An international review of paratransit regulation and integration experiences: Lessons for public transport system rationalisation and improvement in African cities

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SUMMARY

Paratransit operations are an essential part of passenger public transportation systems in African cities. These entrepreneurial services deliver highly demand-responsive, affordable transport in settings not conducive to scheduled or 'formal' public transport operations. They also present problems in the form of ruinous and violent competition between operators for higher volume routes, 'cream skimming', and aggressive driver behaviour. As with the Integrated Rapid Transit system in Cape Town and the Dar es Salaam Rapid Transit project, public authorities across a range of international contexts have responded to these problems by planning integrated public transport networks within which paratransit operators are given the opportunity to become contracted service providers alongside existing rail and bus companies. Despite some well-publicised successes in integrating paratransit operators into 'formal' public transport systems, the available evidence suggests that processes of paratransit integration are typically protracted and at times difficult to sustain. Even in relatively successful cases, many 'informal' operators have not been included in these processes, and their services have remained in parallel to the improved 'formal' networks. Managing the interface between the resulting 'formal' and 'informal' systems has often proved a complex and difficult task. This paper provides a review of selected international cases where interventions were made to increase paratransit regulation or incorporate the sector in formal operations. The paper illustrates the planned interventions in Cape Town and Dar es Salaam, provides an overview of the interventions and interaction with paratransit and the impacts thereof on competition, service provision and institutional arrangements in the selected case cities, and concludes by drawing lessons on the scale, timeframe and operational and institutional contexts of paratransit integration processes in Cape Town and Dar es Salaam.

INTRODUCTION

Paratransit operations, such as South Africa's minibus-taxi industry, Kenya's *matatus*, and the *daladalas* of Tanzania, are an integral part of transport systems in developing world cities, providing demand-responsive, but intensely competitive, transport services. In order to improve the level of service to passengers, many cities around the world have embarked upon processes to incorporate paratransit into expanded formal public transport networks, with varying levels of success. Drawing inspiration from these developments, the cities of Cape Town (South Africa) and Dar es Salaam (Tanzania) are planning revitalised public transport systems that would either absorb existing formal sector and paratransit operators into trunk corridor and feeder services, or displace paratransit to other parts of the cities. However, in view of the highly fragmented nature of ownership in the paratransit sector in the respective cities, and conflict between regulatory agencies and paratransit operators, the transition promises to be a complex and challenging process. In particular, the process through which paratransit will be engaged and formalised remains uncertain.

This paper reviews selected international cases in which interventions were made either to bring about greater regulation of paratransit services, or to integrate paratransit operations into 'formal' transport networks. The first part of the paper outlines the rationale for selecting specific cases for detailed review. The second part illustrates the nature and extent of the interventions in the selected case cities, the manner of interaction with paratransit operators, and the respective impacts on competition, service provision and institutional arrangements. The paper concludes by drawing lessons from these experiences for processes of paratransit integration in Cape Town and Dar es Salaam.

BUS RAPID TRANSIT AND PARATRANSIT INTEGRATION PROPOSALS

Cape Town

Urban public transport services across South Africa are typically rendered by three modes: overground rail, formal bus services, and paratransit in the form of minibuses and *amaphela* (sedan vehicles). At the national level paratransit is the dominant public transport mode, with an official modal share of around two-thirds of daily public transport trips (NDoT 2003). Cape Town, a city of around three million people, is an exception to this pattern, with more or less one-third of public transport trips being catered for by paratransit (CCT 2007). It is unclear what proportion of paratransit services is illegal. A primary challenge facing government in the regulation of paratransit, and indeed public transport as a whole, is that service regulation, planning and infrastructure provision responsibilities have been, and remain, fragmented across national, provincial and local governments, and subsequently the planning for, and provision of, modal integration to improve passenger choice and service levels has been difficult to achieve.

The national Taxi Recapitalisation Programme (TRP) in 2000 initially was aimed at legalising paratransit operations, formalising business structures and labour practices, establishing a hierarchical representative structure from within the industry, and providing for the renewal of the vehicle fleet through a fixed scrapping allowance on surrender of old vehicles (Walters 2008). In view of difficulties in engaging paratransit around restructuring of the sector, it is perhaps unsurprising that the primary focus of the programme has shifted to fleet renewal. The industry has, however, not responded with great enthusiasm: as reported in the *Business Report* of 3 March 2009, the National Department of Transport are targeting 80,000 vehicles to be replaced between 2006 and 2010 (or an estimated 80% of the national fleet), but to date only 22,000 vehicles have been scrapped.

Within Cape Town, two initiatives involving proposals to incorporate paratransit in the formal provision of public transport services preceded the current engagement process to integrate the sector in a formal transport system, but have not been successfully implemented. The first was a cooperative venture in 2003 by the city's municipality and the government of the Western Cape Province within which Cape Town is located. It proposed investment in a BRT line replacing paratransit and conventional bus services along Klipfontein Road, a major arterial road traversing the city, linked with feeder services, non-motorised transport improvements and land-use intensification (PGWC 2004). The project reached a detailed level of design at significant expense, but failed to be implemented. In 2005 the Provincial Government released a draft report for a second initiative to integrate road-based services, the Transformation of Scheduled Subsidised Services in the City of Cape Town (PGWC 2005). Although not strictly a bus rapid transit (BRT) plan, it proposed the incorporation of road-based (i.e. formal bus and paratransit) services into a trunk and feeder system comprised of 15 contract 'balloons' that cover the geographic area of the city. The stalled implementation of this project is primarily due to a lack of cooperation between provincial and local governments, as well as to unresolved transport planning responsibilities between the spheres of government.

Despite national and local initiatives to improve public transport systems and integrate paratransit, of which the preceding serve as examples, by 2006 – a decade after the release of the White Paper on Transport Policy – little progress had been made in corporatising paratransit business structures or addressing the poor standard of public transport services. However, a renewed thrust to revitalise public transport emerged in 2006, both in terms of planning and funding, coinciding with the announcement of South Africa as the host country for the 2010 FIFA World Cup. The same year witnessed the release of the National Land Transport Strategic Framework (NLTSF) (NDoT 2006a) for 2006-2011, in which the World Cup was recognised as a critical stagegate in passenger transport development. Besides the construction of new stadia, the event was identified as an opportunity to leverage funding to fast track investment in public and non-motorised transport infrastructure.

