PRIVATISATION & INNOVATION

EXPLOITING GUIDED BUS

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1. Introduction

For some reason a strange 'tradition' has developed in this country which sees the bus as a harrassed, unreliable, unfashionable, downmarket and 'has been' means of public transport, whereas the emergent light rail mode is seen as reliable, exciting, accessible, fashionable and indeed the future for urban public transport.

In some ways the resurgence of light rail was aided significantly by the virtual abolition of the old city tramways in the UK (which by the 1960s had achieved a downmarket image far below that even of some notorious recent bus systems!). The main reason for light rail's present acceptability is, however, not the mode itself but its application of public transport priority and segregation measures, developed elsewhere in the world, to these new systems, but have not been applied to the same extent for existing bus systems.

I suspect too that the bus industry itself compounded this perception, having existed for half a century as a mode of declining useage against the car, by believing that this spiral of decline was irreversible.

What I intend doing in this paper is to demonstrate that this 'black and white' tradition is unfounded and that it is the application of techniques which are available to both modes which determines their operational and fashionable characteristics rather than their intrinsic nature, and that the bus spiral of decline is indeed dramatically reversible.

Privatisation and deregulation have unlocked innovation from the bureaucratic strait-jacket and produced many exciting projects. A key one has been the development of 'Quality Corridors' featuring guided buses.

2. Guided Bus - Concepts & Roles

It is important to recognise that different modes, including 'Guided Bus', are means to an end (for carrying passengers from where they are to where they want to go) and not ends in themselves (something light rail and other system proponents often seem to forget!) and that Guided Bus might more properly be described as 'guidable bus' since guidance is only invoked where appropriate.

Buses operate usually on public highway, intermixing with other traffic of all kinds. Where such operation is not prejudiced by congestion or awkward or convoluted road layouts there is no virtue or gain in making special provision - it is far cheaper and gives far greater accessibility for buses to remain there. The situation may change by time of day and any decision on making special provision should relate to the worst case scenario for bus operation. It is also true that problems develop with the years (usually because of the growth of other traffic) and a location which needs no action today may well do so in 5 years time (but don't spend the money now to solve a problem that does not yet exist).

Congestion is usually a physically localised phenomenon - peak time buses might typically spend 80% of their journey time on the 20% of their physical journey length where congestion occurs. By segregating buses from other traffic here the speed and reliability of bus services can be restored. However congestion usually occurs where there is not much space to do anything about it. This is one of the key points of light rail advocates - by using a guided vehicle such as a tram the space needed for it is significantly reduced compared to that for a steered one. This is true, and so by arranging to guide a bus in such circumstances the same effect is achieved (but, unlike with light rail, we only need to do it on that 20% or so where problems exist).

There are several technical ways available to guide a bus, some (e.g. electronic or GLT) allow for guidance in mixed traffic, others (e.g. KGB - kerb guided bus) provide segregation as an intrinsic part of the technology. Since the main reason for guidance is to allow segregation more easily there seems little virtue, in most circumstances, in being able to guide a bus in mixed traffic (pedestrianised zones being a notable exception).

It is primarily for this reason, but also for the speed of changing from guided to steered and vice versa, which led FirstBus' constituent companies to advocate KGB. Technically it is also far simpler, more rugged and more reliable than the other options, to some extent because it is also at a more advanced stage of mainstream development,. Once it has been provided, much more can also be done with it to improve system accessibility.

Simply to guide buses past congestion points is to waste much of the potential for the bus however. Having removed the unreliability from the service it is desirable to capitalise on that improvement by upgrading everything on the corridor - vehicles, infrastructure, information, customer care, etc. and also by employing more conventional priority measures where appropriate.

Just before finishing this section it is worth reminding readers that improving the reliability and speed of a bus service at a particular location does not simply benefit those on the buses at that location (as it does with car users) but this benefit is received also by <u>all</u> the other bus users elsewhere on the corridor as punctuality is improved downstream of the physical benefit (Local Authority and Department of Transport officers please note when evaluating the cost-benefit of bus priority schemes).

3. The Creation of the Leeds & Ipswich Bus Corridor schemes

The key to both of these schemes has been partnership. The Leeds 'Super Busway' project was instigated by the local major operator (Yorkshire Rider Leeds, now Leeds CityLink, a part of FirstBus) but was developed as a partnership of:-

Leeds City Council (highway infrastructure and information)

Leeds CityLink (services, vehicles and information)

West Yorkshire PTE (stop facilities and information)

The Ipswich 'Superoute 66' scheme was initiated by the local authority (Suffolk County Council) and developed as a partnership with one of the local operators, Eastern Counties, also now a subsidiary of FirstBus.

