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#07

GOVERNING THE GCR PROVOCATION SERIES

UNREALISTIC EXPECTATIONS, UNREALISED

BUS RAPID TRANSIT IN JOHANNESBURG

Authors: Jesse Harber and Megan Rose Bryer

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[to provoke: to stimulate, incite, stir up, challenge, irk, exasperate, vex]

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Governing the Gauteng City-Region: A Provocation series

The idea of the city region is growing in international prominence. This is because the form has been hailed as a means to promote a range of agendas, including boosting economic competitiveness; fostering integrated development; building partnerships between state and non-state actors; and solving urban growth challenges by offering ways to think differently about mass infrastructure provision, environmental sustainability, and the like.

A growing amount of academic and policy work is being done on the issue of city region governance, with many arguing that the burgeoning of thinking and practice represents a dedicated 'process of scale building' (Brenner, 1999; Harrison & Hoyler, 2014; Jonas, 2006; Scott & Storper, 2003). Brenner in fact argues that the rise of regional governance can be understood as a process of 'state reterritorialization' or 'state rescaling', and that the specific form of the city region reflects 'state spatial selectivity'. In other words, this scale has been specifically chosen or assembled by the state to facilitate various processes such as economic agglomeration or competitiveness (Brenner cited in Wu, 2017, p. 1135). In other contexts, the scale has been asserted as a way to mitigate the negative effects of inter-locality competition (Wu, 2017).

Regardless of the deliberative processes behind this 'rescaling', the city region is not a straightforward site in which to organise governance. As Storper (2014a) points out, governance at this scale necessarily involves many large, contested and intertwined issues that arise as a result of strong interdependencies and cleavages, combined with fragmented geographies and overlapping implementing agencies. This means that the issues that become the object of regional governance are not amenable to a 'solution' so much as a haphazard muddling through. Similarly, Wu (2017) interprets the state's spatial selectivity of the city region form less as a proactive model to manage social provision or promote democratisation, but rather as an attempt to manage intractable crises.

The Gauteng City-Region (GCR) is increasingly recognised in official and other discourse. That said, the acknowledgement of something that can be described as a city region has not resulted in consensus on what this means, or should mean, for planning, public investment or governance.

This is the fourth in a series of GCRO Provocations that examines different aspects of governance of and in the GCR. Others have considered: policy intentions to institutionalise the GCR; the advantages of and prospects for a unified address database as a key instrument of government; and what the GCR can learn from deep public debate on possible forms for regional government in the Paris city-region. Taken together, these Provocations hope to trigger debate and dialogue on various complexities of the issue, and signal a series of priorities for consideration in thinking about the future and the fortunes of the city-region.

This Provocation is also a shared output with another GCRO research project, *A political economy analysis of transit corridors.*

Abstract

Johannesburg's bus rapid transit (BRT) system, Rea Vaya, was a major intervention into the space economy of the city intended to build a more just, transit-oriented urban future. Planned and built at high speed in the context of preparations for the 2010 Soccer World Cup, the high running costs and poor service of the system have attracted increasing criticism by policymakers, and the system has never realised its ambitious objectives.

This Provocation recounts the timeline of Rea Vaya and summarises the major debates around it. It argues that apart from some extremely preliminary analyses of Rea Vaya, the high costs of the system were never in doubt, and its construction reflected the decision that its costs were reasonable in light of its social and spatial necessity.

Finally, this Provocation argues that while building Rea Vaya or something like it was necessary, it was always going to be insufficient to drive major spatial change in Johannesburg. A number of additional spatial interventions were and are necessary to support transport reform, including a redistributive approach to urban development; using housing to drive spatial transformation and create the basis for mass public transport; enforcing mixed land use, good urbanism, and walkability; and integrating with other modes of transport, in particular minibus taxis.

Photograph by Richard Ballard

1 Introduction

Johannesburg's bus rapid transit (BRT) system, Rea Vaya, didn't die a hero; it has lived long enough to see itself become a villain (see Dent quoted in Nolan, 2008). Bus rapid transit is a transport technology that entails buses running on dedicated lanes segregated from other traffic, with above-grade 'stations' that allow riders to board and alight at maximum speed. Rea Vaya was Africa's first 'full' BRT system (after Lagos' 'BRT-lite', which lacks certain features), and its routes became the basis of a programme of capital investment and spatial planning under the name 'Corridors of Freedom'.

Announced to enormous fanfare, implemented in haste ahead of the 2010 Soccer World Cup, and touted as all but a silver bullet for Johannesburg's significant transport problems (and others besides), Rea Vaya has subsequently come under increasing criticism.

In July 2017, the Minister of Transport at the time decried that the buses were running empty at a Southern African Transport Conference, a criticism that was affirmed by Gauteng Member of the Executive Council for Roads and Transport Ismail Vadi (cited in Mabena, 2017). The overall cost of BRT, running to R15bn for Gauteng (including similar BRT systems in Ekurhuleni and Tshwane), has been a particular target of criticism, much of which focuses on the failure of the systems to 'break even'. The vast majority of public transport users, predominantly black and poor, continue to make use of other modes of transport of varying precarity. It is not without reason that BRT has been criticised as failing to serve the populations intended to benefit from its implementation in South Africa.

Which is not to say that all of the criticism of Rea Vaya is fair. Apart from early and largely unsubstantiated projections by consultants, there has never been any real question of the system breaking even. As recent analysis has shown, the very spatial form of Johannesburg made that prospect impossible (Munoz-Raskin & Scorcia, 2017; Scorcia & Munoz-Raskin, 2019). Rea Vaya was introduced as part of a broader strategy of transport reform and spatial restructuring delivering a range of benefits to Johannesburg, from better mobility and more dignified mobility for the poor to wholesale land-use change and densification; and to these worthy ends it was understood from early on that subsidy would be required.

This Provocation covers Rea Vaya's journey from hero to ostensible villain. We set out to argue two things: first, that the case for BRT or something like it remains strong, notwithstanding failures of implementation and governance. Second, that while BRT was always vulnerable to the challenges of urban politics, unrealistic expectations from the beginning followed by failures of implementation have resulted in the system's current, precarious situation. This Provocation is a caution against throwing the baby out with the bathwater: the potential good of Johannesburg's Rea Vaya and the Corridors of Freedom remains both significant and necessary.

2 A brief history of transport in Johannesburg: From influx control to BRT

The spatial context of South African cities

Among the first major policy programmes of the apartheid government, after taking power in 1948, was the introduction of 'influx control': a system of passes, labour bureaux, and regulations on where people could live and work. The intention and effect were to maximise the labour supply for the National Party's agricultural and mining base, and limit interactions between races in the cities. As a result, apartheid cities came to be marked by relatively small urban cores surrounded by white suburbia, with dormitory settlements—'townships'—for the black majority on the distant periphery. This in turn necessitated extensive, and expensive, local and long-distance public transport networks designed around commuter rail and conventional bus services.