The 2006-2011 NLTSF also paved the way for a cluster of national and local strategic planning and implementation frameworks emerging between 2006 and 2008 that acknowledge the lack of implementation and set the scene for the National Department of Transport's current Integrated Rapid Public Transport Network programme, and Cape Town's subsequent Integrated Rapid Transit (IRT) project. The first of these documents, the national Strategy to Accelerate Public Transport Implementation (NDoT 2006b), and the Public Transport Strategy (NDoT 2007a), propose new large-scale multi-modal public transport networks, particularly in urban areas, reliant on the phased implementation of BRT trunk and motorised and non-motorised feeder systems which supplement existing core rail corridors and incorporate existing formal and informal road-based operations. These Integrated Rapid Public Transport Networks (IRPTNs) draw heavily on the management and operational model of the Transmilénio BRT system in Bogotá, Columbia. The first phase of these IRPTNS, as detailed in the Public Transport Action Plan – Phase 1: Catalytic Integrated Rapid Public Transport Network Projects (NDoT 2007b), focuses on the 12 largest urban centres in the country and contribute towards 2010 World Cup transport commitments (see Figure 1 for selected milestones). At present four cities have made some progress in constructing first phase trunk BRT infrastructure: Johannesburg, the Nelson Mandela Bay Metropole (incorporating Port Elizabeth), and Cape Town. The fourth municipality, Tshwane (Pretoria), has experienced significant delays but has committed to completing a first BRT line (PMG 2009).

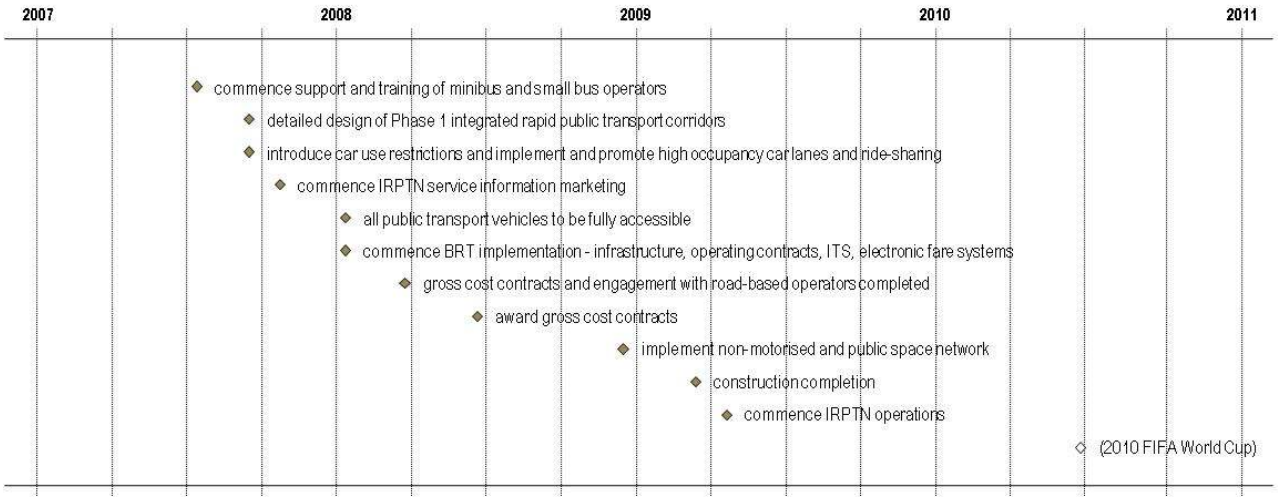
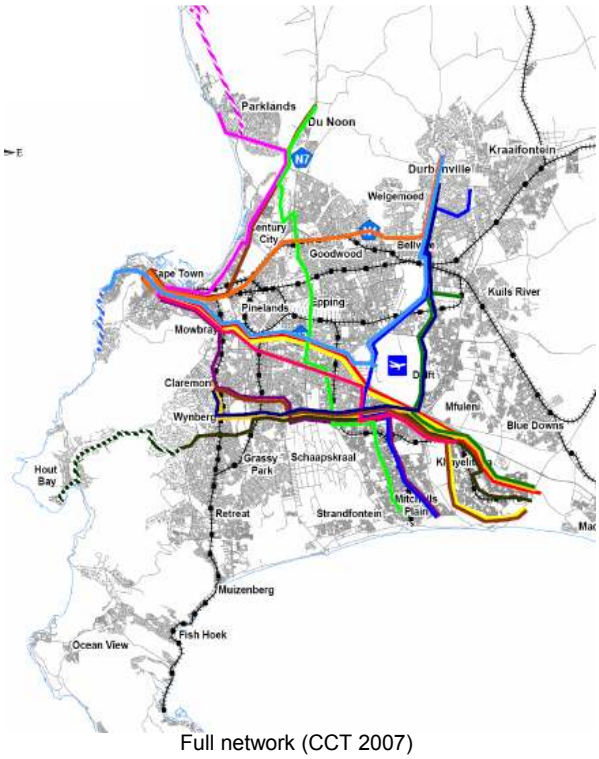


Figure 1: IRPTN Phase 1 implementation (2007-2010) - selected milestones

In the case of Cape Town, the municipality revealed its interpretation of the IRPTN programme in its draft Public Transport Implementation Framework (CCT 2007) and named it the IRT (Integrated Rapid Transit) system. The Framework recommended developing a system of trunk corridors and routes for BRT and other road-based services (shown in Figure 2), but as per the IRPTN documents, did not offer a conclusive rationale for selecting BRT as the trunk mode of choice. Nevertheless, the municipality has proceeded to form a project office, construction on some of the trunk lines has been initiated, and the bus and paratransit industries have been engaged in talks on incorporation in the new system. The proposed and actual milestones for the phase that is planned for completion prior to the World Cup in 2010 are illustrated in Figure 3.