Because Rider had been at the forefront of promoting the guided bus concept in the UK for 'mainstream' application, the Leeds scheme was developed first. It formed a key part of the integrated Leeds Transport Strategy which had all-party support and was based very much on a 'horses for courses' approach, featuring (as appropriate):-

* shopping centre pedestrianisation
* a public transport box round this
* a highway loop around this
* bus gateways giving direct bus access from radials to the public transport box
* conventional bus priority corridors)
* guided bus corridors)
* light rail corridors) as appropriate
* heavy rail corridors)
* limited orbital road building to remove traffic from key areas

Although detailed planning for the first 2 corridors started back in 1990, with a TPP application for detailed feasibility and cost-benefit studies funds for 1992-93, the first section of guideway, on one corridor, did not come on stream until September 1995.

In contrast the Ipswich scheme, making use of the experience gained in developing the Leeds scheme, was developed from first concept to opening for service in under 2 years, the rapid timescale that the Leeds proponents had always believed was achievable with bus-based schemes.

The rapidity of this scheme's progression enabled it to open in January 1995, ahead of Leeds.

Both schemes have also adopted the 'enhanced corridor' approach, with the guided sections (initially at least) confined to a single short route section bringing very significant time benefits. Leeds opened with a 450-metre section in one direction on the approach to the first of a series of roundabouts on the heavily trafficked A61 Scott Hall Road corridor; buses in the afternoon peak period here gain some 3 minutes in journey time compared to staying with the mixed traffic; perhaps as importantly the actual running time over this section is now identical at all times of day and irrespective of any parallel highway congestion.

The Leeds services were changed, not in routeings, frequency, departure times or scheduled running times, but to being operated by designer-liveried, higher-quality 'Superbuses' with customer-care trained drivers and extensive (and high quality) marketing and information. The entire network in this major segment of the city went over completely to Superbuses and so users and non-users alike could see the quantum change in product quality. This 450 metre section of guideway cost some £750,000, of which over half was for associated environmental improvements. The associated bus fleet cost £2 million.

The Ipswich scheme was a single route development into a rapidly-developing suburban area of Ipswich, the 200-metre long 2-way guideway being on a 'green field' site providing a direct bus-only link between two parts of an otherwise-convoluted local road system, saving some 3-4 minutes on a routeing via the normal roads.

As with Leeds, specially-liveried and branded "Superoute 66" buses were used with dedicated drivers and extensive marketing and information. Only the 66 route was so developed, other services sharing parts of the same corridor remained as they were. However the 66 route also made use of extensive conventional priorities, and a real-time information system was developed for all the stops on the route which were given special high-quality infrastructure including posts, information and shelters.

4. The Effect of the Leeds & Ipswich schemes

Despite there being no change to routes, frequencies, departure times or running times, the 'opening' of the Leeds Superbus services, with the first guideway section, led to an instantaneous quantum jump in service patronage. By the second month of operation ridership on the services was some 9% above that which would have been expected ordinarily. On-bus revenue was only 7% up, showing that many commuters now had sufficient confidence in the 'system' to buy weekly or monthly travel tickets. One year after operations commenced, year-on-year patronage growth was around 30%.

The Ipswich scheme, introducing an enhanced service and new links as well as the improved vehicles saw corridor traffic growth of some 21% within 4 months of the opening (and 42% within 16 months). On the Superoute 66 itself patronage doubled in the first year of operation.

Technical problems for both schemes were virtually non-existent, despite them using vehicles from established manufacturers 'new' to guided buses (Scania for Leeds, Dennis for Ipswich). Indeed the only serious operational problems were found equally in both places and were something fresh and new in both - overcrowding because of the services attracting new business!

The solution in both cases was the same - augmenting the services with additional vehicles (something again relatively easy to do with guided buses as adapted 'mainstream' vehicles are used).

The significance of these results cannot be overestimated. That of the Leeds scheme is in demonstrating that quality and performance improvements alone (without changing timetables or service patterns) have a dramatic effect on patronage. That of the Ipswich scheme is that a new high-quality public transport corridor service by bus with a restructured network achieves exactly the same sort of patronage growth as claimed for far more expensive (and far slower to introduce) light rail schemes.

In commercial value-for-money terms, the traffic growth in the Leeds scheme means that the additional costs of the guidewheel-equipped high-specification buses will be recovered in less than 2 years (of their 12-year life), whilst the higher traffic growth for the significantly enhanced Ipswich service leads to a similar rate of capital cost recovery through revenue. This allows for the significant service strengthening required in each case.

In both schemes, whilst the costs of the services and vehicles are borne by the commercial operators, the infrastructure is funded through the Local Authorities (including from Central Government). Such expenditure has to be recovered through 'community benefit' in time savings both to users and non-users. Since both schemes are performing well above prediction, this is being easily achieved.