Starting in the 1970s and 1980s, the breakdown of influx control led to rapid urbanisation, unmatched by an increase in the housing supply or bulk infrastructure, and townships were joined on urban peripheries by informal settlements, the largest of which are home to hundreds of thousands of people and have existed for nearly thirty years. Relative and absolute underinvestment in public transport led to a collapsing or near-collapsing system, and new and existing demand being met by an enormous paratransit industry in the form of minibus taxis. Economic deconcentration and decentralisation resulted in new economic nodes in what was hitherto white suburbia. The resulting shape of Johannesburg might be simply imagined as a triangle, with the historic central business district (CBD) at an oblique angle between the large township of Soweto in the south-west and the new CBD of Sandton in the north-east. The space in between and a halo around is occupied by suburbs, and a much larger halo represents informal settlements, golf estates, and periurban industria.

This produced a pattern of extreme 'spatial mismatch' (Budlender, 2016): where most jobs are, most people aren't. 'The dislocation between people and jobs is still a defining feature of the Johannesburg space economy, and the pattern is getting worse' (Götz & Todes, 2014, p. 131). This produces huge daily movements of people from economically marginal peripheries to workplaces in distant urban cores, and results in enormous costs to individuals, in time and money: nationally, people living on the urban periphery spend an average of 27% of their incomes on transport, and black South Africans spend 104 minutes on average on their daily commute (Kerr, 2015; Venter, 2011).

Economic deconcentration and decentralisation resulted in new economic nodes in what was hitherto white suburbia

Towards a new bus system for Johannesburg: The SPTN

The first years of post-apartheid South Africa were a time of political, economic, institutional, and policy upheaval. Cities in particular were entirely reconstituted in law and in practice, most notably with the formation of 'unicities' from the racially and spatially fragmented municipalities of apartheid. In 2003, the newly unified City of Johannesburg produced South Africa's first Integrated Transport Plan (City of Johannesburg, 2003). This is a long and comprehensive document, forward-looking for its time, and it mostly articulates a transport solution to spatial mismatch: it undertook to replace the city's fragmented, 'dispersed, less frequently serviced and customised routeing' (City of Johannesburg, 2003, p. 326) of public transport with highly serviced transport corridors between residential and other economic nodes, a system which it calls a Strategic Public Transport Network.

Whereas apartheid transport planning had been entirely supply-driven, the Integrated Transport Plan (ITP) articulates the first shift to demand-driven transport planning, aimed in the first instance at moving people from where they are to where they need to go. In Johannesburg, a large number of people follow the two legs of the triangle from Soweto to the CBD and then from the CBD to other nodes, most particularly Sandton. The ITP undertook, for the first time, to create the hypotenuse (B. Stanway, personal communication, 8 June 2017).

It clearly includes the seeds of a more integrated vision of spatial transformation: in a section named 'Land-use restructuring', it calls for 'corridor densification and infilling' along the Strategic Public Transport Network and 'rationalisation of transport and housing strategies' (City of Johannesburg, 2003, p. 337). Nonetheless, the Strategic Public Transport Network as articulated in the ITP is primarily about mobility. In the words of Johannesburg's head of transport for this period:

> Its objectives were to improve public transport for existing users, not to convert car users but to improve for existing users, to improve the level of service, the quality, experience and to make it a more acceptable and even a comfortable service for existing users, a quality service [...] and also as a sort of a backbone on which land use could be transformed. (B. Stanway, personal communication, 8 June 2017)

Rea Vaya: 'We are going'

In the mid-2000s, BRT was gaining global popularity as a low-cost, high-quality public transport option that could address rising levels of congestion; some have gone so far as to say that it 'emerged as a leading mode of urban passenger transit in the first decade of the twenty-first century' (Deng & Nelson, 2011, p. 69). BRT systems vary in implementation, but typically rely on a set of features including dedicated lanes; raised access-controlled stations, often in the traffic median, with pre-boarding fare collection; and traffic signal priority (Deng & Nelson, 2011, p. 71, citing Levinson et al., 2002, and Canadian Urban Transit Association, 2004). These features are all intended to enable maximum throughput of buses, which—apart from decreasing journey time for the sake

of passengers—may allow any given bus to make a second peak-time journey down the route, dramatically reducing the capital and labour costs of the service. 'In short, infrastructure of this type reduces travel times which reduces vehicle fleet requirements, improves fuel economy, and reduces maintenance' (Viva, 2007, p. 15). This was a major consideration in the adoption of BRT in South Africa.

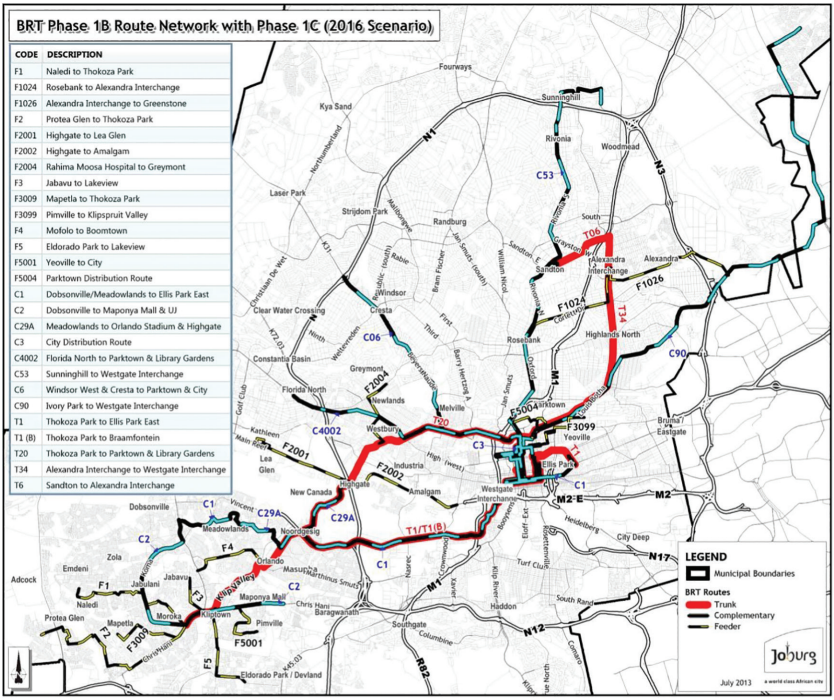
In August 2006, while initial implementation was under way on the Strategic Public Transport Network, the National Department of Transport brought out a pair of international consultants called Lloyd Wright and Todd Litman. Wright is a global booster of BRT through his organisation Viva; Litman is a specialist in 'innovative' transport. In various venues and cities, to gathered municipal and other officials, they claimed that BRT could not only provide a quality, better-than-bus service, but it could do it quickly and without operational subsidies. This coincided with the start of preparations for South Africa's hosting of the Soccer World Cup in 2010, an event that necessitated high levels of public expenditure on infrastructure. Although it goes too far to say, as some do, that BRT was planned in response to the World Cup, the event nonetheless shaped the implementation of the system. Significantly, it also became the deadline for BRT's first phases: 'there was a huge push to get our system done by the World Cup, come hell or high water' (B. Stanway, personal communication, 8 June 2017).