Full network (CCT 2007)

First phase (CCT 2008a)

Figure 2: Proposed Cape Town IRT route network

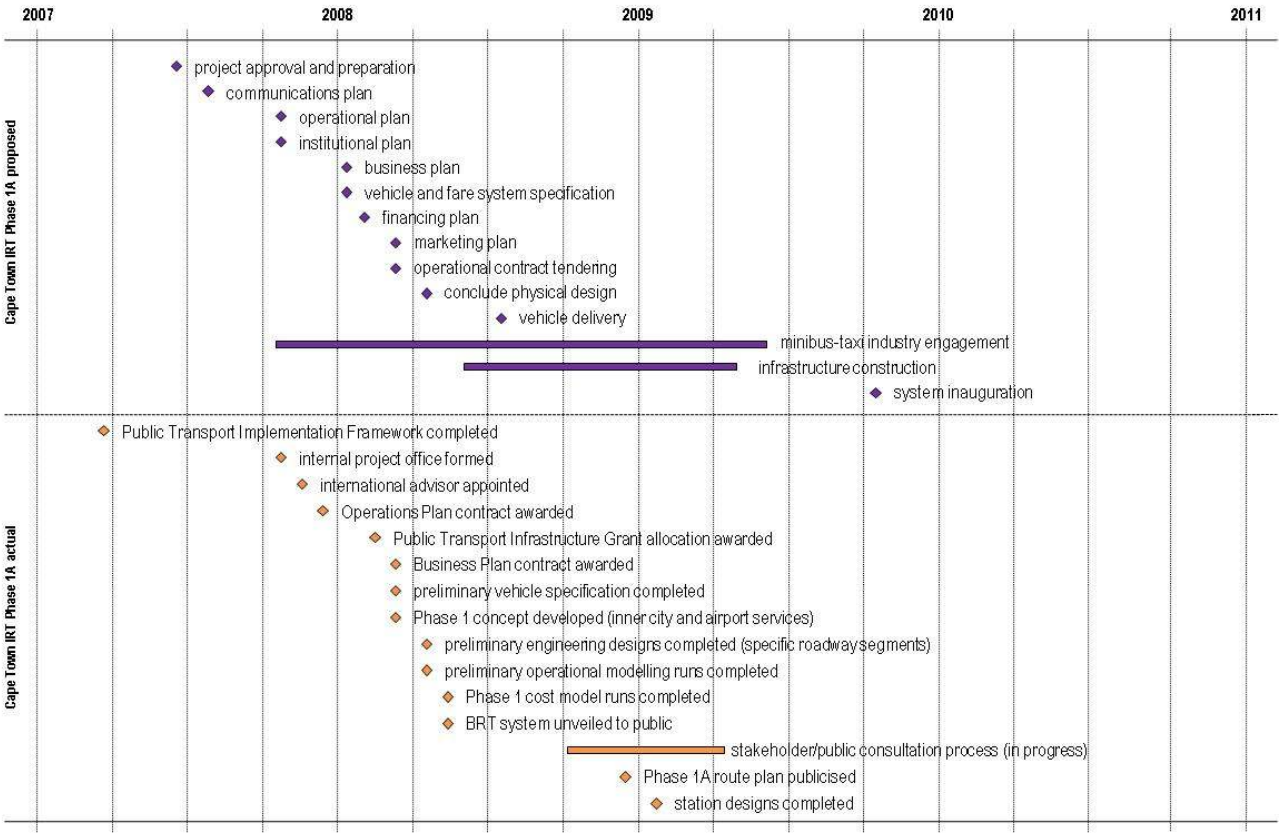


Figure 3: Cape Town IRT Phase 1A proposed and actual implementation milestones

The business plan detailing contractual arrangements has not yet been made available, but at a conceptual level existing bus and paratransit operators will be required to form amalgamated companies to tender for trunk or feeder contracts. These operator companies would be responsible for vehicle procurement and maintenance, and would be reimbursed on the basis of vehicle kilometres travelled. It is envisaged that IRT will make use of a smart card fare collection system. Fares will be handled by a central collection agency and then channelled to a trust fund entity from which operators will receive their revenue, all under the oversight of a public management organisation incorporated in the municipality (CCT 2008b).

Dar es Salaam

Dar es Salaam is estimated to have a population of close to four million people, the majority of whom depend on public transportation services for their daily travel within the city. The backbone of public transport services in the city is currently provided by about 9,000 small capacity privately owned buses, commonly known as *daladalas*, and about 30 buses owned by a public company, Shirika la Usafiri Dar-es-Salaam (UDA). The service offered is generally of poor quality and unsafe, lacking professionalism, efficiency, quality and customer care for the passengers. In order to address these challenges and the increasing problem of traffic congestion, the Government of Tanzania proposed a modern system of public transport suitable to the city of Dar es Salaam. The BRT in Dar es Salaam is branded Dar Rapid Transit (DART). DART's first phase is 20.9 kilometres long running primarily along Morogoro Road, Kawawa North Road corridor and the short Msimbazi Road. The trunk–feeder system includes 31 stations, six integration stations, five terminals and two bus depots. Feeder services will utilise smaller buses in lower-density areas, bringing passengers from those areas to the trunk corridor to transfer to higher-capacity buses at the terminals and integration stations. Figure 4 illustrates the complete proposed route network.

