Urban INNOVATIONS

Researching and Documenting Innovative Responses to Urban Pressures

Editors: **Philip Harrison and Margot Rubin**
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FOREWORD

The National Development Plan (NDP), guided by its vision to eliminate income poverty and reduce inequality by 2030, provides a framework for addressing challenges related to the transformation of human settlements and the national space economy. The reform agenda presented in the NDP, specifically in Chapter 8, requires alternative innovative approaches to solving South Africa's urban inefficiencies. In order to adequately fulfil the objectives articulated in the NDP, it is necessary to shift from previous approaches which have had a limited impact.

The 2011 Census revealed continued high levels of urbanisation and urban expansion with the greatest pressures in the Gauteng City Region (GCR). It is against this backdrop that the first National Planning Commission and the Gauteng Provincial Government in November 2012 collaborated around work on urban innovation. The purpose of this collaboration was to find innovative ways to address these and other urban challenges and take advantage of opportunities presented by urbanisation for the benefit of the population and cities.

Urban Innovation is considered to be an emerging field, and the publication provides an overview of the theory and practice of urban innovation together with perspectives, trends and international experiences in this area. The publication stimulates debate and creative thinking around different approaches towards dealing with everyday urban challenges through presenting a collection of local and international case studies that could potentially be replicated. It also showcases what can be achieved when various spheres of government together with an academic institution and a range of other actors partner to think creatively and constructively around a set of issues facing cities and city regions.

Through this partnership, young researchers were appointed to write up an innovative approach to dealing with an urban challenge of their choice, and as a result covered a range of topics. Papers were presented to experts in the fields of urban development and the innovation community at a colloquium in October 2015. This provided the opportunity for practitioners and experts to contribute and offer feedback to the work of the young researchers. Five of the nine case studies presented are South African innovations, while two of the case studies interrogates the replicability of innovations from Kenya in the South African context. The remaining cases includes one UK based case study and one US based case.

The case studies include the eKhaya Project, an innovative approach to managing urban crime and grime in Hillbrow through a variation of the concept of City Improvement Districts. Two case studies related to land development and sustainable human settlements were included, namely, the case of the Greater London Mayor's Housing Covenant as an innovative approach to deliver more affordable housing stocks to households that do not qualify for social housing support, but cannot afford their own housing (gap market), and a contextual study to determine the development impact of Cosmo City towards producing a socially and economically integrated community. Another case study includes the Diepsloot Memorial Park – a graveyard with poor uptake from the Community despite its award winning design.

A number of papers focused on challenges related to transport and mobility. One paper explored a case study of the San Francisco commuter benefit ordinance as a means to incentivise the use of public transport and its potential for South Africa. Another study focused on the importance of knowledge-driven solutions to social and economic transformation with particular reference to the taxi industry in South Africa. In promoting urban efficiencies one project presented proposals of dealing with organic waste in dense, transient communities, such as Hillbrow, with a focus on technological solutions. Another explored the concept of Civic Academies as a means to increase public participation, community capability and meaningful engagement within cities. The final case study explored practical examples of 'Distributed Cities,' a process of sustainable city building where Information and Communication Technology (ICT) is used to respond to urban challenges and pressures in a sustainable and inclusive way.

There is no doubt that this work will contribute to thinking through the challenges, offering alternatives and contributing to the debates around urban innovation, however more still needs to be done. The Department of Planning, Monitoring and Evaluation acknowledges critical role-players who have contributed to the success of this publication. However, most special thanks goes to the young researchers, the National Planning Commission, the Gauteng Provincial Government, Academics who supported the process, as well as the editors of the publication.

Dr Nkosazana C. Dlamini-Zuma, MP
Minister in the Presidency: Planning, Monitoring and Evaluation

Biographies as at the research phase
Editors and established authors

Philip Harrison

Professor Philip Harrison heads the South African Research Chair in Spatial Analysis and City Planning funded by the National Research Foundation and hosted by the University of the Witwatersrand's School of Architecture and Planning. He also served as a member of the National Planning Commission in the Office of the President in a non-executive and part-time role from 2010 to 2015. Previously, Professor Harrison was the Executive Director in Development Planning and Urban Management at the City of Johannesburg for four years from 2006 to 2010 with responsibility for forward spatial planning for the city, spatial information systems, urban management programmes, and administrative oversight over special projects such as inner city redevelopment, the Alexandra Renewal Programme, and the Cosmo City. Prior to that, he was the Professor and Chair of Urban and Regional Planning and Associate Dean at the University of Witwatersrand from 2001 to 2006, and also held an academic position at the University of Natal. He has published widely internationally in the field of urban planning and urban development with his most recent publication a jointly edited book entitled Changing Space, Changing City: Johannesburg after Apartheid (2014, Wits University Press).

Margot Rubin

Dr. Margot Rubin is a senior researcher and faculty member in the University of the Witwatersrand (South African Research Chair in Spatial Analysis and City Planning) in Johannesburg. Since 2002 she has worked as a researcher, and policy and development consultant focusing on housing and urban development issues. She has contributed to a number of research reports on behalf of the National Department of Housing, the Johannesburg Development Agency, SRK Consulting Engineering, World Bank, Ekurhuleni Metropolitan Municipality and Urban LandMark. Her doctorate in Urban Planning and Politics from the University of Witwatersrand interrogates the role of the legal system in urban governance and its effect on the distribution of scarce resources and larger questions around democracy. She also holds a Master's degree in Urban Geography, an Honours degree in Geography and Environmental Studies and a Bachelor of Arts in Geography and Philosophy. Of late, Margot has been writing about inner city regeneration, housing policy and is currently engaged in work around mega housing projects and issues of gender and the city.

Geci Karuri-Sebina

Dr. Geci Karuri-Sebina is the Executive Manager of Programmes at the South African Cities Network. Prior to 2011 she worked with the National Treasury (Neighbourhood Development Programme), Council for Scientific and Industrial Research, Human Sciences Research Council, and University of California's Advanced Policy Institute. Her interests span a range of development foresight, policy, planning and practice topics, particularly urban governance, the built environment, innovation systems and local development. She holds Master's degrees in Urban Planning, and Architecture and Urban Design, both from the University of California, and a doctorate from the University of Witwatersrand in Johannesburg in planning and innovation systems. Her committed service to development in various capacities covers a range of roles over the years as: Fellow of the Archbishop Tutu Leadership Programme (Africa Leadership Institute and University of Oxford); Council Member of the South African Council of Planners, Associate Research Fellow of the Institute for Economic Research on Innovation and the Department of Science and Technology-National Research Foundation's South African Research Chairs Initiative Chair on Innovation and Development; founding director of the South African Node of the Millennium Project; co-founder of ForesightForDevelopment.org; Associate Editor for the African Journal for Science, Technology, Innovation and Development; and Africa Regional Editor for Foresight, the journal of future studies.

Young Researchers

Thembani Mkhize

Mr. Thembani Mkhize grew up in Johannesburg. Mkhize holds three degrees from the University of Witwatersrand: a Bachelor of Science in Urban and Regional Planning in 2011, as well as in Urban and Regional Planning with Honours in 2012; and a Master's of Science in Urban and Regional Planning (Urban Studies) in 2014. His research interests range from neighbourhood working and micro-scale governance to city branding and large-scale city politics. An independent researcher, Mkhize's recent research project was sponsored by the Department of Planning, Monitoring and Evaluation as part of project on innovative approaches to manage urban pressures.

Jerome Kaplan

Mr. Jerome Kaplan has a background in urban planning, having graduated with his master's degree in City and Regional Planning from the University of Cape Town in 2013. Subsequently he has been exposed to a wide array of public sector strategic planning, having worked at both the provincial and local government level, and is currently employed as a consultant at Palmer Development Group. His interests focus on urban market dynamics and how these manifest and shape South African cities.

Bronwyn Kotzen and Samuel Suttner

Ms. Bronwyn Kotzen is an architect and urban researcher at the University of Witwatersrand's Public Affairs Research Institute. She holds two Master's degrees: one in Architecture from the University of Witwatersrand; and another in City Design and Social Science from the London School of Economics and Political Science, receiving its Cities Award for Outstanding Academic Achievement. She has worked in architecture in Johannesburg and New York, written and edited numerous publications, curated exhibitions and taught at local universities. Her focus, in academia and practice, is on the interstices between governance, informality and the built environment in rapidly developing urban African centres.

Mr. Samuel Suttner is a research specialist for the Johannesburg-based Centre for Affordable Housing Finance in Africa. He is interested in local government and urban governance, housing and land markets, and more broadly in understanding how cities are assembled and maintained. He has worked for an urban design firm, consulted for an urban planner, tutored geography and international relations, and lectured political studies. He holds a Bachelor of Commerce in Politics, Philosophy and Economics and a Bachelor of Arts with Honours in Development Studies, both from the University of Witwatersrand, as well as a Master's of Science in Urban Studies from University College London.

Tsepang Leuta

Ms. Tsepang Leuta is an urban geographer by training. She is currently a doctoral student in the School of Architecture and Planning at the University of the Witwatersrand. Her research looks at cemeteries as both green and built infrastructure, and contributes to the understanding of whether current cemetery provision in the Johannesburg is consistent with resilience and green infrastructure principles. She previously worked for the Council for Scientific and Industrial Research in the Spatial Planning and Systems Unit focusing on projects related to policy, spatial analysis and planning, and urban growth management among others.

Julia Letang

Ms Julia Letang graduated with a Master's degree in City and Regional Planning from the University of Cape Town in 2013, before which she completed an undergraduate degree in Architecture. Her experience in the urban environment has ranged across scales, and includes work in the public sector, non-governmental sector, and most recently in the private sector as an urban planner for Headland Planners in Cape Town. She has a strong interest in the relationship between urban planning and public transport in South African cities.

Marijana Novak and Joanna Glanville

Ms. Marijana Novak is interested in the role of the financial sector in creating a sustainable built environment, focusing on designing models that account for responsive and integrated urban planning. Marijana has a Bachelor of Science in Actuarial Science, a Bachelor of Science (Honours) in Advanced Mathematics of Finance and a Higher Diploma in Property Finance from University of Witwatersrand. She has worked in Commercial Real Estate for several years, and is a qualified Energy Risk Professional. She is currently studying for her Master's degree in International Business (Sustainable Finance) at Maastricht University as well as toward her Leadership in Energy and Environmental Design Green Associate qualification.

Ms. Joanna Glanville has a Bachelor of Arts (Honours) in Drama. Whilst lecturing and creating content for Production Design at the University of Witwatersrand for first, second, third and fourth year students, she developed an interest in urban and spatial design with a focus on creative, sustainable and responsive spaces. In conjunction with the research for this publication, she is completing the design and construction of a park in Hillbrow for differently-abled children and children on the Autism Disorder Spectrum. Her other activities include theatre work; freelance design and costume design; and production designer and art director for various short films. She continues to be committed to dramatic art.

Nonjabulo Zondi

Ms. Nonjabulo Zondi completed her undergraduate studies at the University of Witwatersrand in Architecture before being awarded a prestigious scholarship by the SAFe (South Africa and French Embassy) Think Tank to study for a two year Master's degree in Urban Governance and Public Policy at the Political Sciences and Sociology school, SciencesPo, the Paris Institute of Political Studies in France. Since completing her master's degree in 2013, she has worked on urban governance and public policy research within the spatial and infrastructure development sphere for institutions such as the Industrial Development Corporation, Knowledge Resources and the United Nations Development Programme. Recently, she has been working closely with Non-Governmental Organisations with Monitoring and Evaluation exercises. She is interested in ensuring inclusive cities are achieved to ensure opportunities are better accessed by all.

Adoné Kitching and Chido Muzondo

Ms. Adoné Kitching joined Isandla Institute in 2014 as the Urban Land Policy Researcher and has to date primarily worked on the project entitled Developing Communities of Practice for Informal Settlement Upgrading. Kitching is a social anthropologist by training, and is currently completing her Master's degree in that field. She is particularly interested in contributing to development practices that harness and enhance the agency of urban residents. Through her work at Isandla Institute she aspires to build a career in urban planning and policy development.

Ms. Chido Muzondo is a research intern at Isandla Institute and has been working in the Non-Governmental Organisation sector since 2015. She holds a Bachelor of Social Science Honours degree in Environmental and Geographical Science from the University of Cape Town, and a Bachelor of Social Science degree majoring in Environmental and Geographical Science and Social Anthropology. Her interests are in sustainable development and climate change, and in understanding the tensions inherent in multi-stakeholder collaboration for development.

Azra Rajab

Ms. Azra Rajab is a researcher at the Council of Scientific and Industrial Research on the Sustainable Human Settlements and Informatics team. Prior to that and with an academic background in Urban and Regional Planning, Azra was one of three members of the citywide spatial policy team at the City of Johannesburg Metropolitan council. She has a Master's degree in Sustainable Urbanism with distinction at University College London and has a passion for exploring sustainable approaches to informal settlements.

abbreviation

noun

a shortened form of a word or phrase

Abbreviations

CID	City Improvement District
COCT	City of Cape Town
COJ	City of Johannessburg
GLA	Greater London Authority
PPP	Public-Private Partnership
RSA	Republic of South Africa
RDP	Reconstruction and Development Programme

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innovation
noun
a new method, idea, product, etc

1. URBAN INNOVATION: THEORY AND PRACTICE

Philip Harrison and Margot Rubin

Introduction

In the post-global financial crisis period since 2008, urban innovation has emerged as an alternative to both local 'neo-liberal' austerity measures and non-sustainable economic populism. Urban innovation requires new and creative ways of improving urban services within an existing, or shrinking, resource envelope. A strategy such as this is required, instead of cutting down on the scale and quality of services, or continuing to spend recklessly to maintain political support. Urban innovation, as a form of adaptive creativity, is, arguably, a response to both the limitations of traditional practices within a tough economic environment, as well as to the increasing demands from urban citizens for better service. Urban Innovation is also increasingly spoken of in the context of 'adaptive governance'. Whereas conventional systems of governance are characterised by bureaucratic rigidity, hierarchy, and top-down instruction, adaptive governance is associated with network structure, participatory process, learning-based approaches, and *innovation*.

Although innovative practices are hardly new, the high-level policy attention given to urban innovation clearly is. In 2010, the World Economic Forum's Global Agenda Council on the Future of Cities produced an Agenda Paper on Urban Innovation which was a direct response to the state of city economies (World Economic Forum, 2010). In 2012, the Mayor of Guangzhou, China, inaugurated the Guangzhou International Award for Urban Innovation that two leading international networks of city governments sponsored (see Chapter 2). Historically, regional policy in the European Union (EU) focused on supporting the problems of lagging regions, and on achieving regional balance. The severe effects of the financial crisis on many European cities provoked a rethink. The idea of urban innovation provides a conceptual framework for addressing urban challenges in both a more creative and more systematic way. In June 2015, the European Union launched its Urban Innovation Actions providing €371 million on a competitive basis for innovative programmes in urban areas in Europe of more than 50 000 people. In launching this programme, the European Union stated that "cities need to do more with less, responding to growing challenges but with lower budgets" (European Union, 2015).

Then, in September 2015, President Obama unveiled his $160 million Smart City initiative which, despite the 'smart city' label, has many elements of the broader construct of urban innovation. The initiative links technology to new multi-city collaborations between city governments, universities and industry, and so goes beyond conventional 'smart city' solutions. Objects around us, such as cars, buildings, roads, public spaces, and cell-phones that are digitally linked to networks allow for collecting information, are as important as finding solutions to problems relating to safety, energy, climate preparedness, transportation and health; and on supporting new multi-city collaborations between city governments, universities and industry (The White House, 2015).

At the same time, a number of large foundations adopted urban innovation as a central theme. Examples are Bloomberg Philanthropies that funds innovation teams (i-teams) in city governments (Puttick et al 2014); the Urban Land Institute that has been providing urban innovation grants since 2012 (Urban Land Institute, 2016); Brookings Institution that actively supports the rise of 'urban innovation districts' (Katz and Wagner, 2014); and the Rockefeller Foundation that promotes urban innovation as an instrument for achieving the resilience of cities (Rockefeller Foundation, 2016).

The very recent uptake of 'urban innovation' by these major institutions is, of course, built on a long history of conceptual development, and also on initiatives that have bubbled up from the grassroots over time. Concepts and practices of urban innovation have emerged within all regions of the world, taking different forms (Chapter 2). While the new initiatives are important, especially for their scale and impact, the textured way in which the history of the concept has given rise to quite significant variations in use and practice, clarifies the term "urban innovation".

This introductory chapter addresses the intertwined domain of theory and practice, tracking the various threads of conceptual development. Key debates are outlined and the relationship between 'urban innovation' and other current concepts such as 'smart cities', 'urban sustainability', 'urban resilience' and 'inclusive cities', are explained. This chapter pays particular attention to smart cities, which is seen as a parallel, or even having a competing agenda, to urban innovation. The chapter than asks the critical question of how to make urban innovation real in the lives of urban residents. A brief cautionary note reminds that innovation, in-and-of-itself, is not always positive.

The chapter then introduces the Partnership for Urban Innovation in South Africa, which was initiated by South Africa's National Planning Commission in collaboration with the Gauteng Provincial Government follows. However, other agencies too are involved. This book brings together a number of contributions from young, mainly first time, authors on its main theme, urban innovation. An overview of its content concludes the chapter.

Meanings

The term **'urban innovation'** is used with growing frequency in the policy terrain, but often without adequate definition. The scope for intellectual and practical confusion is wide.

A frequent use of the term, for example, relates to commercially profitable technological innovations that also improve the quality of the urban experience. The Mashable Global Innovation Series, sponsored by car manufacturer BMW, uses the term urban innovation in this sense (Mashable, 2016). The listing of key urban innovations (ibid.) illustrates how difficult it is to differentiate between private and public benefit. There are gizmos and gadgets that are more obviously geared towards private convenience and pleasure such as high-tech clothing fabrics that double up as mobile phone chargers. However, there are many innovations, most privately generated, that have been applied for public good, or offer potential solutions to pressing urban challenges. Examples are traffic apps, sustainable prefabricated housing, high-tech carpooling, apps for reporting infrastructure failures like potholes, leaking pipes, broken traffic lights. There are also smart grids; technologically-enabled education centres; crowd-funding start-ups for urban improvement; and data apps that increase the access that residents have to local government information.

The second use of the term is a partial reaction to the perceived fixation with technology in speaking of 'innovation'. Urban innovation in this sense is also known as 'urban social innovation' (Chapter 2) that refers to new social practices directed to resolving a pressing social problem, serving as a "creative transgression of established rules" (Fontan et al., 2008:22). Urban innovation may be technologically-enabled but often involves new forms of social practice, institutional organisation or regulatory framing. Bike sharing, for example, makes use of smartphone mapping apps that show the location of bike stations and available bikes. Its success relies to a large extent on innovative organisational arrangements. Bike sharing began as a small scale innovation in local community groups and non-profit organisations yet it has evolved institutionally in some cities into a large-scale practice supported by public-private partnerships (Shaheen and Guzman, 2011). In framing the concept, the agents of urban innovation are often the 'urban impact entrepreneurs' who may, but do not necessarily, operate for commercial gain (Brenner and Lein, 2012). The uptake of the innovation may be led by the public sector or may be channelled through a public-private arrangement.

A third use of the term, urban innovation, is more directly related to governance. It is concerned with how the agents of governance, with government as the anchor, would act more creatively to deliver public benefit. Again, technological enabling is likely to take place but the focus would be directed to governance practices. These could include a range of new models of collaborative practices with citizens, in financing arrangements, in delivering public services and new forms of public procurement. Creative spaces for collective deliberation and new approaches to spatial planning would develop in specific ways and forms (URBACT, 2015).

In reality, there is often overlap and fuzziness in definition and it is often difficult to neatly differentiate between the various meanings the terms imply. In the final analysis we choose what we mean, but we should do so with an understanding of how others use the term.

The simple definition of urban innovation the Rutgers Business School provides resonates with this understanding:

> We define **urban innovation** as a **break from common practice** to develop long lasting transformations in communities, neighbourhoods, and cities.

(Robinson, 2015). It is the meaning adopted in this book.

Genealogy

The difference in the shades of meaning reflects a complex intellectual genealogy. The key originating idea is the concept of 'innovation' with the positive normative connotation that this idea has acquired.

Benoît Godin (2015) offers an unexpected intellectual history of innovation, revealing its origins in religious dogma as a negative and threatening trait. Innovation referred primarily to deviance and heresy[1] and then, in political terms, to subversion and revolution. In 1548, Edward V, King of England, issued a proclamation Against Those that Doeth Innovate (ibid.). In the nineteenth century, explains Godin, innovation took on positive connotations, and was gradually associated with positive attributes such as creativity, originality, invention and reform. In the early twentieth century, Joseph Schumpeter, now hailed as the 'prophet of innovation' (McCraw, 2007) coined the term, 'creative disruption', arguing that the disturbance of innovation was necessary for continued competitiveness, growth and employment creation (Śledzik, 2013). Through the twentieth century innovation was well established, and popularised, as a normative virtue but, at the same time, its use narrowed, with innovation increasingly understood in terms of technological change. It was only towards the end of the century, with the rise of a concept of social innovation, that that there was a broadening in the use of the term (Godin, 2015).

Rather obviously, the term 'urban innovation' brings together the term 'innovation' with the idea of 'the urban' or 'the city' as the locus of innovation. Indeed, one of the necessary conditions for the emergent concept of urban innovation is the reversal of the historical prejudice against cities. For much of the nineteenth and twentieth centuries, the dominant discourse was anti-urban, despite the seemingly irrevocable move of people from rural to urban areas. Even as late as the 1970s, national and regional policies aimed to constrain, or even reverse, urbanisation. In the European Union, for example, it is only over the past decade that regional policies, and related funding programmes, have explicitly acknowledged the role of cities in regional development.

Innovation is, of course, not confined to cities and there is important work to be done on innovation in rural contexts. However, the discourse on urban innovation does recognise that cities are the nodal points of modernity. It is in cities where global pressures are first articulated, and where transformations are most rapid. As Capello (2001:181) put it, cities are 'a breeding place for new activities'. There are various studies, of which Athey et al., 2008 is an example, which show that the highest rates of innovation, in both absolute and per capita terms, are in cities.

While urban innovation joins the ideas of the 'urban' and of 'innovation' – which are a very normal part of our discourse today and have their own intellectual histories – there is more to the genealogy of this term. The variant uses of the term 'urban innovation' reflect the different sub-streams of genealogy over the past half century or so. We identify three of these: first, social innovation; second, the territorial dimension of innovation; and third, innovation in governance.

[1] *The Reformation (the rise of Protestantism) was, of course, a systemic innovation in religion, bitterly resisted by the Counter-Reformation.*

Social innovation

Very briefly, the rise of social innovation is a response to the preoccupation with technology in ideas of innovation. It is elaborated on in some detail in the next chapter (Chapter 2). Importantly, for our purpose, the emergent ideas around social innovation are carried over into the discourse on urban development (Moulaert et al., 2007; MacCallum et al., 2009); with reference to 'social innovation in cities' (URBACT, 2015); or to 'urban social innovation' (SEisMiC, n.d.). For Moulaert et al. (2007), social innovation in cities is an alternative to a 'neo-liberal' urban discourse and practice.

The territorial dimension of innovation

Innovation was given a territorial dimension in the early to mid-1990s through the work of Bengt-Åke Lundvall (1992) and Chris Freeman (1995) on the 'National Innovation System' (NIS). In their writings, innovation is not only a feature of a firm but also the outcome of the relationships, flows and capacities of a multitude of public and private actors connected by the histories, cultures and institutions of nation states. The National Innovation System idea was inspired by the post-war success of countries such as Japan, South Korea and Singapore, which suggests that there are certain features, at a national level that inspire innovation and these are not evenly distributed across countries. The Organisation for Cooperation and Development (OECD) (1997, 2004 and 2008) then took up this argument, undertaking systematic investigation into these factors. Typically, receiving attention were those matters involving investment in research and development, the diffusion of technology, inter-agency cooperation, regulatory instruments, especially those related to intellectual property and human resource flows.

However, in the course of this work, it became increasingly apparent that differences in performance were often greater within, than between, countries. Freeman (1995:21) observes that "local infrastructure, externalities, especially in skills and local labour markets, specialised services and not least, mutual trust and personal relationships, have contributed greatly to flourishing nether regions" Freeman (1995), who understood regional geography, refers to the work of Piore and Sabel (1984) who identified the 'Third Italy' as an innovative cluster of interacting small firms. He also points out that Harvard's Michael Porter (1990) observed that competitive clusters of interconnected firms, suppliers, related industry and specialised institutions emerge in particular localities, a significant point.

With this recognition, an emerging subnational focus complemented a National Innovation System at both regional and local levels. Scholars documented their work as a 'Regional Innovation System' (RIS) (Cooke et al., 1997; Cooke, 1998 and 2001; Agrawal et al., 2014) or as a 'Local Innovation System' (LIS) (Mytelka, 2000; Breschi and Lissoni, 2001; Rantisi, 2002). Importantly, a Local Innovation System is not simply a National Innovation System, or even a Regional Innovation System at a smaller scale.

While a National Innovation System operates over a large and invariably diffuse geographic space, a Local Innovation System is a spatially concentrated agglomeration of agencies such as firms, research institutes and government departments. They produce innovation through their economic, social and intellectual interactions (Cooke et al., 1997).

It was also not long before 'the city' was identified as a dominant form of a Local Innovation System. It was the 'innovative milieu' within which innovation happens (Camagni, 1995; Simmie, 2001)[2]. The two key elements of the city that underpinned this innovation were 'diversity' and 'density'. Jane Jacobs, as early as 1961, had famously argued that the vitality of cities rested in their diversity (Jacobs, 1961). Authors, such as Feldman and Audretsch (1999), and Duranton and Puga (2001), took this notion up in relation to innovation. Camagni (2004:121) emphasises the "relational capital" of cities, with their high density of "synergies, interpersonal and inter-institutional relationships, collective action and shared development visions". Carlino et al. (2007) contend that there is a positive correlation between employment density in a city and the per capita invention rate, as measured by patents. Knudsen et al. (2007) maintain that cities produce innovation through the knowledge spillovers created in dense agglomerations of firms and talent.

In all these conceptions, the city provides an enabling environment within which a multitude of agents can be innovative. For Alexander Gutzmer (2016:1), "the city [is] a strategic resource". This differs from other conceptions such as 'the smart city', 'the intelligent city' or 'the creative city' in which innovation is somehow inherent in the physicality of the city.

Innovation in governance

This discursive thread has its origins in the economic austerity of the 1970s, the decade when post-war economic stability and growth ended the economic crisis of 1973. For cities, the defining moment may have been in 1975 when New York, arguably the most powerful city in the world at the time, experienced a fiscal meltdown. The New York experience was replicated countless times internationally in other cities of the world (Clark, 1999).

[2] *The idea of an 'innovative milieu' was, in fact, developed within the Regional Directorate of then European Economic Community (EEC) with reference to 'lagging regions', and as an alternative to conventional regional policies which generally involved physical relocation of industry to the spatial periphery;however, it soon became evident that it was the large cities in Europe that provided the most effective milieu for innovation (Camagni, 1995)*

The neo-liberal response to the crisis often involved massive cutbacks in the quantity and quality of services to city residents, either with or without privatisation. However, these austerity measures were politically damaging to many authorities and, morally or ideologically, unacceptable to some. Public sector innovation offered an attractive way of avoiding, or reducing, the need for these measures. Sørenson (2014:1) referred to the four structural conditions that placed pressure on local government to be more innovative: "the fiscal crisis, the proliferation of wicked problems, growing policy-execution problems, and low growth rates in the early 1980s".

Labelling public sector alternatives as 'urban innovation' came from Terry Clark (1999 and 2000) of the University of Chicago. The large research programme he launched to document them was titled the Fiscal Austerity and Urban Innovation Project (FAUI). The findings of the studies were not entirely straightforward. It was simply not seen as a case of urban innovation as a counter to neoliberalism, as some of the innovations themselves contained its very elements. In Europe, a parallel study, the Creative Town Initiative produced a database of innovative solutions to urban problems (Landry and Bianchini, 1995).

A common response by local authorities was to adopt New Public Management (NPM), an approach that drew largely from private sector practice, and was transferred, sometimes uncritically, to the public sector (Torfing and Ansell, 2014:iv). Key to the approach was placing professional management at the head of a public authority as the Chief Executive Officer; separating policy from execution; introducing rigorous systems of performance management; developing long term strategic visions; and, ensuring flexibility to implement these visions by introducing 'management by objectives' (Agger and Sørensen, 2014).

Agger and Sørensen (2014) not only recognise the benefits New Public Management brings, such as strengthening strategic administrative leadership in city government, but they also claim that some of its aspects have become barriers to further innovation. The New Public Management, for example, undermines the capacity for innovation by leaving the executive leadership of local government isolated at the top of an administrative hierarchy. It also introduces performance management systems that reward compliance to existing conceptions of good practice, rather than encouraging efforts to invent the next round of good practice through incentives. Theoretically, New Public Management is also often associated with an emphasis on inter-city competition that has the potential to limit collaborative problem-solving that could be valuable and lead to constructive outcomes (Landry and Bianchini, 1995; Jessop, 1998). Over the past few years, however, there has been a shift in thinking in public administration. Instead of stressing the importance of a competitive and entrepreneurial urban leadership, the new approach underlines the ways in which the knowledge, skills, creative capacity, experiences and resources of multiple actors can combine to produce innovative responses to urban problems. Sørensen (2014:1) writes that "collaboration between interdependent actors [is] a key driver of innovation".

He explains that "although leadership is important for initiating and authorizing innovative endeavours, and competition motivates actors to strive for change, collaboration drives the formulation, realisation and diffusion of innovations" (ibid.:5). This way of thinking underscores the point of view that governance networks are more effective in the production of innovation than well-managed bureaucratic hierarchies.

There are a number of other contributions that use a similar language. Sørensen and Torfing (2011) speak of "collaborative innovation in the public sector"; Sørensen and Waldorff (2014) refer to "collaborative policy innovation"; and Mulder (2012:43) to "co-creation as the enabler of urban innovation". Dvir and Pasher (2004:16) use the term 'conversations' to explain the driving force of innovation. "An 'urban innovation engine' is a … complex system that includes people, relationships, values, processes, tools and technological, physical and financial infrastructure. We suggest that what innovation engines really do is to create conversations" – which are the foundation of most innovations. These trends in thought around collaborative governance was paralleled also by the emergence of ideas around *adaptive governance* which emerged initially from the field of environmental management. The need to manage complex sustainability transitions in response to resource scarcity and global climate change directed attention to the processes across scales involving multiple actors that are required to guide or steer ongoing responses to changing ecological conditions (e.g. Muñoz-Erickson et al., 2016).

This identified shift in the discourse concerning urban innovation reflects trends both within the broader innovation field, and in earlier contemplation of urban governance and urban planning through an institutionalist lens (Healey, 1997; Gonzalez and Healey, 2005). The enthusiasm for a collaborative mode of urban innovation has been tempered a little by an acknowledgement of the challenges of building, and sustaining, meaningful learning networks. Dente and Coletti (2011:45) capture something of the challenge when they write that "the ideal governance network is at the same time complex (bringing together actors from different territorial levels and from different societal and institutional domains), dense (favouring direct interaction between the actors) and 'focused' (showing one or few actors able to act as focal points of the network)". Sørensen (2014) cautions that these networks do need to be 'meta-governed' in a way that ensures "efficiency, effectiveness and democratic anchorage" (ibid.:8). In the literature reviewed for the theme of this chapter, much of the focus is on the role of local government in constructing learning networks and mobilising other actors, as Dente et al. (2005) mention.