Through a process thoroughly documented by Astrid Wood, both Johannesburg and the National Department of Transport adopted BRT as their mode of choice (Wood, 2014; 2015a; 2015b). This involved study trips in August 2006 and August 2007 to South American cities, which were particularly influential. On 22 November 2006, the Johannesburg City Council approved the implementation of Phase 1 of the Rea Vaya BRT system. On 7 August 2008, the Mayoral Committee approved a revised Phase 1A network for implementation in time for the 2009 Confederations Cup (City of Johannesburg, 2009) as a 'test drive' for the World Cup the following year. From the City Council decision to adopt BRT to the system opening took a little less than three years (B. Stanway, personal communication, 8 June 2017): in August 2009 the 'starter service' of BRT, by now called 'Rea Vaya' ('We are going'), began operating between Soweto and the CBD. A subsequent alternative route has since been opened between Soweto and the CBD, another around the CBD itself, as well as feeder routes. At the time of writing, a route from the CBD to Alexandra had been built but had not yet begun operations.

Corridors of Freedom

Parks Tau had been an early champion of spatial transformation on Johannesburg's Mayoral Committee, first as the Member of the Mayoral Committee (MMC) of Development Planning, Transport and the Environment (2000–2003) and then as MMC for Finance and Economic Development (2003–2011). In this latter period, he was a particular proponent of BRT. In 2011, he became the Executive Mayor, and in his 2013 State of the City Address he announced 'the next step … to position Johannesburg as one of the leading global cities' (Tau, 2013, n.p.). Aside from quoting two texts from David Harvey, this speech is notable for the introduction of the term 'Corridors of Freedom'.

Figure 1: Phase 1C BRT Network for 2016 (including Phases 1A and 1B)
SOURCE: City of Johannesburg (2013b)



Tau's vision to fulfil the 'right to a spatially integrated and united city' took the form of transport corridors, planned according to transit-oriented development (TOD), 'connecting strategic nodes through an affordable and accessible mass public transit', of which BRT is an essential component (Tau, 2013, p. 6). Although this represented the elevation of TOD from planning theory to public agenda, it primarily represented a consolidation and branding of what had been under way in the City for some time (B. Stanway, personal communication, 16 May 2018).

3 The finance question

Debates over financial viability

Already by 2009, the costs of BRT had become apparent, in particular the magnitude of operational costs—belying the claims of BRT's early proponents that it could run without any operational subsidy whatsoever. The earliest scoping study conducted in 2006, prepared for the City of Johannesburg by the Institute for Transportation and Development Policy (ITDP), claimed that 'as has been achieved in most other BRT systems around the world, Rea Vaya will strive to not require any operational subsidies. [...] The efficiency gains from converting a system to BRT typically result in an improvement in service quality at an equal or lower cost' (ITDP, 2006, p. 87).

The ITDP study also makes clear the assumption that the BRT system would claim the ridership of all existing public transport on its routes, displacing minibus taxis and conventional buses. This would come to significantly affect the operating costs of the system. When negotiations began with minibus taxi operators, national government publicly committed that no taxi operator would be left worse off by BRT, a commitment that came before any comprehensive costing had been conducted (B. Stanway, personal communication, 8 June 2017). The resulting 'restraint of trade' settlement, as part of which minibus taxi operators received both a cash payment and the concession to run the BRT buses, has been cited as a major driver of costs in the system (e.g. B. Stanway, personal communication, 8 June 2017).

In the original business case for Rea Vaya (City of Johannesburg, 2008), operating costs, revenues, and profits for Phase 1 of BRT were estimated as follows:

- Daily revenue = R2 698 076
- Daily operating costs = R2 010 085
- Daily profits = R687 991.[1]

Based on international BRT experience, it was assumed that 12% of the daily profits would be spent on other system costs, including operation of the fare system, the control room, and a city agency to manage the system, resulting in a daily profit of R605 440 to the shareholders of the BRT operating companies. The Johannesburg Operational Plan set out a zero subsidy target for BRT's operating costs and was heralded as an example for other cities to follow (National Department of Transport, 2007).

But by 2008, these assumptions were being shown to be extremely optimistic. The City's Finance Department was tasked with an overall review of the proposed BRT project to assess its viability and funding implications. In the assessment report, compiled by Freetel Capital in March 2008, a number of concerns over assumptions in the initial scoping study were raised. The conclusion reads: 'it is the opinion of Freetel that there is insufficient basis to commit to the implementation of BRT' (Freetel Capital, 2008, p. 3).

1 Annual exchange rate for 2008: USD–ZAR 8.2640.

In the same year, the international bank HSBC was appointed by the City's Transport Department as a 'financial arranger' for the purchase of the buses, in preparation for which they 'stress tested' the system's financial models and validated its demand forecasts. The HSBC assessment, finalised in December 2008, led by Graham Smith, found that the proposed BRT in Johannesburg was 'underwater' from the beginning (G. Smith, personal communication, 23 June 2017). The assessment showed that the City's financial model could work only under two conditions: (i) if the City could finance the BRT system with equity, and (ii) if the first phases could be up and running quickly (G. Smith, personal communication, 23 June 2017). The HSBC findings estimated that, at best, the model would be 'underwater', with costs in excess of returns, for three years. None of the various financing scenarios tested in the HSBC's calculations predicted that Johannesburg's BRT would be financially sustainable without a subsidy. Importantly, these calculations were derived from base costs (such as bus parts and fuel) and financing costs but did not factor in the profits payable to the operating concession (held by minibus taxi operators) as this figure was not yet estimated. Vehement opposition to BRT (see for example Donnelly, 2010; 'Taxi demands fall on deaf ears', 2010) from the taxi industry had delayed negotiations at the time of modelling.

Within the City, two opposing views emerged: the Transport Department held that BRT would be self-sustaining within five years. The Finance Department held that the BRT system would require ongoing operational subsidies from the state (J. Ngobeni, personal communication, 3 July 2017). By the time that approval for the BRT system was tabled to Council, Jason Ngobeni, then Executive Director of Economic Development in the City of Johannesburg, notes that it was no longer a question of whether the BRT system would require an operational subsidy, but just how large that subsidy would be (J. Ngobeni, personal communication, 3 July 2017).

In implementation, the costs of the BRT system were pushed up even further than originally predicted. Phase 1B suffered long delays, including to the capital works which delayed implementation of the starter service (City of Johannesburg Transport Department, 2013) and in negotiations with the taxi industry and bus operators. Moreover, buses were procured from a different manufacturer to those purchased for Phase 1A, which had higher costs and delayed the delivery of buses due to changes in bus requirements to meet local content specifications (City of Johannesburg, 2013a). The pressure of growing costs was compounded by low BRT bus ridership and therefore low earnings, plus problems of fare evasion. The City 'failed to quantify the risks' despite being aware of them (G. Smith, personal communication, 23 June 2017).