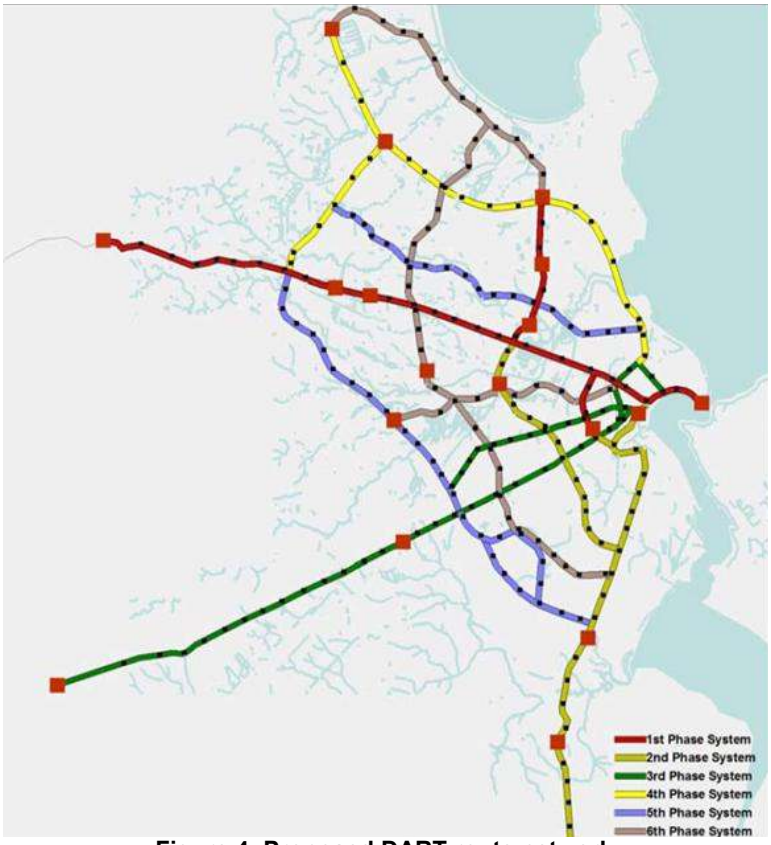


Figure 4: Proposed DART route network

Incorporation of *daladala* operators on the new BRT system is one of the major challenges facing the implementation of the BRT system. *Daladalas* are grouped in three main fleets, the Hiace *kipanya* van of 17 seated passengers, the 'Coaster' minibus of 30 seated passengers, and the 'DCM' a slightly bigger minibus with a capacity of 40 seated passengers. *Kipanyas* are widespread all over the city and their state varies from good to completely decaying vehicles (Logit, 2005). One of the barriers to the integration of the paratransit operators is the fragmented ownership in the bus industry and the inability to regulate, making the industry unmanageable. Many of the problems of *daladala* operation are a result of the ownership and management structure and there are various types of *daladala* owners in Dar-es-Salaam listed by Kanyama *et al* (2004) in three categories, namely i) retired people, ii) people with low incomes, and iii) civil servants. On the whole, most owners of *daladala* buses have a relatively unstable financial situation. While some owners may have other employment, others depend solely on one or two *daladala* operations to support their families. Some owners divest the operating risk to the driver/conductors by contracting out the bus for a fixed daily fee, leaving the driver to earn sufficient revenue to retain a surplus to live on after paying the owner the daily fee. This leaves the driver with little option but to: speed in an attempt to increase the number of journeys; overcrowd passengers to increase trip loads; and increase hours of operation (Rizzo 2001). Competitive forces and the need to survive are thus the operating culture of the *daladalas*.

The big question is what happens to *daladala* owners following implementation of the BRT. Currently, the Government is closely involving the Dar es Salaam Commuter Bus Owners Association (Darcoboa) in the planning and implementation of the project. The first phase is planned to have two companies each operating both trunk lines and feeder lines where bidding will give advantage to consortia which include former *daladala* owners and

operators. *Daladala* owners must form into consortia and bid to win one of the two operating contracts or form a company and associate with an international bidder. International bidders are therefore required to incorporate existing operators in their bids.

In preparation for the implementation, the Government had stopped issuing licenses to *kipanyas* going into the city's central business district (CBD) effective from year 2007, re-allocating them to periurban routes, which is estimated to have reduced the number of *kipanyas* from 6,000 to roughly 2,000 minibuses. Currently only minibuses with a minimum capacity of 25 passengers are allowed on CBD routes. The *kipanyas* banned from entering the CBD are re-allocated to other *daladala* routes which are not covered by the first phase. Since implementation of the many phases to cover all trunk routes of the city will continue for many years, paratransit can continue to operate on the routes to be incorporated in later phases, thus allowing smoother transition. It is also expected that many more of these minibuses will be obsolete by the time the BRT opens. The Government is also encouraging the registration of new buses that comply with the technical specification of the feeder buses. Owners of these new buses can use these buses as capital to enter new consortia, although no such guarantee is provided. In addition, the Government is currently seeking the services of a consultant to advise on the participation of *daladala* bus and freight truck owners in the DART project. The study is geared towards enabling the local private operators to organise themselves into companies that will provide an opportunity to bid and operate in the planned DART system. This does not however exclude the option of scrapping and compensation so as to provide entry capital to operators.

The timelines for implementation of DART system, which are currently under review, are indicated in Figure 5.

Figure 5: Dar es Salaam DART actual and proposed implementation milestones

Emerging challenges in Cape Town and Dar es Salaam

The key challenge confronting efforts to incorporate paratransit operators into planned BRT systems in Cape Town and Dar es Salaam clearly centres on the willingness and capability of minibus-taxi and *daladala* operators in the two cities to engage effectively with the processes of planning and installing these essentially 'formalised' and tightly regulated systems. In Cape Town, resistance by certain minibus-taxi operators' associations to establishment of the planned IRT network has been vigorous, sustained and sometimes violently expressed. There appears to have been no equivalent manifestation of such resistance by *daladala* operators in Dar es Salaam, and it is probable that this can be explained, at least to some extent, in terms of the different histories and institutional 'cultures' – operating practices, organisational structures and dynamics – associated with paratransit operations in the two cities.

In the case of Cape Town, along with other South African cities, the minibus-taxi industry was established and developed initially in a period in which the socio-political project of apartheid was being forcefully contested in the city's Black African and Coloured townships and informal settlements. It was also a moment when it was becoming increasingly clear that it would no longer be possible to maintain the fundamental bases of urban apartheid as it had been conceived in the immediate post-Second World War era. As a consequence, efforts to develop a black middle class – supposedly open to co-optation within a reformed polity – and to provide opportunities for economic enterprise which had been strictly limited and contained in the earlier period, were intensified and significantly extended during the late 1980s. Among other developments, efforts to regulate and constrain the officially illegal provision of 'informal' public transport services, primarily based on the use of minibus-taxis within the Black African and Coloured urban areas, were effectively abandoned or rendered ineffectual, and the minibus-taxi industry experienced explosive growth through the late 1980s and into the 1990s (Grey 2006).