However, there are other writers who emphasise the mobilising power of civil society. Gonzalez and Healey (2005:2055) argue that "episodes of innovative governance arising from within civil society [have the potential to transform] wider governance processes and cultures". Halpern (2005) is more direct when using a case from Berlin, Germany, to show the power of community mobilisation in coercing greater inclusivity in urban governance. Gerometta et al. (2005) assert that the stronger the role of civil society in the innovation process, the more likely the process will address matters of socio-economic polarisation and social exclusion.

In Relation to Other Concepts

The urban studies and policy terrain is becoming increasingly crowded in terms of ideas or concepts. Driven in part by the demands of the academic enterprise, and in part by funding agencies that latch on to concepts to frame their own agendas, this is an inevitable consequence. There is a complex process of vocabulary formation as concepts rise and fall, or evolve into new meanings, or fragment into multiple meanings. This is a dynamic and positive process that empowers us to think and speak in new or revised ways about cities. It is, however, also confusing and disorienting, especially for policy practitioners who are the users, rather than producers, of the concepts. The concept of 'sustainability' is a case-in-point. Introduced in the 1970s, it expanded massively in its use and meaning from the 1990s, powerfully influencing policy at all geographic scales towards care for the natural environment and our fragile resource base.

For policymakers the idea of 'urban innovation' may appear as a new addition to a list that already includes 'smart cities', 'urban sustainability', 'urban resilience', 'urban liveability', 'inclusive cities', and many more. In the paragraphs below we discuss urban innovation in relation to these concepts. Particular attention is paid to smart cities, an idea currently in vogue, and its relationship to urban innovation. Each requires careful explanation. Depending on definitions, the smart city may be a competing, parallel or complementary, concept to urban innovation. This requires resolution.

Smart Cities

A mainstream definition of smart(er) cities is provided by Hancke et al. (2013:393):

> A smart city is a city which functions in a sustainable and intelligent way, by integrating all its infrastructures and services into a cohesive whole and using intelligent devices for monitoring and control, to ensure sustainability and efficiency.

The promise of the smart city is that the application of new electronic, digital and other technologies will transform the lives of people in the city, improving the quality of services such as water, energy, waste collection, health care, and education, and strengthening the connection between the local authority and its citizens (Hancke et al., 2013).

As with many ideas, the origins are a little fuzzy. The term 'smart' was taken from the 'smart urbanism' and 'smart growth' movements that were popular in the United States in the 1980s and 1990s[3]. The term, and concept, of the smart city emerged sometime in the 1990s, as the connection was made between urban management and new technologies such as digital sensors, wireless networks and information management algorithms. Initially applications were ad hoc. As Harrison and Donnelly (2011:1) put it "the Smart Cities approach began as a pragmatic, engineering-based attempt to improve the operation of individual urban infrastructure and services". New technologies offer the potential, for example, to provide real-time information about traffic and road conditions, energy consumption and criminal behaviours. This attribute could improve the urban decision responses of both households and state agencies (ibid.).

In fact, in the 1990s, the term 'intelligent cities' was used more frequently than 'smart cities', with Singapore the paradigmatic city for the way in which it had deployed Information and Communication Technology (ICT) (Heng and Low, 1993; Jussawala et al., 1993; Arun and Yap, 2000). In the early 2000s, the concept of the smart city was commonly used in relation to comprehensively planned new cities such as Masdar City in the United Arab Emirates and Songdo outside Seoul in South Korea, which were built around smart grids. However, in relation to the global urbanisation challenge, these high-tech utopias were limited ventures, accommodating fewer than 100 000 people each (Staffansa and Horell, 2014). Nevertheless, on-going research into the broader application of the smart city concept such as in the Brookhaven National Laboratory in New York continued. It concerned both ways in which individual service grids could be integrated to retrofit existing cities, as well as the structure of systems functioning as a whole (Hall et al., 2000). Until 2008, however, references to the smart city were sparse (exceptions including Mahizhnan, 1999 and Shapiro, 2006).

The change came in 2008, the year of the global financial crisis and significantly also the year when IBM launched its Smarter Planet initiative. Anthony Townsend (2013), author of the popular book, Smart Cities: Bid Data, Civic Hackers, and the Quest for a New Utopia, referred to the rise of the smart city approach as "both the result of global economic forces and the culmination of decades of technological progress" (Mathis, 2014). With the financial crisis, large Information and Communications Technology companies faced a marked decline in the spending power of their traditional customers. Yet they beneficially discovered new untapped markets as national governments increased stimulus spending and channelled significant funding through municipal governments (ibid.; Paroutis et al., 2014). IBM was the leader, registering its trademark over the term 'smarter cities' in 2011 (Paroutis et al., 2014; Söderström et al., 2014).

[3] *There are different claimants for the first use of the term.*

In the early 2000s, IBM had moved from hardware design and production to software and consultancy, identifying city governments as a major target for corporate expansion. Effectively, the catalyst for the major shift in corporate strategy was the 2008 crisis (Paroutis et al., 2014). Cisco, Siemens, General Electric and the Chinese company, Huawei developed similar strategies. Supported by these Information and Communications Technology transnationals, a growing number of cities formally adopted smart city strategies. Amsterdam, Cairo, Lyon, Dubai and Seoul are cases in point. In some instances, this modus operandi was actively supported by national urban policies. Malaysia was an early leader but, more recently, India's Prime Minister Narendra Modi announced plans to develop 98 smart cities (The Financial Express, 2016).

There were challenges. The stimulus packages dried up and the transfer of technologies from multinational corporations to local governments proved to be more complex than intended. As Townsend (2013) observes, the realisation of a smart city vision is likely to be more incremental than comprehensively planned and implemented. However, the idea of the smart city was quickly established within urban thinking and practice, and did offer some notable successes, as was the case in the management of traffic and transportation systems.

After a short lag of about a decade, rapid take-up of the smart city concept in academic literature appeared. Examples are Allwinkle and Cruikshank (2011); Deakin (2011); Winters (2011); Batty et al. (2012); Schuurman et al. (2012); Batty (2013); Hancke et al. (2013); Perera et al. (2014); Söderström et al. (2014); and Anthopoulos (2015). Several of the contributions (Batty, 2013; Perera et al., 2014) were technical, dealing with the ways in which new or emergent technologies could be employed in service of the smart city. The original focus of the internet fell on sensors and wireless technologies. Current devices used in the Internet of Things to deal with impact of the explosion of available data, known as 'Big Data', and its storage, complements its initial boost. Significantly, a wave of critical commentary soon followed the debate. Various writers picked up on observations that corporate interests were driving the smart city agenda. The general contention was that the implementation of a high-tech strategy in economically and socially polarised cities could exacerbate the severity of the digital divide that was developing at great speed. Their warning warrants heeding. Furthermore, some scholars (Hollands, 2008; Deakin and Waer, 2011; Söderström et al., 2014) criticise the smart city for being 'technologically reductionist', and for not paying sufficient attention to the relationships, and organisation, required for making the smart city a success.

While critical, these writers did not call for the rejection of the smart city agenda. Hollands (2008:315) set out the framework for a progressive reworking of the smart city:

> First and foremost, progressive smart cities must seriously start with people and the human capital side of the equation, rather than blindly believing that [Information Technology] itself can automatically transform and improve cities….Second, the progressive smart city needs to create a real shift in the balance of power between the use of information technology by business, government, communities and ordinary people who live in cities, as well as seek to balance economic growth with sustainability.

A number of scholars have proposed drawing the smart city concept closer to the ideas of collaborative governance that incorporates the notion of collaborative learning networks in urban innovation (Shapiro, 2006; Deakin and Waer, 2011; Winters, 2011; Allwinckle and Cruickshank, 2011; Caragliu et al., 2011; Paskaleva, 2011; Leydesdorff and Deakin 2011; Nam and Pardo, 2011b). Several salient elements relevant to the urban innovation concept emerge from their work. First, human capital is seen as underpinning the construction of a smart city (Shapiro, 2006; Winters, 2011; Allwinkle and Cruikshank, 2011). Arising this is a strong focus falls on the notion that relationships, networks and social infrastructures allow for learning and knowledge transfer (Deakin and Wear, 2011; Caragliu et al., 2011). Nam and Pardo (2011b:282) endorse this assumption as they claim that the smartness of a city comes from "integration of infrastructures and technology-mediated services, social learning for strengthening human, infrastructure, and governance for institutional improvement and citizen engagement". Leydesdorff and Deakin (2011:53) offer a 'Triple Helix Model' with the smartness coming from the dense networks and interactions between "the intellectual capital of universities, the wealth creation of industries, and the democratic government of civil society".

This discursive preamble brings the smart city closer to the ideas of urban innovation. It is noteworthy that the academic debate is marginal to an agenda that is still powerfully driven by corporate interests. There are only a few instances where this more inclusive and progressive understanding of the smart city is reflected in city practice. Hollands (2008), as an exception, refers to the way in which the City of Brisbane, Australia, offers a smart city agenda concerned with overcoming the digital divide through information access, social inclusion and lifelong learning.

There are, however, some more recent signs of a modification in even the more mainstream applications of the concept. Townsend too suggests that both corporations and city governments are learning the limits of a top down, technocratic process, and now have a better understanding of what corporations are able to offer local government and what aspects of governance technology can really solve. He suggests that this could be leading to a more organic and adaptive conception of the smart city:

> You build an open grid, you allow people to customize the pieces of it that they have jurisdiction over, and you get this fine-grained, resilient, vibrant kind of system with a lot of complexity, as opposed to a very controlled, hierarchical system that's actually fairly brittle when it comes under stress. (Mathis, 2014)

This is in contrast to the initial conceptions of a centrally controlled process which involved, for example, the establishment of Operation Control Rooms (or Intelligent Operation Centres) by IBM in municipalities to provide "integrated maps, online dashboards, customizable reports, multiple analytic algorithms, interactive standard operating procedures and other tools for improved city operations and incident or emergency response" (IBM, 2016). President Obama's Smart City Initiative may also represent a modification of the smart city agenda in the direction of collaborative governance. The opening quote from President Obama in the official Fact Sheet (The White House, 2015) on the initiative is instructive:

> **Every community is different, with different needs and different approaches.** But communities that are making the most progress on these issues have some things in common. They don't look for a single silver bullet; instead they bring together local government and nonprofits and businesses and teachers and parents around a shared goal.

What is the relationship between the smart city and urban innovation?

This is clearly not straightforward as there are different strands of both terms. Moreover, discourse and practice are evolving. In its 'technically reductionist' form the smart city is clearly at odds with conceptions of urban innovation that are informed by ideas of social innovation and collaborative governance. The field is indeed changing; hence it is perhaps best to adopt a 'watching brief'. This will keep open the possibility of the boundaries between the concepts eventually dissolving. Zygiaris (2012:217) argues for the "assembly of all smart city notions into green, interconnected, instrumented, open, integrated, intelligent, and innovating layers" and this may be the direction towards which we are heading. Nam and Pardo (2011a:185) also offer the basis for a confluence, suggesting "a smart city can be considered a contextualized interplay among technological innovation, managerial and organizational innovation, and policy innovation".

Sustainable, resilient, liveable and inclusive cities

The relationships between these ideas and urban innovation are less conceptually difficult than with smart cities, as they do not compete with urban innovation. They are normative ideals and urban innovation is arguably a tool to achieve their realisation. For urban innovation, these concepts raise two critical questions – innovation for what purpose? Innovation for whom?

Mieg (2012) recognises the positive interweaving of the discourses on 'innovation' and 'sustainability'. Rather than being competing threads, innovation may be regarded as a powerful instrument towards greater sustainability. Anguelovski and Carmin (2011) show how cities have embraced the 'new climate agenda' and adopted more innovative means to address challenges of mitigation and adaptation. Similarly, Katz (2015) points out how the COP21 (namely the 21st 'Conference of the Parties' of the countries signed up to the 1992 United Nations Framework on Climate Change) meeting in Paris in December 2015 recognised the significance of cities in producing the innovations needed to address climate change.

Westley (2013) clearly demonstrates that the concepts of social innovation and resilience enhance each other, a line of reasoning that could easily be extended to ideas of urban innovation. A social innovation approach could show how the transformation to resilience may really happen through collaboration between multiple social actors. Moreover, resilience brings a systems approach to thinking about innovation. The United Nations Development Programme (UNDP), together with the Asian Cities Climate Change Resilience Network, launched an Urban Resilience Competition to recognise new and innovative approaches to building urban resilience particularly through broad partnerships that would contribute to inclusive and pro-poor actions (United Nations Development Programme, 2014).

There is an emergent scholarship on how innovation can support greater social inclusivity. Dutz (2007) edited a book for the World Bank entitled Unleashing India's Innovation: Toward Sustainable and Inclusive Growth; George et al. (2012) call for further research on 'inclusive innovation'; while Foster and Heeks (2013) write of modifying Systems of Innovation to support low income households. These are examples in the broader innovation literature of the explicit connections made to the goal of social inclusivity. In the more specific field of urban innovation, social polarisation and exclusion are addressed through the mobilisation and involvement of civil society in the innovation process (Halpern, 2005; Geromeca et al., 2005; Dente et al., 2005).

Having addressed the merit of innovative action, the question that now arises is how to make innovation happen. Capello (2001) recognises that there is considerable variation across cities in the rate and quality of innovation. This suggests that some cities are better able to support innovation than others. Interestingly, even within individual cities, innovation is lumpy, with some districts or neighbourhoods supporting innovation more than others. Katz and Wagner (2014) aptly write about the rise of urban innovation districts.

Making Urban Innovation Happen

Agger and Sørensen (2014:5) put it simply: "to be an innovation a new creative idea must be implemented and gain practical impact". A decade earlier, Landry and Bianchini (1995:20) distinguish between the acts of "creativity" and of "innovation":

Creativity…is the process through which ideas are produced, while innovation is the process through which they are implemented.

A city may be very creative, but may not have the analytical, evaluative and financial skills to develop innovative solutions. Creativity is a necessary precondition for innovation, but innovation is what counts in maximising the potential of a city. Getting from creativity to innovation involves evaluation, which is not in itself part of the creative process. Evaluation involves assessing how appropriate an idea is to a given situation, its feasibility, cost-effectiveness and popularity.

Rather than separating the two concepts as Landry and Bianchini do, we prefer to include creativity as a component of innovation and fully agree that actualisation is a necessary requirement for urban innovation – a notion we will refer to again in the closing chapter. Robinson (2015) suggests the following criteria for recognising urban innovation:

- Measurable and documentable impact
- A positive social impact
- Ability to be replicated in other places
- Ability to make a sustained impact

While stimulating creativity – 'thinking out of the box' – is vital. A considerable challenge is to overcome bureaucratic inertia. Political conservatism often blocks a creative idea from becoming a new practice. Agger and Sørensen (2013:6) put it like this: "we cling on to routines and roles because they signal order and normality, and the disruption of such orders creates uncertainty and fear". They explain that taking an idea from the realm of individual creativity into the public sphere exposes it to contest, conflict, resistance, and osen, to failure. There are, of course, other reasons why creativity is not translated into innovation. Reasons for this vary. Situations that stifle innovation could be, for example, simply be a lack of funding for the takeup of new ideas; inadequate capacity to engage with the requirements of innovation; or a regulatory environment that affects aspects like public procurement and performance management. Verwijnen (1998:142) asks whether "traditional technocratic and bureaucratic planning tools [will] be able to deal with the cultural forces carried by a new wave of urban innovation and creativity". The hard reality is that, for multiple reasons, city governments rarely receive incentives and often lack the capacity to take-up and implement innovation.

How can these constraints be overcome to make innovation the norm within city governance? Fortunately, there are studies that offer valuable pointers. As early as 1995, Landry and Bianchini put forward a 'how to' for urban innovation and their work remains useful, even though contexts vary enormously and there are no silver bullets. Agger and Sørensen (2013) present a positive story, describing how politicians, citizens and bureaucrats in Albertslund municipality in Denmark were brought together in a "transformation journey" in which the "role perceptions and patterns of action" (ibid.:6) of the different actors were fundamentally changed. Collaboration is the vehicle which reduced resistance to change.

Robinson (2015) reports on a study in the United States that explored why some cities do becer with urban innovation than others. Among the reported factors underpinning success are:

- A history of social activism and entrepreneurial activity
- Dynamic leaders
- Partnerships that matter
- A funding environment that seeds, incubates and supports innovative ideas
- Technical assistance and other support infrastructure for urban innovation

Other studies have addressed specific elements for success. Future Cities Catapult, an agency partly funded by the United Kingdom Foreign and Commonwealth Office (Future Cities Catapult, 2014), supports an Urban Innovation Centre in London that provides a discussion space for developing practical strategies for urban innovation; it also offers a range of tailored guidance-based case studies (Urban Innovation Centre, 2015). The UK Capabilities for Urban Innovation report stresses the importance of shining from purely conceptual discussion to identifying the real capabilities required for making urban innovation happen, including the spatial, physical, digital, commercial and social capabilities. Urban Innovation and Investment explores the need for capital mobilisation through financial institutions (Future Cities Catapult, 2014; Future Cities Catapult and Arup, 2014).

Then, there is focus on the people who make things happen. There is now extensive literature, such as the work of Bornstein (2007) on the role of social entrepreneurs, the individuals who produce innovative solutions to social problems. Westley (2013:8) points out "less research has been done, however, on the system entrepreneurs who are responsible for finding the opportunities to leverage innovative ideas for much greater system impact". As Westley explains, the social and system entrepreneurs play different roles at different stages in the innovation cycle. Thus, while people's ideas are necessary, so too are the individuals who are able to systematise innovation within the processes of city governance.

Another key theme is the construction of learning networks across different geographic scales. In local context, these networks are formed through partnerships between and among city and local governments, academic institutions, civil society and business. However, institutional learning also requires more extensive networks that cast a wide net for helpful insights and ideas. Hambleton and Gross (2007) introduce a global dimension by asserting that "those concerned with the future of cities – whether as academics or practitioners, should devote more time to instrumental learning from abroad" (Hambleton and Gross, 2007:224 cited in McKinley, 2009:147).

As a summary of the growing literature, we suggest the following elements that actively support urban innovation:

- Institutions that provide a supportive milieu for innovation by actively incentivising creativity, adopting a problem-solving approach and a learning ethos, and that recognise and support the innovators
- A successful combination of top down and bocom up approaches absorbing incentives and other support from the top down and the ideas generated from the bocom up
- Provision of platforms or spaces for sharing and discussing ideas to promote mutual learning
- Active participation in learning networks at all scale levels, from the local to the transnational
- Capabilities for urban innovation such as those Future Cities Catapult propose
- Institutional relationships that connect the social and system entrepreneurs and, if necessary, bypassing traditional hierarchies
- Reforms to regulatory frameworks that would remove the barriers to innovation
- Funding that would support the transition from created initiatives to implemented innovation
- Experiential feedback that deepens understanding of what the inhibiting and enabling factors are for systematising innovation

Cautionary notes

To institutionalise and systematise innovation within urban governance a suitable degree of critical insight is essential. Recognition that innovation in-and-of-itself is not necessarily positive is a primary prerequisite. The question is always – innovation for what purpose? Is innovation building more inclusive and sustainable cities, or is it merely allowing established interests to maintain their position within an economically challenging context? Secondly, being compelled to produce something new simply for the sake of doing so is not an option. While it is clear that many old practices are failing to make an impact in difficult environments, some established practices remain effective. They may require adaptation or modification rather than replacement. At times, it clearly is better to build on established practices and incrementally improve, rather than substitute.

Thirdly, acknowledgement that innovation happens in a contested terrain implies that there are invariably winners and loser in the process. Two recent technologically-enabled innovations in urban practice provide cases in point. Uber taxis, for example, have improved convenience in daily mobility for tens of thousands of people and have provided thousands of new jobs. Accompanying this innovation is its negative impact on the established taxi industry, thus threatening existing jobs and the livelihoods of many others.

Similarly, Airbnb, although providing new income opportunities for many, in offering travellers more affordable accommodation has affected established guesthouses negatively. A marked decline in occupancy, and other aspects of the hospitality industry, has meant retrenching staff and financial insecurity in the affected locations.

Finally, there is the challenge of context. Innovations may be informed by extensive learning networks but generally arise within a specific geographic context that is conditioned by multiple contextual factors. Of course, an innovation has limited value if it is confined to one context only, therefore transferability and replicability is critically important. However, transferability invariably requires a contextual adaptation. Where this does not happen, innovations may either fail or be counterproductive.

Partnering for Urban Innovation in South Africa

Consistent with international trends, the concept of urban innovation has emerged recently in South African discourse and practice, although South Africa has adopted the wider concept of a National Innovation System. When the National Development Plan (NDP) was prepared in 2011, driven by the National Planning Commission (NPC), the term 'urban innovation' was still not widely known in South Africa. However, multiple references to innovation appear throughout its documentation, specifically where the national research and innovation system (Chapters 9 and spatial transformation (Chapter 8) are dealt with explicitly. The National Development Plan categorically states that:

South African towns and cities must keep up with international innovation in technology, transport and energy production, while local urban innovation systems should be incentivised (Republic of South Africa [RSA], 2011:284).

The plan also proposes a National Spatial Restructuring Fund that would, amongst other things, "incentivise innovations in terms of spatial development" (ibid.:288). There was also reference to the need to promote "innovation capacity and leadership" in relation to spatial development (ibid.:290). Specific forms mentioned are "institutional innovations that may include the regionalisation of planning and service delivery, or at least arrangements that allow for cross-border sharing of planning capacity" (ibid.:291).

Thus, while urban innovation was not a major feature of the National Development Plan, the concept was least present. The idea of urban innovation found its way into South African discourse and practice in other ways too. South Africa has a Centre for Public Service Innovation (CPSI) within the National Department of Public Service and Administration (DPSA). The Centre for Public Service Innovation is engaged in a series of partnerships with agencies such as the Human Sciences Research Council and the Innovation Hub in Pretoria to "inspire the public service to be innovative" (Centre for Public Service Innovation, 2015). While not specifically about urban innovation, the focus on innovation in governance brings its work and that of its partner agencies, into close alignment with the idea of urban innovation. In addition, the South African Cities Network (SACN), an association of the ten largest cities in South Africa, is implementing 'Knowledge Managers' Forums' to facilitate mutual learning and the transfer of innovation. The South African Local Government Association (SALGA), the organisation constitutionally mandated to represent the interests of local government, is exploring forms of municipal funding that would support local innovation. A few of South Africa's larger city governments have formally adopted innovation as a central component of their governance strategy. Most notably, perhaps, is the City of Tshwane that has introduced the Tshwane Innovation Zone to drive a spirit of innovation within the municipality and the wider city (Urban Innovation Partnership, 2016).

In their interactions around the implementation of the National Development Plan, the National Planning Commission and the Gauteng Provincial Government, identified urban innovation as an area of joint interest and potential collaboration. This was reiterated in July 2013 when the Minister in the Presidency for the National Planning Commission and the Premier of Gauteng expressed a commitment to work collaboratively in support of innovation. Engagement with the Gauteng Provincial Government invariably focused on the challenges and possibilities of rapid urban growth, as the Province of Gauteng is the urban heartland of South Africa where urban growth pressure is greatest.

In October 2015, the Department of Planning, Monitoring and Evaluation and Gauteng Provincial Government hosted a special Colloquium on Urban Innovation held in the City of Ekurhuleni. The colloquium was followed by smaller and more focused conversation between role-players within and beyond government. The engagements have helped conceptualise an understanding of urban innovation which provides a platform for a series of other initiatives aimed at making innovation the new norm within city governance in South Africa.

Through these engagements an understanding has evolved of urban innovation as being about a 'pipeline' of producing and applying ideas. Creative ideas must be either generated internally or identified from elsewhere, but innovation cannot simply be about the ideas. It is not just about the 'light-bulb moment'. It must involve implementation with observable impact at a scale sufficient to make a real difference, and in this initiative, in the management of cities. Neither can urban innovation simply be about a collection of creative implemented projects. We must promote the idea of a 'System of Innovation' in cities which aims to normalise the innovative disposition (see Chapter 2 for a discussion on the Systems of Innovation). To achieve this, both the enablers and inhibitors of innovation in city governance must be identified, then the enablers must be systematically strengthened and the inhibitors removed.

A key segment of the pipeline is the evaluation of creative ideas in terms of desirability, feasibility, scalability, replicability, and so forth. The European Union's Urban Innovation Actions offers an interesting example for evaluation by calling for 'super-innovative projects' that meet clear quality standards; are partnership-based; have measurable results; and, offer solutions that are transferable (European Union, 2015). This form of evaluation requires very different skills and aptitudes from the creativity required for generating ideas. Then, there is the implementation segment, which requires the system entrepreneurs who are able to make things happen within the confines of complex institutional, regulatory and political environments. Through partnership across scales of government, and with other actors of governance, we hope to give support in each segment of the pipeline to ensure that creativity is carried forward into meaningful change.

This book

This book is a product of collaboration between the he Department of Planning, Monitoring and Evaluation and Gauteng Provincial Government. It is an attempt to engage conceptually and practically with ideas of urban innovation and is also intended as a way to bring the younger generation into the discussion around urban innovation in South Africa. The Department of Planning, Monitoring and Evaluation made an open call for young researchers to prepare research papers on instances of urban innovation in South Africa or internationally. It was a competitive process and nine young researchers or research partnerships were selected for the task. They were each required to document a case of urban innovation and explore the transferability of the innovation to a South African context. For most researchers this was their first opportunity to prepare material for publication, and the Department of Planning, Monitoring and Evaluation provided support through a mentoring process. The researchers were provided the opportunity to present their case study material at various stages in the research and writing process, including at the Colloquium on Urban Innovation held in October 2015 (Department of Planning, Monitoring and Evaluation and Gauteng Office of the Premier, 2015). There was also a rigorous process of review, editing and revision. The case studies are highly varied and the approach taken to review the submission also differed between researchers.

Chapters 1 and 2 of the book provide a broad frame for the work the young researchers undertook. Chapter 2, prepared by Geci Karuri-Sebina of the South African Cities Network, extends the conceptual framing offered in this chapter. With a focus on urban social innovation, it explains the various ways in which urban innovation has evolved across different regions of the world. Together, these initial chapters provide the context for the descriptive and analytical work of the young researchers.

Chapter 3 by Thembani Mkhize follows this introduction. The eKhaya Neighbourhood City Improvement District in Hillbrow, Johannesburg is identified as innovative practice and the author argues that the success of this initiative is a challenge to academic work that is often critical of regeneration projects in the inner city.

In Chapter 4, Jerome Kaplan considers the Great London Mayor's Housing Covenant exposing the innovative way in which a private sector developer has taken up the opportunities it offers to significantly expand the delivery of affordable urban housing.

In Chapter 5, Bronwyn Kotzen and Samuel Suttner explore the extent to which Cosmo City, a large mixed-income residential development on the edge of Johannesburg, has contributed to post-apartheid urban transformation. They also offer their own innovative evaluation method that accommodates paying attention to the disposition of the residents in addition to the conventional assessment of material benefits.

Drawing on a South African example of design and management, the Diepsloot Memorial Park, a large new cemetery in Johannesburg, Tsepang Leuta in Chapter 6, addresses the vexing question of why an apparently innovative project did not receive the expected uptake and community support.

In Chapter 7, Julia Letang investigates the way in which the San Francisco Commuter Benefits Ordinance of the State of California in the United States of America, incentivises the use of public transport in the city; and evaluates the possibilities for transferring this mechanism to the very different institutional, regulatory and social context of Cape Town in South Africa.

Chapter 8, by Novak and Glanville, draws on experience and international case studies in Costa Rica, Sri Lanka and Egypt to propose an approach to waste management in Hillbrow, Johannesburg, South Africa.

Chapter 9 by Nonjabulo Zondi, explores the Nairobi 'matatus' as an innovative example of paratransit that may be adapted to improve the mobility of the urban poor in South African cities.

In Chapter 10, Adoné Kitching and Chido Muzondo of Isandla Institute in Cape Town consider the possibility of introducing the Civic Academy as a model for enabling and strengthening the participation of communities in urban transformation processes in South Africa.

In Chapter 11, Azra Rajab reports on the proactive responses to the servicing needs of informal settlements.

In Chapter 12, the editors provide a synopsis of the lessons learned from the various case studies. Based on a formula to expand the urban innovation 'pipeline', it considers its composition that comprises the implementation of the creative idea, its initial impact, the replication of the idea and its extended impact. The editors use the findings to frame proposals for further partnerships around urban innovation. The book includes compelling case studies, albeit a small fraction of the many instances of innovative urban activity that exists across the world. They should be regarded as illustrative cases studies that offer insight into the wider process of urban innovation, suggesting not only specific practices that may, or may not, be worthwhile for South African cities. Significantly, they also signal ways in which an innovative institutional milieu could be produced in an array of contexts.

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perspective

noun
a particular attitude towards or way of regarding something; a point of view.

2. EMBEDDING URBAN INNOVATION: PERSPECTIVES, TRENDS AND EXPERIENCES

Geci Karuri-Sebina

Introduction

> Cities are good at generating problems and the city fabric is problem rich… " [but city environments also have a] problem solving nature.
>
> (Johnson, 2008:149,153)

Although urban innovation has not had any discernible, singular origin, definition or theory behind it, it has been emerging globally as a point of reference alongside the rising international interest in issues of cities and urban development. The concurrent interest is not surprising given that cities are increasingly recognised as playing a vital role in the social and economic development of countries (South African Cities Network, 2011; Johnson, 2008).

While the idea that cities are important and are sites of productivity and innovation is not at all new, the first chapter of this book has explained that this has not always been a popular acknowledgement. Otherwise scholarship as far back as the nineteenth century was beginning to think about territorial economic change in certain parts of the world. Alfred Marshall (1890), in his theorising on industrial agglomeration proposed a set of localised advantages of agglomeration that were logistical efficiencies; large and deep labour pools; development of supporting industries; and knowledge spill-overs. The latter really spoke to innovation.

Essentially, cities create the conditions for productivity and growth because the factors of production, like capital and labour in particular, are relatively more available, abundant and efficient than they possibly are elsewhere. Their production structures tend to be more diversified which supports the development of synergies, and thus innovation. This, in turn, encourages a more robust and dynamic economy feeding back into the same system (Johnson, 2008). American writer Jane Jacobs was writing as far back as the 1960s about the importance of diverse trades and crafts in how cities stimulate innovation and economic growth (Jacobs, 1961). Looking beyond the diversity of occupations, competences and social backgrounds that make up cities, the relatively higher wages and tastes of urban populations also create a high and differentiated level of consumer demand, which invites innovation (Hall, 1998).

So cities demonstrate a fairly unique potential to build innovation-driven economies. In their study of innovation and inequality at a regional level, compared to a metropolitan level, Oliveira and Breda-Vazquez (2012) found that, whereas metropolitan regions are clear centres for innovation and creativity, marginalised regions tend to lack the necessary tools to promote innovation and creativity on a large scale. This difference, they found, is primarily due to the power of agglomerations and their influence on innovation, and creativity, in cities.
However, in order for cities to be efficient and productive, they need public and private investment in other enabling framework conditions. These include infrastructure, education and health,improved living conditions, social stability reflected in the reduction of poverty and inequality, public safety, as well as other supporting goods and services. Furthermore, the space and potential of innovation may not always be utilised, and is said to depend on the combination of two particular factors. First, proximity, the physical distances within the urban structure and dense communication networks of well-functioning cities that support interactive learning and innovation; and second, the knowledge of capable and activated human capital (Goldberg, 2006; Johnson, 2008).