Photograph by Clive Hassall

The true cost of BRT quickly became apparent. In 2009, a report to the City began: 'The expenditure requirements of the City of Johannesburg are increasing extremely rapidly, most obviously in relation to public transport but also for other services, infrastructure, and economic development interventions' (Hunter van Ryneveld, 2009, p. 2). The report categorically notes the need for 'substantial ongoing operational subsidies' to finance Rea Vaya, in addition to the capital funding requirement, stating:

> While evidently a crucial programme, with implications for spatial form, sustainability and the long-term success of the city, Phase 1A of the programme requires some R2.1 billion in capital costs, mostly funded out of [Public Transport Infrastructure and Systems Grant]. This infrastructure will also entail considerable long term maintenance costs. (Hunter van Ryneveld, 2009, pp. 12–13)

The report estimates that an eventual full Rea Vaya network would cost R500m per annum in operational subsidies alone, 'possibly on the low side' (Hunter van Ryneveld, 2009, p. 13), and upwards of R2.5bn per annum overall, anticipated to halve after the debt was paid off—which it warned could take a generation. The report concludes: 'Rea Vaya in fact involves considerable fiscal risk for the city, as it is potentially a very large function that will not be sustainable without significant operational subsidies' (Hunter van Ryneveld, 2009, p. 13). The capital costs of Rea Vaya were covered by a grant from the national government, but any liability for operating costs fell directly and entirely to the City.

At the same time, however, the National Department of Transport commissioned a 'Technical Review and Evaluation of the Rea Vaya System' from Lloyd Wright, one of the international participants in the original 2006 scoping study and a global proponent of BRT systems. The technical review was intended to assist the Department of Transport in providing the appropriate levels of support and resources to the Rea Vaya project. While noting that the City was losing approximately R3.4m per month on operating the starter service, and needed an overall operational subsidy of R100m per year, the review claimed that 'with the implementation of the full Phase 1, the system should be able to achieve financial sustainability' (National Department of Transport, 2009, p. 3).

Rea Vaya today

At the time of writing, cost recovery was less than 50% of Rea Vaya's direct operating costs (Van Rensburg, 2017). This does not take into account the overhead operating costs, nor capital expenditure on buses and lanes which are funded by the National Treasury. For Johannesburg, this amounted to R290m in overhead costs and R864m for capital expenditure in 2016. Revenue from fares collected amounted to R103m for the same period. Ridership levels have been persistently lower than expected, as are resultant fare revenues due to non-collection at the turnstiles (Van Rensburg, 2017). The Operational Plan approved by Council in August 2007, and in revised form in November 2008, predicted 434 000 passengers a day for full Phase 1 implementation. At the time of writing, approximately 56 000 passengers ride the Rea Vaya buses daily (City of Johannesburg, 2018). With that said, ridership increased by 6% per annum for the five years leading to 2016; riders report greater satisfaction with Rea Vaya than alternative public transport modes (Venter & Hayes, 2017). One driver of low ridership is likely the City's failure to enforce the restraint-of-trade agreement with the taxi industry that it paid so much for (Hook, 2009); there is no effective BRT monopoly along the Rea Vaya corridors, which remain well serviced by taxis.

The expense of this agreement with the taxi industry is frequently cited as a driver of BRT's costs and its failure to break even (e.g. by B. Stanway,personal communication, 8 June 2017): the combination of the political commitment that no taxi operator would be worse off and the City's decision to negotiate a settlement rather than engage in competitive tendering for Rea Vaya operations meant that costs were higher than they might otherwise have been. In addition, other costs of implementation ran over budget, due especially to price inflation from increased demand for construction work boosted by the World Cup, and delays in the start of operations leading to additional financing costs and necessitating interim service agreements. But despite cost overruns, Venter and Hayes (2017) note that infrastructure spend per kilometre of busway for BRT in South Africa is comparable to more successful examples from Latin America (Bogota, Quito) and Asia (Beijing), which suggests that the financial 'failure' of BRT is not due to its cost to implement but rather its poor ridership and resulting low revenue (Venter & Hayes, 2017).

This low ridership is only partly due to ongoing, and unanticipated, competition from minibus taxis. It is also due to the apartheid spatial form, of which Johannesburg remains a prime example. Johannesburg's low-density and single-use-zoned urban sprawl makes for long transport routes with little seat renewal (the same passenger occupies a seat for most of the trip) and highly tidal passenger flows (buses are mostly empty in one direction). Moreover, whereas minibus taxi routes connecting the same points tend to provide direct transport, BRT often forces passengers to make one or more transfers. The nature of public transport, its use, and efficacy is in this way determined by the structure of the city.

4 Beyond financial sustainability

This discussion of the financial sustainability, or not, of BRT, is not to say that this should be the only or even the primary consideration of a public transport system; indeed, we argue that a fixation on breaking even is neither especially desirable on its own terms, nor does it reflect either the spirit or the letter of the original motivations for an overhaul of Johannesburg's public transport system. Bombastic promises by BRT's early proponents, quickly—but not quickly enough—shown to be unlikely, and since shown to be downright preposterous, so dramatically shifted the expectations of many policymakers as to all but crowd out the original intentions of the system.

In this section, we discuss the fundamental problem that the original vision of public transport reform in Johannesburg set out to address—spatial mismatch—and how TOD and BRT propose to address it. We argue that this problem remains pressing, and these approaches appropriate, for Johannesburg's transport policy.

Spatial mismatch and how to address it

In Section 2, we introduced the concept of spatial mismatch, or the jobs–housing mismatch, which describes a persistent and significant distance between the places where most people live and where most people work. As Budlender describes, 'a substantial body of work exists which shows descriptively how jobs and economic opportunity are concentrated around city centres while the majority of the urban poor and unemployed live in dense settlements on the urban periphery' (Budlender, 2016, p. 23, citing Turok, 2001 and others; see also Sinclair-Smith & Turok, 2012; Todes, 2012; Götz & Todes, 2014).