One problematic outcome has been a situation in which minibus-taxi operations compete for passengers with both rail and scheduled bus services on the more lucrative line-haul commuter routes, and there is fierce 'on road' competition between minibus-taxi drivers – with all its attendant negative consequences for driving behaviour and passenger comfort and safety. Another has been the emergence of a continuing attitude of mistrust between the regulatory authorities and minibus-taxi operators and their associations, which has come to revolve around conflicting views over where control over access to the more lucrative routes rests. With some justification, the minibus-taxi industry can claim to have pioneered the development of services along these routes to provide a necessary alternative to the poor levels of service offered by the rail and formal bus operators, essentially without any financial or other support from the authorities. The associations have therefore tended to regard control of access to these routes by their members as their prerogative and not that of the authorities – a claim which has led to often violent conflict at various times, not only with the authorities and law enforcement agencies, but also between rival associations contesting the 'ownership' of particular routes.

Under such circumstances, it is understandable that engagement between minibus-taxi operators and the authorities planning and implementing the new BRT systems should be fraught with tensions over the potential impact of this process on the minibus–taxi industry's established 'informal' operating and business practices, as well as on the revenue and employment opportunities those practices generate. Attempts to pre-empt such tensions through 'top-down' design of the proposed networks and associated tendering procedures to ensure 'regulated competition' between potential providers of services on those networks have proved, in practice, only to exacerbate the problem. It remains unclear at this point how the authorities and their planning and implementing agencies propose to address this impasse.

In the case of Dar es Salaam, while the historical evolution of the *daladala* industry appears to have been less systematically researched than that of the minibus-taxi industry in South Africa, it does seem to have given rise to a current situation in which some level of accommodation has been reached between the industry and the authorities responsible for planning and managing the provision of public transport services in the city. The extent to which the interests of *daladala* operators are represented by Darcoboa are unclear, but it seems to have been involved in some capacity in the process of planning and implementing the DART programme. The obvious questions to be posed are, firstly, whether Darcoboa does in fact represent the full range of interests present in what is likely to be a fairly

heterogeneous membership and, secondly, whether it will be able to manage any tensions which may emerge as the various phases of the programme are implemented and their consequences for particular segments of the established but possibly differentiated and stratified system of *daladala* operations become clearer. These questions will only be answered through further enquiry and systematic observation and analysis of events as they unfold, appropriately situated within the broader context of historical process and institutional evolution which tends generally to evince place-specific patterns of path dependency that influence the nature of those events.

In addition to this primary site of actual or potential challenge to the installation of rationalised and 'formalised' BRT systems, another possible obstacle is present – certainly in Cape Town and possibly also in Dar es Salaam – in the shape of a deficit of organisational capacity within the relevant planning and implementing agencies to address this key issue in effective ways. In part, this may be due to the absence or limited presence within these agencies of an adequately contextualised understanding of what is involved in the process, often associated with the importation and uncritical adoption of models of 'best practice' promoted by international consultants. There is some evidence to support this assessment in the case of Cape Town, but the situation in Dar es Salaam may be less amenable to such characterisation and requires further investigation.

The problem is likely to be less that of a lack of the 'technical' capability required to undertake systematic demand analysis, network design and operational planning than that of deficiency in institutional capacity to address the 'governance' issues involved in negotiating an accepted framework for the incorporation of paratransit operators into rationalised and regulated public transport systems in an appropriate and sustainable way. As has already been suggested, the roots of this deficiency may lie in the possibly unrecognised inadequacy of the understanding which the relevant planning and implementing agencies have of the constraints which shape existing paratransit operating practices and might direct the interests of the operators involved towards defending those practices in the face of attempts to transform them. The failure, then, is not one that can be ascribed to bad faith on either side, but rather to a degree of ignorance on the part of the authorities seeking to regulate and 'formalise' paratransit operations which is underpinned by invalid assumptions about the nature of the industry that they are proposing to transform.

INTERNATIONAL CASE STUDIES OF BRT AND PARATRANSIT INTEGRATION

Public transport improvement programmes based on BRT technology that incorporate existing paratransit operations have been introduced in a number of cities around the globe. Latin America, in particular, has seen significant investment in the phased implementation of urban BRT systems that absorb paratransit operations either partially or completely. The planned BRT networks in Cape Town and Dar es Salaam draw on this precedent, and issues that have emerged from such cases where BRT was introduced into a system previously reliant on paratransit operations may prove informative to the manner in which BRT is approached. These cases may serve to moderate the high expectations around what can be achieved in terms of integrating paratransit into BRT systems. To this end the interventions in Bogotá, Mexico City and Santiago are described in this section, preceded by the rationale for selecting each of these cases.

Rationale for case city selection

Bogotá is popularly recognised as the first city to demonstrate that public transport systems in developing world cities can, through reassigning road space and reorganising operations into trunk and feeder services, be revived within a relatively short timeframe and with a

lower cost than traditional heavy rail-based technologies. Cape Town and Dar es Salaam share many of its aims: create a reliable, integrated public transport system run by incumbent operators; formalise and rationalise the businesses of public transport operators; increase and stabilise profit for operators; and improve working conditions for employees. The Transmilénio BRT system has, nevertheless, encountered difficulties that go beyond teething problems, including overcrowding, delays and pick pocketing, and the continued political influence of both pre- and post-Transmilénio ownership organisations (Gilbert 2007). Critically, the continued presence of paratransit operations overshadowing Transmilénio both in terms of fleet size and number of routes, and the lack of integration between the two systems (Muñoz and Gschwender 2005), must temper expectations around it being a transferable 'silver bullet' solution in Africa.