Therefore the urban development question primarily concerns how cities can utilise their spatial knowledge and technological systems to recognise and understand their own requirements and challenges. Equally important is for cities to find sustainable solutions through a combination of actors who can assess problems and then develop and implement appropriate solutions. This chapter frames this question within the concept of social innovation, and motivates for a systems perspective on innovation. It then looks to identify instructive international trends and their directions from which South Africa's urban innovation initiative might learn.

Understanding 'Social Innovation'

The previous chapter usefully mapped out a conceptual terrain for thinking about 'innovation'. Indeed, one of the challenges in discussing 'urban' or 'social' innovation is the vagueness with which the term 'innovation' itself is generally used. A fashionable buzzword that has evolved into subjective common-sense usage, the term has grown popularly beyond its scholastic definitions which are typically attributed to economist Joseph Schumpeter (1912), among others. Schumpeter defined innovation quite precisely as consisting of one of the following five phenomena: introduction of a new good; introduction of a new method of production; opening of a new market; conquest of a new source of supply of raw materials or half-manufactured goods; and lastly, implementation of a new form of organisation (Godin, 2008). Schumpeter went further to qualify that innovation necessarily includes an economic dimension to distinguish it from mere invention. This implies that the introduction of novelty had to be coupled with consequential application or adoption. Our popular use of 'innovation' however, has come to mean everything from a general novelty, creativity and invention, to almost any technological application. Even then, the concept is complicated by its wide-ranging applications to various dimensions and levels of economic, societal and organisational studies (Li et al., 2012).

For the purpose of the South African Urban Innovation pilot, the term 'urban innovation' was defined as "the generation and application of new ideas for the management of urban growth to support rising incomes, a better distribution of wealth, enhanced living standards, improved environmental quality and equitable service delivery" (Department of Planning, Monitoring and Evaluation, 2015:2). This definition aligns reasonably to the Schumpeterian definition, and inclines towards what is referred to as 'social innovation' in the literature. Social innovation has to do with how innovation acts as a driver for economic opportunities and performance by shifting the focus from social deficits to social assets. This is done by viewing communities themselves as social agents and industries as a sector (Howaldt and Schwarz, 2010; Adams and Hess, 2010). The focus is thus on the local-scale involvement of actors in a context of specific approaches to innovation that meet the needs of residents. This would include anything from the provision of services for the urban poor, such as water, electricity, sanitation and land, to other higher order pursuits (Ghosh and Kamath, 2012).

Social innovation is also referred to as implying 'inclusive innovation' in that the concept incorporates "innovation *for* the poor as well as innovation *by* the poor" (Johnson and Anderson, 2012:41, emphasis in original). By linking this kind of innovation to Amartya Sen's (1999) popular 'capability approach', these two authors suggest it becomes important to consider the opportunity to apply them to improving human well-being. This is relevant in the context of development. Development theory increasingly refers to the importance of knowledge and learning together with innovation as fundamental processes in development. Considering the opportunity to apply these three cornerstones, through increased job opportunities and productivity, and increased efficiencies, would be beneficial. In this sense, social innovation is seen as having the potential to lead regular people to a better quality of life by engaging a range of societal actors in innovating in relevant ways.

Amanatidou (2014) argues for critical recognition and qualification of a wide range of perspectives on what 'social innovation' might mean, including 'innovation to meet social needs and create new social relationships or collaborations'; 'innovations that are social in both their ends and means'; 'innovations to satisfy social needs of disadvantaged people or communities through helping to develop their capacities'; and 'innovation to develop alternatives to the market-based economy model adopting [social] principles'. She thus problematises the over-simplification of innovation as just being either 'by people' or 'for people'. Rather than a single conceptualisation or theory clearly defining social innovation, it is therefore left to a wide range of potential interpretations that link innovation to societal issues and agency. Li et al. (2012) suggest that social innovation studies enable researchers to "address the need to strengthen human relations in forms of association, collaboration, and cooperation between agents, in order to change the institutional based infrastructure in the circumstances of everyday life" (ibid.:57). This links social innovation back to the Schumpeterian idea that innovation must involve a change in the factors of production, namely inputs, or in the social context, the social systems, to produce new or different products, the outputs, or in the social context, increased well-being.

'Systems of Innovation' Approach

Defining innovation on its own, however, is not sufficient for the purposes of urban or city development. Importantly, innovation is considered to be systemic: it is an innovation system as opposed to merely a series of innovations. It systemically considers the diffusion, absorption and use of innovation (Lundvall, 1992). The 'Systems of Innovation' (or 'innovation systems') approach locates innovation as the result of complex and multiple interactions, for example, flows of technology and information. These interactions include a variety of actors and their environment, producing a virtuous system of networking, learning and collaboration among the multiple actors of the innovation system. These dynamics result in systemic learning and distribute knowledge throughout the system, leading to strengthening developmental capabilities within it (Lundvall, Joseph, Chaminade and Vang, 2009:2-3 as cited in Karuri-Sebina, 2014:3). This approach also considers the framework conditions that represent the overall conditions in the economy, governance, education and infrastructure. These conditions are deemed necessary for innovation systems to function (Karuri-Sebina, 2014). The systems approach enhances the link between innovation and economic development, a strategy belonging to educational institutions, research and development departments, and universities that provide the necessary impetus for innovation and growth (Niosi, 2008).

These are the four distinct contributors to the concept of 'Systems of Innovation' (Lundvall, 1992):

- The distinct role of actors, such as government departments, political structures, companies, academic and research institutions and civil society organisations.
- The nature and types of interaction between the actors.
- The underpinning role of policies and institutions.
- The constituted knowledge bases of the system.

Together, these combine as an innovation system – a dynamic network of public and private sector institutions "whose activities and interactions initiate, import, modify and diffuse new technologies" (Freeman, 1987:1 in Siyanbola et al., 2012:15). Systems of Innovation thus become the actual determinants of the innovation process; they represent all the important economic, social, political, organisational, institutional and other factors that influence the development, dispersal and use of innovation (Edquist, 2010).

Understanding social innovation within the systems of an innovation approach is important for understanding factors that determine the extent to which city growth problems might be solved through the processes and deployment of innovation. In this light, innovation systems are deemed crucial for the economic growth and development of cities (Johnson, 2008), in that they can both increase our appreciation of city dynamics through innovation as a driver of cities; and promote the sustainable development of cities and society as a whole, through cities as drivers of innovation.

Innovation Ecosystems

Innovation systems have been introduced here as the components that make up the system. An important emerging consideration is that of the innovation ecosystem. The innovation ecosystem is a metaphor that draws on the biological sciences to represent the broader environment or dynamic system of complex feedback loops, causal links and flows. Within these, innovation and innovation systems try to achieve an equilibrium sustaining state or are otherwise disabled or destabilised (Jackson 2011; Spruijt 2015). Applied to the subject of urban development, the ecosystem would refer to the innovation system translating into a strong socio-economic force with impact, rather than to a set of projects or interventions. It refers to the range of people, institutions, policies and resources that enable innovation systems (Freeman 1987; Nelson, R. and Nelson, K., 2002; National Science Foundation, 2010; Blowfield and Johnson 2013; Rajab, 2015).

The innovation ecosystem comprises two distinct but interconnected economies: the knowledge economy, which is driven by fundamental research, and the commercial economy, which is driven by the marketplace (Jackson, 2011). The knowledge and commercial economies tend to interact mutually in city economies, as discussed earlier in this chapter. Government plays an important role in linking the two because they typically play a major role in making the fundamental research and development investments from the public purse available (ibid.). Governments also tend to be central actors in the innovation ecosystems because of the different actors. Interests and communication are challenges that need to be coped with in such systems (Durst and Poutanen, 2013).

The innovation ecosystems perspective is important for Africa in getting beyond the discrete incidents of innovation to the systemisation and scaling required to achieve socio-economic transformation (Adesida et al., 2016). This means that beyond innovation and its many facets, and even beyond systemic understanding, creating the overall environment is essential in order for innovation and innovation systems to flourish.

Conditions for Social Innovation in Urban Contexts

It is useful to consider how social innovation, in all its variety, plays out effectively in the story of successful cities. The variety in cities creates the space for innovation, starting with the demand side, expressed in the complex range of key city issues described by Ravetz and Miles (2015):

- Social: housing, health, education, poverty.
- Technical: transport, communications, innovation.
- Economic: local jobs, businesses, investment, regeneration.
- Environmental: energy, water, climate, habitats, waste, pollution.
- Policy: local governance, organisations and networks.

However, having argued that cities are the premier innovative spaces, Johnson (2008) also proposes that not every city is, in fact, innovative. A city needs a combination of specific factors and conditions for urban innovation to happen on the supply side. He proposes that the following are key conditions for innovation to thrive in a city:

- A creative class that drives innovation.
- Certain qualities that attract and keep the creative class in the city
  - Access to good public services
  - Quality public spaces and opportunities for recreation
  - Diversity
  - Potential for higher incomes
  - Political will
- Appropriate institutional capacity.
- An understanding of the process of innovation in a city.
- Policy that supports innovation.
- Developed knowledge infrastructure, especially knowledge institutions and information technology hardware and software (ibid.)

Considering an innovation ecosystems approach, however, it is useful to note that other authors extend the idea of innovation actors in innovation beyond the idea of a privileged 'creative class' and formal knowledge workers. This introduces more inclusive ideas of citizen engagement in co-production and also of informal or 'grassroots' innovation. Beyond traditional notions of university-based research, Forsyth (2007) argues that numerous actors must be involved in the production of knowledge to develop innovative solutions to problems. However, the complex factors involved in developing innovative solutions, in the importance of research in finding these alternatives, and involving a range of actors to do so, are real. Social, economic and design aspects are derived from real-world practice.

It is also useful to recognise though that, while a narrow sense of where the focus of innovation system interventions is on boosting economic growth, a second broad notion also exists, which sees innovation as necessarily anchored in the everyday activities or routines of firms. These relate to procurement, production, human relations and marketing (Johnson and Lundvall, 2000). This broader notion of Systems of Innovation requires a detailed understanding of process and how innovative new ways of doing things in an organisation can ultimately lead to transformation that is development or system orientated, such as in a city.

The distinction is useful when thinking about the potential of the innovation system or an innovation ecosystem to focus on development outcomes and not merely on economic productivity. In the context of urban development, in particular, it invites innovative practices that would address other critical outcomes too, in large fields of endeavour: resource sustainability, poverty alleviation, the provision of quality public goods and services, promoting good governance and transforming the built environment could be treated as ends in, and of, themselves. It thus manages to exceed limited technicist interests in knowledge, learning and developmental capabilities, seeing them instead as fundamental to the kind of transformative development that the developing world requires.

What remains important is that these expanded notions about innovation systems point even more critically to the role of institutional orientation, capacities, policies, arrangements and infrastructures. It is these that support, or enable, the agents and processes of social innovation in cities. This is duly reflected in the key factors identified as constraining Regional, and Local, Innovation Systems (Spruijt, 2015):

- Short-term orientation of politicians, being the 4- or 5-year term-in-office phenomenon.
- Short-term orientation of managers who tend to be career-focused.
- Democracy, which can tend toward less investment in long-term concerns such as innovation and education
- Science not focusing on innovation policy development.
- Bureaucracy.
- Lack of natural resources, although not so much a factor in Africa.
- Corruption.

The Territorial Perspective

Cities are mainly a territorial construct and indeed, innovations systems are generally studied at territorial or spatial levels. Much debate surrounds the relevant levels and ways in which territorial innovation should be theorised, however. They range from industrial districts, to innovation clusters, localised production systems, regional Systems of Innovation, learning regions and a range of others (Moulaert and Sekia, 2003). Irrespective of the specific dimensions applied, Johnson (2008) builds on Marshall's (1890) ideas to suggest that there are four specific place-attributes that tend to support innovation performance in an area.

First, geographical areas with institutional characteristics that lead to frequent, intense and high-quality interactions. Second, are areas with a certain degree of production and trade specialisation. Areas like this are where people and firms have become good at doing certain things and acquired a production and a noteworthy competence profile. Third, areas that have developed knowledge infrastructures and public policy routines with an established organisation and policies that affect learning and innovation, both directly and indirectly. Finally these attributes may also include areas that over time have acquired specific demand characteristics, which to some extent match specialisation pattern and enable different kinds of user-producer interactions.

However, Marshall also recognises that spatially defined territories displaying all these characteristics simultaneously are not easy to find. City states and culturally homogenous nation states may seem to be the obvious candidates, like the Athens and Rome of antiquity, Florence and Venice during the Renaissance, Hong Kong in present times. These were all areas of great creativity and innovation during their golden periods; they were successful and interaction-rich with common cultural traits and strong political powers. These traits enabled them to develop capabilities and institutional frameworks that allowed competencies of different kinds to be combined. They also accepted transactions and intense connections with other regions and countries (Hicks, 1969 in Johnson, 2008).

These seemingly ideal systems, however, clearly did not guarantee sustainability (clearly not so in the case of Rome, for example!). Undoubtedly geographical territory is insufficient as an explanation for their successes. Cities, in fact, often lack the strong political power centre that can form policies that develop uniform interests. Cities instead tend to be places of diversity and contestation, lacking a strong common culture and sense of belonging that could lead citizens to believe that it is necessary to act together. This is not necessarily a hindrance to performance, and emergent logics may in fact assemble complementary interests and interactions. However, the point is that cities may have to combine and balance several characteristics to constitute an efficient innovation system.

According to Johnson and Lehmann (2006) the notion of 'city systems of innovation', or the city as an innovation system, would be a useful complement to existing concepts of territorially-based Systems of Innovation that might over-emphasise the locational aspects. City Systems of Innovation can be a useful tool towards understanding how to solve key urban order problems sustainably through persistent technical, organisational, political and institutional innovation. Relating institutional innovation to the more technical aspects of innovation is important because urban issues very often have strong institutional attributes. Their solution would require, for example, new property rights to land, new regulations, new types of public and political attention, and new ways of thinking about sustainable development, rather than just new technical blueprints or gadgets.

International Trends in Urban Innovation

Urban innovation and innovation systems have evolved in different ways across the different regions of the world. This section provides a snapshot overview of some of the key directions globally as a means to drawing lessons for South Africa. The information and reflections documented draw upon a literature scan, popular trends and on an analysis of the submissions to the Guangzhou Urban Innovation Awards which were initiated in 2012 (Guangzhou Institute for Urban Innovation, 2012-2014). These have since attracted the nomination of hundreds of urban innovation projects in the public domain from over 50 countries around the world. Although the analysis here does not intend to be comprehensive or representative, it offers some insight based on a broader view looking to experiences elsewhere.

Asia: Japan, South Korea, India, China

> Asia is extremely heterogeneous and difficult to discuss as a single region, so this author's review can only highlight some key directions in Asian urban innovation. It will also introduce Guangzhou's urban innovation competition that is used as a proxy for regional trends.

Japan was the flag-bearer of innovation in the 1980s with its famous high-tech innovation and the incredible economic growth that came along with it. Although it has since faced serious challenges economically and, with its ageing population, Japan's industrial successes over the years have also been matched with recognition for its innovative hybrid approaches to development. Strong public-private partnering and a blend of traditional values and systems with modernity in its development and governance models have been a hallmark. Japanese people of today, mere decades after its World War II tragedies, enjoy among the highest quality of life standards in the world. The country is still reputed as having a strong innovation culture on many fronts. Tokyo has been considered a unique and world-class city in recent decades, and its intensive use of urban space and dynamic property market have been studied world-wide.

South Korea has seen a rapid growth trajectory since the 1970s and similarly transformed its economy. It started with industrial development over a transition from a low-wage factor-driven economy, to being a medium wage efficiency-driven economy. Eventually it came into the world-recognised high wage innovation-driven economy (Mazzarol, 2012). Importantly, higher education is identified as having been key in achieving South Korea's innovation progression. Significant investments were made into the sciences even though the functional drivers were mainly technological engineering. What the country appeared to achieve was a balance between effective expedient programmes, while maintaining a series of long-term visions supported by fundamental investments.

Today, South Korea is exemplary in a range of urban innovation areas such as transportation systems and urban farming. It is renowned for developing high-tech urban visions for the ubiquitous city.India has served as a global archetype for social and grassroots innovation. In addition to having a strong formal science and technology system with world-class achievements in several areas, it also has significant offshore corporate research and development undertakings. It also boasts an internationally-renowned medical tourism sector. The series of Indian technological revolutions, the so-called 'green', 'white' and 'blue' revolutions, raised global interest. India is also known for its extensive informal, 'affordable' innovations across a range of domains, the social, economic, environmental and technological. These have arisen from conditions of intense and widespread urban and rural poverty in the country. An example is the impact of non-governmental initiatives, such as the Indian-based Honey Bee Network which aims to "recognise, respect and reward creativity at the grassroots" (Society for Research and Initiatives for Sustainable Technologies and Institutions, 2015), thus acknowledging community-based approaches that are driven by the communities themselves as agents of social change. This happens through people's use of appropriate and low-cost technologies and active participation in an open and inclusive innovation system (ibid.).

Last but not least, the global giant, China. China has only relatively recently driven towards becoming a strong System of Innovation. Having previously focused, and quite effectively so, on innovation through creative adaptation which is essentially copying, in recent years the country is moving towards forging a national innovation policy that adopts an indigenous and systemic approach:

> The nation's economic growth shows an excessive dependence on the consumption of energy and resources, with high associated environmental costs; the economic structure is irrational, characterized by a frail agricultural base and lagging high-tech industry and modern service industry; and firms lack core competitiveness and their economic returns are yet to be improved as a result of weak indigenous innovation capability. There are a whole range of problems concerning employment, distribution, health care, and national security that need prompt solution.
>
> (People's Republic of China, 2006)

As such, China focuses on innovation towards overcoming the country's domestic challenges, rather than the usual concern with international competition and recognition. In addition, while there continues to be a strong central drive towards becoming a national System of Innovation, there are also localised efforts and arrangements to drive regional Systems of Innovation, particularly at the city level. The following section will present the Guangzhou initiative as a brief example of global achievements. It is also worthwhile to recognise the emergence of more globally orientated Chinese cities like Shanghai, and the older and more complicated case of Hong Kong, which may signal another direction for Chinese urban innovation. These examples are more inclined to portray themselves as global cities.

> An important lesson for South Africa from these Asian examples is that, while an innovation systems agenda does not necessarily have to take the lead initially, most transformed economies do two things. Firstly, they adopt a posture that is contextually relevant. They do so for instance by adopting an internal focus, recognising diffuse and informal innovation, and leveraging cultural advantages. Secondly, they evolve into a focus on building innovation systems as a long-term and committed project.

China: Guangzhou Award for Urban Innovation

The existence of the Guangzhou Urban Innovation Awards programme itself is indicative of the scale of focus and ambition that China has regarding urban innovation at a sub-national level. The South China city of Guangzhou is the capital of Guangdong Province, and is reported to have in excess of 7 million inhabitants. Driven by pressure to be innovative and competitive, the city embarked upon what is probably now the most internationally representative urban innovation competition.

The awards programme is one that allows the city to invite peers from around the world to document and submit their innovative practices to a technical review and jury process. Through this, international experts select top urban innovation practices according to regional and global standards. In addition to signalling the city's interest in urban innovation locally and globally, the concept puts the city into an advantageous position. It is here where innovative cities around the world willingly share their ideas.

The city essentially has the position and structures in place to scan and scrutinise the best ideas in the world for their own consideration. The Guangzhou Urban Innovation Awards platform has drawn strong participation in its two inaugural rounds (2012 and 2014), in which it attracted a total of over 400 applications from over 150 cities from over 50 countries. The 2014 submissions were simply thematised incrementally, and then clustered, based on key words and application descriptions. Best-fit assignments were based on the researcher's judgement. Where projects covered more than one theme, they were assigned to both as duplication was allowed. The purpose of the exercise was to establish frequency of the themes. An analysis of the Award contestants in the most recent round was conducted by the author of this chapter, to identify patterns in urban innovation trends regionally, as represented by this dataset. In order of frequency, the top themes of the submissions were:

- Environment: issues of ecology, sustainability and biodiversity, climate change, resilience, emissions.
- Governance: city governance and administration, corruption, democratisation and participation.
- Information Systems: information technology systems, data and smart technologies.
- Social issues: family and community-building initiatives.
- [Public] Transport.
- Urban and neighbourhood regeneration.

Other recurring themes which emerged to a lesser extent, were waste management, vulnerable populations, particularly issues of gender and disability, arts, culture and heritage, health, economic issues including poverty, architecture and the built environment, education, emergency services and disaster response, housing and human settlements, safety and security, water, innovation, agriculture and food security, and energy.

The Guangzhou Urban Innovation Awards analysis for Asia shows a main focus on public and Non-Motorised Transport, and on environmental issues, like waste or resources management. Some examples of the Asian submissions that were shortlisted or winners are:

2012

- Ahmedabad, India: Janmarg – Bus Rapid Transit System
- Chiang Rai, Thailand: Urban Ecosystem and Biodiversity Conservation towards Sustainable City and Climate Change Resilience
- Kaohsiung, Taiwan: 1999 Anytime, Anything, Anywhere
- Sakhnin, Israel: TAEQ's (Towns Association for Environmental Quality) Green Building of Sakhnin: Center for Environmental Research and Education
- Seoul, Korea: Healthy Seoul Free from Internet Addiction of Children and Adolescents
- Sylhet, Bangladesh: A Disaster Resilient Future: Mobilizing Communities and Institutions for Effective Risk Reduction

2014

- Abu Dhabi, United Arab Emirates: Tailor-made cutting edge green building system
- Gwangju, Korea: 'Incentivising' households to reduce GHG through devolved targets
- Hangzhou, China: Innovation in a large-scale operation and maintenance of public service delivery
- Jakarta, Indonesia: Engagement of political leadership in pro-poor participatory process
- Kunming, China: Free Bus Service by the Elderly in Kunming
- Phitsanulok, Thailand: Phitsanulok Low Carbon city
- Tel Aviv, Israel: The Tel Aviv-Yafo Municipality Residents Club – 'Digitel'

Europe: European Union

The Guangzhou Urban Innovation Awards analysis showed European applications to mainly focus on three broad areas: smart cities; climate programmes, green programmes and emissions; and projects in participatory governance. Some of the leading projects were:

2012

- Bristol, United Kingdom: Bristol's Big Green Week - Inspiring Change, Europe's Biggest Festival of Sustainability.
- Düsseldorf, Germany: Development Concept for the South-eastern Inner Suburbs (EKISO or 'Entwicklungsgebiet Innenstadt Süd-Ost') – Joint Action for a Strong Local Community.
- Kocaeli, Turkey: Prepare Before It's Too Late: Learn To Live With Earthquake
- Perm, Russia: 'Transforming the City' – Perm Strategic Masterplan and the Implementation Engine of the Transition from Industrial City to the Liberal Creative Community.
- Salerno, Italy: Sustainable energy now.
- Tallinn, Republic of Estonia: Free Public Transport in Tallinn – A Brave Step towards the Green Capital.
- Vienna, Austria: Start Wien – A Programme for New Migrants to Help Them Settle In and Facilitate Their Integration in Vienna.

2014

- Bremen, Germany: Liveable streets, liveable city!
- Bristol, United Kingdom: Citizen-centric approach to the Smart city.
- Eskisehir, Turkey: Eskisehir City Memory Museum.
- Hamburg, Germany: Socially-inclusive approach to building a zero-carbon district.
- Linköping, Sweden: Long-term consensus driven alignment for attaining carbon neutrality.
- Malmo, Sweden: Climate Smart Hyllie.
- Sabadell, Spain: Sabadell smart city as a catalyst for building the city of the future.

European institutions have been driving policies and programmes to foster innovation in the European Union since as far back as 1972 when the Union agreed to collaborate in the area of industrial policy. Thirty years of continual innovation programming has thus reinforced the building of Regional Innovation Systems, developed innovation strategies, and also resourced and funded the implementation of their innovation policies (Rosanis, 2011).

The European Commission's Framework Programme (FP) has furthermore been instrumental in stimulating and funding intense European Union research cooperation for their research and innovation programmes since 1984, currently in an eighth cycle. This programme aims "to stimulate cooperation and improve links between industry and research within a transnational framework" (WelcomeEurope, 2016). It has identified and driven specific priority themes that are likely to somewhat define the focus in a large-scale innovation focus. Importantly, the Framework Programme (FP4, FP5, FP6 and FP7) included specific programmes with an urban or city focus. Both environment, with climate change, and Information and Communication Technologies have also had continued focus. As such, the urban innovation programmes and the results achieved through this concerted drive are attributable to the focused capacity of institutional funding and backing. The drive given to particular themes reflects agreed common European Union priority issues. In some cases, it would also appear to have stimulated, or perhaps mirrored, commercially-driven innovation at small and large scales. Evident from a scan of the internet, are a vast number of companies in the space of smart city technology, renewable energy and energy efficiency, habitat models and similar businesses.

A main thrust in Europe has been the importance of the use of Information and Communications Technology in modern urban development as a way of increasing the competiveness of a city and improving quality of life for citizens (Paskaleva, 2011). Europe has also been a lead experimenter with the so-called 'Living Labs' approaches (Van der Walt, 2009). 'Livings Labs' are collaborative programmes involving numerous stakeholders to develop solutions and solve problems, serving as a base for experimentation where new ideas and concepts can be tested. They also work towards the transfer of technology across different domains, trying to address issues of a similar nature in a different community (ibid.).

Latin America: Brazil, Colombia

In the Guangzhou Urban Innovation Awards analysis, South America emerged as having applications that mainly concentrated on social programmes, safety programmes, mainly crime and disaster response, and Information and Communications Technology and big data initiatives. Some of the leading projects were:

2012

- Aguascalientes, Mexico: The Green Line: Social Development Comprehensive Plan.
- Buenos Aires: Public Participation in Commune 8.
- Curitiba, Brazil: The Green Areas of Curitiba – linking environmental preservation to urban development.
- Medellin, Colombia: Medellin Digital.
- Mexico City, Mexico: Support for Social Participation in Action for the Conservation and Restoration of Ecosystems.

2014

- Antioquia, Colombia: Knitting regional territory through innovation in education
- Bogotá, Colombia: Zero Waste Program: a focus in reuse with social inclusion
- Buenos Aires, Argentina: Dialogue for decision making for urban projects
- Porto Alegre, Brazil: Datapoa – the open data project of the City of Porto Alegre
- Recife, Brazil: Recife, part for life – urban safety management)
- Rio de Janeiro, Brazil: Using big data for integrated risk management and action
- São Paulo, Brazil: State Program for Prevention of Natural Disaster and Mitigation of Geohazards

There is unlikely to be an urban development practitioner in the early 21st century who does not recognise the cases of Bogotá (Colombia) and Curitiba (Brazil) as popular urban innovation legends in the areas of urban governance and public transportation systems; or Medellin (Colombia) for its famed achievements in urban safety and community development; and its Metrocable, using sky technology for public transportation; or Brazil's 'Lula Moment', a notable period where the country not only achieved growth but also significant reductions in poverty and inequality over the first decade of the century. In formal terms, Brazil has been the leading champion of innovation in the region, having driven towards a national System of Innovation since its 2007-2010 Action Plan for Science, Technology and Innovation. This initiative had set specific funding targets and was committed to articulating science, technology and innovation in industrial policy. This evolved into the Greater Brazil Plan 2011-2014, which intended to counter de-industrialisation by restructuring Brazil's industrial base so as to develop endogenous, high-productivity industrial capacity (Cypher, 2013).

The rest of the region has long been considered to have weak innovation systems, and it is only in the past decade that the region's innovation performance has been considered as moderately improving (Rosanis, 2011; Alcorta and Peres, 1998). However, Latin America also has a rich history of social movements and dynamic, if volatile, leadership. It has often enabled home-grown experimentation and solution-building, backed with political, popular and institutional support, including international development assistance.

Brazil and Mexico, the two largest markets in the region, have both had a significant commercial focus on big data and analytics, driven by the need for resource optimization and process efficiencies. Following their big northern neighbour, the United States of America, with its teeming technology and applications, the region seems poised to leverage the big data trend towards urban and social innovation. Notably, it is being driven by emerging trends in the region of start-ups influenced by increasing consumer empowerment and social awareness as well as administrations that seem relatively open to creative experimentation and co-production.

From the Latin America case, South Africa may wish to consider:

- The characteristics of urban leaders and managers, as well as their governance and administrative systems, which can enable innovation to thrive.
- How to unleash and leverage the creative potential of communities for urban innovation through grassroots innovation and co-production.
- How new and emerging technologies can be harnessed towards addressing local developmental needs, and not just commercial opportunities.

North America

The balance of the regions applying to the Guangzhou Urban Innovation Awards (Africa, North America and Oceania) had relatively few applications, totalling less than 10% of total applications. They were therefore too small a sample, covering too wide a range of themes, for generalising any trends.

For North America, the leading projects were:

2012

- Vancouver, Canada: Visionary Vancouver: Creating a welcoming and sustainable place for all.

2014

- Boston, United States of America: Empowering youth through participatory budgeting.
- Dubuque, United States of America: Smarter Sustainable Dubuque.
- Ottawa, Canada: Ottawa's Innovative Spirit: Transforming an economy through diversification and entrepreneurship.
- Vancouver, Canada: West End Community Plan.

The United States of America is probably the most renowned region of the world for innovation, having had a proven ability and track record to give birth to whole new range of industries over a relatively short history. Examples include innovations in steel, logistics, electricity, food, financial systems, Information Technology (IT), warfare, corporate structure, governance, and so forth. Somewhat reflective of this, the American submissions to Guangzhou awards were, while few, interesting hybrids of public and private involvement, and most with a strong local focus.

Being home to firms like IBM, Apple and Google, the United States of America is world-renowned as possibly the most fertile innovation ecosystem, pushing the boundaries of innovation at industrial and international levels. It generally has both an institutionalised, corporate and university-based, and a diffuse innovation base comprising Small and Medium Micro-Enterprises (SMMEs), households and individuals. Here, innovation really seems to be anyone's and everybody's business. Significantly, the systems of governance and administration are also driven to innovate and to partner with any other public or private actors to continuously solve, modernise and advance.

To give but one example of the United States of America's active pursuit of innovation, American cities are recognised as the best sources for government innovation (Centre for an Urban Future, 2013). New York City Mayors like Rudy Giuliani and Michael Bloomberg are world-recognised for the stream of innovative practices and policies introduced during their terms. Over the years, the city has studied local and international innovative policies and models that could be used to address challenges faced by their own complex city.

Canada has been a role-model for the South African public service in various ways and, while often overshadowed by the United States of America in terms of innovation, it has seemingly been considered the better benchmark for South Africa on the level of values and context (as evidenced by policy influence in sectors such as finance and planning). Canadian governments have, for many years, recognised the need for and the value of social innovation in achieving development in a context of democracy and diversity. Toronto is hailed as one of the most socially innovative and sustainable cities in the world. It is an achievement credited in no small part to the city's "passionate, creative and energetic" (The Innovation Lab, 2102) public service, and the contributions of research, business and civic actors. Importantly, Canada has a long history of active civil society that serves as a useful source and repository of development knowledge and innovation.