Spatial mismatch, although deeply inefficient, is a highly stable equilibrium due to a combination of positive feedback loops and the large sunk costs of the built environment. Bertolini argues for 'the deep intertwining of urban mobility, spatial developments, and broader socio-economic and cultural processes' (2012, p. 16), which takes the form of a feedback cycle with reciprocal causality:

> Patterns of land use determine the places at which people carry out activities, namely where they live, work, engage in leisure pursuits, etc. Movements between these different locations of activity have to be taken care of by the transport system and transport system developments are intended to be adapted accordingly. In turn, transport developments determine the accessibility of locations and, with that, their attractiveness as a location for certain land use developments. (Bertolini, 2012, fig. 19)

Rode et al. (2014) argue that the transport–urban form relationship is shaped by the slow rate of change of land use and spatial form compared to human activities, and the extreme persistence of the built environment creates significant lock-in effects (see also Bertolini, 2012). They conclude that 'where urban form and transport infrastructure is too biased towards sprawling, automobile-dependent patterns of development, it can in turn lead to a change-inhibiting cultural and political equilibrium' (Rode et al., 2014, p. 7). The costs of this equilibrium are not distributed equally: 'spatial mismatch implies a poverty trap where poor location causes poverty, and poverty simultaneously causes poor location' (Budlender, 2016, p. 6).

Equilibria are by nature stable; spatial mismatch is not going to resolve itself. If the problem might be characterised simply as large distances between people and jobs, then there are three broad possible responses. The first is a transport solution, which involves moving the people to the jobs, on a daily basis. This is a relatively short-term solution: it can be implemented within two to five years and can start paying off immediately, but it doesn't solve the underlying problem. In a city characterised by extensive, sprawling development and dependency on private cars and paratransit, driving modal shift to public transport is very difficult, and long-distance public transport that services only those who cannot afford alternatives requires large ongoing subsidy.

The second response, local economic development (or 'spatial targeting'), is the inverse: moving the jobs to the people (Todes & Turok, 2017). This, however, is easier said than done, requiring the private sector to respond to the policy programme, and tends to encourage 'investment in the region, rather than all-round development and transformation of the region' (Todes & Turok, 2017, p. 4). Decentralising economic activity can reduce the interconnectedness and connectivity of the city, which fails to connect residents to wider opportunity, impedes potential agglomeration effects, and encourages gentrification (Todes & Turok, 2017). Some version of spatial targeting has been the norm in South African planning for decades.

The third approach, which includes elements of the first two, entails a deeper reconfiguration or restructuring of the space economy. In South Africa, the term by which this goes is 'spatial transformation', in general meaning a programme of intervention that attempts to drive urban development oriented towards the use of public transport. The ultimate aim of a programme of spatial transformation is to create a city where, first, the preponderance of people and jobs are closer together; and, second, the connectivity and interconnectedness of the city is increased overall through better, and better-subscribed, public transport.

In a city characterised by extensive, sprawling development and dependency on private cars, driving modal shift to public transport is very difficult

Transit-oriented development

While spatial transformation has been part of the urban and transport policy agenda in South African cities for some time, it has increasingly been articulated in terms of TOD, especially by key actors such as the National Treasury. The term 'transit-oriented development' has been defined variously, but Bickford and Behrens (2015, p. 377) find that most literature on TOD holds certain elements of it in common:

- an efficient, integrated and reliable public transport system;
- a high quality public realm which prioritises pedestrians and cyclists over vehicles and ensures high accessibility of the public transport station;
- a mix of residential, retail, commercial and community uses;
- medium- to high-density development within comfortable walking distance of the transit station (i.e. the TOD precinct); and
- reduced rates of private car parking.

In a South African context, TOD is typically articulated as a strategy to restructure the urban form to promote inclusivity and counter the spatial segregation that typifies cities. Departing from the concept of TOD that first emerged in North America, where the objective has traditionally been to create neighbourhoods more supportive of public than private transport, the South African articulation aims to improve the livelihoods of the majority of poor black people who already make use of public transport to traverse great distances between places of home and places of work, and to use this as a basis for further spatial transformation.

This is an important departure from the origins of TOD in at least one key respect, not often acknowledged: TOD arose from the concept of the pedestrian pocket, a 'simple cluster of housing, retail spaces and offices within a quarter-mile walking radius of a transit system' (Calthorpe & Fulton, 2001, p. xix, quoting Calthorpe, 1986). Through planning and other policy levers, this was intended to promote development oriented towards, and supportive of, transit: dense, mixed land use at these nodes would make the transit system that serviced them economically and financially viable. Carlton (2007) distinguishes this from *development-oriented transit*, a pre-automotive mode of urban development. Before cars were the dominant mode of mass transport, demand for mobility in a growing city was such that laying a new tram line or bus route was often sufficient to drive development along it, which in turn would provide sufficient ridership to sustain the transit line. With the advent of automobility, development uncoupled from public transport and made possible urban sprawl: density is good for (and supportive of) public transport, but neither good for nor supportive of automobility.

Transit-oriented development is therefore *development* oriented towards *transit*, rather than the other way around. It entails and requires the deployment of all the other tools of urban planning and development, including zoning, public investment, pedestrianisation, and so on, to create the basis, in the form of ridership, for a transport system that only subsequently can be used to support broader patterns of development. This key insight, observable in many early TOD planning documents in South Africa, is nonetheless neglected when it comes to Rea Vaya and other BRT systems. We argue in Section 6 below that rectifying this, by emphasising development supportive of transit, is key to the future success of Rea Vaya.

Bus rapid transit and transit-oriented development

TOD as classically conceived—a programme of development and densification that progressively creates the conditions for transit—would leave the majority of Johannesburgers, mostly poor, high and dry: stranded on the outskirts of the city with only inefficient and costly options for getting to their jobs. As such, Johannesburg's approach, using BRT, tries to combine the transport solution with the spatial transformation solution. The BRT system is the backbone on which corridors for development are designated in Johannesburg, along which a restructuring of the space economy was first intended to take hold.

BRT serves two functions: one ameliorative and one curative. In the short term, BRT is simply the Strategic Public Transport Network as envisaged in 2003: a high-quality demand-driven bus service that alleviates some of the pain and cost suffered by poor commuters. This is the transport solution. In the longer term, BRT is intended to facilitate spatial transformation, by promoting infill along BRT transport routes, including (i) developing affordable, accessible housing, and (ii) catalysing economic development. Over this longer term, the intention is to create a virtuous circle where infrastructure, primarily transport, raises land values, increasing both rates to fund further capital investment and densities which sustain public transport through the fare box. Another, interlocking virtuous circle requires modal shift from private vehicles and paratransit to public transport—helped along by the superior experience of riding BRT compared to a regular bus, train, or minibus taxi—the revenues from which make it possible to extend and sustain the transport network. Lastly, if you manage to direct development such that you spread economic activity and residential densities somewhat evenly along transport corridors, then you reduce the cost to commuters in time and money; reduce the need to service, at high cost, ever-growing sprawl; and increase public transport revenue. Under most subsidised fare structures a higher volume of short trips requires less subsidy, and bidirectional travel reduces the wastage of empty seats on return buses. It is on this logic that the financial case for BRT ultimately rests.