Metrobús, Mexico City's BRT system, was inspired by Transmilénio in Bogotá and similar systems in other Latin American cities (Metrobús 2009). Considerations that led to its implementation were a reduction in pollution by replacing a large number of old paratransit vehicles with a new, much smaller fleet of articulated buses, reduced travel time and comfort improvements for passengers, and the opportunity for paratransit operators to formalise their businesses. However, what distinguishes Metrobús from Transmilénio is that it identified a single strategic corridor and focussed only on infrastructural and operational interventions in this corridor not previously served by a trunk mode. While there was some opposition from paratransit to the Metrobús project, the first line, running north-south, has achieved a public satisfaction rating of over 80% due to the frequent, rapid and safe service (Boman 2008, Metrobús 2008). The service's apparent success may lie in its relative simplicity: it encompasses only trunk services, relying on physical integration (as opposed to operational integration) with other modes of public transport in the city for feeder and distributor functions, as well as integration with the metro system at key points. Mexico City is also distinguished from Bogotá in that there are multiple modes in operation, similar to the Cape Town scenario. Ultimately, Mexico City is of interest as a case study due to the manner in which BRT was initially implemented, that is, as a single corridor intervention that engaged with two relatively discrete groups of operators, one formal and the other informal.

Successive measures to formalise paratransit in Santiago, including the rationalisation of bus numbers and the introduction of a 10 year limit on the age of vehicles, failed to wrest control of routes from the industry's owner cooperatives and led to demonstrations and blockades by the sector. However, high operating costs brought on by an oversupply of services and long, direct routes spurred public intervention in the form of the Transantiago trunk and feeder system. Transantiago was envisaged to link into the rail system, with a modal shift from private to public modes encouraged through specific travel limitations on private vehicles where necessary. Its fleet of primarily new buses would replace all paratransit vehicles across the city on a single day, with routes being bundled into trunk and feeder 'packages', with foreign operators being favoured for the former. This placed great demands not only on the local operators, planners and implementers of the system, but also on the bus manufacturing capacity available on the South American continent. Nevertheless, the changeover from direct routes to interchanging trunk and feeder routes occurred on 10 February 2007. There was a lack of user information and smart card recharge points, and widespread confusion about the new route structure ensued. Funds were not available to construct dedicated lanes for the buses since the decision was made to rather expand the rail system and, counter-productively, the city's freeway system. This undermined the reliability of the system and reduced the potential for travel time improvements. It is notable that it is primarily negative sentiment from the travelling public, rather than from the operators, that has shaped the poor image of Transantiago, in turn leading to overloading and travel time increases on the rail system (Muñoz and

Gschwender 2008). The large scale of the intervention in Santiago, and the accompanying system-wide impacts on infrastructure, operators and institutional capacity, may be instructive in understanding operational and institutional limitations with respect to the achievable scale and impact of interventions in Cape Town and Dar es Salaam.

Intervention in case city: Bogotá

Ardila-Gomez (2004) and Gilbert (2007) provide accounts of the planning process, as well as responses to this process, leading up to the introduction of Bogotá's Transmilénio BRT and feeder system. Before the commencement of the planning and negotiations in 1998 leading up to the introduction of Transmilénio, public transport provision was led by the market: the 64 bus companies operating in the city at that time would request the city government to assign routes to them, after which individual vehicles' owners (of which there were more than 25,000 at that stage) could provide services on these routes in exchange for a 'membership fee'. The bus companies' primary form of income was these fees, thus leading to competition between companies to obtain the rights for the most profitable routes, while bus owners derived their income from the fares collected from passengers and paid their drivers per passenger carried, encouraging strong competition for passengers (or a so-called "penny war") from within the then fleet of close to 21,000 vehicles. Bus companies' were the *de facto* regulators in their role as brokering agents for public transport services in the city, and were therefore threatened by the changes heralded by the new regulatory regime emerging alongside Transmilénio. Other concerns voiced by bus operators and companies were that the typically one owner-one driver bus operations would not be able to finance new, larger vehicles; that the planned centralised fare collection would take cash out of the hands of operators; and that the timeline for implementation was very tight.

Besides seeking to improve public transport services for passengers, the introduction of Transmilénio is, at the strategic level, an attempt by the city government to formalise public transport from the paratransit sphere to counteract the destructive competition between associations and individual operators. However, while the two-year timeframe (Jan 1999 to Dec 2000) for the planning and construction for the first part of the first phase of the system is an attractive prospect for such a major intervention from a political point of view, the intense processes of negotiations with the public and with operators that preceded Transmilénio's implementation is not often publicised. Ardila-Gomez (2004) reveals that there were more than 300 meetings with the public on the Transmilénio project alone; that the preliminary planning was in progress early in 1998, but that the complete 42 km first phase was only finished four years after that; and that negotiations and consultation with bus companies to implement busways had already been underway as early as 1990. At the same time, an underground railway was, and still is, being seriously contemplated (and lobbied for) as an alternative to Transmilénio. Ultimately, the persuading arguments on which operators and the public authority chose Transmilénio were based on financial grounds – the former being convinced that revenue would be more secure and profits greater, and the latter that construction and operating costs would be more manageable than the *status quo* or other modal alternatives.

Operations pre-Transmilénio were more consolidated, and well-represented, by way of the bus companies, than appears to be the case in the paratransit sectors in Cape Town and Dar es Salaam. Once one company convinced some of the others to collectively bid for a Transmilénio concession, the others were soon to follow. In the end all bar four of the 65 bus companies merged into four bidding groups. Once the concession contracts were signed, in effect guaranteeing cash flow to the operators, it simplified access to finance

facilities for the new vehicles. A further measure to ensure that the vehicle fleet was renewed and, indirectly, that operators were consolidated, was the scrapping arrangement for old buses operating legally: in the first phase of Transmilénio, concessionaires had to buy and scrap 2.7 old buses for each new articulated bus that entered into service, rising to 7.7 old buses in the second phase. Scrapping has, however, proceeded slowly, partially due to there only being one scrapping company (Ardila-Gomez 2004: 367).