From the North American case, South Africa may wish to consider questions such as:

- How an innovation ecosystem can be actively enabled so as to have a steady flow of supply and diffusion of innovation in the society
- How the full National Systems of Innovation (NSI) can be activated to contribute towards urban innovation practice and activism; this could be achieved by leveraging investments made into research and educational institutions and the public science councils, while activating civil society as key contributors to urban innovation

Africa and Innovation Systems for Development

It is important to understand South Africa's urban innovation story within the challenges and opportunities of its broader context, as they are likely to be interconnected. Several continental plans and strategies, such as The Consolidated [Africa] Plan of Action, Africa Vision 2050 and Africa Agenda 2063, clearly depict Africa's aspirations. As a continent, Africa hopes to have greater food security, eradicated poverty and greater access to efficient energy sources. It seeks to be protective of its natural resources, adaptive to climate change, competitive in its economic endeavours, integrated in the digital age, peaceful and populated with healthy and skilled individuals. While these goals are progressively being translated to the city-level (United Cities and Local Governments of Africa, 2015), it is also acknowledged that it would take both political will, and effective, inclusive innovation systems to achieve these lofty goals (Kraemer-Mbula et al., 2014).

The continent is complex and sometimes contradictory. ***"Africa today is home to inventors and entrepreneurs, high- and low- end technological innovation, tinkerers and dreamers… Poverty, inadequate social services, poor infrastructure, low agricultural productivity, preventable diseases, limited sanitation and clean water also characterize the continent"*** (Adesida et al., 2016:8). African innovation systems remain largely dysfunctional: innovators struggle to find investors, investors struggle to find suitable incentives and programmes; community members struggle to find suitable research outputs; and all around innovation has failed to scale up to its transformative potential at a societal level thus far (Africa Innovation Summit, 2014; Adesida and Karuri-Sebina, 2013).

It has been said that, while there exists a level of capability and innovation that is indeed taking place in Africa to some degree, the region's innovation systems are not fully developed for several reasons. Reference is made to the need for robust policy frameworks and more dynamic and effective institutions supporting innovation and entrepreneurship (Adesida et al., 2016). More fundamentally, scholars have argued for alternative conceptual frameworks to neo-classical economic theory to understand and engage with the problems and challenges of persistent underdevelopment in Africa. Indeed, the innovation systems approach is considered to have significant potential in this regard. Learning case studies across Africa have been used to suggest that Africa can indeed extend beyond discrete and random innovation events and islands to fostering more systemic innovation (ibid.). Southern Africa, Cape Verde, Kenya, Nigeria, Ghana, Egypt and Algeria offer cases in point.

An Africa Innovation Summit held in 2014 concluded that African countries would need to deliberately and decisively act to develop and nurture their innovation systems. These are the key propositions made (Africa Innovation Summit, 2014:71):

- Get and maintain the basics in place: Build the critical mass needed of skills, financing, productivity, and appropriate governance. Also have explicit and contextually relevant National Systems of Innovation (NSI) policies, and Science, Technology and Industry agendas.

- Align key systems to achieve the virtuous cycle: Get the politics, policies, programmes, platforms, people and partnerships right. Ensure that national development agendas are pro-innovation, stakeholders are moving in the same direction, and encourage demand-led innovation.

- Scarcity requires that we be resourceful and responsive: Be creative in using scarce resources, funding, core competencies, and talent. Leverage all available knowledge resources, build home-grown solutions, learn from others, and be very creative in building towards endogenous innovation systems that are robust, efficient and productive.

- Promote experimentation: Build systems that encourage trial and error in order to build knowledge and insight.

- Learning and collaboration: Create platforms to promote and invest in quality education and research; new approaches to learning for today's 'networked/knowledge economy'; standards and systems of accreditation; collaboration within and between educational institutions and industry; and regional collaboration and cooperation in building innovation systems.

- Everyone must be engaged: Recognise that government, industry, academia and communities must play critical roles. Within each of the groups, it is important to have 'creative entrepreneurs' that forge and promote the necessary disruptions to stimulate innovation.

Table 2.1 (below) outlines the high-level roles identified.

Table 2.1: Roles for various National Systems Innovation actors

GOVERNMENT	ACADEMIA	PRIVATE SECTOR	COMMUNITIES
• Political will and alignment of intent and action • Policy experimentation • Commitment to evidence based policy • Long-term vision and consistency • Horizontal coordination and policy coherence • Promote social innovation and address barriers to entry	• Demand-driven education and research • New types of scientists that understand social needs. Inter- and trans-disciplinarity • Creative innovations and reforms in the education and research systems • Collaboration and learning without boundaries (using Information and Communication Technologies, regional collaboration, mobility, diaspora)	• Identify and nurture entrepreneurship from an early stage • Mentor and coach • Align skill formation to business needs • Identify and pursue social impact markets • Recognise non-technology and non-research-and-development-based innovation • Brokerage across innovation cycle • Bridge the gap to the market • Promote value chain upgrading and integration	• Be active actors for innovation; raise awareness and capacity to articulate • Creative approaches for knowledge appropriation and open innovation • Communication strategies for the dissemination of research and innovation achievements • Support ”learning communities” or learning platforms

Source: Africa Innovation Summit (2014)

Lessons and Conclusions

> Government does have a role to play in providing the people and the infrastructure to ensure that nations and regions have the knowledge and creativity they need to compete, along with the capacity to generate new knowledge, ideas and innovations for the future.
>
> (Michael Goldberg, 2006:648)

This review of the scholarship and international experiences reinforces the message that, beyond a technology bias, achieving effective and systemic innovation is largely an institutional issue. For innovation to be developmental, rather than discrete and ephemeral in South Africa, requires a two-pronged approach: first, a systems view of innovation that considers the key elements and actors, in conjunction with an innovation ecosystem perspective that recognises the environment for innovation; and second, policy regimes and institutional support to deal with barriers. Taking the city context into consideration, it is necessary to recognise the important roles of various actors in the urban innovation system. Effective Systems of Innovation are not just about individual innovators, or about government actors or levels, or only industry. It is about all of these and more. A systems perspective would require considering opportunities for effective partnering and co-production, rather than assuming a top-down, 'delivery-to-client' posture.

As cities are indeed problem rich, urban innovation can look locally for demand, grounding, and inspiration to solve problems and leverage opportunities. However, an important city-level lesson seems to be that cities also need to look out and go beyond their limits to be effective and sustainable as innovation systems. For example, the system may have to look regionally, or even globally, to fully explore relevant linkages, scope for competition or application, as well as understand scalability.

Generally, the following points summarise key institutional influences that might positively enable urban innovation in South Africa (Spruijt, 2015):

- Smart infrastructure, hard and soft.
- Decent quality of life with labour quality, housing and leisure amenities.
- Cosmopolitanism in the form of attractiveness for highly educated personnel, a world-wide reputation, a good atmosphere, a shared purpose, highly motivated people.
- Talented human capital.
- A creative cultural environment, attracting and exploiting personal talent, while reinforcing community culture.
- Trust, which promotes knowledge sharing.
- Identity, with individual members sharing a sense of purpose with the collective.
- Diversity, and recognising that knowledge diversity stimulates creativity and innovativeness of the actors in the network.

Specifically, and considering the South African pilot innovation programme and the lessons learnt from this chapter, these points should be borne in mind:

- The discrete innovations need to be connected to an innovation system. What national and local systems exist and where do these innovations connect to them? It will thus be necessary to consider inter-governmental issues and ownership at national, provincial and local levels, as well as the roles of other actors, the private sector, civil society and academe, in relation to the effective diffusion and uptake of the innovations.
- The challenges to effective innovation are often institutional, and therefore the question arises of how conditions involving the infrastructure, the regulatory environment and other support and capabilities regarding facilitation, flexibility and experimentation will be ensured, or deployed, to enable and extend the innovations.
- Where there are systemic or thematic issues, a high intensity of innovation support is likely to be required in the form of large-scale, multi-year funding for networked teams and collaborations. This requires a strategic and sustained, long-term perspective on supporting innovation, and not just an episodic approach .

These are three useful issues to keep in mind as each innovation project is reviewed. Indeed, South Africa has only recently started to focus on its urban innovation potential, and in a general context of economic constraints and social pressures. It will be important to beneficiate and learn from our experiences as we journey along.

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urban innovation

adjective

urban innovation as a break from common practice to develop longlasting transformations in communities, neighbourhoods, and cities.

3. URBAN CRIME AND GRIME: LESSONS FROM HILLBROW'S EKHAYA RESIDENTIAL CITY IMPROVEMENT DISTRICT

Thembani Mkhize

Introduction

This chapter challenges two perceptions prevalent in popular writing and imagery seen in recent twenty-first century academic literature. The first is the grim portrayal of Johannesburg's post-apartheid inner city as a haven for crime and grime, as well as a site of failed development initiatives, fraught with stakeholder relations (Mpe, 2003; Winkler, 2013; media productions such as the popular television 'soapie', Yizo Yizo 3 (2003) and the film Jerusalema (2008)). The second is the idea that designated 'improvement districts' are inherently exclusionary and undemocratic as urban regeneration tools, invariably giving voice to property owners at the expense of others (Schaller and Modan, 2005; Paasche, 2013). In challenging these perceptions, the eKhaya Residential City Improvement District is presented as an example of positive innovation in urban governance as a City Improvement District (CID). These are known as Business Improvement Districts (BIDs) and Residential CIDs in American cities. As a formal South African initiative, the improvement district model has achieved a significant degree of success in building a local community through simultaneously reducing levels of crime, grime and physical regeneration and addressing social marginalisation.

The spotlight falls on Hillbrow, which is a mainly residential high-rise, high-density part of inner city Johannesburg that is notoriously ridden with grime and prone to crime. Yet, Hillbrow is now the location of eKhaya, the first participatory, socially-driven Residential CID in Johannesburg and in all of South Africa (City of Johannesburg [COJ], 2008; Johannesburg Housing Company, 2010a; b). As an innovative community-led response to urban disorder, eKhaya is still an unusual case. By researching and documenting this case study, the value of the inclusivity of improvement districts and other urban regeneration efforts in Johannesburg comes to the fore. The chapter seeks to focus largely on eKhaya's creative elements that make it an effective instrument for both urban management and fighting crime in Hillbrow. As will be explained, it is the "social ingredient" (Adler, Pers. Comm., 2013) of eKhaya that distinguishes the eKhaya precinct from many other less innovative cases of improvement districts, and which positions eKhaya as a possible exemplar for other places.

First, a brief account of the research design, and its noted limitations, introduces the research questions and methods used to expand on earlier work (Mkhize, T., 2014) that provoked other insights worth exploring. A review of literature on the different responses to urban crime and grime in different urban settings follows, with a discussion on the role of improvement districts and mention of the shortfalls noted in the literature. As a focal theme of this chapter the case of eKhaya, and the neighbourhood within which it is housed, is descriptively illustrated and assessed. Its success in tackling crime and grime is addressed through a socially inclusive approach. Finally, the chapter reflects on the extent to which eKhaya could be enhanced and, particularly, on the innovative approaches that could be replicated in other inner city contexts.

Research Design

For this project, identifying and focusing on eKhaya's critical success factors was a priority, in particular, exploring the extent to which these success factors could be further improved in the quest to counter crime and grime in Hillbrow. Equally important was whether they could be reproduced in other inner cities elsewhere in South Africa, or other parts of the Johannesburg inner city, where similar challenges are evident. The following sub-questions guided the investigation:

- What are eKhaya's critical anti-crime and anti-grime features and principles?
- To what extent are these principles in line with the policy instruments at local, provincial and national level?
- With which local, provincial, national and international community-led initiatives is eKhaya affiliated?
- What can eKhaya learn from the principles of other community-led initiatives in the quest to prevent crime and grime?
- How can local state institutions be more proactive in helping to tackle crime and grime in eKhaya and Hillbrow?
- How can eKhaya's critical success factors then be replicated in similar inner city contexts in South Africa?

The concern of this in-depth study was to identify the principles evident in the eKhaya neighbourhood and to establish the extent to which they could be adapted and replicated in other South African areas. Research was concentrated on eKhaya South, where initiatives to create an improvement district were established a fairly long time ago. That eKhaya has recently extended towards the northern parts of Hillbrow (Figure 3.1), is acknowledged with interest in this work. The research involved an array of data collection methods associated with its qualitative approach (Cresswell, 2009), which is appropriate for this particular case study. In particular, the following were useful:

- Documentation review
- Semi structured, open-ended interviews
- Direct observation
- Participant observation
- Photography

Figure 3.1: eKhaya clusters relative to Hillbrow proper

Source: Housing Development Agency (2012:4)
(since its inception, eKhaya has expanded and/or been replicated to northern parts of Hillbrow)

A desktop study began the process and involved a review of different types of documents: policies (mostly national, provincial and local safety policies); journals; book chapters; and reports. The review of the different documents yielded a wealth of information with these outcomes:

- Academic literature (journal articles and book chapters) revealed specific knowledge and current discourse on matters such as urban safety, social inclusion in inner city regeneration, and the use of City Improvement Districts (CIDs) in particular.
- Reports on the background, establishment and history of eKhaya, which included old and recent online newspaper editorials and features on the City of Johannesburg (COJ) website, familiarised me with the context of eKhaya and provided pointers towards the critical success features of this initiative.
- National, provincial and local reports on community safety included the draft Integrated Urban Development Framework (RSA, 2014), the new Draft White Paper on Safety and Security (RSA, 2014), the Gauteng Safety Strategy (Gauteng Provincial Government, 2015), and the Joburg Safety Strategy (COJ, 2007). An analysis of these reports explicated the relationship between eKhaya and official policy on safety.

Interviewees included the two coordinators of eKhaya whom I accompanied during the course of their everyday activities – Ms. Josie Adler (founder and former coordinator) and Ms. Bafikile Mkhize (current coordinator). Other interviewees were the sector manager of the Hillbrow Police Station, and one representative of Bad Boy'z Security (the private security service and cleaning provider in eKhaya). This chapter also draws, in part, on material from interviews with housing managers in eKhaya conducted for previous research for a master's dissertation (Mkhize, T., 2014). Housing managers play an important role in the eKhaya community as they pass information on to, and liaise with, tenants in the buildings and other players such as coordinators of the precinct initiative. I also had the privilege of attending and taking part in some of eKhaya's activities, the monthly walkabout and the eKhaya Soccer Day, where study-relevant notes were diarised and triangulated with data from other sources. However, the research procedure had its limitations and difficulties. There were some key meetings that I was unable to attend. This included, for example, meetings of the Community Policing Forum (CPF) which I was not informed of, apparently due to a suspicion that I was a journalist and not a researcher.

Established Knowledge

There is extensive international literature on inner city regeneration and the politics of taking part in community safety-related initiatives, including significant literature on Johannesburg itself. There is also a growing number of works on CIDs as a creative response to crime and grime that together make for an unfavourable living environment. It is impossible to do justice to all of this in one chapter, but I have drawn selectively on scholarship that illustrates general key themes in extant literature.

Literature on community safety points to types of interventions that can improve levels of safety, from the general, like the chapter by Crawford and Evans (2012) in a recently published criminology handbook; or following on from Oscar Newman's early classic, Defensible Space: Crime Prevention through Urban Design (Newman, 1972), to the specific circumstance or location. In contexts of a marked social divide, such as is the case in Latin America and South Africa, a prominent theme concerns actions to counter crime and grime that have been socially exclusionary. Scholars have focused on the materialisation and proliferation of the so-called urban fortresses (Landman and Schönteich, 2002:71); and gated residential communities, and suburban road closures comprising heavy security measures to repel non-residents as new spatial features of defensive urbanism (Landman, 2004:6). These features are common on the edges of Sao Paolo and Johannesburg (Landman and Schönteich, 2002:71; ibid; Murray, 2004; Landman and Schönteich, 2002; Landman, 2012; Dirsuweit, 2014; Vigneswaran, 2010).

Although urban developments that contain visible, well-secured properties are more often than not legitimised by the fear of crime, another point of view is that owners seek to make their properties unaffordable for those perceived as threats to safety. The assumption is that lower class people are criminals. The fear of crime is thus sometimes used as a façade disguising residents' self-interest in a bid to raise property values. By so doing, the middle- and upper-classes may deflect the urban poor, the perceived threats to "the surrounding pregnable neighbourhoods... [that] often fall prey to much of the crime that is pushed their way, causing a concomitant

drop in property values" (Murray, 2004:152). From this has emerged a form of 'NIMBYism' (Murray, 2004; Landman, 2012), which is an acronym for 'Not In My Backyard'. This concept refers to a phenomenon that entails middle- and upper-income residents' strong opposition to developments perceived as threats to property value increases in their own neighbourhoods. Yet, they do not object to similar developments elsewhere. Needless to say, urban scholarship in the developing world has critiqued urban developments that deliberately make it impossible for those with lower incomes to purchase a home. Apart from significantly contributing to urban sprawl, this action of inflating house prices in certain areas also leads to greater exclusion and marginalisation of the poor. While literature on this issue tends to paint a vivid picture of responses to crime that are exclusionary, it is almost entirely a critique of well-off residents', or corporate property owners', responses to crime as exerting stress on, and excluding, the less well-off urban dwellers. Very little reference, if any, is made to the positive question of how the issue of crime can be addressed while being more inclusionary and proposing the creation of more integrated cities.

Whilst some urban researchers are preoccupied with the well-to-do residents' retreat from urban life as a response to fear of crime and grime in South African cities; others choose to look at mechanisms that residents in deprived neighbourhoods have devised (Gossman and Premo 2012; Dirsuweit 2014). Argues Dirsuweit, contrary to the commonly held notion(s) that fear of crime is "a white, middle- and upper-income concern" (Dirsuweit, 2014:549) perpetrated by black and disadvantaged citizens (Murray, 2004); the fear of crime is possibly most pronounced within black and/or low-income communities, especially those living in inner city neighbourhoods. Correspondingly, Murray (2004:158) points out that "violent crime affects South Africans of all backgrounds and colours, especially black urban residents, most of whom do not live in gated communities with 24-hour armed response teams." This effectively implies that fear of crime in the urban context is a pervasive issue. In the light of the possibility that fear of crime is more pronounced in disadvantaged communities, a probe into how such communities cope with this fear becomes crucial.

Gossman and Premo (2012), and Dirsuweit (2014) observe that against the backdrop of limited public security measures, poor urban residents' fear of crime has translated into some of them taking the law into their own hands. This has come about via drastic, punitive, violent and equally criminal measures in the form of vigilante activism - 'mob justice' - that claims lives. The result is a situation of fighting crime with crime. Although Community Policing Forums, in their capacity as constitutionally mandated anti-crime partnerships between communities and the police, have "often [been] touted as a panacea to vigilantism and fear in poorer areas" (Dirsuweit, 2014:550) like Hillbrow; "the private security firms, however,... are cited as the most effective force in security response" (Gossman and Premo, 2012:11). This is largely attributable to the lack of professionalism of some members of Community Policing Forums and the South African Police Service (SAPS), and the perceived (and real) lack of respect for some residents of diverse communities (Gossmann and Premo, 2012) of which Hillbrow is a good example.

An instance of this lack of professionalism and respect is the harassment of foreign nationals, legal and undocumented, based on the stereotype that they are all perpetrators of crime and disorder. Dirsuweit (2014:550) also chastises the Community Policing Forum as seen in the following excerpt:

> … the [Community Policing Forum] model has proven to be problematic, with [Community Policing Forums] in some cases becoming vigilante movements where trust in the police partnership has broken down. In other cases [Community Policing Forums] have reinforced inequalities, with those in poorer areas struggling to access resources and social capital to function effectively.

The dire crime situation in such neighbourhoods has been aggravated by the involvement of law enforcers and functionaries in criminal activities (Pillay, 2013). This seems to be the case in Johannesburg's most stressed and disparaged urban neighbourhood, Hillbrow. There have been allegations by some Hillbrow community members that some leaders of the area's Community Policing Forum are deeply connected to criminal activities and syndicates (ibid.). Hillbrow Police Station, despite being "one of the stations that [are] doing very well in terms of crime prevention in the [Gauteng] province" (Nathi Mthethwa, the former Minister of Police as cited in Pillay, 2013), continues to be plagued by allegations of police corruption (ibid.). Indeed, although Hillbrow's reported crime statistics have dropped significantly over the years, especially when tested against Gauteng's and South Africa's average crime statistics, drug-related crimes in the area are still higher than national and provincial averages (ibid.; Quest Research Services, 2010). This may justify scholars' and community residents' perception of Hillbrow as an area "where the cops do the work for drug lords" (ibid.). Given that community safety in the modern-day context "needs contributions from different role-players, not only the police... [and is] a cross-cutting issue that includes everyone" (South African Cities Network, 2014:8), it becomes imperative to research the extent to which community-driven development initiatives concerning violence and corruption, as occurs in eKhaya, may work innovatively with the local state and other stakeholders to counter crime and grime.

"Since governing institutions with wider authority [are] fail[ing] to meet citizen needs" (Nelson, 2007) in inner city areas, citizens in such neighbourhoods "are increasingly taking matters into their own hands at the most decentralised levels possible" (ibid.). One of the ways in which citizens have taken the initiative to change their neighbourhoods for the better – thus demonstrating their agency - has been through the formation of improvement districts in their respective neighbourhoods (Hoyt and Goppal-Agge, 2007; Nelson, 2007).

Improvement districts are geographical areas within which property owners pay an additional tax or levy to fund projects within the area's boundaries (Ward, 2007). As a new form of urban management for the improvement of derelict Inner City areas, improvement districts are now seen as a powerful strategy on the road back to prosperity for economically-distressed city sections (Mkhize, T., 2014). They were first established in North American cities like Toronto and New York as a counter-response to urban crime and grime in the 1970s, and are now used all over the world as a tool for urban regeneration in a neoliberalising world (internationalised). Interestingly, they have been 'creolised' and 'internalised' – they have specific terminologies in different geographies, and have been locally adapted to contexts, issues and actors (Brenner and Theodore, 2002; Peyroux, 2006; 2007). In South Africa, for instance, CIDs are by law implemented only after 51% of the property owners within a designated area have given consent for CID approval; unlike the situation in Germany, where only 30% of the property owners have to give consent (COJ, 2008; Friesecke and Lockemann, 2008). The improvement district model can thus be perceived as what Peyroux et al. (2012:111) refer to as "a travelling concept", with replicable features in South African cities (Didier et al., 2012).

Predominantly, improvement districts occupy business areas via generating multi-year revenue through a compulsory assessment on local businesses and/or property owners (ibid.; Samson, 2007; Morgan, 2011). They are usually approved by city councils in line with improvement district by-laws or national and provincial statutes; and are "intended to add to or enhance municipal services" (Samson 2007:128) such as waste collection and security within defined boundaries. This implies that private bodies are "[p]aying for the public life" (Levy 2001:124). Paasche (2012:260) argues that by so doing, "[t]hese private bodies pursue a neoliberal agenda that facilitates consumption, which is the goal of many urban renewal programmes." Indeed, it is well-documented in research on improvement districts that they are a privatised tool for the management of inclusive enclaves or decaying residential parts of the city that still hold potential for investment (Ward, 2007; Lloyd et al., 2003; Morgan, 2011; Kreutz, 2009; Lippert, 2010; Lippert, 2012; Hoyt and Goppal-Agge, 2007; Ellen et al., 2007). Against the backdrop of urban challenges such as crime, grime and disinvestment, improvement districts are seen to "bring wit, imagination, and entrepreneurial skills to the provision of public services" (Hoyt and Gopal-Agge, 2007:956). They are also recognised as a "creative response to suburbanisation" (Levy, 2001:124). Such interventions have led to transformed public spaces, revitalised properties and enhanced levels of safety. This is accomplished via security patrols and technologies in formerly run-down localities globally (Ward, 2007). The success of improvement districts in business has allowed for the concept to be carried through to the residential neighbourhood level (Schaller and Modan, 2005; Friesecke and Lockemann, 2008; COJ, 2008).

Research on CIDs has generated much global discussion. Debates have been raging about CIDs' exclusionary, undemocratic nature (Peyroux, 2007; Miraftab, 2007) against their ability to channel much-needed private monthly levies to contribute to urban regeneration and safety in areas such as Johannesburg's inner city. Nelson (2007) hails the improvement district model for having enhanced the notion of "sublocal governance" (ibid.) by giving property owners a voice in urban decisions that affect them collectively. However, the improvement

district model is also being slated for "concentrat[ing] power in a narrow set of actors, primarily property owners and secondarily business owners... [thereby] reinforc[ing] political constellations that further exclude traditionally marginalised low-income residents and small businesses" (Schaller and Modan, 2005:405). This is a justifiable concern since "tenants are not allowed to vote" (Friesecke and Lockemann, 2008; Dube, 2009) in the decision-making process of CIDs.

Moreover, improvement districts are said to have adopted a "revanchist" (Paasche, 2012:260; emphasis in the original) stance towards citizens who are considered a nuisance in CID space – hawkers, loiterers, displaced people and the mentally ill (Miraftab, 2008). Measures are put in place to retaliate in some way to recover what they see as a loss of their territory. Given South Africa's fascist history which, in essence, excluded some racial groups from the city, the CID model is said to be reifying the apartheid logic (Scott, 2003; Peyroux, 2006; Miraftab, 2007; Paasche, 2013). CIDs in South Africa have thus been criticised for covertly "perpetuat[ing] the apartheid spatiality, shifting the bases of urban exclusion from race to class" (Miraftab, 2007:603). Their policy ensures that the "exclusionary socio-spatial relationship is [blurred and]... governed innovatively through a multi-actor matrix that is not only flexible but permeable" (ibid.:603). Critics of CIDs have thus argued for a conception of CIDs as Privately Owned Public Open Spaces (POPOS) – a form of social control and/or spatial governmentality - which has had a negative impact on citizenship, democracy and the public realm (Schaller and Modan, 2005; Miraftab, 2007; Dube, 2009).

In so far as research on CIDs has spurned many debates, it has largely been silent on the everyday governance of these CIDs as well as their participatory nature. Particularly overlooked in research on CIDs is the extent to which a sense of community is fostered among the allegedly disempowered (those without property). Given that the various stakeholders without property operate in CID territory, their incorporation in the governance and management of everyday urban issues such as crime and grime in the territory is warranted. Neglect of this issue would give the impression that those without property are completely nameless, faceless and voiceless when decisions affecting them in CIDs, and other urban improvement initiatives, are made and carried out. Such neglect could also lead to misleading thinking that all improvement districts are the same. This discourse contributes to filling this void by exploring a somewhat under-researched terrain associated with urban improvement districts (Mkhize, T., 2014). Using the case of eKhaya, the study seeks to demonstrate the possibility and extent to which the 'disempowered' are empowered in improvement districts, especially in the mitigation of collective urban issues such as crime and grime in unsavoury residential environments.

Innovative Approaches against Urban Grime and Crime: Lessons from eKhaya

There was 24 hour shooting in Hillbrow. And the place stank! I used to put gloves on and lavender in my nose to go into Hillbrow. It was foul! The tar of the street was eaten by this acid foulness [...] The relationship between the City and the landlords was gone, the relationship between the landlords and tenants was gone, and tenants were victims, they were not tenants. The governance in the buildings was bad news.

I've said that landlords were bad, tenants were bad, tenants were victims, the landlords were aggressive - it was an absolute nightmare! And I stood and watched all this, and got a packet with a dirty Pampers in… it hit me on the side of the cheek [...] And you're looking at the only person you'll ever meet who's been peed on from the 2nd floor of a building […] because there was a hijacked building that I wanted to have a look at, and I look up and then there's this guy urinating […] Well, if these property owners hadn't acted, the guns would still be firing there 24/7 (Adler, Pers. Comm., 2013).

There is sizeable academic literature depicting Hillbrow as an embodiment of inner city Johannesburg's physical, economic and socio-spatial degeneration, bedlam as well as failed management (Morris, 1999; Swilling, 2003; Lipietz, 2004; Winkler, 2008; Gossman and Premo, 2012; Winkler, 2013). A premier 'reception area' for many new migrants into Johannesburg, Hillbrow is culturally vibrant and is one of the most densely populated neighbourhoods in Africa (Peron, 2002). What makes Hillbrow area a 'neighbourhood of strangers' is the proliferation of people from different walks of life. Scholars reference the predominantly high-rise neighbourhood as an area that has significantly metamorphosed for the worst over the last three decades. The claim is that it has transitioned from a prosperous whites-only area in the early 1970s to a grey area from the 1980s onwards (Gossmann and Premo, 2012:5). Hillbrow is caricatured by overpopulation, property hijacking, illegal landlordism and illegal sub-tenancy, homicides, landlord-tenant tensions and run-down buildings (Morris, 1999; Gossmann and Premo, 2012; Winkler, 2013). Indeed, Hillbrow is portrayed in the media and popular culture as "Johannesburg's high-crime hotspot and a haven for drug lords, prostitutes... gangsters" (Independent Online, 2002) and the "crime capital of the world" (Jerusalema, 2008); and is thus perceived as a violent no-go zone.

A staggering number of atrocities are reported weekly in Hillbrow, among them the property hijacking-related "murder[s] of three guys... in the Florence Building [in 2012]" (Witbooi, 2012:45) and the fatal death of a police officer in a shooting in 2012 (South African Press Association, 2012). These endorse perceptions of Hillbrow as a 'haven' for crime that is unsafe for women and children especially (Ndaba, 2012). Not only that, Hillbrow has for many years been infamous for its "'trashing culture' (throwing rubbish onto the streets). This culture is extremely widespread in Hillbrow and perceived to contribute to crime and violence by degrading the neighbourhood (Gossmann and Premo, 2012:20). The area has been notorious for becoming a 'danger zone' during festive seasons, largely because of "its dangerous New Year's Eve bashes, where fridges, televisions and couches would be thrown out of flatland windows, endangering lives [of pedestrians] and causing chaos" (COJ, 2012). The ubiquity of social ills and disorder in Hillbrow has consequently solicited the branding of this neighbourhood as "Hellbrow" (Independent Online, 2002; South African Press Association, 2002; Coggin, 2009) and "Prostitution Hill" (Richter, 2010), a play on the name of Constitution Hill which is a few metres away.

In academic literature, there appears to be general pessimism regarding innovative ways of thwarting crime and effecting positive change in Hillbrow and inner city Johannesburg (Lipietz, 2004; Winkler, 2013). Scholars maintain that Johannesburg inner city residents do not find it feasible to work together in Hillbrow. Lipietz (2004:11) writes that "attempts to engage with 'civil society' in order to devise more inclusive neighbourhood-based approaches to dealing with the urban environment, have shown to be highly frustrating more often than not, leading to numerous dead-ends." This may be true when considering the fact that "[t]he inner city is a domain that few want to belong to or establish roots in" (Simone, 2004:425). Hillbrow's 'hyper-fluidity', its context of impermanence, transience, multiple belonging and survivalist arrangements, is likely to ultimately render any type of formal urban management arrangement doomed (ibid). Yet, in this hyper-fluidity, there are still micro-local structures of power that generate, maintain and reproduce local forms of order and inequality in Hillbrow. Simone has studied this around urban residents' modes of survival in the Johannesburg inner city (ibid.); Winkler (2008) around Faith-Based Organisations (FBOs); and Bénit-Gbaffou (2014) around local leaders.