There are three key problems with this two-pronged approach. The first, a problem of politics rather than principle, is that BRT is expected to create the conditions for its own success, measured both in ridership and in revenues. But in the meantime, BRT was always going to face challenges: by building expensive public transport infrastructure upfront, rather than only once supportive development had created the conditions for success, BRT opened a gap that needed filling with operational subsidies for the foreseeable future. A World Bank analysis recently argued that '*travel market structural factors* related to the structure of the urban form and mobility patterns in Johannesburg' (Scorcia & Munoz-Raskin, 2019, p. 396, emphasis in original) mean there is little prospect of Rea Vaya breaking even, even under optimistic assumptions about ridership and other contingent operational factors.

The second problem is potentially more significant: it is that the transport solution and the spatial transformation solution are in direct tension. The transport solution is a subsidy for distance, in that it reduces the cost in time and money of travelling from the periphery to the core. It therefore exerts a centrifugal force on development, enabling profitable housing development ever further on the periphery. The spatial transformation solution requires infill housing development, and as long as that is expected to be undertaken by the market, it requires that the periphery become *less* desirable to develop relative to the core. As such, the more effective your transport solution, the more desirable is housing development on the periphery, and the less desirable is housing development representing spatial transformation in the core. Insofar as this is an absolute logical opposition, there's no way around it: investing in the transport solution undermines the spatial development solution.

It may be that the state can use the various tools at its disposal to encourage infill development despite subsidising peripheral development, but that has to be done deliberately and systematically. A key tool here could be housing: the various institutions of the South African state, through housebuilding, exert enormous control over where South Africans live, and historically has used that control to build peripheral, ill-located, standalone houses. If the considerable amount the South African state spends on building and subsidising housing could be directed at infill densification, it could go a long way to creating the conditions for successful TOD. Instead, however, the City made only half-hearted attempts to redirect housing investment towards the Corridors of Freedom and other well-located areas, and with a change in governing party has reverted more or less entirely to peripheral low-density housebuilding. Provincial housing policy is even worse: it has doubled down on peripheral development, not inadvertently but deliberately, with a programme of 'mega human settlements'. These 'new cities' are in fact just dormitory settlements built on the cheapest land available in quantity, that is, the most distant, least well-located land in the province, and are all but unserviceable—especially by public transport. Thus, even if it were possible to reconcile the transport solution and the spatial transformation solution, there is no indication of the state's will or inclination to do so.

The third problem is also one of principle: should state investment be directed towards the Johannesburg we have, or the Johannesburg we want? Notwithstanding the centrifugal force exerted by the transport solution, to have any hope of spatial transformation the state needs to—at an absolute minimum—make infill densification *possible*. That requires servicing the BRT routes—with additional capacity for water, electricity, sewerage, and so on—to support significantly higher densities than they currently hold. This is building for the Johannesburg we might want—but as long as city budgets are finite and service backlogs large, it comes at the expense of building for the Johannesburg we have now. Every rand spent by City Power on high-capacity electricity infrastructure along the Empire–Perth corridor, which would be underutilised for now but is necessary before any medium- or high-density development could happen, is a rand not spent on electrifying Diepsloot or Orange Farm where residents live *today* without power. This temporal quandary is because there are both political and moral imperatives to service Johannesburgers where they live *today*, and there are financial and sustainability imperatives—and considerations of long-term justice—to build towards a denser, more concentrated city. There is no way out of this bind, under the prevailing conditions of urban finance, save for a state that is prepared to take political, financial, and moral risks, or, alternatively, to tacitly abandon the objective of spatial transformation. It is this lattermost option that seems to be reflected in both City and provincial policy.

These are irreducible challenges facing Johannesburg (and indeed any city in similar spatial circumstances, including others in South Africa). They are irreducible in the sense that there is no clever transport technology, BRT included, that can cut through them. The fundamental problem remains that of spatial mismatch, not immobility; and the policy response must be designed accordingly. BRT in Johannesburg is not, and cannot be, just a means to move people around at low cost.

The fundamental problem remains that of spatial mismatch, not immobility; and the policy response must be designed accordingly

5 A fairer evaluation of Johannesburg's BRT

BRT was conceived of as a long-term project, and must therefore be evaluated over a longer period. As such, criticisms of Rea Vaya's finances frequently miss the mark. They nonetheless have the potential to damage a system whose work is really just beginning. In 2017, then-Minister for Transport Joe Maswanganyi was reported as saying that the Rea Vaya system would likely be scaled down in future (Webster, 2018).

As a component of a broader TOD strategy, Rea Vaya cannot be judged narrowly by whether it breaks even or not. This is not to say that the system should be subsidised without any consideration of the cost, given multiple competing demands on the fiscus; just that any subsidy must be compared to the actual benefits of the system, and its policy objectives. Furthermore, these policy objectives include engineering a built environment that is more supportive of public transport—including financially—than the status quo. As such, the sustainability or not of the system should never be measured by its short-term finances: it will take time for the policy of TOD, of which Rea Vaya is a part, to create the conditions for BRT's success.

There have been some attempts to evaluate the BRT system more broadly than in simple financial terms. In so doing, the wider socio-economic benefits of Rea Vaya are quantified. Still, the focus of these assessments has been on the short term over which BRT has been in operation.

Photograph by Alet Pretorius

A fuller accounting of Rea Vaya

An early study by Vaz and Venter (2011) investigated the effectiveness of BRT as part of a poverty-reduction strategy in Johannesburg. They used data from a small-sample household survey conducted in Soweto in 2010/11. The study found that, on average, Rea Vaya users saved 10–20% in travel time compared to their previous mode of travel. Two-thirds of Rea Vaya users paid less than their previous transport costs (by 20%), but one-third paid more. Medium-income households used Rea Vaya in greater numbers than their poor counterparts, and accordingly benefited more. Rea Vaya was found to contribute modestly to community satisfaction with transport and living conditions in general, which the authors believed would have a positive impact on social cohesion and for leveraging further investment in the area (Vaz & Venter, 2011; Venter, 2016).

The following year, in 2012, Strategic Economic Solutions, in partnership with ITS Engineers, conducted a comprehensive economic evaluation of Phases 1A and 1B of Rea Vaya—two routes running from Soweto to the CBD. Considering only direct transport benefits, Phase 1A was found to not be economically efficient: for every R1 spent on Phase 1A, R0.77 of transport benefits accrue to society. Phase 1B was found to break even: R1 spent delivers R1.01 of social transport benefits. In aggregate the two phases were found to not be economically efficient. But, when broader social benefits—regrettably unspecified—are considered in addition to direct transport benefits, Phases 1A and 1B were both found to be economically efficient (Seftel & Peterson, 2014).

The City's efforts to grapple with the concept of sustainability, in regard to the BRT system, are documented by Seftel and Peterson in a paper entitled 'Achieving sustainability in BRT implementation in the City of Johannesburg' (Seftel & Peterson, 2014). Most notably, the paper asserts that sustainability is not a once-off consideration but an ongoing ambition that requires constant interrogation (Seftel & Peterson, 2014). Financial sustainability is just one of the sustainability issues considered, alongside economic and social, land-use, public transport, and environmental sustainability.