The introduction of Transmilénio in Bogotá has reportedly had both positive and negative effects. The new bus companies' profits have certainly increased, but Gilbert (2007) points out that these companies once again exhibit cartel-like practices to exert political pressure to guard against change and prevent the total eradication of the old buses, whether operating legally or illegally, in which they still have a stake. As reported in the press and official sources (Gilbert 2007: 26), it emerged that Transmilénio has indeed not eradicated illegal operations – as at mid-2006, only around 10,000 buses should have been on the road legally, as opposed to an actual fleet in circulation of just under 21,000. From the public's point of view Transmilénio has also achieved mixed results. Overcrowding in the new system has sustained the traditional bus industry and deterred some users, especially due to the prevalence of pickpockets (Gilbert 2007: 23-24), but overcrowding may also be indicative of some level of public acceptance of Transmilénio. In addition, Transmilénio seems not to have realised its initial aims of alleviating the plight of the poor, as routes are primarily in higher income areas, and the new system is unable to compete with the lower fares offered by paratransit in this cost-sensitive market (Gilbert 2007: 27).

Intervention in case city: Mexico City

Amongst the case cities, Mexico City is unique in that a publicly owned bus company still operates, although with a small fleet of vehicles compared to paratransit – 1,400 at the time that Metrobús was introduced in 2005 (Lobo 2005). The paratransit sector's minibuses and vans, operating under individual route concessions issued by the city, are the dominant road-based public transport mode in Mexico City with a fleet size of around 28,000 vehicles serving 60% of daily travel demand in the city (Boman 2008). The remainder of public transport trips are catered for by the underground rail network with an extent of 200km. An ongoing initiative introduced prior to the BRT project to improve paratransit service in the city, is the road-based public transport fleet renewal programme. It is expected to be complete in 2011, and aims to replace all minibuses that were manufactured before 2006 with new, larger buses (GDF 2009). Old vehicles are scrapped, and the owner paid out a sum of MXN100,000 (approximately USD8,000) from dedicated public funds towards the purchase of a new bus, provided previous operations were legal (Metropoli 2009, GDF 2009). The primary motivations behind the programme also include emissions reductions and service quality improvements, but there does not appear to be a clear link between the fleet renewal programme and the introduction of BRT.

The city embarked on its BRT system – Metrobús – in 2005, with the primary aims of reducing emissions, improving passenger service quality and, corporatising paratransit businesses practices. The first line implemented was in a corridor with high passenger demand, in the order of 250,000 passengers per day (Lobo 2005). This corridor was a critical link running north-south through the city, yet unserved by underground rail. The Metrobús service on this line was opened in mid-2005, 18 months from when it was first announced (Boman 2008). A subsequent second line linking east and west was opened at the end of 2008 (Metrobús 2009).

Both Metrobús corridors impacted on existing paratransit and public bus services. However, the existing operational structures of these entities, and the ultimate ownership and competition arrangement under Metrobús, allowed for a relatively simple formalisation process. The public bus company, RTP (*Red de Transporte de Pasajeros del Distrito Federal*), was already a formal entity, which in effect limited the impact of the transition on the company to it having to renew its fleet and train its staff in BRT operations. In the case of paratransit, the vehicles and operators affected by Metrobús were already organised into route concession 'federations' ('Ruta 1' and 'Ruta 2') that operated along the same respective alignments as those in which both BRT lines were implemented (Metrobús 2009). In the case of the first line, 262 former paratransit vehicles were scrapped and replaced with 68 articulated buses, while a further 30 articulated buses replaced 90 PRT buses.

In the case of both lines the transition to BRT did not proceed without problems, as reported in the local press at the time (*El Universal*, 4 August 2004 and 31 May 2008). Paratransit operators indicated a lack of sufficient information on which to base their decision to formalise while Metrobús was still being planned, and drivers protested due to the possibility of a loss of employment opportunities and insisted that they wanted to be included in the system after the transition. Despite these problems, some progress has been made towards the initial aims of the project: gaseous and particulate emissions have been reduced substantially, all previous paratransit operations on the delineated BRT routes have been incorporated into the new BRT system and benefit from increased financial security and improved working conditions, and the public response to the service has been positive (Metrobús 2009). However, in the city-wide context, these gains are fractional: the number of paratransit concessions that have been corporatised in the first phase of Metrobús represent less than 1% of the city's (legal) paratransit sector. Transferred expectations that may be raised regarding the short timeframe within which implementation occurred should therefore be tempered accordingly.

Intervention in case city: Santiago

In contrast to the Mexico City case, where the implementation of BRT had a relatively small impact on the city's overall paratransit operations, in Santiago the Transantiago road-based trunk and feeder system was an intervention in the public transport system that affected paratransit and formal transport operations across the entire city. Also in contrast to the former city, Transantiago suffers from a lack of public approval, which has led to political repercussions even at the national level.

Road-based public transport before the introduction of Transantiago resembled paratransit in South Africa and Tanzania, except that the vehicles in use were buses rather than the typical local minibus. According to Muñoz and Gschwender (2008) bus ownership was highly fragmented with an average of two vehicles per operator, with owners organised into cooperatives which coordinated members' tenders for routes. Route structures were inefficient, although convenient for passengers – as at the end of 2004 many of the 380 routes in Santiago frequently started at one side of the city, passed through the centre and terminated at the other side of the city, thereby reducing the need for transfers. As a consequence, however, routes averaged 60km in length, operational costs were high, and there was an oversupply of services. A fleet of 8,000 buses competed on the road for passengers, utilised informal terminals and suffered from a lack of maintenance. While limited regulation in the 1990s rationalised the number of buses on the road to a small degree, this did not affect the industry's structure. Other attempts to modernise the industry in 2001 led to operators blocking major intersections, bringing the city to a standstill. These

conditions underscored the need for regulatory intervention, which came in the form of the Transantiago system. Successes in Bogotá and Curitiba also served as inspiration, although it was recognised that each of these cases was a solution within a unique context and not without fault (Muñoz and Gschwender 2008: 46).

