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# Hybrid urban transport systems in developing countries: Portents and prospects

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ABSTRACT

Some South African cities have initiated public transport transformation projects which, in most cases, ultimately envisage the *in toto* replacement of paratransit operations with formalised BRT systems. There are two likely outcomes: (1) complex negotiations with existing operators and budget constraints will result in the *in toto* transformation occurring over an extended period of time; or (2) *in toto* transformation will simply not occur. In either case, cities will depend, for decades, on a 'hybrid' public transport system that combines both formal and paratransit operators. This paper presents a case for policy recognition of hybrid systems, and explores how such systems might best be managed. The following categories of hybrid public transport systems are explored through case studies: (1) transformative processes in which paratransit operators are to form or assimilate into companies to operate new services, but this incorporation has proved difficult to complete and the operational and regulatory frameworks remain unchanged; and (2) transformative processes that, from the outset, anticipated a hybrid system and designed the outcome accordingly. A third category of hybrid transport systems, defined as transformative processes that have been amended following a realisation that *in toto* transformation is unattainable, is also introduced and discussed. The paper concludes by tentatively drawing lessons for appropriate public transport regulation, particularly with respect to Cape Town's transformation project. It is argued that a review of the current national regulatory framework is required to enable possible project modifications that acknowledge system hybridity. It is suggested that regulatory frameworks that accommodate the likely hybrid nature of public transport system outcomes have greater prospects of success than frameworks that do not. Furthermore, it is argued that contextually appropriate and successful public transport transformation projects do not necessarily require the *in toto* substitution of incumbent paratransit operators, and that they can be integrated with, and complement, formal services.



## 1. Introduction

Public transport systems in South African cities reflect the historical spatial planning policies that shaped urban territories. Apartheid settlement policies dictated that large pockets of low-income inhabitants would be located at the peripheries of cities. Initially, rail- and road-based services transported workers in and out of employment zones. However, starting in the 1970s, the minibus–taxi sector began supplanting all existing modes and became the dominant form of public transport in most cities (Clark & Crous, 2002). During the 1980s, the minibus–taxi industry experienced rapid growth (Browning, 2001) and its share of modal splits increased accordingly. From1998,[2] the two principal modes of public transport – passenger rail services and scheduled bus services – showed signs of significant service quality decline (such as overcrowding, safety, unreliability, amongst others), while 'paratransit'[3] modes were unable to offer a higher quality of service (Wilkinson, 2008). Contemporary policy discourse holds that the increasing dominance of minibus–taxis has gradually undermined other existing modes and has been partially responsible for the decline of the public transport system.

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[1] *In memoriam*: Peter Wilkinson passed away on 10 August 2011, before the finalisation of this paper.

[2] In September 1998, the initial proposals of a first 'post-Apartheid' national transport strategy were published in the Moving South Africa document.

[3] 'Paratransit' is defined in this paper as unscheduled and unplanned urban public transport services generally operating outside the formal regulatory framework. These services often start as illegal services and acquire legality as they become more established in the city. Services are road-based, with vehicles ranging from multi-seat motor-tricycles to full size conventional buses. Vehicles used often lack minimum safety standards and are not necessarily periodically maintained.

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Symptoms of dysfunctionality in South African public transport systems include: the mode share decline of (rail- and road-based) 'formal'[4] services; violent competition in the market on over-traded routes; the poor quality of service provided by 'paratransit' modes (most notably aggressive driver behaviour and the lack of roadworthiness of vehicles); and weak law enforcement and regulation (Schalekamp & Behrens, 2010). The South African National Department of Transport (NDoT), in response to these problems, initiated different projects that were aimed at modifying the existing public transport system. The Taxi Recapitalisation Programme of the early 2000s and the various Integrated Rapid Public Transport Network (IRPTN) projects of the late 2000s were the cornerstones of the proposed transformation of public transport systems.

Partly in response to the imperative of preparing the transport systems of host cities to better accommodate the 2010 FIFA World Cup events, substantial sums of money were made available in 2007 through the Public Transport Systems and Infrastructure Grant (PTSIG) and the NDoT to facilitate the planning, design and implementation of IRPTNs in different cities.[5] Generally, the proposed projects incorporated a network of bus rapid transit (BRT)-type corridors modelled along the lines of the systems introduced in Latin American cities such as Bogota and Curitiba, with the former being the most recent and publicised example (Lleras & Pereira, 2009). In most cases, the IRPTN proposals have involved the wholesale or phased total replacement and transformation of the existing mixed 'formal'/'paratransit' system by a comprehensively regulated and formally operated system.