In anticipation of Phase 1C—a route along Louis Botha Avenue from the CBD to Alexandra township—an assessment of these various sustainability issues was performed. BRT with additional feeder routes was deemed most sustainable for Phase 1C, followed by: business as usual; curb-side bus lanes as per the original Strategic Public Transport Network; BRT as rolled out in Phases 1A and 1B; or light rail (Seftel & Peterson, 2014).

Financial sustainability is just one of the sustainability issues considered, alongside economic and social, land-use, public transport, and environmental sustainability

Working towards effective transit-oriented development

Rather than equating the need for operational subsidies with the failure of BRT, the efficacy of the BRT system must be measured against the broader objectives of TOD that it supports. A more useful analysis to determine the sustainability and financial viability of the BRT system, then, is whether spatial restructuring is feasibly achievable, even over a longer period, and the extent to which BRT encourages the envisaged residential and commercial developments that drive spatial restructuring.

The presence of a public transport system alone is not enough to ensure vibrant and accessible, equitable, sustainable cities. Both employment opportunities and affordable housing options are required to expand accessibility and to tackle inequality and exclusion. This requires mixed-use development along designated transport corridors, integrating commercial and residential space.

There are a number of mechanisms that municipalities can use to incentivise private sector development along TOD corridors, including the proactive rezoning of areas. Government can use the extension of land-use rights or the reduction of restrictions to attract and incentivise private development. The City of Johannesburg, for instance, has been developing incentives to stimulate private sector development, including rebates in rates and Special Development Zones (City of Johannesburg, 2017). But beyond the incentive mechanisms, Denoon-Stevens and Nel (2017) suggest that upfront investments in housing and public infrastructure may be required from government to draw in private sector interest.

But even with the various levers available to the state, spatial transformation is not easy to achieve. Spatial transformation requires clear coordination across state functions: it requires not only an efficient and attractive public transport backbone, but inducements to development along that backbone that range from bulk infrastructure upgrading (e.g. water and sewage reticulation, electricity substations), to higher standards of servicing (e.g. solid waste collection), to better urban management (e.g. by-law enforcement and public safety). It requires a planning department not only to facilitate development and densification along the TOD corridors but to actively discourage development in other areas. In other words, if the land market of the city—the 'urban land nexus' (Storper, 2014b)—is embedded in the local mode of regulation, then the state (not just the City) needs to alter the entire mode of regulation so as to produce a new urban land nexus.

The spatial restructuring solution is a very long-term approach. It has high upfront capital and political costs, and depends on changes to the built environment that will take decades—many multiples of the five-year electoral cycle—in order to justify those costs. And, as seen in Johannesburg, it is far from a sure thing. Many of the criticisms levelled against Rea Vaya overstate the failure of the system by defining the objectives of the BRT system in terms of short-term mobility and not long-term poverty reduction or spatial restructuring.

6 Creating the conditions for long-term success

Rea Vaya may be part of a long-term strategy, but it alone is not enough. As we have shown, the *conditions* for public transport must be created, if not prior, then at least in parallel with the transit system itself. The success of TOD relies on the provision, and use, of effective public transport; residential densification, which depends heavily on the availability of land for development or redevelopment; and the growth of local economic activity within the areas delineated for TOD development. To date, the challenge of a highly unequal urban land market and the failure to redirect the spatial economy as envisaged have been major limitations to the success of TOD and, consequently, for spatial transformation in Johannesburg.

Even where government owns large land parcels along the corridors, coordinating the acquisition of land large enough for densification and inclusive development has been largely ineffective. This is partly because of the misaligned interests of the state and private sector owners (SERI, 2017). Left to the private sector alone, housing development is only possible if it meets investors' desire for profit. Along the corridors, this has been difficult to achieve, not because infill development is necessarily unprofitable, but because greater profits are realisable in peripheral development, where land prices are low. This is a neat illustration of the zero-sum nature of spatial transformation (which entails infill) and the combination of automobility and the transport solution (both of which subsidise peripheral development).

The City's approach to TOD appears to rest on the assumption—in practice if not in the plans—that if effective quality transport is provided, and bulk infrastructure laid, then private developers will build affordable housing and mixed-use developments along designated public transport routes. But the international and growing local experience of TOD is clear: 'although transit adds accessibility and value to a place, transit alone is insufficient to drive real estate markets' (Carlton, 2007, p. 23).

In examining the patterns of ownership along the Corridors of Freedom, Halvey et al. (2017) found that the state owns 33% of the land by area, followed by limited-liability businesses (29%) and individuals (27%). The current zoning patterns in the Corridors of Freedom do not match the desired mixed-zoning profile; rezoning applications have been filed for fewer than 2% of the stands along the corridors. Much of the state-owned land is, however, already zoned as residential, which the authors note presents an opportunity not yet seized for high-density, low-cost housing developments (Halvey et al., 2017).

The Corridors of Freedom have encountered significant resistance, particularly in middle-class neighbourhoods, by residents' associations deploying a mix of good-faith arguments and less defensible NIMBYism. This is to be expected: spatial transformation is fundamentally a redistributive policy, where what is being redistributed is well-located living opportunities. In some cases, the City of Johannesburg has managed to convince or overrule the objections of suburban

incumbents; in others, the existing residents have managed to forestall densification in or around their neighbourhoods. An entire proposed BRT corridor was relocated from Oxford Road to Louis Botha Avenue due to the mobilisation of resident associations.

The state in general and the City in particular need to steel themselves against these objections: there is no way to create well-located living opportunities for the poor without bringing them closer to the rich. Much better use needs to be made of state-owned land, which instead of being sold to private developers could be used for high-density state-owned rental housing, the residents of which could substantially boost the ridership of Rea Vaya—ideally in both directions of travel.

More than that, the state needs a moratorium on the construction of housing that does not support the goal of spatial transformation. Spread across its three spheres of government, South Africa conducts one of the largest state housebuilding programmes in the world, which until now has followed a crude economic principle of per-unit capital cost minimisation. As a result, houses are built on the cheapest available land, which is typically distant, poorly connected to opportunities, and expensive to service. Every house thus built further entrenches the apartheid spatial form and commits a family to a life of economic exclusion on the urban periphery. The state needs to commit itself to the principle of spatial transformation and commit its enormous human settlements budget to developments of maximum economical density on well-located sites. This alone has the potential to reshape South Africa's cities; when combined with an effective and well-implemented public transport policy, it could be transformative.

This would require a shift, too, in the politics of housing. Current housing policy is largely predicated on redistribution of freehold title to land, through the purchase of land by the state, construction of individual units, and transfer of title deeds. There is no doubt that the moral case for land redistribution is strong, and it may be that this is genuinely the best approach in rural areas. However, in cities such as Johannesburg, it results in the construction of peripheral houses that are extremely poor assets. 'An RDP [Reconstruction and Development Programme] house [is] "dead capital" [...] because although it can be sold [...] its utility as financial capital for household/individual economic progression is weak and hence its capital is lifeless within the broader property market' (Lemanski, 2011, p. 68). In urban areas, the focus of a progressive housing policy should be on redistributing high-quality accommodation close to jobs, an enormously more valuable economic asset than distant freehold.