The preliminary design of Transantiago envisaged a road-based trunk and feeder network with the Metro underground rail system as the backbone. It was envisaged that the total vehicle fleet would comprise 4,600 buses, a reduction of nearly 43% compared to the original paratransit fleet. For the feeder network the city was divided into 10 areas, with a new company to be formed that would operate services to the trunk and Metro lines in each of these areas. Trunk lines were to be on major corridors, grouped into five operational units each also to be run by a new company and aligned with two of the feeder areas. Though segregated bus corridors were initially planned, in a widely criticised move the government postponed this step in favour of extending the Metro from 43km to 83km during 2004-2006 and constructing four new urban highways in the same period (Muñoz and Gschwender 2008: 47-8). However, even without the segregated corridors, the plan was still highly ambitious: the entire new system was to become operational on the same day (as opposed to the more common phased approach). Custom specification for the buses and limited manufacturing capacity on the South American continent added to the complexity of this approach.

The business model for Transantiago relied on a mixture of new (foreign or local) and incumbent operators, allowing for the gradual replacement of the fleet, augmented by rented buses in the interim period. It is notable that the public were against the inclusion of operators from the paratransit owner cooperatives, but no legal grounds could be found for excluding these operators. Successful operators were guaranteed a minimum income and a concession period of at least two years, with various determinations to stabilise fare levels and revenue (of which one was an agreement to introduce measures to limit car use to increase ridership, contrasting sharply with the additional freeways constructed during the implementation period). It was the common expectation at the time that the trunk route concessions were being aimed at foreign operators, with feeder services falling to existing local operators, i.e. the paratransit sector. This proved not to be the case in reality: a perusal of the current list of Transantiago operators suggests that the majority of operators are local (Transantiago 2009).

Transantiago was launched early in February 2007, to coincide with a drop in public transport ridership demand during the peak holiday season. From the outset, the lack of dedicated rights of way, as well as poor enforcement when these were introduced, significantly limited operating speeds. The transition from a direct to a trunk and feeder route structure, along with too few smart card recharge stations (mainly located at Metro stations) caused widespread confusion amongst passengers. As a consequence Metro ridership increased and operating speeds dropped by 25%. From the operators' perspective, a positive outcome was that almost all objectives for improving drivers' working conditions were achieved. However, even though operators were guaranteed their income level, Transantiago was initially running at a deficit of 35% due to low fares, a long free transfer period, an insufficient number of recharge points and fare evasion amongst disgruntled passengers (Muñoz and Gschwender 2008:50). The biggest problem, though, remains the so-called 'Big Bang' approach of the planning authorities: the cost and risk of a single, system-wide transition requires large-scale institutional, technical and operator capacity and commitment. In the case of Santiago, as is likely in Cape Town and Dar es Salaam, this proved unrealistic, suggesting that a more balanced, phased approach is more desirable.

CONCLUSION

The review of the three cases of interventions in paratransit regulation and integration into formal public transport systems presented in this paper reflects three very different approaches to regulatory transition. Similarly, each of these cases holds different lessons for the interventions currently unfolding in Cape Town and Dar es Salaam.

The city-wide scale of the intervention in Santiago had an impact on all stakeholders in the system, compounded by the fact that the change-over from the old system to the new took place on a single day. Consequently, the intervention affected all paratransit operators at the same time, and consultation with this sector as well as other prospective operators was an extensive and complex undertaking. The challenge to provide a new fleet of vehicles and implement the necessary infrastructural changes by a single 'due date' stretched institutional planning, skills and financial capacity. Whereas the initial aims with Transantiago were to improve the passenger experience, shortcomings in operational and infrastructural planning had the opposite effect: users were inconvenienced, had to transfer more often, and, in some cases, even experienced increased travel times. In sharp contrast to Santiago, the intervention in Mexico City only affected a single corridor at a time. The process of change could thus be piloted, and the transition was ultimately more manageable. **From these cases, it appears that successful implementation depends on the scale of the intervention being appropriate to the needs and capabilities of the involved institutions, operators, and public at large, and on an implementation timeframe that is long enough to accommodate adequate provision for detailed and protracted negotiation of the terms of incorporation of paratransit operations. In addition, successful implementation is also likely to depend upon a flexible timeframe which enables adjustment to the transition plan to take account of emerging path dependencies.**

The case studies indicate that the organisational configuration of existing operators is also key to the level of complexity involved in the transition. In Mexico City the paratransit operators affected by the first and second Metrobús corridors were already consolidated into two distinct federations, each of which operated on their own corridors. Similarly, even though the intervention in Bogotá was city-wide, almost all of the bus companies in control of awarding operational licences to paratransit operators were aligned into four groupings. In both these cases, it is evident that operator engagement could thus proceed more rapidly to contractual and operational considerations. By comparison, the paratransit sectors in Cape Town and Dar es Salaam are much more fragmented. Individual operators and associations are represented at numerous levels, with different alliances complicating the process of negotiation and reaching a final agreement. **This key difference may imply that, until greater operational consolidation is achieved in, or disaggregated negotiation can take place with, the local paratransit industry, it may be very difficult to reach agreement on the regulatory and integration regime that will be put in place.**

A universal observation is that there are significant contextual differences that preclude transferring a paratransit regulatory and integration intervention to the African context without adaptation to local conditions. In the case of Bogotá, paratransit was the only public transport mode prior to Transmilénio; in order to improve public transport, engagement with this sector was thus an imperative. In Mexico City, Metrobús introduced a new mode into the public transport system to fill gaps in the network left by other modes, affecting paratransit operations only to a limited extent. The intervention in Santiago, on the other hand, had a system-wide impact: the confusion that ensued after the transition to Transantiago led to a pronounced shift in passengers from road to rail as they opted for the

system that was more familiar and convenient. **Clearly, a context-specific approach is required in Cape Town and Dar es Salaam as local experiences of, and reactions to, regulatory and integration interventions may differ radically from those in the case cities.**

In conclusion, the investigations presented in this paper were based on an initial review of literature documenting the transitions in the case cities, and are consequently not exhaustive. Little evidence was uncovered about the actual processes that were followed in the engagement processes between regulatory authorities and incumbent paratransit operators. In view of the difficulties that have been encountered in Cape Town and Dar es Salaam, further research is planned into processes of paratransit engagement in Cape Town (and other cities in South Africa that have embarked on paratransit rationalisation and integration processes), Dar es Salaam, and abroad.

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