This paper explores the likely outcomes of current policy objectives of *in toto* paratransit replacement and wholesale transformation. The paper is divided into five sections. The following section describes national public transport policy in greater detail, and illustrates the manifestation of this policy in the case of the city of Cape Town. Section 3 reviews the outcomes of the pursuit of similar policy objectives elsewhere. Section 4 draws lessons from these experiences, and Section 5 concludes with a discussion of future research needs.

## 2. Cape Town's public transport system

### 2.1. South Africa's policy dichotomy

The South African public transport policy environment presents a dichotomy in so far as two sets of policy prescriptions are applied to two types of cities: those with IRPTN or BRT projects; and those without. Depending on the type of city, local governments need to apply and uphold different frameworks.

Cities not concerned with IRPTN plans are required to continue to apply earlier regulatory frameworks such as Rationalisation Plans (Ratplans), Operating Licensing Strategies (OLSs) and provincial bus contracting. On the other hand, cities involved in IRPTN planning, need not apply earlier regulatory frameworks. This group of cities should replace previous frameworks with an IRTPN operational plan. The NDoT in the planning guidelines for Comprehensive Integrated Transport Plans (CITPs) explains the conditions for interim phases between the initial planning and full implementation of all phases of IRPTN systems in a particular city:

> *Even though the early Phases of the IRPTN will not cover all existing bus and minibus routes, the long-term IRTPN operation system planning commences in year one and the existing routes to be eliminated or modified should ideally not be planned according to the NLTTA RatPlan or OLS process. The IRPTN should replace these, even for areas not covered in the initial Phases. This is because neither the RatPlan nor the OLS were Operation Plans, nor could they effectively rationalize or optimise the services as has been demonstrated by the IRPTN Operational Plan process. Thus, it is suggested that in the interim, the Interim Contracts should remain in place on a monthly renewal basis and the moratorium on new licenses should remain, affording the greatest flexibility for the phased implementation of the full IRPTN Operations Plan.* Source: National Department of Transport, 2009, page 42.

The proposed interim condition avoids recognition of a system composed of 'paratransit' services and 'formal' services. Hence, the management and regulation of the interface between these two types of services are not addressed as no regulatory mechanisms are created for such conditions. The implementation of IRPTN systems was expected to be quick and wholesale, but in light of new information concerning phases for all six metropolitan areas involved in CITPs, the interim period will be significantly longer than initially contemplated.[6] Cities will then be forced to follow and apply regulatory frameworks not designed for transitional periods during an interim period lasting for decades in most of the cases. Cities could thus experience difficulties in responding to new patterns of passenger demand associated with changing urban conditions relying solely upon monthly interim contracts and unable to issue new operating licenses.

The public transport policy dichotomy was created with the introduction of IRPTN Operational Plans. Two different frameworks have to be implemented by the national government and the provincial governments, while local governments should apply one of the two existing frameworks. Cape Town, as one of the largest urban municipalities, is included in the cities that are to apply an IRTPN.

### 2.2. A mixed but dysfunctional system

Cape Town's public transport system has some of the more important features of South African cities but, at the same time, it is an unusual system in terms of its modal split. There is an observable duality in the general transport system as lower income households located in distant zones from the employment areas are the main users of public transport, while middle- and high-income households in more convenient locations generally depend upon private cars to fulfil their mobility needs (Wilkinson, 2008). In terms of public transport services, the key feature of the system is the role of the rail-based services that can be described as the backbone of the transport system in Cape Town on the grounds of passenger numbers. Table 1 shows the size of the public transport passenger market in 2005 for the Cape Town metropolitan area.

In practical terms, public transport ridership numbers depend on the affordability and the accessibility of the three main modes.

[4] 'Planned' or 'formal' services are defined in this paper as public transport that operates within a formal regulatory framework providing scheduled, planned or frequency controlled services on fixed routes. Vehicles in these networks are typically periodically maintained and they respect minimum safety standards. The network often encompasses rail-based systems and road-based systems that normally use high capacity vehicles.

[5] The key references to the transformative process are the Public Transport Strategy (NDoT) and the Public Transport Action Plan (NDoT) of 2007.

[6] The Public Transport Action Plan of 2007 requires 12 cities to implement catalytic IRPTN projects. These 12 affected areas are: Johannesburg, Tshwane, Cape Town, Nelson Mandela Bay, eThekwini, Ekurhuleni, Buffalo City, Mbombela, Mangaung, Polokwane, Rustenburg and Msunduzi. The strategic phasing presented in this document defines three phases, two of which concern the 12 cities. Phase I (2007–2010) involved the implementation of catalytic IRPTN projects. Phase II (2010–2014) required the completion of entire IRPTN networks.