keynes has got things right. It is a very liveable and economically successful place. Perhaps we transport professionals could view Milton Keynes as a transport/land use aberration that is never to be repeated. But although it may represent an extreme situation, the bulk of urban Britain consists of low/medium density suburbia, most of which represents an attractive and popular environment. The contrast between the old and new design ethos in Milton Keynes very much brings matters into sharp relief. Elsewhere it is less obvious than in Milton Keynes, but just as real.

There are two key issues. The first is that in the UK we seem to have a single model for transport sustainability based around high density living and traditional forms of public transport. So, should we be shoe-horning all types of settlement into this model? Is there only one way for places like Milton Keynes to move towards transport sustainability?

Without massive subsidy, there is no way that a dispersed design like Milton Keynes can support a tram system (in that the *Plan for Milton Keynes* was right), but it cannot even support a frequent conventional bus service. The latter might be achievable by the urban design of the expansion areas, but for the existing town the much resisted minor tweaks seem unlikely to deliver a service that will be attractive to choice users. Something more radical is needed. Possibly a combination of conventional and demand responsive services might be the answer. This is what has happened in similar Canadian, Dutch French and German suburban-style towns, where the existing traditional bus routes have been entirely replaced by semi-scheduled Demand Responsive Transport (DRT) systems (Enoch et al 2004). For example, in Wunstorf near Hanover, the whole conventional bus service was scrapped and replaced by semi-scheduled DRT services operated by a mixed fleet of 50, 25 and 8 seater buses. Patronage increased by 75%. Lintz in Austria has shared night taxis rather than night buses (far more appropriate for smaller urban settlements).

Such sorts of service can attract car users and achieve modal shift in suburban situations. But the real problem is that doing this under our system of deregulated bus operations is all but impossible. Our bus regulatory system is so structured around conventional 1980s style of registered services, it makes innovations that are commonplace elsewhere, difficult, expensive or illegal. Even the *Fast Track* busways in North Kent (in a return to Arthur Ling Runcorn-style system) have faced

substantial and expensive regulatory and organisational problems. In the UK it is virtually impossible to do, for example, what Wunstorf has done. Perhaps what we need are some *Transport Innovation Fund* schemes that include regulatory changes to permit some really radical innovations.

Possibly the key barriers to sustainable suburbia are institutional and regulatory. Although urban design is crucial, on its own it is not enough. For suburbia to attain transport sustainability requires appropriate urban design coupled with much more emphasis on institutional change and things like 'Smarter' initiatives (workplace, school and shop travel plans, personalised travel planning, car clubs etc). The single model for transport sustainability based around higher densities and traditional forms of public transport may be appropriate for major cities, but something both technically and organisationally different is needed for the majority of suburban and semi-urban Britain.

The second issue is that of attitude and acceptance. This is emphasised in transport studies with regards to issues like road pricing, but it is an issue for urban design as well. In Milton Keynes, any move towards transport sustainability is viewed as a threat, unattractive and, often, simply pointless. Proposals to reduce speed limits on the Grid Roads below 70mph are opposed, and there is a constant clamour for more free parking, the absence of which will otherwise result in commerce fleeing the town. Although we transport professionals understand the inevitability of transport demand management, such a concept is utterly alien, viewed as fanciful nonsense and dismissed as unrealistic by the vast bulk of public opinion. Again Milton Keynes with its high capacity roads and exceptionally high parking provision might be an extreme example, but in all respects the public are deeply cynical of transport policies, and have almost given up hope that improvement is possible. As such they are all too ready to view any effective transport demand management measure as a political con that will cost them (either in cash or make their travel even more of a misery) and deliver no benefits to anyone.



We have a public state of denial and no 'buy in' to scale of the transport challenge. Hence there is no grassroots 'buy in' to any solution. The failings of 'predict and provide' transport planning that has emerged in the last 20 years have utterly failed to get beyond the transport professional elite.

In Conclusion

This paper is not intended to provide clear and neat recommendations. It is a discussion paper that is using the UTSG forum to explore some issues and elicit responses to the observations and inferences drawn. Milton Keynes has been used as a focus, but the issues raised have generic implications. So, rather than seeing Milton Keynes as an unsustainable aberration that needs major surgery to conform to our big city model for transport sustainability, perhaps it actually is a wakeup call for the transport profession. Milton Keynes may not be an urban design to emulate, but as it hits 40, and middle age, it continues to raise fundamental and disturbing questions for the transport profession.

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