The City must both encourage and enforce mixed-use development along the Corridors of Freedom. This is envisaged in the Strategic Area Framework for each corridor but has never been effected, despite the relative ease with which it could be enforced through by-laws and planning regulations. Mixed use would encourage the development of economic opportunities along the corridors and increase bidirectional travel on the BRT system (essential for reducing per-rider costs).

This should be combined with state enforcement of good urbanism, such as buildings with street interfaces and pedestrian-centred design. These are not nice-to-haves, but absolutely essential to TOD (and central to TOD guidelines the world over). Reducing automobility and encouraging public transport use means making it possible, and pleasurable, and safer, to walk to transit stops. This in turn requires streets that are designed to be walked, where pedestrians are

protected from cars and allotted plenty of space, and sidewalks are activated by economic activity (both formal and informal). South African roads have been captured by cars, and are designed—according to regulation and custom—to maximise automotive throughput (on which see Harber et al., 2018, and particularly Harber, 2018). Even the Johannesburg CBD, otherwise well designed for and well subscribed by pedestrians, has traffic lights synchronised to allow traffic to flow at maximum speed. This must change for TOD to succeed.

Rea Vaya itself must meet much higher standards of service: it must be more reliable, safer, more pleasant to ride, and altogether easier to use. Existing and potential BRT users value frequent trips, lower fares, and more accessible public transport stations (in walking distance) more than shorter travel times (Venter & Hayes, 2017). Despite its very lofty goals, the current system only partly and erratically meets the needs of its target ridership. From an overdesigned and unreliable ticketing system to unpredictable buses to an almost totally opaque route map and timetable, Rea Vaya as implemented shows callous indifference, if not overt hostility, to those it would carry. It makes a poor argument for choosing it over alternative public transport services, or indeed over private transport.

Finally, the City must embrace the minibus taxi industry, which is in no small part responsible for Johannesburg's daily functioning. The taxis are an asset and, more importantly, they are with Johannesburg for the foreseeable future. Rea Vaya needs to find a way to be accommodating and complementary with minibus taxis: formally integrating the systems will ensure more public transport users benefit from the higher-quality BRT system (Venter & Hayes, 2017). The restraint-of-trade agreement on the BRT trunk routes must be enforced, and a profitable model found for the taxis to serve as a feeder system—ideally even to replace the BRT's current feeder buses. Ideas for how to do this can be found in the City's own Integrated Transport Plan of 2003, which envisaged exactly this integration between public and privately provided mass transport, and in recent efforts to establish dedicated minibus feeders, operated within the existing industry, for the Gautrain.

These altogether represent the basics of a coherent spatial policy: embracing a redistributive approach to urban space in order to overcome political objections; using housing to drive spatial transformation and create the basis for mass public transport; enforcing mixed-use development, good urbanism, and walkability; improving standards of service for the BRT; and integrating with minibus taxis. With these in place, there is room for innovation, such as digitalisation (beyond existing, largely failed, initiatives) and online ride-hailing, an increasingly popular concept of unproven value. But before anything else, Johannesburg (and any other city undertaking TOD) needs, at a minimum, to establish a reliable, high-quality bus service and to drive land-use change along its route.

Rea Vaya itself must meet much higher standards of service: it must be more reliable, safer, more pleasant to ride, and altogether easier to use

7 Conclusion: Rea Vaya lives …

Flyvbjerg (2014), in surveying the reliability with which megaprojects of all kinds run overtime and over budget, often by orders of magnitude, makes the point that the great tragedy in these cases is not directly the cost in time or money. Rather, it is that the cost in time and money discredits the true value of the project, whether it was realised or not. He uses the example of the Sydney Opera House, whose enormous overruns resulted in its genius architect never receiving another commission. In Johannesburg, overruns—less over a true budgeting of the project than over the unrealistic promises made by naïve or unscrupulous consultants—threaten to discredit the broader project launched by the Strategic Public Transport Network and realised imperfectly by Rea Vaya: a project to provide dignified, high-quality transport for the poor of the city, and to gradually reshape Johannesburg for greater sustainability and justice. These goals remain worthy, notwithstanding the regrettably partial success of Rea Vaya.

If the City of Johannesburg is able to achieve the objectives of TOD, changing the structure of the urban form through infrastructure investments, increasing densities, integrated development, and improved accessibility to amenities for poor residents and communities, the conditions for a viable BRT system will be set in place. Johannesburg has not resolved the underlying issues with spatial transformation; nor did it ever build the processes of consistent coordination across line functions that would have been necessary to achieve this spatial vision. It is clear, however, that if it is to do so then the Corridors of Freedom or something like them are a key mechanism: a coherent, strategic, overarching, silo-busting vision, and a process of unifying the many disparate processes of the local state behind that vision.

Until recently, the City has shown an overall ambivalence towards spatial restructuring through BRT. Its plans have been ambitious, appropriately so, and determined to effect change. Its implementation, however, has been less determined, and less unified, and this has made the long-term challenge even more vulnerable than it might have been to short-term politics.

In the 2016 municipal elections, the City of Johannesburg changed political hands for the first time, to a coalition of smaller parties. The swing was driven largely by dissatisfaction with national government; nonetheless, the coalition worked swiftly to reorient the City's activities to short-term retail politics in advance of the 2019 general election, a strategy described by one senior official as 'houses for the poor, potholes for the rich' (Anonymous, personal communication, 24 May 2017). The Corridors of Freedom, at least in their original form, are 'dead' (Anonymous, personal communication, 24 May 2017).

The corridors may be dead, but BRT lives on due to national capital funding and the brute fact that the lanes are built and the buses—usually—running. More interestingly still, the long-term vision of spatial transformation has had nearly 15 years to shape the daily operations of the City, and the thinking of the officials essential for those operations. The degree to which spatial transformation, capital prioritisation, and cross-functional alignment live on is an open question.

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About the Provocations series

[to provoke: to stimulate, incite, stir up, challenge, irk, exasperate, vex]

The Gauteng City-Region Observatory's Provocations are an ongoing series of thinkpieces that give a platform to cutting-edge thinking on current issues of the day, written and presented in non-academic style and format. Each Provocation is offered by an academic or practitioner for reading by a wide audience, with the hope of shedding light on key topics relevant to researchers, policy-makers, business people, activists and members of the public. The series aims to challenge conventional understandings, stimulate new thinking, stir up debate and incite readers to respond with interpretations of their own. At times, the thoughts offered will exasperate, perhaps even anger. Each piece goes through rigorous editing, but the analysis, views and opinions presented are solely those of the authors.

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