Despite the suburb's close proximity to the Hillbrow Police Station and the COJ offices, Gossmann and Premo (2012:6) draw attention to Hillbrow's "qualitative, intangible distance from the state … [lack of] constant communication with the government … [and] an ephemeral police presence" in the area. These two factors are cited as significant contributors to crime, grime, disinvestment and the redlining of the area (Morris, 1999; Grossmann and Premo, 2012). Winkler (2013) has lamented that Johannesburg's inner city will never regenerate through top-down regeneration initiatives that are insensitive to the inner city's socio-politico-economic context (ibid.). An example is Constitution Hill, a Local Economic Development (LED) initiative that, socio-economically, has done little-to-nothing for Hillbrow residents (ibid.). Winkler (2013:309) points out that "neighbourhood change in Hillbrow … is shaped by situated histories, politics and economics, in addition to the activities of diverse local actors". As a result, Hillbrow's problems can only be addressed if Hillbrow's different stakeholders are closely incorporated in context-sensitive initiatives (ibid.). While scholars focusing on Hillbrow are beginning to tackle its dynamics and their implications for community development, research still has not yet adequately addressed the productive and inclusive bottom-up approaches that facilitate social cohesion and mitigate urban pressures too, particularly crime and grime in inner city Johannesburg. This case study demonstrates that eKhaya, a community-based urban renewal initiative, is an innovative organisation that has adapted to Hillbrow's complex challenges in a very significant and decisive manner.

Introducing eKhaya

Can you see the isolation, anonymity, the police not working, the police not being trusted, the governance systems not operating? You've got a no-go area! And it's absolutely intolerable to have a no-go area in the middle of a South African city, isn't it? It's quite unacceptable! You've got to break it! And you're not going to break it by having meetings on the 10th floors of Metropolitan Offices, in a democracy. And we're not going to have a one man one policeman ever again, which is what we were all begging for. So you start establishing relationships, and not with whom you choose based on the Old Boy Clubs of who's got money and access to Old Mutual for investment money. It's just based on who is there, and on people choosing what their issues are (Adler, Pers. Comm., 2013).

eKhaya is a CID of a particular sort. While most CIDs in Johannesburg have been established in business precincts, in the historical Central Business District (CBD) and places like Rosebank and Sandton, eKhaya, meaning 'at home', is a Residential CID that is "reclaiming the streets and buildings of Hillbrow, one step at a time" (COJ, 2012) with the broad objective of "making Hillbrow a liveable neighbourhood" (ibid.). In 2004, the Johannesburg Housing Company consultant and community organiser, Ms. Josie Adler, initiated the organisation of the precinct. This happened in collaboration with Hillbrow property owners, their property caretakers, security and cleaning service providers, residents and the COJ's agencies. This was seven years after the promulgation of the Gauteng City Improvement Districts Act of 1997, and four years before the COJ approved of CIDs in residential areas. Indeed, the concept of Residential CIDs is a relatively new phenomenon in South African cities; and while eKhaya is not the first Residential CID in inner city Johannesburg, it is nevertheless widely hailed as "the first of its kind in a high-density, predominantly residential, inner city neighbourhood" (Johannesburg Housing Company, 2010a; b).

Morphologically speaking, eKhaya is different from other CIDs and Residential CIDs in four ways. Firstly, whereas other CIDs have clearly defined boundaries proclaimed in terms of the Gauteng City Improvement Districts Act (Gauteng Provincial Government, 1997), eKhaya's geographical delimitation has remained indistinct and fluid, until very recently, at least. Secondly, although there appears to be specific demarcation between eKhaya and the whole of Hillbrow (see Figure 3.1), where eKhaya 'member' buildings forming part of the membership of the Residential CID exist alongside 'non-member' buildings within the demarcated Residential CID area. This was done deliberately and strategically to avoid a sense of 'insiders' and 'outsiders', and forestall resistance. Ms. Adler (Pers. Comm., 2013) explained:

> The most important thing about the CID is not to define it because the minute you make a wall, you're building reaction against the wall. Nobody knows where eKhaya begins and ends, and that's useful. You get jabbed with a knife, not knowing from which building you've been hit; whereas here it's absolutely rigid, you can see that. [...] You can see eKhaya has a funny shape, and that's where the [CID] legislation is not useful.

A third area of difference from other improvement districts is that eKhaya involves more than just physical urban regeneration. There is a very strong emphasis in eKhaya on social cohesion and community building. As reported by the Housing Development Agency (2012:13):

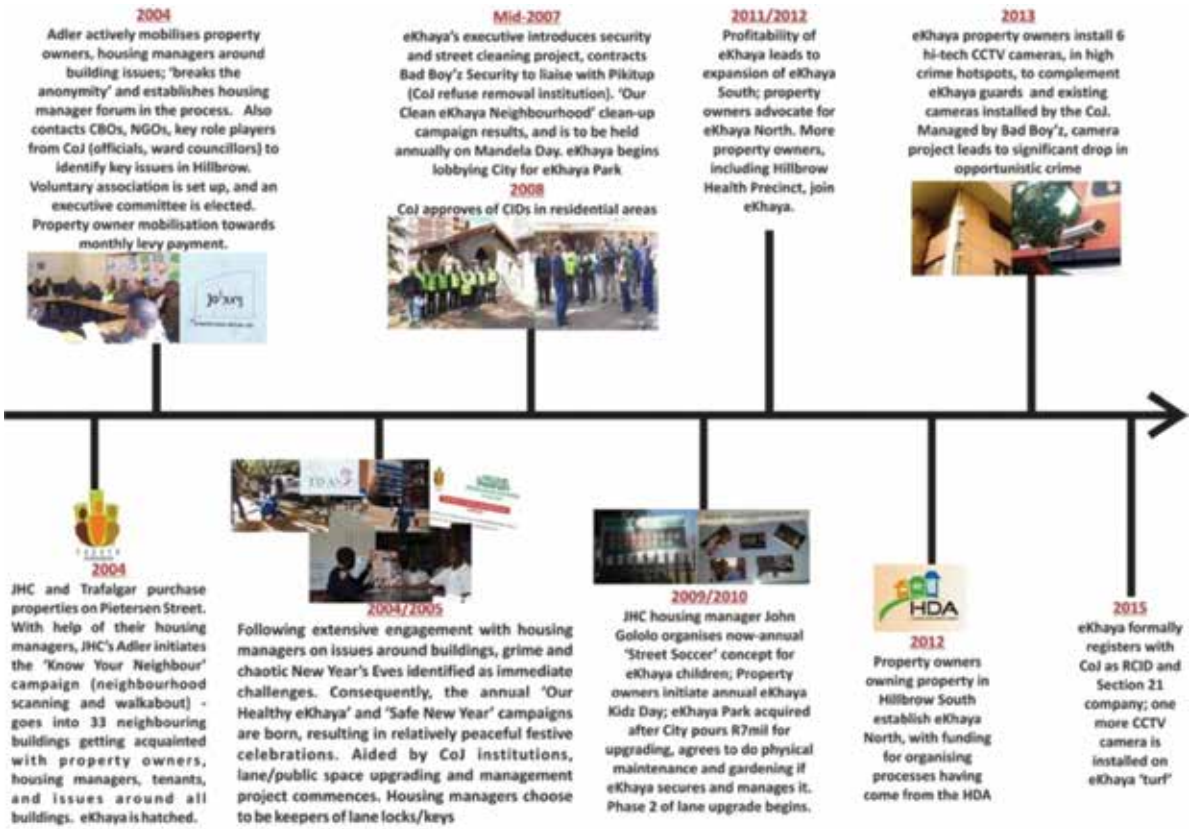
Compared to existing CIDs, eKhaya uses a more bottom-up approach. Initially this has involved organising local stakeholders on a voluntary basis and then involving them in defining priorities and making and implementing the plans to deal with these.

Against the backdrop of CIDs and Residential CIDs co-opting private sector actors and shutting out the urban poor, eKhaya sees social cohesion and/or social capital as "the sine qua non for a healthy city" (eKhaya Neighbourhood, 2009). In fact, Ms. Adler (Pers. Comm., 2013), in her narrative about eKhaya and the change it ushered into the Hillbrow suburb, constantly contrasts the Residential CID with its Berea counterpart, 'Legae la rona', meaning 'our place' (COJ, 2012). According to Ms. Adler (Pers. Comm., 2013), Legae la rona has not had the same success as eKhaya in counteracting crime and grime as it has not fully incorporated the social cohesion component into its operationalisation. This then gives the impression that social regeneration is as critical a factor to eKhaya's success as physical regeneration.

A fourth, and meaningful, point of difference is that eKhaya developed initially on an informal and voluntary basis. Unlike other CIDs, it was not formally proclaimed in terms of the Act, and not registered with the COJ as a CID until 2015. The eKhaya directors had vowed that they would only register the precinct as a formal CID and establish eKhaya as a Section 21 company, if the COJ modified its policy on CIDs in two respects: first, to include social factors; and second, to amend voting provisions for sectional title buildings (Housing Development Agency, 2012). The eKhaya management also 'bargained' with the local state for services and amenities in Hillbrow. This quintessentially suggests that eKhaya is, and has been, complying with the local state's directives while also attempting to reconfigure, and perhaps challenge, the laws emanating from the COJ vis-à-vis CIDs. "[I]n so doing, [eKhaya] is helping to redefine forms of implementing CIDs that require policy consideration by municipalities" (ibid.:14,28). Here, it becomes clear that solutions to urban problems cannot only be devised by bureaucrats at the top, but can also be generated by actors on the ground. This, to a great extent, begins to point to the presence of innovation in eKhaya.

As the overarching principle of progress in eKhaya, social capital is reportedly engrained in each and every eKhaya project and activity. This is achieved through building networks and relationships among different eKhaya stakeholders and the residents themselves, the actors on the ground (COJ, 2013) (see also Figure 3.2). According to the current eKhaya coordinator, social cohesion and the spirit of Ubuntu (Mkhize, Pers. Comm., 2013; 2015) inform the three other brand values of safety, cleanliness and friendliness encapsulated in the area's operational endeavours. These are the values that enable eKhaya to position itself as a "[n]eighbourhood … [that has] destroyed the perception of Hillbrow as a no-go violent zone" (eKhaya Neighbourhood, 2009). These three principles are discussed in the three sections that follow, and further principles are deciphered from an analysis of the manner in which eKhaya's approach has been operationalised.

Figure 3.2: Chronology of eKhaya



Source: Author's formulation, most images from Housing Development Agency (2012) and eKhaya Neighbourhood (2009) (timeline chronicling the evolution of eKhaya's socially-driven projects and activity and outlining the different roles of active stakeholders)

Safety: eyes on the street, internal surveillance and 'networked policing'

Improving levels of safety is a key objective of eKhaya and, by all accounts, it appears to have been successful. The Housing Development Agency points out the eKhaya Neighbourhood Association has silenced cynics and surpassed the expectations of sceptics, such as the COJ's officials, with its success (Housing Development Agency, 2012:18).

In effect, eKhaya grew from "the inability of state agencies to manage some key functions in the area" (ibid.). Since its inception, eKhaya's reclamation of Hillbrow and transformation of the area into a liveable neighbourhood have taken many forms, among them physical transformation. Physical transformation has involved the purchase of run-down abandoned buildings in Hillbrow and their refurbishment into beautiful, colourful social housing apartment blocks (Housing Development Agency, 2012). Active in this process have been institutes, such as the Johannesburg Housing Company, Trafalgar, and Connaught Properties (Photograph 3.1 below) (ibid.). Given the gravity of issues presented by abandoned buildings in Hillbrow, their susceptibility to being 'invaded' by building hijackers who usually do not manage them and do not pay rates to the City (Witbooi, 2012); the purchase of property by Social Housing Institutions (SHIs) such as the Johannesburg Housing Company has positive implications for the COJ. By this, I mean that the COJ is a largely self-funding city whose revenue is heavily reliant on property taxes and tariffs (Lipietz, 2004). In response to the crime and grime for which Hillbrow is notorious, the eKhaya precinct is now characterised by viable street furniture. This furniture includes upgraded and paved sidewalks that have conducive, functional lighting, cleaned-up, sanitary lanes, and state-of-the-art Closed-Circuit Television (CCTV) surveillance cameras evident in public space. Important too is the surveillance of eKhaya street patrollers (Photograph 3.1 to Photograph 3.4,).

The COJ's institutions, the Johannesburg Development Agency and the Johannesburg Road Agency, are responsible for the upgrade of alleys or lanes between buildings, street lights and pavements in the eKhaya neighbourhood. Endless lobbying on eKhaya's behalf has made this possible. The eKhaya housing managers are responsible for the everyday management of these alleys that are kept locked with the managers in charge of the keys.

Photograph 3.1:
Clean and safe passage in eKhaya

Source: Photographs from author's fieldwork (2013, 2015) (eKhaya comprises renovated buildings alongside functional paving and lighting; which ensures that pedestrians and residents in the area are guided along clean and well-lit routes at night)

Photograph 3.2:
eKhaya 'Before' and 'After'

Source: COJ (2011) (prior to eKhaya's inception, garbage-filled alleys were the order of the day in most of Hillbrow)

Photograph 3.3:
'Spot the difference' – eKhaya and elsewhere in Hillbrow

Source: Photographs from author's fieldwork (2013,2015) (nowadays it is easy to distinguish an eKhaya member building from a non-member building in Hillbrow as eKhaya member buildings' environs are characterised by upgraded public amenities and alleys)

Photograph 3.4:
'Surveillance society' in eKhaya

Source: Photographs by author, fieldwork in 2013 and 2015 (eKhaya's public and private spaces comprise hi-tech surveillance technologies that monitor illicit conduct

Interestingly, there has been some scepticism surrounding the use of surveillance in managing urban space and the effectiveness of the Closed-Circuit Television system in the prevention of crime in areas with many high-rise buildings, such as Hillbrow. One of the sceptics, Leggett (2003:21-22, as cited in Minnaar, 2007:196), points out that:

In the inner city context [of Johannesburg] [sic] in particular, preventing crime through [Closed-Circuit Television] would be limited in its potential, as most of the population at any given time is situated vertically, in high-rise apartment … blocks […] Many of these buildings have concrete overhangs that shield the sidewalk from view. Hawkers use umbrellas to shade their stands and trees shade many areas. Coverage is therefore incomplete, and it would not be difficult for habitual criminals to adjust their behaviour accordingly.

However, perhaps in response to these concerns, these cameras, according to the eKhaya coordinator, have been placed strategically in areas perceived as criminal hotspots within the eKhaya precinct. It is noteworthy that their number has increased from six in 2013 to seven in 2015. Before their installation, the COJ, in association with Business Against Crime South Africa (BACSA) – had already installed the hi-tech cameras in public areas of inner city areas such as Hillbrow, Braamfontein and Newtown (Minnaar, 2007). Interestingly, while the COJ (2015) officials credit their cameras for the 80% drop in crime in inner city areas, Quest Research Services (2013:52) suggest that the cameras in Hillbrow were dysfunctional and "nothing was being done by the authorities to repair [them] or even install additional cameras, contrary to the notion that Hillbrow is a priority police station." Thus, eKhaya's desire to "catch every activity" (Mkhize, Pers. Comm., 2015), coupled with the absence of eKhaya guards at night, motivated eKhaya property owners to have cameras installed in eKhaya. Bad Boy'z Security, the private security service provider, manages the cameras. According to the eKhaya coordinator (Adler, Pers. Comm., 2013), their response to crime is experienced as being quicker than that of the police. More interestingly, the camera sub-project took over three years to materialise as the public was worried that the installation of the cameras would lead to a displacement of the eKhaya street patrollers (COJ, 2013). "Nobody wanted to lose the guards of the street because they are an integral part of the social arrangement of the neighbourhood" (Adler, Pers. Comm., 2013).

Nonetheless, discussions with the housing managers, and narratives of how misbehaving criminals were caught on camera revealed that the eKhaya Closed-Circuit Television cameras and street patrollers are effective. Furthermore, eKhaya, via lobbying and mediating for years with the City, ultimately managed to acquire a once unsightly, drug- and rubble-infested brownfield site. The site was reclaimed and upgraded into a beautiful recreational space for eKhaya children, and was named eKhaya Park (Photograph 3.5 below).

According to all the respondents, the street patrols and Closed-Circuit Television have had significant and positive impacts. For instance, the Hillbrow sector manager recalled the days before 2004 when it was difficult to patrol in Hillbrow because some "criminals used to shoot at police vans from windows of hijacked buildings" (Mohloana, Pers. Comm., 2015). In agreement, eKhaya housing managers attested to the effect that eKhaya has had on Hillbrow itself.

Photograph 3.5: eKhaya Park, success story

Source: Photographs by author, fieldwork in 2013 and 2015 (after years of lobbying with the City, eKhaya Park, a brownfield development, was born and plays a pivotal nodal role for eKhaya residents' children)

For instance, Mr. Mkhwanazi (Pers. Comm., 2013) had the following to say: *Hillbrow has changed, especially in terms of crime. Crime has dropped, man. I'm not saying that there is no more crime but I am saying the crime is not like it was before. The thing is we didn't have eKhaya security guards patrolling, you understand? Especially here in Hillbrow, you could not walk around casually, but now it is so much better [...]It was really dangerous, it was bad but now it really is much better. I mean there is still a lot of bad stuff happening but it is not like before because before it was bad.*

In agreement, Mr. Letsoalo (Pers. Comm., 2013) said: *You know, before this eKhaya Neighbourhood, this Josie Adler lady whatever? […] Yes! So the time before she started this eKhaya thing; it was tough, boss! It was terrible before! You wouldn't walk here whether it's during the day or it's during the night. In the night it was even worse; you wouldn't walk with a cell-phone in the street... In the corner you would hear screams there! They were just robbing. But nowadays you can walk at 2 o'clock in the morning; they won't rob you because there's cameras all over the show here, and they're linked to one another!*

Like Mr. Letsoalo (Pers. Comm., 2013), housing manager, Ms. Morrison (Pers. Comm., 2013) replied in the affirmative by stating the following: *Hillbrow? Totally! It's changed quite a lot, especially now when eKhaya Neighbourhood has been established. We work together with cops like [the South African Police Service]; and even the Bad Boy'z security…. You see Bad Boy'z is actually running the whole of Hillbrow. They've got lots of security guards and so when people do snatch people's bags and phones, they caught up with them, they called the cops and they get them arrested and they get case numbers, and that's how it goes. Now crime is very low since eKhaya because Neighbourhood guards are patrolling the streets and so on; it's quite very safe now, really.*

Leggett's concerns of more than a decade ago (2003 as cited in Minnaar, 2007) thus appear to not apply to the context of eKhaya in light of at the security arrangements that are in place in the precinct. The difference does seem to lie in the street patrollers who monitor illicit conduct in public spaces. This compensates well for the coverage shortcomings of Closed-Circuit Television. Moreover, most eKhaya member buildings and their immediate environs have these cameras, security guards and turnstiles blocking entrances. These then safeguard the security of owners and tenants by ensuring that only they can access their respective buildings. Their visitors gain access by signing in and surrendering identification at the entrance gates; in addition, most eKhaya buildings have a 10h00 pm visitors' curfew (Photograph 3.6) that building managers strictly enforce. In their capacity as residents of the buildings they manage, the eKhaya building managers know who does not live there and who are genuine tenants or owners. They are also responsible for managing social relations within the buildings, and have the authority to restrict homeless persons and undocumented people from accessing the buildings.

Entrance into the area where the buildings' laundry lines are placed, and other communal sections, is under heavy surveillance. This is most probably as a result of theft complaints within the Hillbrow buildings themselves. Most are locked and have Closed-Circuit Television surveillance, which implies that tenants needing access to these areas have to surrender their identification in exchange for keys borrowed from the buildings' security guards. When asked about the impact of the surveillance technologies within the buildings they each govern, all the eKhaya building managers affirmed that the reduction of break-ins and burglaries in their respective buildings can definitely be attributed to the effective technologies that have had a massive positive effect.

It also helps that surveillance within eKhaya is multifaceted. It comprises Bad Boy'z Security patrollers, building managers, building security guards and, to a lesser extent, the Hillbrow sector manager. Accompanying the eKhaya coordinator during a routine visit and interviewing the sector manager, brought to light the fact that eKhaya street patrollers and the Bad Boy'z Security control room operators facilitate the sector manager's job in Hillbrow, particularly in eKhaya. The private security is responsible for identifying offenders via Closed-Circuit Television, after which the South African Police Service's officers apprehend them. This cooperation gives the impression that the sector manager and the private security agents work closely together. However, it is also apparent that the contracted eKhaya security agents seem to be doing more than they need to be doing, which is beneficial and enhances security in eKhaya. eKhaya noticeably favours public-private security arrangements. The South African Police Service only appears to increase its visibility in areas eKhaya identifies as criminal hotspots. Hence, different kinds of human surveillance work as a network.

Photograph 3.6: House Rules for residents and visitors

Source: Photographs from author's fieldwork in 2013 and 2015 (most eKhaya buildings have restricted access and curfews for visitors)

Not only does this show the overarching principle of social capital, it also brings to light the sub-principle of 'networked policing' in eKhaya, which was articulated by Adler (Pers. Comm., 2013) as follows:

Law doesn't make change happen, people make change happen! And policemen don't stop crime, people stop crime! […] When an opportunist snatches a bag … in the past, the security inside the building would see something happening in the street and just watch. But now you've got relational engagement; so the guys in the buildings and the cleaners and the supervisors and there's the few eKhaya security guards … there's immediate engagement and response! And the security guys go to the buildings hourly and clock in; they know each other. The security guards will cross the streets with the young kids. This must have an impact on crime prevention; and that's why I say people stop crime, not police.

eKhaya's networking surveillance system is clearly practically effective. While it may be true that many inner city residents are willing to forgo a level of privacy for safety, it is highly possible that a trade-off has been made and not all residents would want to exchange their safety for their privacy. This observation implies that eKhaya is not necessarily addressing the deeper philosophical questions around surveillance.

While riding through eKhaya with the Hillbrow sector manager, the critical importance of the role the street patrollers in ensuring safety was unmistakeable They worked closely with the stakeholders, especially the Hillbrow sector manager. Enhancing these relationships is evidence that they are totally familiar with the precinct itself. The actuality lies in the mental map they have of the location of problematic buildings and crime hotspots within eKhaya and Hillbrow. However, local street patrollers also have a 'darker side'. While talking about how the patrollers catch the criminals, and how the offenders are dealt with, I came to realise that the eKhaya street patroller interviewed constantly referred to how "they have to be given a bitter taste of their own medicine" (Sibanda, Pers. Comm., 2015) before being handed over to the police. Some eKhaya housing manager respondents shared the notion of heavy-handed security when asked about the measures they take against troublesome tenants in their respective buildings.

They disclosed that they usually 'recruit' the services of Bad Boy'z and building guards to 'solve' the problem. One of the eKhaya building managers (Morrison, Pers. Comm., 2013), expressed this clearly when asked about how she deals with altercations within the building she governs:

Sometimes they [residents] get out of line, and if you take me to that limit, then I will just start and they'll say, "OK, OK, OK" because they know I don't get angry, I don't fight. If you start to be a problem, I'll just look at you like that; you'll get discipline there by the eKhaya guards. They will discipline you, not me! They will really discipline you!

Upon asking the Hillbrow sector manager whether there had been any incidents of beatings imposed on offenders caught misbehaving on eKhaya space, the station commander replied in the negative. He maintained that such community disciplinary measures are now a thing of the past in Hillbrow. Nevertheless, interactions on the ground with policing agents in eKhaya gave the disconcerting impression that although there appears to be stability in the neighbourhood, there still exists "a kind of [punitive] vigilante mentality" (Murray, 2004:154) among some policing agents in eKhaya and Hillbrow.

Cleanliness: ownership and everyday management of spaces, respect for environment

Many of its new residents perceive Hillbrow as "a temporary place of abode: a place to 'land', find your feet, strengthen your networks and, ultimately, move from" (Winkler, 2013:316). Yet, eKhaya's name is interestingly the Nguni equivalent for '[at] home'. However, the motive behind creating this improvement district is, inter alia, to offer people who come to live there a safe and attractive environment and to maintain it. It is thus beneficial for all residents to have a sense of ownership of Hillbrow and other inner city areas where they choose to live. Instilling encouragement for, and participation in, the planned expansion of the eKhaya initiative would facilitate its progress. Thus, eKhaya is: *…about people finding a home in the city… accepting a place and thereby [having] a reciprocal relationship with their environment for which they start to take responsibility. It is therefore this process which over a period of time starts to impact on the environment (Savage and Dodd Architects, 2012:1).*

Moreover, Ms. Adler (Pers. Comm., 2013) stated the following, *For people coming to settle in this neighbourhood, they have found - for the first time - a place where they can reasonably be safe; and that's why I pushed for it to be called eKhaya because it was looking at the person, because that person is not thinking about Hillbrow as home. They've still got a home somewhere in Matatiele in their minds and it's gone, they are not going back there; and even if they are, their children are definitely not!*

In persuading eKhaya residents to take ownership of their own but different spaces and consider staying longer in eKhaya, campaigns that aim to achieve these goals were launched. One of the most important of these crusades is the 'Know Your Neighbour' campaign soon after the conception of the eKhaya precinct, which Ms. Mkhize (Pers. Comm., 2015) described as "one of the greatest social cohesion projects we have ever done."

The concept of this campaign as it relates to the everyday management of internal and external spaces is clarified in this excerpt (Mkhize, Pers. Comm., 2015):

The first thing we introduced was 'Know your Neighbour' because if you know your neighbour, you can share whatever problem that you encounter, you come together, talk about it and come up with a solution. […] We've got lanes that the buildings share – and someone else will be saying, "No, your tenants are the ones throwing rubbish in the lanes, and they are making noise and doing this and that." So, to counter that, we always try to bring housing managers together so that they understand each other and go back to their buildings and then talk to their tenants and tell them, "Please; these are the house rules to follow." So, the housing manager gives them the way to live in the building as well as going outside. And outside the buildings we've got Bad Boy'z in the streets to safeguard our community; and in every street there is a guard to support [the South African Police Service] and [Community Policing Forum]. So, they do security as well as cleaning. So, by doing this, we are suppressing the level of crime in the streets and keeping our Neighbourhood clean and safe, so that our tenants live longer, hence we get profit out of them.

It appears that eKhaya tenants do stay longer, with most eKhaya managers maintaining that their buildings are full and their tenants rarely move out after settling. Correspondingly, the Johannesburg Housing Company (2010a; b) reports that eKhaya is now one of the preferred places of residence for inner city tenants due to the safety and high quality of life in the eKhaya member buildings. Indeed, eKhaya South has become profitable for property owners, as evidenced by the replication and extension of the initiative in the eKhaya North clusters that are encouragingly being sought after (Figure 3.1 on and Figure 3.2).

With regard to housing managers' strategies to combat grime in and around buildings, tactics range from simply conducting meetings to imposing fines on tenants who do not comply with the house rules. It also appears that the life-threatening and rubble-causing New Years' Eve parties that were the norm in Hillbrow have subsided significantly thanks, in a large part, to the 'Safe New Year's Eve campaign. This campaign was achieved via an active mobilisation of eKhaya housing managers around the matter of chaotic holiday celebrations. It culminated in a simple A3-sized poster encouraging eKhaya residents to celebrate their festive season "with respect for each other, the Neighbourhood and the environment" (see Figure 3.2, and Photograph 3.7).

In ensuring peaceful New Year's Eves, eKhaya housing managers work hand-in-hand with the Hillbrow Police Station officials in controlling movement and access within and into the eKhaya member buildings on New Year's Eve. Doing this effectively ensures that building residents cannot get into any building carrying any harmful items. All the housing managers have conducted this campaign annually since 2004, with the result being that New Year's Eve celebrations have been safe ever since. Ms. Adler (Pers. Comm., 2013) proudly remarked that this campaign helped save the Lutheran German Church and the Hillbrow Community Centre from being lost to Johannesburg. This is the valuable lesson to be carried forward from this campaign:

It was absolutely amazing! And it has continued now […] But the lesson I was very surprised with was people are crying out for management and leadership, because there was nothing except a little paper on the wall that said, "We're doing this, this is eKhaya Neighbourhood, and if you're going to do otherwise you choose." It's not rocket science.

Photograph 3.7: The 'original' eKhaya Residential CID

Source: Photographs from author's fieldwork in 2013 and 2015 (an eKhaya 'Safe New Year campaign' poster depicting the buildings and property management companies that comprise the area of focus, in eKhaya South)

A sense of ownership in eKhaya has also been fostered through the 'Our Healthy eKhaya' campaign, a massive clean-up initiative in close association with Pikitup (see Figure 3.1). This entailed the mobilisation of cleaning volunteers from among the residents of both member and non-member buildings within eKhaya. Pikitup supplies cleaning materials, brooms, gloves, trash bags, and eKhaya organises volunteer residents to clean the neighbourhood.

To ensure continuous management and cleanliness of the neighbourhood, eKhaya has monthly walkabouts with the eKhaya housing managers and stakeholders, COJ officials and the ward councillor as welcome participants. Personal observation in some of the walkabouts brought to light that the main intention is to identify and compile a list of management and/or service delivery issues like broken, dysfunctional street lights, uncollected refuse, burst water pipes and any problems around each eKhaya member building. According to Ms. Mkhize (Pers. Comm., 2015), after all the eKhaya housing managers have been consulted, their issues as a collective are then put together in a matrix and sent to Region F that comprises the inner city area of Johannesburg, for the attention of Municipal-Owned Entities and heads of department. The Johannesburg Road Agency (JRA), Pikitup, Joburg Water (JW) and appropriate entities, come and solve the problems. The ward councillor is also invited to the walkabouts "because political heads have a stronger voice to take up the issues" (Mkhize, Pers. Comm., 2015).

According to Ms. Mkhize (Pers. Comm., 2015) and Ms. Adler (Pers. Comm., 2013), the sense of ownership of space appears to have trickled down to residents of hijacked buildings – namely buildings that been 'illegally' occupied or 'managed' – that do not have eKhaya membership. Ms. Adler (Pers. Comm., 2013) narrated a story about how residents of these buildings, inspired by the cleanliness and good management that characterise eKhaya member buildings, are now taking the same kind of initiatives with their own buildings, in spite of the absence of management and security companies. They are renovating them, fixing their broken windows and the security gates. Ms. Mkhize (Pers. Comm., 2013) agreed:

We had one [hijacked building whose residents] used to throw things over the balconies; but through talking to the caretaker, we have now managed to control them; they're no longer doing it. […] We've got quite a number of hijacked buildings in eKhaya; but you cannot realise now because of the outside environment. Before, you could see the hijacked buildings by the area, the dirtiness outside; but those within our area now, the outside is clean, it's only when you get inside the buildings that you can see that this is a hijacked building.

It is clear that building hijacking remains a problem in Hillbrow and eKhaya does not have the capacity to fully tackle the issue on its own. What is also evident is the fact that, "the buildings that the City should have acted on, they haven't!" (Adler, Pers. Comm., 2013). However, the reality is that building hijackers within the precinct are responding positively to the institutional rules within eKhaya. This is an achievement in itself on the part of eKhaya management and organisation.