5. Developing these schemes further

The Leeds scheme in particular was approached on a phased, incremental, basis (although it must be said that, had sufficient Government funding been available at the start, this might not have been necessary!). This indeed is one of the supreme advantages of guided bus over other modes in that its fragmentable nature allows progress and development as funds and opportunities arise, with immediate benefits accruing (the 'opportunist' approach), unlike light rail which has to sit on assets and years of expenditure until a continuous route is available for service.

Phase I of Leeds was:-

* 450 metres of northbound guideway

* 250 metres of contraflow bus lane
+ 'bus gateway' to city centre

* 2 'docking stops' on ordinary road southbound adjacent to guideway

* dedicated fleet of 21 Scania N113 guided buses with 2-step entrance, high specification bodies and also with 'Euro 1' engine packs and low sulphur 'city diesel' fuel

* dedicated rota of customer-care trained drivers

* 3-month trial of a Mercedes-Benz guided bus with 3 step entry, double-glazed windows, air-conditioning, etc.

Phases II and III were closely related and treated virtually as one for progress purposes, although Phase II was funded in 1995-96 and Phase III in 1996-97:-

* 400 metres of southbound guideway (Phase II)

* 400 metres of southbound guideway (Phase III)

* an additional 300 metres of contraflow bus lane extending the gateway approach of Phase I

* Major improvements to a road junction to facilitate bus turning movements

* Additional services routed onto Scott Hall Road to gain the time and performance advantages of the guideway (further dedicated vehicles and crews)

* Additional high-specification guided buses (also with 2-step entrance layout but with a significantly lower floor line)

* Further docking stops on the corridor bus network

* Introduction of contactless smartcard technology on the guided buses; faster boarding through the existing single doorway is considered a safer and better (and more commercial) option than multi-door buses.

* Trial installation, at a number of strategic stops, of a real-time information system

Phase IV (which it had been hoped would be funded in 1996-97, but spending restrictions caused its implementation to be set back into the 1997-98 fiscal year) would add:-

* 250 metres of northbound conventional bus lane on the congested approach to the city's Ring Road (frontager accesses discouraging the use of the preferred guideway)

* Further docking stops on the corridor bus network

* Additional high-specification guided buses, this time of low-floor single step layout and with dynamic body 'kneeling' to allow level boarding at all guideway and docking stops

* Some of the extisting, higher-floor, guided buses would be cascaded onto other 'normal' services

Phases V and VI, intended for funding in 1997-98, would extend these developments with:-

* 300 metres of southbound guideway on the congested approach to the city's Ring Road

* a 180-car Park & Ride site provided at the start of this guideway section (i.e. 'outside' the Ring Road) on land provided free by a local school, in return for which the school has the use of the site for parking for evening leisure activities, etc.

* Further docking stops on the corridor bus network, hopefully virtually completing this facility on at least one route sub-group of the services (on which low floor buses would then be used exclusively)

* Additional high-specification low-floor, single-step, guided buses (with dynamic kneeling) to allow the operation of this route sub-group entirely by these vehicles

* Further existing high-floor guided buses to be cascaded to other services.

Further phases, not yet programmed, would seek to continue this evolutionary process including:-

* a further Park & Ride site

* further low-floor guided buses

* further docking stops

* buses with significantly cleaner power units (possibly CNG). FirstBus placed the UK's first purpose-built CNG powered bus into service in Bristol in January 1996. With virtually all potentially harmful emissions eliminated, this option (though still more expensive than diesel) appears to be substantially more effective than electric propulsion

As you will see, this corridor scheme is not expected to be complete until 1999 and yet the residents of this sector of Leeds are already reaping substantial benefits thanks to the incremental nature of guided bus.

By the time the Scott Hall Road scheme is completed work should be well in hand on the much larger York Road scheme, possibly in this case aided by substantial private investment in the infrastructure, as a Quality Bus Corridor, and preliminary works should have started on a third, Kirkstall Road.

By this time a sizeable proportion of the Leeds bus fleet should be guided (guidable!) and it may then well be possible to introduce short sections of guideway as passive bus gateways, and docking stops, all over the city to improve accessibility to the comprehensive bus network.

6. Conclusion

With the results now available from the Ipswich and Leeds guided bus schemes it is now well proven that bus corridor enhancement schemes can bring the same levels of service performance as can light rail at a fraction of the cost, with immediate commercial and community benefit, on an incremental 'spend as money is available' or 'opportunist' basis.

The total costs of providing the whole of the infrastructure for the Leeds Scott Hall Road guided bus scheme, (£4 million) including phases completed and also yet to be funded, are only about the same as the costs of preparing bids incurred in 4 months by the consortia competing to achieve 'preferred bidder' status for Leeds Supertram Line 1 (itself but a single corridor scheme) - and there is no guarantee of funding for that light rail project!

Our own Group's investment in these intermediate mode schemes is earning significant commercial returns directly to justify the enhanced level of higher-quality services as well as providing the level of community benefits needed to justify the public sector expenditure on the infrastructure investments.

Their potential is truly being realised.

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