Friendliness: community- building, 'breaking the anonymity' via 'invited spaces'

With its emphasis on social capital and strong community involvement as a cornerstone for inclusive urban renaissance, eKhaya appears to have succeeded where the COJ has perceivably failed. The constant garnering of community members with different interests to promote the goal of urban change at neighbourhood level has paid dividends. By placing social capital and community-based projects and activities at the core of Hillbrow's physical and socio-spatial transformation, eKhaya may have "fostered a sense of community that is lacking in many other areas, and established a common vision for Hillbrow that has been essential in its hoped for reestablishment as a vibrant destination within Johannesburg" (Gossmann and Premo, 2012:12).

Participation in activities seems to have broken the characteristic facade of anonymity prevalent among eKhaya residents because residents have been "brought... out from behind their closed doors, [are] socialising with one another, and [are] developing an interest in their surroundings" (COJ, 2009). Friendships have developed, and mutual learning in this multicultural neighbourhood has taken place. Events were especially organised for the local children and it was gratifying to see that the parents in attendance knew each other. As a researcher, I attended the annual eKhaya Kid'z Day in 2013 and the eKhaya Street Soccer tournament in 2015, and experienced the spirit of camaraderie personally. The importance of friendship was being instilled in the eKhaya residents' children. Anti-crime action is supported. Ms. Mkhize (Pers. Comm., 2015) explained:

By having these kids' sporting activities, we are teaching the kids how to play with each other because people who grow up together … people who grow up playing together know each other and become brothers and sisters at the end of the day, and they won't rob each other when they grow up. So we are trying to build social cohesion by teaching them to play together.

Hillbrow is a multi-ethnic neighbourhood people have chosen to enter and has become known for its xenophobic tensions that can erupt as cases of violence. eKhaya may be a step in the right direction towards the fighting of culturally diverse inner city areas plagued by prejudice. eKhaya has established relatively strong networks and relationships among its stakeholders not only through supporting social cohesion projects and events that recognise community needs, but also through bringing residents together at regular meetings (Adler, Pers. Comm., 2013). Ms. Adler recalled that, prior to holding monthly caretaker meetings, some building managers who have been neighbours for many years had "talked about each other and never to each other". Through the eKhaya 'Know Your Neighbour' campaign and regular meetings while engaging with each other, the building managers have come to know and understand each other (Figure 3.1). According to both Ms. Mkhize and Ms. Adler, acting in a neutral manner during these meetings is the key to getting building managers and other stakeholders to get along together. The stance to adopt is to "never take sides [...] never make other people feel like their opinions are more important than opinions of others" (Mkhize, Pers. Comm., 2015).

Importantly, at some of these meetings, eKhaya people air their complaints, particularly to name and shame City institutions that are not pulling their weight (Mkhize, T., 2014). Ms. Adler (Pers. Comm., 2013) remembered uncovering many incidents of corruption and misconduct of City officials. Concerned stakeholders met with those involved to bring this unacceptable conduct to an end. She particularly recalled demanding meetings with Pikitup because eKhaya housing managers, property owners and managers complained about Pikitup's negative behaviour. Issues included untimely refuse collection, throwing dust bins around and thus vandalising them, and then asking property owners to pay for replacement bins. Even more serious was the accusation that Pikitup officials demanded bribes as a precondition for refuse collection (ibid.).

However, notably, "that meeting was an amazing success because now we're working with their team leaders" (ibid.). In support of this, Ms. Mkhize (Pers. Comm., 2015) stated the following:

Pikitup used not to pick all these dust bins, you could go up to 12 o'clock with them in the streets; and you had to phone them in order for them to come. However, they are now responding to our queries quickly; and it's because of the push that we give them because they know, "Oh if we don't do it, they're going to phone us and report us!" Because we are having the monthly Visible Service Delivery meetings, where the CIDs are invited to meet the [Municipal-Owned Entities]; and that's where you stage all your complaints. Now, this month in a meeting, you stand up and say, "Pikitup …" Because that forum is managed, the things reported there should be attended to. So it's progress on their side; they have changed.

While these meetings serve the practical purpose of putting pressure on the COJ to respond to the precinct concerns, they also serve to bring diverse residents together in a common project.

eKhaya is arguably more tolerant of the sometimes extra-legal survival practices of the urban poor than is the COJ, like informal street trading and sub-letting within buildings. There has been robust criticism of the way in which CIDs have extended surveillance and social control "beyond actual criminals" (Paasche, 2013:260) to groups comprising "informal traders, parking attendants, street kids and the homeless" (Miraftab 2007:603). It is a criticism that may well be deserved in many cases, but eKhaya appears to be an exception. The COJ has been sharply criticised for the way in which it has treated informal traders, most notoriously through evicting traders during "Operation Clean Sweep" in 2013 (Ndletyana, 2013). Nevertheless, street traders are seemingly welcome in eKhaya space with some provisos. As Ms. Mkhize (Pers. Comm., 2015) stated,

We are not like other CIDs. Other CIDs see street traders and chase them away but we allow them to operate, as long as they clean their trading areas. The Johannesburg Metropolitan Police Department does not want them to be there because it's against the City by-laws but we have no problem with street traders, and it's up to them how they deal with the [Johannesburg Metropolitan Police Department].

eKhaya has also shown flexibility in relation to subletting, a practice which is often seen by City officials as irregular and contributing to urban disorder, yet it is hugely important in opening access to the city for the poor. This leniency towards sub-letting is a pragmatic response to existing pressures such as urbanisation. There is no obvious sign of gentrification in Hillbrow. Although environmental conditions have clearly improved through the eKhaya initiative, the area still does not attract middle-class residents. While there is no telling whether or not gentrification will be experienced in Hillbrow, and whether it will result in the eradication of subletting in eKhaya, at the moment subletting is tolerated and this is to the advantage of the urban poor.

Concluding Reflections

This chapter is not an argument in favour of improvement districts in general. It is rather about a specific form of improvement district that combats crime, grime and physical decay while building a community and addressing social needs. Much of the critique of inner city regeneration in Johannesburg concerns the efforts of the City to establish physical and social order as the urban poor have been marginalised, and even criminalised.

While this is the case in many instances, the eKhaya story suggests that it need not always be so. eKhaya has played a significant role in the alleviation of crime, and creation of a liveable environment. This enables Hillbrow residents to "experience their lives in ways in which they can develop themselves as responsible citizens (Adler, Pers. Comm., 2013). It is true that business interests on the part of the eKhaya property owners to increase property values motivated eKhaya's materialisation. However, commendable is the adoption of innovative social approaches to the CID's functionality and realisation of the commercial interests. It is also worth noting that eKhaya has created an environment conducive to business development in Hillbrow even though not creating direct employment opportunities for Hillbrow residents. With the advent of disorder in the neighbourhood, big businesses and retail chains left Hillbrow, but are slowly making a comeback and setting up shop in Hillbrow again. This could well create employment opportunities for the residents of eKhaya and Hillbrow. Developments certainly signify the possibility of creating a synergy between poverty alleviation and social relief on the one hand, and law and order on the other.

By stressing the importance of bringing and keeping the residents on board in a transient community, evidence from eKhaya shows that it is possible to facilitate social cohesion as well as respect human dignity in a very unequal society. Establishing and maintaining human relationships leads to the accomplishment of shared urban goals. eKhaya signifies humanistic and back-to-basics management of grime and opportunistic crime. In so doing, it advances the notion of "empowered active communities [...] and 'active citizenship'" (RSA, 2014:75-76), This is spelt out in community safety-related policies at local, provincial and national levels. Examples are the Draft Integrated Urban Development Framework (RSA, 2014); the Community Safety Strategy (Gauteng Provincial Government, 2015); the National Development Plan (RSA, 2011); and the new Draft White Paper on Safety and Security (RSA, 2015).

eKhaya's success can be optimally realised if, and when, institutional factors are strengthened through intergovernmental collaboration and political championing at the highest level. Insofar as eKhaya has done much to mitigate crime and grime innovatively in Hillbrow, it remains evident that there are other forms of crime that eKhaya cannot diminish and/or systemically root out. The most notable is building hijacking. This effectively calls for the intervention of the COJ, the stakeholder with the capacity to formulate and promulgate legislation. In doing this, the City cannot operate as an island but must work in conjunction with what is happening in provincial and national spheres. In addition, some by-laws in CID legislation and its safety policy require amendment to cater for social capital in community development initiatives.

The South African Cities Network (2014:12) cautions against the casual expansion and replication of anti-crime initiatives that have been successful elsewhere, warning that "careful consideration needs to be given to how, and how rapidly, successful crime prevention should be scaled up." The context of this study quintessentially means accommodating eKhaya's critical success factors: social capital and networks, social cohesion, social regeneration and community building, These can be replicated elsewhere but cannot be replicated sightlessly. This solicits careful consideration of the extent to which they can be replicated elsewhere. While eKhaya's success relies largely on strong ongoing networks that have been established on the ground, it remains obvious that its materialisation and endurance might have not been possible without two other critical factors. The first is the very strong interest property owners have shown in profit and rent maximisation.

This has enabled their commitment to and investment in the precinct because the payment of levies contributes to the cost of the precinct's day-to-day management and holding of annual social events. The second, and most critical, is the powerful presence of a hands-on founder, leader, coordinator and consultant – Ms. Josie Adler. Not only did she take the time to rigorously familiarise herself with Hillbrow's context and complex challenges (Figure 3.2), but also actively mobilised various residents and stakeholders around context-sensitive issues of common interest. She meticulously aligned the interests of various stakeholders while simultaneously establishing mutually useful relationships and networks. Similar leadership and overseeing is needed in areas seeking to replicate eKhaya's critical success factors and in communities with a strong unanimous manifesto. While there is no telling whether solid human relationships will take a while to materialise and endure in other contexts, it remains certain that it takes the vigour of a champion to effect these relationships.

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gap market housing

is a term that describes the shortfall, or 'gap' in the market between residential units supplied by the state and houses delivered by the private sector.

4. INNOVATION IN GAP MARKET HOUSING DELIVERY: THE CASE OF THE GREATER LONDON MAYOR'S HOUSING COVENANT

Jerome Kaplan

Introduction

This chapter is an analysis of one of the Greater London Authority's (GLA) Mayoral Covenant housing delivery strategies, "Homes for Working Londoners". The broad approach adopted allows for a more nuanced understanding of the Covenant, its programme and package. It then considers a particular case study which is one of the many private sector partners created through the framework, Pocket Living. First, the problem statement is broadly defined and outlined. It concerns the housing gap market in South Africa which reveals the impetus from which this research stems. The second point made is that, although London has vastly differing economic characteristics, the city still fundamentally faces similar challenges in the emergence of what is its own unique form of the housing gap. An analysis of the Greater London Authority Covenant, and also the approach of the private developer, Pocket Living, follows. Its success factors and challenges are identified and reviewed to determine how these could shape potential replication in the broad context of South Africa, and Cape Town more specifically. In order to gauge the effective need for such a programme, and to determine alignment of its principles to South Africa's housing gap market challenge, national understanding of the current drivers of the gap market are considered.

However, it is shown that these drivers reflect large variance across urban centres in the country, thus local market dynamics are not standardised. Effectively, this alters the inherent characteristics of the gap market at the local level. To evaluate the potential effectiveness of intervention in this market, it is imperative that the local level of understanding of the housing market, and the gap within it, are recognised. Discussion then delves deeper into the nuanced gap market dynamic in Cape Town and its spatial morphism. It establishes the current major policy and implementation responses, as well as analysing the reasons why these have not been able to deliver affordable housing stock at a scale to close the gap market. Contextualising the case study determines the efficacy of the key findings to replicate the programme. Lastly, the approach of the case study is reviewed in the light of current South African policy, highlighting the alignment of trends, where they occur and the major challenges facing its domestic implementation. Ultimately, the aim of this paper is to explore an innovative Public-Private Partnership (PPP) procurement and packaging approach. Its purpose would be to stimulate the involvement of the private sector in providing the requisite housing option and tenure mix in South African cities. One that is delivered at a scale that would close the gap and create a unitary housing market is desired.

Problem Statement

> Fifteen per cent of households in South Africa have access to bond finance. Around 60 per cent of households qualify for subsidised houses, leaving a group representing approximately 25 per cent that does not qualify for a fully subsidised house, yet does not earn enough to qualify for a bond. This segment is known as the gap in the housing market (RSA, 2011:271).

In South Africa, a shortage of housing for the low-income majority of the population has, since 1994, been a challenge the state has attempted to address. Primarily this has been achieved through the mass delivery of low-income housing on the periphery of urban centres following the Reconstruction and Development Programme (RDP) and Breaking New Ground (BNG) plans. However, the potential beneficiaries of RDP housing are South Africans who earn under R3 500 ($250) per month. These are the most poverty-afflicted demographic sector of South Africa's population. A lack of both existing housing stock and adequate access to finance resulted in an additional section of the population being unable to access housing options due to the distortionary effect of South Africa's unequal development history through apartheid policies. This market segment is known as the gap market in South Africa. It is defined as those who do earn above R3 500 a month and therefore cannot qualify for RDP housing but, at the same time, they can neither afford a house in the primary open market nor access to adequate finance to do so (Centre for Affordable Housing Finance and South African Cities Network, 2014). The upper end of the gap market is generally accepted, at national level, as being approximately R15 000 per month income per household. The result of this market distortion is a broad economically active group, particularly noticeable in urban areas, that does not qualify for the traditional and primary state-subsidised housing programmes. Moreover, they do not earn enough to be eligible for financing and cannot afford rentals to enter the open private housing market.

Market distortions are increasingly evident when the spatial variance of housing prices in urban markets, relative to locations with access to transport, economic opportunities and social facilities, are concerned. These opportunities inherently price-in the locational advantages. Increased accessibility leads to raising market entry prices which excludes an increasingly larger segment of the market. This urban land market dynamic has structurally entrenched the spatially inefficient and unjust structure of South African cities. Hence the segregated city design and policies of pre-democratic South Africa tend to continue. South Africa therefore has a growing gap between the demand and supply of affordable housing that services the lower earning, yet economically active population, particularly in well-located urban areas.

The South African state is aware of this market segment and advocates the need to address its market failure as a priority. To date, there has been failure to deliver at scale despite attempts to address the gap. The Finance Linked Individual Subsidy Programme (FLISP) addresses the demand side, and the social housing programme the rental supply side. Furthermore, there is growing recognition that the current form of state subsidies for affordable housing is fiscally unsustainable. Given the scale of continued demand and resource limitations this is likely to continue for the foreseeable future.

Competing priorities too have to be considered, for example, education and health. The state is unlikely to increase current subsidy levels beyond keeping pace with inflation. Instead of relying on increased subsidies, other models of housing delivery have to be found. The National Planning Commission, as well as the National Department of Human Settlements (RSA, 2011; DHS, 2009) have stated unambiguously, through policy intent, the need to incorporate the private sector, the financial institutions and property developers in creating a sustainable partnership in gap market product delivery at the required scale. However, despite these intentions and some practical effort to involve private finance and developers in South Africa in dealing with the gap market, there has been little tangible impact. As a response, policy directives are increasingly advocating the necessity of a tailored approach to stimulating private sector involvement to close the housing market gap in South Africa (RSA, 2011). The exact intent of this chapter is to address this call through an analysis of the potential replicability of the innovative GLA Covenant approach.

'Mind the Gap': The London Housing Market

At first glance, London and Cape Town are hardly comparable in terms of housing markets. However, despite vastly different levels of resources, and contrasting economic forces driving distortionary effects, housing market failure persists, shaping the levels of inaccessibility to housing on the open market. Despite the contrasting economic developments, the two cities display a similar market failure. This will become evident throughout this analysis. Nevertheless, similar approaches to addressing this market gap, signifies the potential for effective replication.

London is a highly successful global city in most aspects and measures, with sustained economic growth and stability. However, rapid population and employment growth, combined with a persistent under-supply of housing, has left London with very high housing costs and extremely high housing inflationary pressures (Greater London Authority [GLA], 2014). Average house prices of the London housing market have more than doubled since the late 1990s and trebled since the mid-1980s (Chart 4.1), even when adjusted for inflation. This has happened during a period that has seen a global financial crisis and stagnant price increases in many cities globally.

Chart 4.1: Office for National Statistics index of average London house prices

Source: London Strategic Housing Market Assessment, prices adjusted for Retail Price Index (RPI) inflation (GLA,2014)

Not only has London's property market outperformed global indices for property owners, but it is distinct from the housing market for the rest of England. This indicates a large geographic demand point and prices that have outstripped performance nationally. However, it is not only the high prices that differentiate the London housing market from the rest of England, as can be seen in the following:

The demand for property, the mix of tenures and households, the difference in affordability of renting or buying, and the levels of acute housing need, all distinguish the London housing market from England as a whole, and have major implications for the delivery of housing that is affordable. (Joseph Rowntree Foundation, 2013)

The comparative average house price change in London is compared to the rest of England over last two decades (Chart 4.2 below). It shows that while house prices in England have also risen steadily they have not reached the levels of London, with the gap between prices in London and the rest of England still rising. On average, house prices in London are 57% higher than England as a whole, and continue to grow at a faster rate than the wider English housing market (ibid.).

Chart 4.2: Average London house prices compared to England, 1995-2011

Source: Joseph Rowntree Foundation (2013)

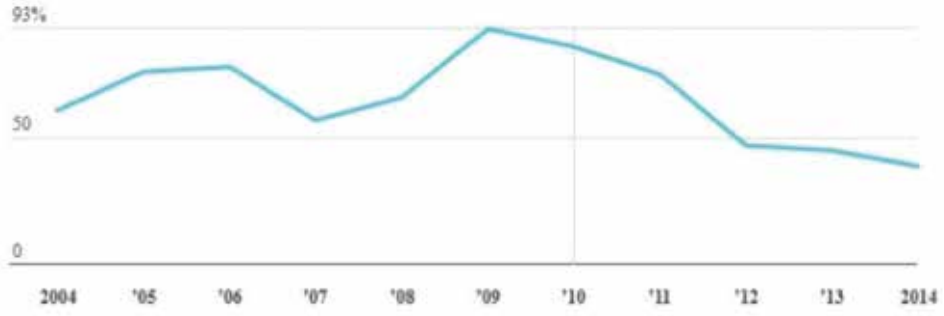
This trend in itself is not uncommon, as successful large cities often generate far greater land demand than other areas which, in the context of limited land supply, results in higher prices. Also, successful large cities such as London, offer higher labour absorption and wage rates relative to their national hinterlands, contributing to higher property unit prices. Since London is a global economic hub and is one the top ten regions in Europe, according to the Gross Domestic Product (GDP) per capita (Brookings Institution, 2014), the price gap between London and the remainder of England is hardly surprising. As a consequence, the ability of first time buyers to enter the property ownership market in London is decreasing (Chart 4.3), with an increasingly larger percentage of the population excluded from market participation. Although average wages and salaries are higher in London than elsewhere than the United Kingdom, the size of mortgage payments as a percentage of mean take-home pay is nearly 20 per cent higher in London than nationally (GLA, 2014). Thus, despite London's enormous success as a global city, there has been a degree of market failure in the housing market. Despite the prosperity of the city there is a 'housing gap market'.

Chart 4.3: Affordability of housing for first time buyers, London relative to United Kingdom

Source: Nationwide Building Society (2012)

However, although London's housing market may be regarded as exclusionary due to inflationary pressures, local government in London has historically and enduringly countered this market failure with subsidised social housing. Policies for social housing are formally in place at a national government level and are supplemented extensively by the GLA at the metropolitan scale. Local authority boroughs provide a planning and assisting role. In England, 17% of all households have social housing benefits while 23.9% of all Londoners live in social rented housing (GLA, 2015). Despite substantial provision of partially state-subsidised housing, the enormous demand side pressures in London have resulted in a situation where one in ten Londoners are currently on council housing waiting lists (Fisher, 2012). Furthermore, the waiting list is perpetually growing as the state has, over the last half-decade, not been able to match the supply with demand. The supply of new social rental units has remained fairly constant but increasing demand and housing prices in the city have led to a far greater provision of private market-related builds (Chart 4.4).

Chart 4.4: Percentage of new housing units, social housing relative to private housing



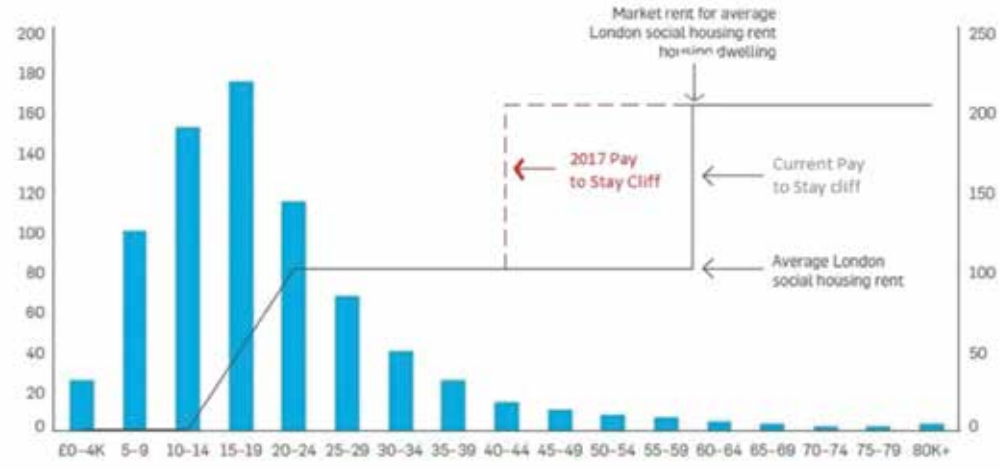
Source: The Guardian (2015) – Data Source: Estates Gazette

This has led to a continually increasing misalignment between public needs and the provision of housing. At present, in terms of policy, social rental prices, which vary by area and income, have a ceiling of eligibility at £60 000 per household per annum, for London. By any standards, globally this is a very high income to be recognised for a subsidy. However, at the upper end, it also depends on other conditions such as family size, area and type of housing stock, thus the subsidy may be minimal. Despite the significantly high cap placed on housing subsidies, the average London income is £35,238 (Office of National Statistics, 2014). This means that the average household, without a deposit and taking housing mortgage finance limits into account, would only be able to afford less than a third of the cost of an average property.

This gives London an affordability index of roughly 3.2, which is very similar to that of Cape Town. This is largely due to the fact that in the last ten years property prices in London have risen 94% while average wages have only increased by 29% (United Kingdom Parliament, 2015). Given this price discrepancy in the market, despite a relatively high income ceiling for subsidisation, a large segment of the housing market is falling through the gaps. In fact, higher income earners are effectively priced out of both social housing and the full housing market range: a clear illustration of the gap market (Chart 4.5 below). In this illustration, the 'pay to stay cliff' represents the income point at which, and above, a social housing tenant will have to pay market rent.

To compound the market failure, due to fiscal constraints and a new ruling party, it was announced in 2015 that from 2017/18 those on incomes above £40 000 in London and £30 000 in the rest of England, who live in social housing, will be charged a market rent (United Kingdom Treasury, 2015). These changes will, assuming the market status quo is unchanged, essentially broaden the gap market drastically, disenfranchising about 9% of all social tenants in England, including more than 40 000 social housing tenants with household incomes in excess of £50 000 per year and 300 000 with incomes of more than £30 000 (Spur, 2015). Two related initiatives that address market exclusion are now explored. The first is state-led, the Mayor's Housing Covenant, and the second an approach a new private sector developer, Pocket Living, adopts and which, importantly, the Covenant enabled.

Chart 4.5: Subsidy distribution within London social housing household income and rent



Source: Adapted from Redman (2013)

Case 1: "Homes for Working Londoners": The Mayor's Housing Covenant

In response to the heightening housing crisis in London and the fiscal restructuring of the social housing market in the City, the GLA formulated and implemented the Mayor's Housing Covenant, led by Mayor Boris Johnson in 2012 (GLA, 2014). The Covenant's premise was to provide homes for working Londoners who are ineligible for state-subsidised social housing yet simultaneously priced out of the open market- essentially the emergent gap market. It comprised two parts with up to £100 million of capital investment and a commitment to improve working Londoner's affordable housing options through deregulating the market and cutting red tape (ibid.). The initial phase involved the production of a prospectus, through which organisations were invited to deliver proposals for intermediate housing, meaning gap housing, across London. It could help to house 10 000 people who want to live in the city in which they work. For all investment made as part of the Covenant, the commitment was made that all its revenue returns realised within the next ten years, would be reinvested in further affordable home ownership products (ibid.).

The innovative aspects of this Covenant are multi-fold. First, it seeks to stimulate a mixture of subsidy options with around 40% of the affordable homes delivered for flexible low-cost home ownership, and 60% of the homes for affordable rental. The affordable rental product was to be split equally between discounted rent, for households unaffected by the benefit cap, preferably targeted at working households, with levels up to 80% of the market rent; and capped rent, with properties let at lower levels to households in greater need. Second, the Covenant focuses almost entirely on working Londoners, not the indigent, to give those whose modest earnings are eclipsed by the high housing costs in London, a market entry point. This represents a change from a broader housing delivery target to a focused specialised delivery in the market segment (ibid.). To note, however, is that although the Mayor's Covenant, "home for working Londoners" programme targets working class Londoners, the majority of the social housing initiatives are for the indigent, and there are programmes offering specialised housing for London's older people and disabled adults.

Third, it is accepted that, to address the gap market and create a unitary self-functioning market, it is imperative to increase the supply and mix of all tenures. In this regard, the Covenant not only encourages, but also expects, the cross-subsidy to primarily come through the provision of open market housing. Development finance applicants are expected to provide market housing for rent and/or sale on the open market, alongside their affordable housing. Developers which did not include market housing options in their proposals were challenged during the negotiation process. It was expected that only very small and specialist providers would not make some contribution to market supply (ibid.4).

Fourth, in terms of financial sustainability the Covenant sought to implement a Recycled Capital Grant Fund (RCGF). This grant requires that returns be reinvested for a stipulated period into the affordable housing market. Based on performance, a provider would be required to repay the Recycled Capital Grant Fund on failure to deliver. Furthermore, in its establishment the Covenant tied in the concept of a London Housing Bank

that would focus on large scale developments to generate an additional supply of houses (ibid.).

Lastly, the Covenant proposed a system of solicited proposals from any developers able to deliver affordable homes in London in the 2015-18 period and beyond. They were requested to submit expressions of interest for innovative ways of delivering affordable housing through a revolving investment fund. A revolving fund remains available to finance an organisation's continuing operations without any fiscal year limitation, because it replenishes the fund by repaying money used from the account. This is imperative as the private sector is able to promote further innovation through relaxed regulative prescriptions. Many aspects of the Mayor's Covenant can be regarded as innovative, and each warrants attention in its own right. To illustrate, the product mix is selected as a single element, given the limitations of a single chapter.

The product mix

One of the primary challenges linked to implementing an effective gap market solution beyond the obvious shelter provision, is the inability of people to gain equity in the form of property ownership, a general precondition to stepping up the proverbial housing market ladder. This equity, derived from property ownership, can also be pivotal in leveraging finance for a business start-up or education, which ultimately, in aggregate, improves a domestic economy. When a large enough segment of a population, despite working and earning a steady income, cannot access equity, there are consequences. A knock-on effect within the housing market itself and the wider economy lessen the potential for a raised income, thereby perpetuating the cycle of the gap market. Simultaneously, it is important however, to take note of the broader demands, requirements and constraints of the gap market, which are entirely varied as is the case with the open market. Although providing equity to an increasing population segment is positive, a mixture of tenure options is required to address any market failure. Ultimately, the market is more likely to self-correct if the choice is up to the consumer as market equilibrium is achieved through the balance of supply and demand.

The Mayor's Housing Covenant sought to do just this. It required that respondents to the prospectus, put forward delivery of a certain number of newly built units without predetermining the ownership tenure type of these units. This decision would be up to the discretion of the purchaser based their on their own individual financial circumstances. In this regard three tenure options were mandated (GLA, 2013a):

- Rent to save: for households on low to moderate incomes without sufficient deposit to access a shared ownership mortgage
- Shared ownership: for households on low to moderate incomes sufficient to support the purchase of 25-75% of the value of the property and a deposit of around 10% of the share
- Equity loan: for households on moderate incomes sufficient to raise a mortgage for 75% of the value of the property and a deposit of 5% of the property value

Furthermore, the Covenant mandated a mixture of rental options that would provide a full spectrum of options accommodating income and location. Bibby and Garvke (2014) reason that the positive correlation between tenure diversity and the output concerning the levels of housing options is predictable. Delivering a supply of different types of housing requires a range of different funding sources and delivery models as well as involving both the private and public sectors. This strategy both maximises finance and the facilitation of output in the short term. Such diversity makes the housing system more productive over the long term, by making it more resilient to fluctuations in house prices and less prone to cyclical shocks (Bibby & Garvle, 2014).

Case 2: Pocket Living

Pocket Living is a relatively new property development company based in London that has an innovative, low-cost development model, solely targeting the gap market. Pocket Living builds compact, starter units for Londoners on small brownfield infill sites that would normally not require much, if any, affordable housing from a mainstream private developer (Pocket Living, 2015). Buy-to-let investors are not eligible for Living Pocket flats, and the leases ensure that the homes are sold to eligible buyers when the occupiers move.

Pocket Living's business-as-usual model is to build affordable starter homes without public subsidy and sell outright to buyers at the local market price discounted by at least 20% (ibid.). To achieve the intended outcome, Pocket Living works closely with local councils to develop smaller infill sites on brownfield land where a market developer would normally not provide affordable housing. It generally limits its product to the 'affordable' market by only making units available to middle income earners who live or work in a specific area but are first time property buyers. However, prior to the GLA Covenant deal, the company was a small-scale niche development company having only provided approximately 200 units over a number of projects, given the infill nature of its model (ibid.).

When the Housing Covenant prospectus came into effect, they submitted a proposal in response, presenting a funding structure for the delivery of 400 housing units over the three-year period. The GLA then considered the deal and a counter-negotiation of packaging and financing the deal as structured, as was the process with all successful applicants (GLA, 2014). The structure of the contract was initially subject to detailed due diligence scrutiny by the Executive Director of Housing and Land of the GLA, in consultation with the Deputy Mayor for Housing, Land and Property (GLA, 2013b). One of the primary points of the negotiation was that the deal was subject to the following conditions: agreement to a suitably drafted contract; procurement of a suitably qualified and financially stable joint venture partner; and, to the completion of detailed legal due diligence report to the GLA's satisfaction.

Subsequently it was agreed that the GLA would provide Pocket Living a revolving loan of £19.12 million. Analytically, it is not a subsidy or grant but purely a loan that would not be subject to interest and would be repayable within ten years from the date of inception. For the developer, the cost of the loan is a critical

consideration as it is the margin between non-viability and affordability. The low interest rates in the United Kingdom clearly assist in this regard but this is an area of future uncertainty. In 2015, the Bank of England charged a 0.5% interest rate, with major banks in the United Kingdom offering a prime lending rate of 1.5% (Trading Economics, 2015). Within the revolving loan package, there was a provision for Pocket Living to reinvest all proceeds generated from the loan over the ten-year period into subsequent housing delivery. This concession allowed Pocket Living to pledge more than double the originally planned number of housing units.

There are arguably, many innovative aspects to the approach Pocket Living took. Through making use of the provisions the Covenant focused on, this developer has addressed issues of cost, raising additional finance and mitigating risks, matters dealt with in the sections that follow.

Reducing costs

The enormous capital and operational costs of affordable housing provision are possibly the largest constraint to housing delivery in any country. In the case of London, although the government is, by most standards, fiscally well resourced, rising costs of land and labour, as well as negative wider economic circumstances, have forced the state to cut back on housing funds (Stone, 2015). In the environment of fiscal restraint, to ramp-up delivery the actual delivery costs of housing projects is the only variable that is reducible on the supply side.

In this regard, a comprehensive study undertaken by the Urban Land Institute in Washington D.C , identified four overarching cost drivers to affordable housing provision (Jakabovics et al., 2014):

1. Project scale: Fixed costs such as land, legal expenses and funding application fees are not correlated to the number of units and often make smaller projects less economical on a per-unit basis
2. Project design and construction: Community concerns, site selection, the price of construction labour and state and local regulations affect the ability to produce high-quality units at an affordable cost
3. Financing and underwriting: Because affordable rentals produce a lower level of profit, developers face several financing obstacles, such as difficulty in attracting investors who are strictly yield-driven; complicated deals requiring multiple layers of funding; and limited or no availability of financing for smaller projects and for mixed-income projects
4. Complex deal structures: Project fees, timing of tax credit use, higher risk, greater due diligence, longer timelines, and the need to set aside capital reserves all drive up costs

In the case of the GLA/Pocket Living PPP-type Covenant agreement, the first two of these factors do fall into the ambit of Pocket Living's delivery model. The second two, financing and deal structure packaging, are the targeted mitigation efforts of the partnership. In terms of finance and underwriting, the provision of ample finance is the first and most patent cost mitigation from the delivery perspective in the PPP structure and secondly, that it is provided at a discounted rate. However, beyond the singular impact of discounted finance, there are significant

multiplier effects on the cost efficiency of delivery. With the structure of large scale flexible, project finance for multiple developments in a singular finance tranche, the scale of economies in delivery are improved, as well as affording financial stability in planning. Furthermore, the singular finance tranche approach, across multiple projects, promotes drastic reduction of time delays across projects, resulting in substantial financial and time savings. The flexible nature of this finance model further promotes these benefits together with improving forecasting abilities of developers in financial planning and modelling. It also potentially allows for leveraging finance into smaller infill development projects which are the key to providing well-located affordable housing, and improving densification in cities.

The deal structure is intrinsically linked to the finance packaging as discussed and therefore acts as mitigation in a number of these costs. However, the single source of funding significantly reduces the project complexity, an issue which will be highlighted in relation to replicability. The fluidity of the deal structure also helps to mitigate higher risk, greater due diligence, longer timelines and the need to set aside capital reserves as Jakabovnic et al. (2014) identify.

Raising additional capital – the Pocket Living mini-bond

In addition to the revolving fund from the Covenant, Pocket Living sought to raise £1 million capital by launching a mini-bond on CrowdCube, a popular online crowd-funding platform. The mini-bond offers investors the ability to earn a 7.5% gross interest rate by purchasing a bond, starting at the value of £500 a bond. The new funding goes towards supporting the negotiated plan to build over 4 000 starter homes around London over the next ten years. The new business model makes use of a cross-subsidisation approach to the extended GLA Covenant provision, for which Pocket Living pledged to deliver 10 000 homes in total, beyond the contracted provision of 4 000 units. The "Pocket Bond" is set for a four-year term at which time investors may choose between two options: either to continue to hold their Pocket Living Bond(s) for another year on exactly the same terms; or to give Pocket six months' notice and then they can redeem them.

On maturity of Pocket Living Bond(s), the full amount of the initial investment would be repaid without any deductions or charges (CrowdCube, 2016). The bond reached 150% of the target capital within days, raising £1.5 million for the developers; certainly, a testament to the high demand for the product and the belief in Pocket Living's socially orientated model and financial viability. The resultant take-up of the offering was diverse, with 332 investors purchasing at least one bond (ibid.). Within the investment group, large variance is evident in that the largest single investment represented £100 000 and the lowest being a single bond purchase at £500, with the average investment being approximately £4 500 or nine bonds per investor. This indicates a mixture of both institutional and personal investment. The bond was predominantly marketed as two streams: the CrowdCube platform that supports marketing to existing investors, and externally to the general public as indicated in the business model. Pocket Living further marketed the bond through its own online internet presence.

The model used by Pocket Living may be the first time such a hybrid model of state-backed finance, private development and public investment through a crowd-funding mini-bond platform has been attempted. Subsequently to the original production of this research, Pocket Living raised a second crowd funded bond termed the 'pocket land bond' (ibid.). The second bond raised its maximum target of £2,5 million, much of which came from repeat investors (ibid.). The bond finance raised is ring-fenced for infill development. This is further testament to the demand for both, Pockets innovative housing and financing products.

Mitigating risk

For the state, a PPP does bring extra levels of risk as it exposes the public purse to the vagaries of private activity. For the private company, of course, levels of risk are massively important, and calculations around risk crucially affect investment decisions. In the case of the GLA and Pocket Living Covenant deal, a number of potential risks were inherent. First, in such a PPP procurement scenario, rapid changes to the housing market, whether inflationary or deflationary, could negatively impact upon the ability of a developer to deliver. Second, the risk exists for the GLA that its private partner would fail to deliver the intended number of homes on time.

This is a relatively heightened risk, given the unregulated development approach of the Covenant structure that allows long-term freedom of development decisions. Although the financial models are in place and subject to intense scrutiny and due diligence, there is still the danger that the GLA will not receive the expected return on investment. A number of factors could cause this, such as increased costs of building or land, coupled with decreased selling prices that would place the project at risk, or even the future prospect of insolvency for Pocket Living.

While it is impossible to remove all these risks, the GLA-Pocket Living deal has reduced the level of risk. For example, while private developers have relative freedom to adjust the programme and pursue market opportunities as they arise, there are minimum requirements for implementation that must be achieved before financial drawdowns can occur. There is also a programme level approach that allows for losses on some project sites to be offset by gains on others. The risk of insolvency is reduced by a requirement that any GLA funding in the developer's account has to be paid back to the GLA; and the GLA have a say in the disposal of the developer's assets (GLA, 2012).

Replicability in the South African Context

Housing market

Cape Town, as with the majority of large metropolitan cities in South Africa is faced with an acute housing crisis. The vestiges of unequal development during South Africa's apartheid regime, coupled with the resultant mass

urban migration and natural population growth, has left the city with a chronic shortage of housing options for the lower income population. At present, the housing backlog is between 285 000 and 345 000 households, depending on the data source, according to the metropolitan municipality, the City of Cape Town (COCT) (City of Cape Town [COCT] 2015). The market is segmented into four categories which comprise the applicable subsidy applicants:

143 823 of which are in informal settlements (13.5% of the city's population), 74 957 in backyard shacks (7%), 114 384 in overcrowded formal housing, 12 297 in hostels (COCT, 2015:10).

With this shortage of housing stock, and given the current rate and model of delivery, as well as land and funding human and other resources, it is estimated that it would take more than 70 years to close the backlog (COCT, 2015:3). In response to the current municipal housing deficit and predicted future demand, the City's Human Settlements division has set its target of enabling the delivery of significantly more housing opportunities than is currently being achieved, with the ultimate goal of 833 000 more households by 2031.

However, it is important to note that the housing backlog, which constitutes the 'housing list' in Cape Town, excludes the housing gap market for the city. This comprises those who neither qualify for a subsidised house in the traditional delivery models, nor earn enough to qualify for a bond to enter the open housing market.

The Draft Integrated Human Settlements Framework (IHSF) furthermore recognises this critical issue to the Cape Town population and states that against the backdrop of the substantial structural changes being felt by Cape Town's economy, and accompanied by a severe decline in blue-collar jobs and a general slowdown in employment, the gap is becoming increasingly glaring and potentially devastating for those who fall within this income range (COCT, 2015:30).

Given this mammoth task, the Draft Integrated Human Settlements Framework for Cape Town (2015:6) states that it has recognised that:

fostering partnerships is also one of the key requirements for the [Draft Integrated Human Settlements Framework] to achieve the Directorate's medium- to long-term goals. This suggests the Directorate must mobilise partnerships with existing households and the private sector to deliver a significant portion of the required housing needed.

Mobilising partnerships between government and the private sector is especially critical in addressing the gap market. The full ambit of the three levels of government does recognise the need for private sector involvement in the closing of the gap and creating a unitary housing market. Moreover, the National Development Plan (RSA, 2011:37) promotes "focused partnerships with the private sector to bridge the housing gap market".

Defining the local gap market

In the national context of South Africa, the general assumption of the population that constitutes the gap market are households within the market segment that have an average income of between R3 500 and R15 000 per household monthly (Steedley, 2014; COCT, 2015). The floor of this bracket is determined by the eligibility for fully subsidised housing which, in South Africa, requires a household to earn below R3 500 per month. The upper ceiling of the gap market is determined by the entry level access to finance that can purchase at the bottom end of the housing market. The consensus nationally is that R15 000 supposedly provides enough finance to purchase a house on the open market (as discussed already at the beginning of this chapter). However, as was patently clear from the analysis of London's market, local housing markets vary drastically across space giving rise to high levels of exclusion that widens the gap market. As such, a more nuanced approach to understanding the deficit in a local context is required. Interventions should thus not only adequately address the gap market but also mitigate overt distortions in the market equilibrium. As was shown in the case of London, although the floor of the gap market is non-variable, the ceiling of market access is determined by the combination of the fluctuations in housing supply and demand, as well as income variances in relation to these market forces. Therefore, even if the marginal affordable housing supply delivered is increased, a decrease in the average income could potentially outweigh this change to grow the gap market. However, at the same time, the opposite is possible too.

In this regard, McGaffin (2014) states there are three primary key affordability market indicators which can be analysed at a myriad of scales:

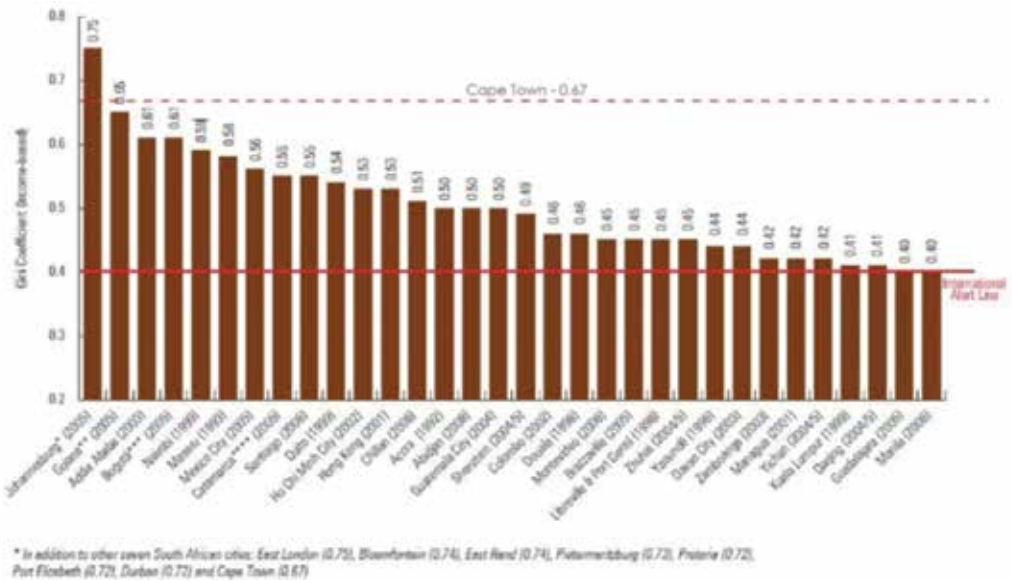
- Rental to Income, the rental market
- Price to Income, ownership market
- Credit payment to Income, ownership market

The broad trends forming the Cape Town housing market on a city scale are identified to assess the overall size and scope of the gap. Subsequently, to acquire a more nuanced understanding of replicability potential, the analysis is spatialised to a smaller scale as submarket segments.

Cape Town housing market

The national South African wealth distribution trend, inherited from South Africa's apartheid legacy, creates the highest level of inequality globally as Gini coefficient values endorse (World Bank, 2015); and Cape Town is among one of the most inequitable cities in the world, as its Gini coefficient of 0.67 reflects. However, according to the State of the World Cities Report (UN Habitat, 2012), Cape Town is, in fact, marginally less unequal than South Africa's other major cities (Chart 4.6 below). Although the difference is marginal, it still leaves Cape Town characterised by inequality of the highest order among its diverse societies. Potentially this has definite implications for the distribution of income in Cape Town. In turn, the impact of an unequal distribution of income affects people's ability to access the housing market, hence the demand for housing as well as the price of entry too.

Chart 4.6: Cape Town Gini Coefficient relative to other South African and global cities



* In addition to other seven South African cities: East London (0.75), Bloemfontein (0.74), East Rand (0.74), Pietermaritzburg (0.72), Pretoria (0.72), Port Elizabeth (0.72), Durban (0.72) and Cape Town (0.67)

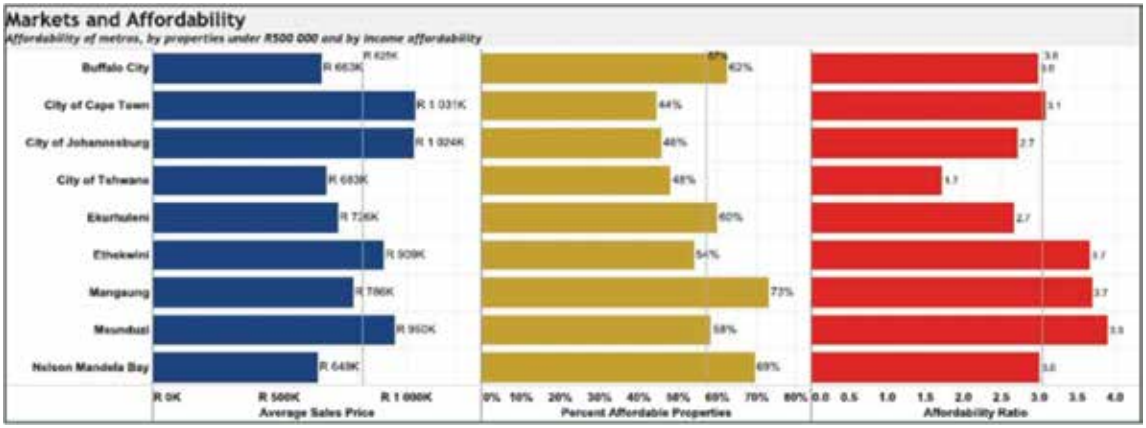
Source: Adapted from State of the World Cities Report (UN Habitat, 2012)

Furthermore, Cape Town has a relatively very high demand for property in the national context, with the second highest level of sales of all metropolitan areas between 2007 and 2012. However, this, coupled with multiple other variables has also led to a market characterised by the highest average property prices nationally (Steedley, 2014). Therefore, the ability of equal income brackets to enter the housing market will potentially be harder in Cape Town. It is noteworthy that, as with income distribution distorting average income statistics, so too does a top heavy housing market which means very high land prices at the top end of the market.

Research by Steedley (2014) into the Cape Town housing market indicates that the average affordability index, a measure of local average incomes to local average sale prices, is 3.1 (the ratio of average income to average property prices). This means that an average household would require more than three times the average income to purchase a home. This affordability ratio is in fact 0.1 points (approximately 3.2%) lower than the average for London, despite the far lower interest rates on mortgages in England. Data thus reaffirms the similarities of the respective gap markets. Cape Town, along with Johannesburg, has the highest average property prices of South African metros, and the lowest number of traditionally affordable houses (greater than R500 000).

It is important to note that Cape Town is still higher than average in South Africa in terms of affordability but the impact of housing affordability is lessened due to the increased average income of both these two cities. This indicator fails to take into account the income distribution of the population, which is eschewed by the higher levels of high income earners in these two cities. Higher level income earners raise the average income level that has critical implications for affordability, as the Gini coefficient data reveals. Chart 4.7 below illustrates the variance across the cities.

Chart 4.7: Housing affordability indices by metropolitan area in South Africa



Source: Adapted from State of the World Cities Report (UN Habitat, 2012)

In 2011, 47% of households in Cape Town had a monthly income of R3 200 or less, which has declined from the 2001 percentage of 56% (Statistics South Africa, 2011). Therefore at least 47% are below the hard floor of the gap market, as they potentially qualify for fully subsidised housing. This percentage is likely to be even higher with the addition of those earning between R3 200 and R3 500.

Typically, an issue with measuring the availability of affordable housing in spatially well-located areas of a city is that it is a relative measure, with no set definition of boundaries. However, the Restructuring Capital Grant (RCG), the primary subsidy for Social Housing Institutions to enhance capital viability, requires the establishment of 'Restructuring Zones' (RZs) for the allocation of the grant. A local municipality is responsible for doing this to give spatial access to economic and social opportunities. Thus social housing has to be provided in spatially

designated areas of high economic and social opportunity to promote spatial justice. Given that these zones must be approved by both provincial and national spheres of government, they serve as a well-established proxy to definable areas of spatial opportunity and access.

Although the wider city market does present certain options within the gap market ownership range, based on valuation roll data from 2012, nearly all of these areas represent formerly marginalised exclusionary areas under apartheid law (Map 4.1 below). On average, the Restructuring Zone areas do not seem to offer many housing options in the reach of the gap market, even if finance were accessible. Furthermore, the income polarisation of the city is still clearly evident along these lines of accessibility, representing the structural entrenchment of spatial inequality through market dynamics.

Map 4.1: Housing cost in Restructuring Zones relative to wider Cape Town

Source: Author's formulation

Addressing the Gap: Policies from Three Spheres of Government

At national government level, the housing gap market is recognised as a major delivery issue and market failure in South Africa. The National Development Plan states that:

It is important to address all [of the factors driving the gap market] in the medium to long term. In the short term, it will be important for the state to alleviate the symptoms of market failures by supporting households to access shelter affordably (RSA, 2011:271).

The National Department of Human Settlements has listed the improvement of the gap market as one of its strategic outcome-orientated goals stating that "the target is to facilitate with the private sector, related Development Finance Institutions and spheres of government, the improvement of financing of 600 000 housing opportunities within the gap market" (Department of Human Settlements, 2015:13). As such, at a national scale there are two primary approaches to addressing the gap market, from both sides of the market, the supply, representing rental opportunities, and the demand, the purchase side:

- Through the Finance Linked Individual Subsidy Programme that aims to subsidise individual prospective home owners who fall within the gap market criteria
- Through the provision of social rental housing through the Department of Human Settlements and Social Housing Institutions

The following sections deal with these two facilities.

Finance Linked Individual Subsidy Programme

The Finance Linked Individual Subsidy Programme was first introduced in 2005, initially offering financial subsidy to those in the R3 500 to R7 000 income bracket and later extended to include those earning up to R15 000. The subsidy currently operates on an income ratio basis beginning at a subsidy of R87 000 on an income of R3 501 to a subsidy of R10 000 if a household earns R15 000 per month. Initially, the programme was largely unsuccessful in penetrating deeply into the housing market. Then the subsidy income bracket was raised and extended to include application for the resale market, with its previous permutation limited to new buildings. However, it is still limited to those who have not received a previous form of housing subsidy and requires applicants to have secured a mortgage bond for the property already; this is common practice for those falling in this particular income bracket. Under the revised programme, households earning from R3 501 to R7 000 qualify for a serviced stand in a housing project, if they are unable to secure mortgage funding to buy a complete product. The National Development Plan, however, notes that the Finance Linked Individual Subsidy Programme has not been extensively used to date due to the deficit in available stock for the market segment (RSA, 2011).

Since the subsidy is contingent on individuals acquiring finance, it has but seen modest results, ultimately not making the level of impact required. A major reason for the shortfall is the lack of availability of stock at the bottom end of the primary housing market, particularly in well-located areas. This is because developers either cannot make such developments financially viable or they perceive the potential risk to be too high. An additional reason is that the success of the Finance Linked Individual Subsidy Programme has been adversely affected by the high levels of credit debt within the target market leaving a lack of affordability in its wake despite subsidy availability. Moreover, gap market households are unable to access institutional housing finance (Rust, 2012). Steedley (2014) reaffirms this prognosis stating that "despite the effort to stimulate financial institutions response through the allocation of the Finance Linked Individual Subsidy Programme subsidy, the progress in delivering housing to the affordable market segment has been limited".

This clearly indicates that, despite the deeper reach of individuals into the housing market if assisted by the Finance Linked Individual Subsidy Programme, the gap is not likely to close unless this facility is actively promoted to stimulate its acceptance within the supply side gap market.

Social housing and spatial restructuring

Social housing in South Africa is currently the main supply side response to the gap market. It is defined in the National Housing Code by the Department of Human Settlements (2009:18) as:

A rental or co-operative housing option for low income persons at a level of scale and built form which requires institutionalised management and which is provided by accredited social housing institutions or in accredited social housing projects in designated restructuring zones.

The Social Housing Institutions deliver this mandate and are entities established with the primary objective of developing and/or managing housing stock that has received capital funding through state grant programmes. An accredited project is a project in which government makes a subsidy contribution towards making in order to make rental units affordable to those eligible for social housing. Providers come from the private non-profit sector. The project receives accreditation through the designated regulatory body. The notion of accredited projects allows for the participation of private sector developers and rental management agencies in social housing provision to bolster capacity to achieve scale delivery. The formation of PPPs is critical as they form the foundation for the structuring of subsidised private sector gap market housing in South Africa. However, in its current form, it is on a once-off project basis, unless a private sector developer establishes a non-profit Social Housing Institution arm, a process that is currently burdensome (South African Local Government Association, 2012). Social housing in South Africa is almost entirely geared to the rental market of those earning within the range of R1 500 to R7 500 a month, the bottom half of the gap market. However, as with the case of the GLA Covenant case study, Social Housing Institutions are permitted to provide housing options that are upper gap market related to cross-subsidise lower income options.

'Restructuring Zones' are spatially delineated areas for the implementation of social housing projects. Eligibility for the Restructuring Capital Grant subsidy depends on the location of the proposed housing development being in such an area. The premise on which this is based is to contribute to urban restructuring that addresses structural economic, social and spatial dysfunctionalities inherited from South Africa's apartheid history, and entrenched through current urban land market dynamics. However, in the case of Cape Town, there are two patent discrepancies in the provision of Restructuring Zones detrimental to achieving this principle.

- The original Restructuring Zones implemented by the City and institutionalised by the Western Cape Provincial Government were delineated in areas which would be considered primary locationally advantaged areas in that they were linked to the primary economic nodes of the city. Their situation hence provides greatest spatial accessibility to opportunity but simultaneously makes them the most exclusionary areas in terms of income due to bid-rent dynamics. Subsequently an amendment of Restructuring Zones delineation has seen the inclusion of areas which the National Association of Social Housing Organisations and Housing Development Agency (2013) refer to as 'grey zones', areas that were classed as exclusionary non-white settlements during apartheid
- The Restructuring Zones delineation, although spatial by nature, has no actual designated, definable spatial border. This leaves the spatial allocations potentially open to interpretation and the potential to result in deconcentration

The relaxed spatial targeting, together with the relatively lower land prices in the less accessible areas, and a subsidy system that is fiscally constrained have resulted in the majority (56%) of Restructuring Capital Grant allocations being made in either 'outer suburbs' or 'grey zones' at national level. The result is a non-responsive acknowledgment of locational variance with allocation being "driven in large part by the availability of land at the right price" (ibid.:5). This trend of spending in areas that are generally less well-located relative to social, economic and transport opportunities has increased over time. Well-located inner areas of cities become more expensive when compared to the Restructuring Capital Grant allocation. This is because cognisance is not taken of the fact that Restructuring Zones property dynamics differ widely across the country, and even more so within cities themselves (Map 4.1). Relatively poorer locational attributes tend to be deciding factors where levels of subsidy and the target market are not as varied as they should be in response to these differences. Although the spatial deconcentration of projects may assist in increasing delivery at scale, it hardly mitigates the impact on a fractured exclusionary urban area that needs restructuring. However, even with the deconcentration of Restructuring Zones in Cape Town, social housing delivery has not been able to be effective with only four projects having been completed, accounting for 1 539 social rental units (COCT, 2015). Without detracting from its achievements, the current rate of delivery is vastly short of meeting the current demand for housing and the stock deficit backlog that have created the present gap market.

The income bracket targeting approach has caused a number of issues in delivery. The primary reason being that demographic attributes are very difficult to determine and audit. Additionally, the hard ceiling approach at a national level cannot account for and be responsive to local property and income dynamics. Nevertheless, the state has recognised these issues for some time (Department of Human Settlements, 2009), but state policy and subsidy changes have not been successfully implemented.

Supply side

Although security of tenure remains one of the fundamental principles of housing policy in South Africa, social housing fulfils a critical role in meeting the increasing need for affordable rental units. They give households, preferring the mobility rental accommodation affords, secure tenure. The gap market represents a broad range of needs and demands that vary according to a household's particular circumstances. Options must exist to meet these varied needs to provide organic responsiveness in the market. However, the grant for social housing is the only major supply side subsidy for the gap market, and it only caters for rental options. Research finds that the supply side is severely lacking which, in turn, restrains the performance of the Finance Linked Individual Subsidy Programme subsidy. Options available to the gap market are limited and trying to close the gap market without increasing opportunities to access equity is potentially a fundamental flaw. The reason that ownership equity options are critical to closing the gap market is that accessing the equity in an owned home is the most common way households move up the housing continuum. Unlocking this equity in affordable markets can help to close the housing gap (Centre for Affordable Housing Finance Africa and South African Cities Network, 2014).

The social housing delivery model represents a model similar to a private sector delivery approach in the gap market, as provision is typically done by non-governmental organisations. In some instances, private sector developers have begun to contribute to social housing development by creating a Social Housing Institution wing for their business. Through the development of a social housing unit within a profit driven businesses theoretically increased opportunities for private sector developers are created by increasing economies of scale and keeping activity stable, even if not for profit. Simultaneously, the vaster the scale of economies and the more complete vertical integration of South Africa's larger and more specialist private sector developers are, the deeper the market reach. This, in turn, can increase cost efficient delivery to the gap market. Supply side delivery will increase as a result of cooperation between the state and the private market's insatiable appetite for providing housing options the gap market desire and need.

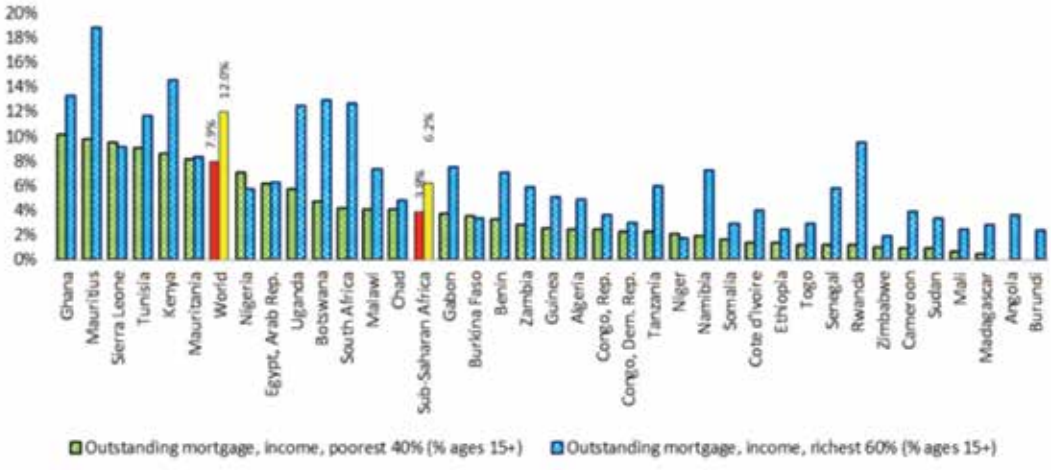
Financial Sector Charter

The South African Financial Sector Charter is a transformation charter in accord with the Broad-Based Black Economic Empowerment (BBBEE) Act. Within the broad framework of the Charter that aims to enable pursuit of its transformation objectives, the Charter commits financial institutions in the sector to transform with regard to access to financial services and targeted investments in transformational infrastructure

and low-income housing. To promote gap market access to mortgages and provide finance to developers offering the gap market affordable housing products, the Charter is a critical component of South Africa's approach to addressing closing gap housing market as a particular concern.

Although the Financial Sector Charter has made significant progress in this regard, evidence indicates that the lower income segment of the South Africa population, in which the gap market lies, still does not have adequate access to home loan instruments (Chart 4.8). Comparing the Findex (2014) data for sub-Saharan Africa, the level of access to housing finance between the wealthiest 60% and poorest 40% of countries shows variation. The wealthiest 60% of South Africans have a level of access to housing finance just above global averages and the poorest 40% are approximately half of the global average. Although this level is approximately equal to the sub-Saharan average, given the relatively higher Gross Domestic Product per capita levels of South Africa when compared to the rest of the region, it can be surmised that the level of home loan finance access, relative to household income, in South Africa is below the average for sub-Saharan Africa. The low level of finance access, shown by relatively low percentage of low income households, is one of the primary drivers of the gap market growth in South Africa.

Chart 4.8: Outstanding home loans, wealthiest 60% and poorest 40%



Source: Kundu (2015)

Aspects affecting the delivery of affordable housing

Despite all of these interventions over the years, the gap market is still considered largely under-serviced. Aside from the challenges experienced, the National Development Plan (RSA, 2011) has identified the following particular aspects that affect the cost of affordable gap market targeted housing across South Africa significantly.

It is critical for these to be addressed in the medium to long term:

- Bureaucratic delays in approval of new development applications that increase the holding cost of land
- High demand for well-located land pushes up the price
- Views from private developers that inclusion of products affordable to the gap market will increase their risk and compromise project viability
- Households falling within the particular income bracket are not necessarily ready to commit to a fixed location for a period of 20 years, and the transaction costs associated with sale and transfer of fixed residential property is high. Very limited support is available for this group to access affordable rental accommodation to allow for a more flexible location until they are ready to invest in property for the long term

Municipal interventions: their successes and challenges

At the municipal level, the COCT has further entrenched addressing the gap market issue into its policy environment. It pledges to address the gap through a combination of loan-funded gap housing provision and a consumer self-help programme (COCT, 2015).

The need to mobilise partnerships between government and the private sector is critical in addressing the gap market. All three levels of government have to recognise the need for private sector involvement in closing the gap and the creation of a unitary housing market. In this regard, the National Development Plan (RSA, 2011) promotes "focused partnerships with the private sector to bridge the housing gap market".

The COCT also facilitates loan-funded houses by releasing land and/or providing institutional housing subsidies. In return, the developer is required to deliver solutions that fit into the gap price and qualification brackets. The buyer is required to contribute loan finance. Various ways of delivering these solutions have been piloted in Cape Town, with varying success. It is hoped that, in the next five years, between 200 and 250 such gap solutions will be delivered annually (COCT, 2015).

Although there are certain similarities between the COCT's and the GLA Housing Covenant approach in that it reflects the nature of a PPP relationship, its programme is in its infancy. It has not yet been able to deliver at scale, nor does it appear to have the ambition to be a large-scale gap market delivery vehicle.

Alignment of critical findings

The main findings of the effects of the critical drivers in the innovative GLA Covenant and GLA-Pocket Living partnership can be closely linked to the primary deficit drivers identified in the analysis of South Africa's domestic approach to addressing the housing gap market.

1. Public-Private Partnerships Procurement Programme for delivery at scale

It is clear, from the discussion in this chapter, that one of the primary challenges to closing the gap market in South Africa is providing the requisite supply side incentives and structures at a large enough scale to offer the necessary housing stock options. There is general consensus that the most viable approach to achieving this is the involvement of the private sector, and a programme that can deliver at scale, in the short to medium term. It was also identified that overly prescriptive regulative environment in affordable housing delivery serves to further limit the scope of delivery agents which stifles innovation at the implementation level.

2. Mixed tenure options and shared ownership scheme

There is strong theoretical argument, as well as international evidence, that a wider range of accessible tenure options are necessary, particularly regarding equity. Such an opportunity provides a platform for market stabilisation and offers households equity leverage to progress up the housing ladder (Steedley, 2014; Rust, 2012). Apart from the Finance Linked Individual Subsidy Programme subsidy, additional supply side stimulation is required for delivery at the requisite scale.

3. Affordable municipal housing loan/grant facility

Currently the subsidy system for Social Housing Institutions is proving financially unviable for delivery in well-located areas. This indicates a need to review the Restructuring Capital Grant allocation quota or restructure the system through which social rental housing options are provided (National Association of Social Housing Organisations, 2013). It has further been shown that finance costs are amongst the highest contributors to this non-viability, indicative of where cost cutting measures could be implemented, supporting the need for a government- based recycled capital loan facility in gap market housing delivery.

4. Cross-subsidisation and spatially variable pricing

The evidence provided leads to the notion of cross-subsidisation and entry points at multiple income levels, specifically in well-located areas. Currently cross-subsidisation of market-related housing and social rental does exist. However, the regulations of the Municipal Asset Transfer Regulations and Municipal Finance Management Act (MFMA) (RSA, 2003) stifle the fluidity of the process. This leads to time delays, resource constraints and the inevitably higher risk in finance application processes, which inflates costs once again. Significant is the non-accountability of spatial variance in land market dynamics, both across the country and within cities. The reciprocal responsiveness in both subsidies and target markets has hampered the delivery of well-located gap market housing options.

Required Interventions in Replicability

The critical challenges and needs required for contemplating possible replication of the primary factors found to contribute to innovative success are reviewed and attention is drawn to possibilities for further research.

Private-Public Partnerships – delivery at scale

South Africa has a strong regulatory framework for the provision of private-public partnership agreements, and a number of large- scale projects have been completed nationally within it. Yet typically, municipalities have struggled to both initiate and complete PPP projects (Support Programme for Accelerated Infrastructure Development, 2007). This differentiated success can be partly attributed to the fact that PPP agreements at the national and provincial levels of government are governed by frameworks aligned to the Public Finance Management Act (PFMA) whereas PPP structures of local municipalities are regulated through both the Municipal Finance Management Act of 2003 and the Municipal Systems Act (MSA) of 2003. A recurring issue is the misalignment of regulations between these two Acts with regard to PPP structures, particularly the feasibility requirements that differ between the two (ibid.). The result of this anomaly in the regulatory environment is a procedurally burdensome process for municipalities seeking to initiate a PPP needing to access private finance, skills and innovation. This makes the processes to be followed for PPP initiation indeed complex and frequently means costly project packaging and extensive time delays in delivery. In 2007, the National Private and Public Partnership Unit conducted research that showed that the average local government Municipal Systems Act feasibility study alone took over two years to complete with an additional six months for the Municipal Finance Management Act feasibility study (ibid.). Given that the GLA Covenant case study was found to be particularly effective due to its structural flexibility, and that delivery of all projects was based on a three-year time line, it is clearly evident that regulatory delays experienced at local level in South Africa would be a serious problem. They would impede the effective and efficient implementation of such a programme in the country's municipal structures. According to the National Treasury, as of March 2013, nationally only one PPP agreement, in line with the Municipal Systems Act and pertaining to the housing sector in the municipal sphere, was registered in the country (National Treasury, 2013).

Despite these challenges, national policy clearly states clearly the need to incorporate the private sector into strategies for addressing the gap market (RSA, 2011; COCT, 2015). The realisation is that the limited use of PPPs thus far at the municipal level remains a potentially untapped financing option for municipal capital investments (Financial and Fiscal Commission, 2014). The need for PPPs strongly motivates the necessity to address these challenges to stimulate the provision of affordable housing stock that has to increase to satisfy the demand for housing and deal with the backlog.

These noted limitations are exponentially magnified in light of the progressive devolution of human settlement powers and functions to metropolitan municipalities, as is currently on the national agenda. Ultimately, municipalities should manage the full range of housing instruments to allow for better coordinated and accelerated the delivery of human settlements.

The Municipal Finance Management Act (RSA, 2003:117) has three tests for PPP compliance stated as follows:

120. (1) A municipality may enter into a public-private partnership agreement, but only if the municipality can demonstrate that the agreement will—

(a) provide value for money to the municipality

(b) be affordable for the municipality

(c) transfer appropriate technical, operational and financial risk to the private party.

While 'value-for-money' and 'affordability' are contingent on the structure of a potentially replicated delivery deal and the financial position of a municipality, it is the 'transfer of risk' to the private party that the regulative environment is most likely to challenge replicability. In the analysis of the GLA Covenant/Pocket Living deal, the risk component of the structure was highlighted. Although a number of risk-mitigating and transfer measures were put into place, it is not clear if these would be sufficient for the legislative requirements. The reason for this is that much risk is passed onto the private sector by virtue of the nature of the Covenant because essentially broad rights are given to the private developer to stimulate innovation, flexibility and responsiveness to the market. Inherently this procedure will have greater associated risks than a tightly regulated project-by-project structure, which takes two-and-a-half years to pass the feasibility study.

Tenure mix and shared ownership

Shared ownership schemes are really in their infancy in South Africa. By and large, these arrangements boil down to private contracts between willing parties, according to the willing buyer, willing seller principle (Adeokun and Isaacs-Sodeye, 2014). In such arrangements there are no institutional or governmental programmes to support a shared ownership programme currently in South Africa. The mandate of Social Housing Institutions generally does not include ownership options. They predominantly provide social rental housing options, with the exception of the very uncommon cooperative ownership structure that is fraught with challenges. However, a legal framework for shared ownership models is certainly in place and common practice in the private sector.

Adeokun and Isaacs-Sodeye (2014) see shared ownership as an option that is not only possible but they also motivate that it is a critical aspect to promote for the provision of housing in developing African cities. However, they add that adaptation of the United Kingdom model is required in that it "must be compatible with the operation of small-scale property developers [and] its success rests on the premises that a) Governments motivate financing institutions to develop mortgages more suited to the financial capability of this range of salaried workers and b) Maintenance programmes via the use of service charges are incorporated into the legal documentation for the sale/rental of such units" (ibid.:5).

The need for the provision of shared ownership social housing options goes beyond the requisite equity leveraging effect for gap market households. This is evident in the fact that, in 2012, one third of South Africa's mortgage holders could not afford their monthly mortgage repayments (African Union for Housing Finance, 2012:1). Given that the gap market is the most economically vulnerable market segment for mortgage potential and economic risk, shared ownership options present a product that is likely to be in very high demand for consumers and financial institutions, as finance would have a lower inherent risk value. Shared ownership as an option could potentially work well in a cross-subsidisation model of social rental housing that has property management mandates and functions that would attract the project developer. This, as with the GLA Covenant, could be effected through the allocation of capital and subsidy provisions.

Financial aspects

In the case of the structure of the GLA Covenant and Pocket Living PPP deal, the incentive for Pocket Living was the GLA offering a substantial loan facility. This allowed the company to exponentially increase its activities as the loan was interest-free. However, in South Africa, the Municipal Finance Management Act No. 56 of 2003 governs the budget, accounting and financial management practices of municipalities. Since it forbids a local municipality to offer a loan, a PPP agreement that contains a clause offering a loan in its structure is not legally permissible. Given this prohibition of loans, the replication of this exact form of PPP agreement would not be possible between the COCT, or any municipality, and a private partner, in the exact form of the case study. However, this does not necessarily preclude a provincial or national agreement structure or, alternatively, the inclusion of the National Housing Finance Corporation as a third party finance provider. Alternatively it would require a change to the Municipal Finance Management Act. Inevitably any remedy would place additional complexity on a deal's structure and counter one of the GLA Covenant's primary benefits. It is this increasing complexity of deal structures that contributes to the burden of initiating PPP agreements, a major reason for the lack of them at local government level. Importantly, it has also been shown that the gap market requires local level intervention due to the presence of local spatial market fluctuations and economic differences.

Although the Pocket Living GLA partnership was subsidised through a loan function, which works well within the gap market, the wider GLA Housing Covenant does not necessarily require this condition due to the need to recoup the financial outlay. Grant subsidies are also allocated to other deals. The only non-negotiable condition across all deals is that the subsidy or loan finance has to be recycled into further project delivery, for the lifespan of the deal or any extension of it.

A further reason why financing and subsidisation should be packaged as a singular deal is illustrated in the operation of this case study. The current issue is that Social Housing Institutions have been experiencing is having to align and coordinate the various grant streams coming from differing sources. Uncertainties and lag times created through this fragmented funding system serves only to increase project risk and raise capital costs of asset holdings and finance interest.

Spatial income targeting

The Department of Human Settlements is aware of the under-performance of the current systems in both spatial targeting and income bracket approach to the social housing gap market as linked to eligibility criteria. These delivery framework changes should be implemented:

> The first is a subsidy approach which allows deep down-market reach. The second is a shift from an income-based to a self-targeting (more demand-driven) approach. The third is a shift from linking subsidies to individuals to a project-based approach (in terms of which targeting is pursued on a project-by-project basis) (Department of Human Settlements, 2009:29).

A delivery vehicle for the implementation of these changes has not been created yet. However, the GLA Covenant case study meets all three of these criteria. First, Restructuring Zones would need to be formalised with spatially defined, hard borders, as in the case of London, which uses its pre-existing zoning scheme. Second, defined upper limits of targeting should be established based on a discount to area-related rentals. Each project must have a mixture of tenure and stock options. This would allow for improved rental and ownership returns in the higher cost, best location-advantaged areas. In turn, such returns could be used to cross-subsidise lower income options on site. Their number and market reach influences the potential subsidy ratio allocation. These considerations would align with the notion put forward by the Department of Human Settlements (2009:32) that "the objective of achieving an income mix should also be accompanied with a corresponding graduation of quality levels. In principle, lower rentals will be associated with lower quality of housing. While this should be so, observing the principles of vertical equity requires that proportionately larger subsidies should go to poorer people". Incremental normalisation of the gap market provides market-linked, yet subsidised, demand-driven housing options, and the full staircase of price entry points that allow for graduating up, and eventually out of, the gap market. In doing so, cognisance must be taken of the need for differential pricing, and cost, based on accessibility measures, in a form of affordable market simulation. The third point aligns to the case study and allows a private developer enough breadth to innovate and deliver a range of products that meet local market conditions.

The points made in this section reinforce the case that the power and functions of municipalities to create such structures and form the requisite packages must be devolved, as local knowledge and responsiveness is critical. A nationally set benchmark system is entirely inappropriate, as it cannot adequately respond to local demand and property dynamics.

Conclusion

The provision of adequate housing options for those in the gap market is a priority for cities and the government alike. Despite the policy-based recognition of the issue and the implementation of both social housing delivery and the Finance Linked Individual Subsidy Programme (FLISP) subsidy, to date housing for this market has not yet been delivered at an appropriate scale in South Africa. As stated in the Restructuring Capital Grant and social housing principles, the mechanisms for the provision of affordable housing for the gap market presents a critical opportunity to restructure South African cities.

According to the analysis conducted, the potential for replication of the fundamental approach to the gap market used by the Greater London Authority (GLA), through the Mayor's Housing Covenant's 'Homes for Working Londoners' exists. It could greatly aid in the delivery of a range of housing options in South African cities as it aligns well to current policy intent. It is suggested that it could be a vehicle for delivery. However, four key shifts would be required:

1. Greater involvement of the private sector through a large scale PPP procurement framework to stimulate housing delivery on the supply side and to leverage the skills, innovation, scale of economies, vertical integration and access to finance that the housing sector possesses
2. More emphasis on the provision of supply side equity ownership options at multiple price entry points; specifically to encourage shared ownership to allow for greater demand-driven responsiveness and a platform for leveraging equity and moving up the housing continuum, thereby helping to close the gap market
3. Increased devolution of powers and functions to local government in social housing, and financial resources commensurate with these tasks; to effectively facilitate responsiveness to the evidence of variance in the extent of the gap market nationally and within cities
4. Fostering flexibility for local government to package and structure deals particularly for PPP projects; if seeking a vehicle for gap market housing provision is to be pursued, it should be seen as essential; it is also critical to provide the breadth required to stimulate further innovation at the implementation level, rather than the current overly prescriptive regulatory environment encountered in the early stages of agreement formulation

If these can be achieved there is a strong possibility that such an approach has the potential to make a significant impact in the provision of housing options for the gap market and restructuring South African cities entrenched spatial inequality.

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Transformation

noun
a thorough or dramatic change in form or appearance

5. INFRASTRUCTURES OF TRANSFORMATION: A CONTEXTUAL STUDY OF HOUSING IN COSMO CITY

Bronwyn Kotzen and Samuel Suttner

Introduction

> '…[U]ntil we can expand our understanding of what takes place in contemporary cities, we are limited in our capacity to develop imaginative solutions to some very real challenges within them' (Koch and Latham, 2012:516).

As South Africa enters its twenty-first year of non-racial democracy, institutional weaknesses, slow-moving economic growth and unequal wealth distribution, amongst others, present a succession of profound socio-economic challenges. This, together with the pressure of rapid urbanisation, result in cities that are continually being reshaped as the boundaries are drawn and redrawn, local government restructured, economies remade and social connections redefined. As the country's financial centre, and most populated city (Frith, 2011), Johannesburg represents the extreme of these dynamics, and Cosmo City – a suburb of the city – a microcosm thereof.

Despite its burgeoning economy, and central location within one of the most powerful city-regions in Africa, Johannesburg exists as one of the most socio-economically and spatially fragmented cities in the world. It is a conurbation of a myriad of assemblages; a variegated city of remarkably different contexts within one urban boundary, unevenly arranged into pockets of privilege and poverty, inclusion and exclusion. It has been carved up in the shadows of successive social, political and economic forces that persistently sought to segregate its residents. Attempts to alter this dynamic have been based on urban development paradigms that rely on large-scale infrastructural investment as the means to fundamentally reshape stark inequalities. This belief continues to predominate. PricewaterhouseCoopers' report on Africa Gearing Up (2015) documents that investment in infrastructure is the preeminent component of Africa's development. In post-apartheid South Africa, rooted in the state's overarching mandate to reduce poverty by accelerating economic growth (Urban Landmark, 2009), the government introduced a system of developmental local government structures (Parnell, 2005). This manifests in efforts to develop large-scale integrated settlements that "create more liveable, vibrant and valued places" (RSA, 2011:246). This assumption is premised on the principle that 'integrated' projects are able to bring people of varied socio-economic and racial backgrounds together.

Yet, the nett effect of public investment remains, in many cases, limited, failing to counteract the deeply divisive and exclusionary forces that persist in urban South Africa.

As such, these solutions rely on the analysis of Johannesburg as the allegory of failed western modernity. Authors like Robinson (2002), Mbembe and Nuttall (2004), and Simone (2004) contend that the city is then read as 'lacking' according to western theorisations, 'a failed and incomplete example of something else', a problem to be fixed (Mbembe and Nuttall, 2004:351). This mode of thinking misses an understanding of the complexity, dynamism and multiplicity of South African society, leaving little room for alternative imaginaries. The challenge for urbanists then, according to Kihato (2007:215-17), is to "develop conceptual frameworks that make sense of urban Africa on its own terms…to find new languages, methodologies and...tools for understanding … cities". This call requires the city to be explored at "sites … not usually dwelt upon in research, that defamiliarize commonsense readings" (Mbembe and Nuttall, 2004:352).

Reading Johannesburg for what it is, rather than for what it is not, sets forward the fundamental basis from which to creatively engage with the local particularities, rather than simply applying ideas from other contexts. With a vision for a more fair, equitable and inclusionary city, a close look is taken at Cosmo City. Attention is drawn to the background problem before proceeding to outline the methodology and conceptualisation of its investigation. In focusing on housing, a priority need in the lives of people, its characteristics and functioning are also evidence of the identity of a locality within which social integration takes place. In an exploration of this case, this chapter deepens insights into the theory and practice of infrastructures of transformation relying on Bourdieu's (1984; 2005) concepts, and a distinctive interpretation of his notions of 'habitus'. This chapter moreover seeks to provide an innovative approach to develop more relevant and appropriate tools to guide interventions that contribute effectively to projecting social transformation through integration in South Africa.

Problem statement

In line with South African housing policy, integration is therefore considered in terms of two strongly overlapping correlates. First, social integration across class and race as social interaction (Department of Housing, 1994), although the latter is not explored in this research; and second, spatial integration in relation to geographic proximity associated with design and planning (Department of Housing, 2009). Through an ethnographic study of policy to provide a different perspective, an argument is presented that infrastructural planning and investment should not follow a contextual, technical and generic understanding of societal practices. It contends that, without affording the necessary credence to people's dispositions (see Table 5.1 below), efforts to achieve social transformation will remain substantively unattainable. The research shows more or less equal outcomes for a city's residents results when the relationships between people's dispositions and the built form are recognised.

Table 5.1: Research terminology

DISPOSITION	A way of being, seeing, acting and thinking in the world.
HABITUS	A "system of dispositions, that is of permanent manners of being, seeing, acting and thinking, or a system of long-lasting (rather than permanent) schemes or schemata or structures of conception and action" (Bourdieu, 2005:45).
NIMBYISM	'Not In My Back Yard' – a term for those who resist unwanted developments, usually housing for lower-income households, such as RDP housing, in his or her own neighbourhood.
BACKYARDING	The practices of constructing Informal dwellings – of ten intended to be rented out as accommodation—located in the 'backyard' of a residential property,, usually increasingly densities in an area beyond planning legislation.

Source: Authors' formulation, 2015

Informing this research is Pierre Bourdieu's (1984:77) assertion that social reproduction and class domination characterise social life through the ways in which 'habitus', as a system of 'dispositions' (refer Table 5.1 above) that structures everyday perceptions and classificatory systems in the form of "tastes and distastes, sympathies and aversions, fantasies and phobias" (ibid.). Bourdieu's analysis moves away from a purely economic account of people's decisions to enter the housing market. He regards economic decisions as also social decisions that both structure and shape people's lives, and at the same time, are central in reproducing the stratification of society, common viewpoints today. The housing market situation in Cosmo City is a particularly significant site for this exploration.

Drawing on research conducted in Cosmo City, a large-scale greenfield integrated residential development in Johannesburg, over a two-month period, the suburb is clearly seen as an example of what Mosselson (2015) refers to as a "vernacular form of development…[that] reflects and also responds to the diversity and contradictions of the post-apartheid moment". Mosselson's attestation emphasises the importance of contextually sensitive research to arrive at place-specific insights, rather than implanting best practices from project to project (ibid.). Inspired by the National Development Plan's claim that interventions should "understand the distinct challenges and potential of different areas and respond with a location-specific approach" (RSA, 2011:237), this project moves away from a normative reading of urban development. It seeks to illustrate how a range of imperatives and agendas, a system of dispositions, drive opportunities to more effective integration and therefore envisioned societal transformation.

Three core ideas are associated with this investigation. First, that more innovative research should be undertaken utilising the conceptual and methodological underpinnings as explored through the methodology employed in this work. The purpose is to provide more nuanced understandings that are able to inform policies and interventions. Second, that government policies and interventions should integrate people's dispositions, their ways of "being, seeing, acting and thinking" (Bourdieu, 2005:45), in their frameworks. The concern for dispositions should be replicated throughout government policies to accommodate the complex urban contexts in which it intervention has to take place. Lastly, using Bourdieu's (1984) notion of habitus, a number of practical insights that are gained from the investigation of Cosmo City are given. These insights, and the concerns for the shared views of people, have a place in the mechanisms of government. Significantly, they are able to create new avenues of action to redress an entrenched history of division to ultimately achieve a more equitable urban reality.

Understanding Policy and Practice Through 'Dispositions'

Integration is often thought about as the inclusion of different income groups or races in the same area (Onatu, 2010:204). This idea that there ought to be a social mix is one of the consistent aims of housing policy in South Africa, from the White Paper on Housing (1994) to the Integrated Residential Development Programme (Department of Housing, 2007). Underlying this has been an understanding of integration as providing spatial proximity between different social groups, equality in terms of access to infrastructural provisions, as well as location, in terms of distance from economic centres (Smit, 2007:11). Assessing integration through these understandings is valuable, particularly when considering the effects of government regulation of, and intervention in, the housing market. Yet, beyond these measurements, there is the social world that emerges from housing that should also be considered when performing research. This is because integrated settlements, and the policy advocating for them, may necessarily result from a particular schemata of beliefs that views integration as vital to urban South Africa's future. Moreover, it is practices of the residents that inhabit these settlements that determines how substantively integrated they become.

This particular innovative approach tries to offer a different way of assessing the results of integrated settlements as an attempt to conjure the long-desired "socially and economically integrated communities" (Department of Housing, 1994). To understand how these interventions take place through, and create new, processes that can (re)produce segregation, a different analytical object of concern should be woven into much research work. Bourdieu (2005) argues that these processes can be understood by studying habitus: "a system of dispositions, that is of permanent manners of being, seeing, acting and thinking, or a system of long-lasting [rather than permanent] schemes or schemata or structures of conception and action" (ibid.:45, emphasis in the original). In using this theoretical frame, this research focuses on the shared, mundane practices and experiences of individuals to reveal the system of disposition through which integrated settlements come to be. The argument is that habitus, as a specific concept, can reveal how "privilege and disadvantage are covertly reproduced" (Holt, 2008:231) and how the system inhibits social transformation.

Bourdieu (1984) developed the concept of habitus to understand how class differences were reproduced in France in the nineteen sixties. Central to it, is how status-stratified society, creating distinctions through different tastes, governed access to power. Bourdieu's research, utilising both survey data and qualitative interviews, focused on the everyday concerns that were not just a consequence but also the cause of social stratification. For example, Bourdieu would look at mundane practices, such as tastes in film, food and clothing, to show how class formation occurred to see how these revealed the different dispositions through which society is (re) produced. This research seeks to show that this choice of indicators that together make up a habitus is central to understanding segregation and societal transformation.

Some researchers use this interpretation of habitus to draw out the importance of "bodies… actions and passions" (Dewsbury, 2011:150) to understand and evaluate integrated settlements. The focus is on the social aspects that lead to their development and the lives of the residents within them. It differs from the simplified political economy readings that typify research on African cities (Mbembe and Nuttall, 2004), which, while offering valuable insights into some of the structural causes of segregation, could benefit from the nuances that habitus offers. Habitus provides a more sophisticated analysis because, for Bourdieu (2005), it accounts for the embodied manifestation of economic, social and cultural capital as it considers the position of individuals in society as the result of their ability to access the various forms of capital; with "economic capital being access to financial resources; cultural capital being tastes, distinctions and embodied dispositions; and social capital the ability to access actual and potential resources through social networks" (Butler and Robson, 2001:2146).

The concept habitus as used in this research also encompasses economic decisions as fundamentally social decisions, which is important to consider when researching the evolution of housing developments. Decisions are informed by the particular visions and aspirations of the actors involved. Cosmo City, the research site, is the manifestation of new forms of habitus, new system[s] of dispositions that affect the possibility of the development of future integrated settlements. Moreover, it also affects the possibility of integration of the communities that live within them. Drawing out how the various actors involved understand and act demonstrates how different contestations have arisen in Cosmo City as a particular kind of societal integration took place. Importantly, not only the inhibitors, but also the processes that enabled the transformation of existing social orders receive attention.

Methodology

Approach

A qualitative approach was deemed most suitable to apply to Bourdieu's theoretical framework as well as the research questions. The methodologies employed included semi-structured interviews, observation and spatial analysis. This work was framed around research of secondary source literature that included a focus on housing policy in South Africa since 1994 to provide insight into the desired outcomes of state-led housing interventions. This approach was adopted to extract the nuanced ways the City of Johannesburg (COJ) and key developers conceptualised and implemented Cosmo City; how it was designed by planners; and the ways in which residents in Cosmo City experience and live in such an environment.

Research sample and interviews

It is important that the collected data reflects the various stakeholders and actors who were involved and affected by the development. In total 11 key informants were interviewed. They included both formal actors who participated in the conceptualisation, development and implementation of the project, as well as residents from each of the three key housing typologies offered in the suburb. The three selected spatial areas were the Reconstruction and Development Programme (RDP) area, the linked housing area and the bonded housing area (as revisited later, refer Map 5.2). The methods used were semi-structured interviews, providing a fairly open framework, allowing for the conversation to move away from the set questions and identify more appropriate ways to understand the subject matter, as Cohen and Crabtree (2006) advocate. The two major sample groups comprised formal actors and households (Table 5.2 below). The formal actors were purposefully selected because of the role they had played in the development of the suburb. The households were chosen to represent the different areas within Cosmo City. Numbers were limited to accommodate the time frame of the project.

Table 5.2: List of formal actors and households interviewed

FORMAL ACTORS (X6)	HOUSEHOLDS (X5)
LEAD CITY OFFICIAL (X1)	RESIDENTS FROM RDP AREA (X1)
LEAD DEVELOPER (X2)	RESIDENTS FROM LINK HOUSING IN THE RDP AREA (X2)
LEAD PLANNER (X1)	RESIDENTS FROM LINK HOUSING AREA (X1)
PLANNING CONSULTANT FOR THE CITY(X1)	RESIDENTS FROM BONDED HOUSING AREA (X1)
FORMER PLANNER FOR THE DEVELOPER (X1)	

Source: Authors' formulation, 2015

Observations and spatial analysis

Observation offers a simple and widely used approach valuable in a variety of contexts to inform an understanding of the place-specific intervention – a well-established methodology by Goffman (1963, 1971) and Whyte (1980). Observation, literally observing people in the spaces that they inhabit, prioritises the embodied experience of residents by providing insights into how they use space.

The research was done in three key housing typologies in Cosmo City (Table 5.2 above). Although more time to gather information would be necessary for an extension of this investigation, the allocated time was adequate to assess the daily lives of people in the study areas. The beginnings of a comparative framework could be provided. For each housing typology, the key characteristics were highlighted and specific features and characteristics as well as similarities and differences were recorded. For the spatial analyses, the researchers drafted blueprints to illustrate the layout, aesthetics and built form of each property. Attention was placed on stand sizes, boundaries, openings, the types of objects found within the property and the way people occupied space.

Limitations

Gathering information to test the applicability of the theoretical assumption expressed about Cosmo City had limiting parameters. First, the results from the qualitative method applied were not generalisable beyond the context and informants from which they were derived. Second, due to time constraints, the sample group remained small, focusing only on one household within each grouping and all residents interviewed were homeowners. Third, the formal actors were interviewed as representing their professional role, which means they had a vested interest in the subject which they portrayed as favourably as possible. Opinions and claims they expressed had to be weighed against other collected information. Fourth, it is important to note that Cosmo City was the first integrated residential development project of its kind in the country. Since its inception fourteen years ago, structures and perceptions of the development have changed, both positively and negatively.

Housing, Housing Policy and Transformation in Post-Apartheid South Africa

The severe and seemingly intractable challenges confronting housing in post-apartheid South Africa have demanded policy and programmes that strive for multiple ends. A considerable backlog, lack of access to finance, poor affordability, poorly located units and inefficient housing markets are amongst the problems to be faced. Interestingly, threaded through the situation has been a concern for integration against the background of historically segregationist policies and the continued segregation of its cities. To understand the context out of which Cosmo City emerged, and the various objectives hoped for, it is important to first place the suburb in relation to South Africa's housing policy at large. Sights were set on it being the first large-scale integrated residential development of this type in the country. This section outlines the three key areas that government's policies and programmes of the state attempted to address.

Housing market

The housing market depends on the supply of housing units, either for households to buy or to rent. In South Africa, the backlog remains substantial. In 2010, it stood officially at an estimated 1.2 million units though this is likely to be significantly below the actual figure (Tissington, 2011). The housing market struggles with constricted supply, particularly for low-income households, which was intensified by the decline for over a decade in the delivery of subsidised housing (Rust, 2015). Low-income households have struggled to access mortgages, limiting access to the relatively small number of units on the market (Kihato, 2014).

Exacerbating this reality, the refusal to lend in inner cities and townships deflated the market in these areas, while adequate access to housing finance in the formerly white-only suburbs resulted in a dual property market at the end of apartheid (Department of Housing, 2004).

To address these issues, in 2004 a voluntary framework, the Financial Sector Charter, was drawn up between banks and government. The intention behind the Charter was to contribute to "the establishment of an equitable society by effectively providing accessible financial services to black people and by directing investment into targeted sectors of the economy" (Banking Association of South Africa, 2003:2). One of the targets included in the Charter was to increase mortgage lending to the 'gap' market, then households earning up to R7 500 a month. Nevertheless, access to mortgage finance remains an issue for low-income households, the vast majority of which are black. Currently the gap market consists of households who earn more than R3 500 a month, which is not enough to make even the cheapest, newly constructed house easily affordable. The finance-linked individual subsidy programme pegs this figure as being up to R15 000 a month. The gap market represents households that do not qualify for a subsidised RDP house and also have difficulty in finding a house to buy, implying they exist in a 'gap' in the market.

Subsidies

The White Paper on Housing, published in 1994, and the guiding document for government policy, introduced the National Housing Subsidy Scheme, which provided capital subsidies to beneficiary households to own a house. The National Housing Subsidy Scheme worked largely through government subsidising the private sector construction of houses for households earning below R3 500 a month. These RDP houses, envisaged in the White Paper on Reconstruction and Development (RSA, 1994), are now thought to number between two and three million units nationally.

For households who fall into the gap market, there is the Finance Linked Individual Subsidy Programme (FLISP). The Programme was implemented in 2005, then for households earning between R3 500 and R7 000, offering a capital subsidy that went towards financing the purchase of a house. The Programme has undergone a number of changes since, and, in response to its poor performance, it was relaunched in 2012. It was expanded to include households earning up to R15 000 to account for the all households in the 'gap' market (Rust, 2012). Originally restricted to new developments, in 2013, the Programme was extended to the resale market (Rust, 2013). There is also a range of subsidies for the rental market, all trying to increase the supply and the affordability of housing (Tissington, 2011).

Integration

Policy also considered what kind of cities and settlements resulted from it. Onwards from the White Paper on Housing, published at the end of apartheid, in 1994, three years after the Group Areas Act was repealed, government's integrationist agenda has been threaded through documentation. Written within the imposing spectre of apartheid, the National Housing Vision, the White Paper states that:

[g]overnment strives for the establishment of viable, socially and economically integrated communities, situated in areas allowing convenient access to economic opportunities as well as health, educational and social amenities… (Department of Housing, 1994)

This trend has continued as policy has developed, continually noting the intractable socio-economic segregation of South Africa's cities, and explicitly envisioning a more equitable urban reality. The White Paper on Housing (Department of Housing, 1994) states that the land and housing development process had the potential to "contribute to the racial, economic and spatial integration of South Africa". The Housing Act (Department of Housing, 1997:4) states that government ought to pursue this agenda, and prevent any discrimination in the way of access to housing. Breaking New Ground (Department of Housing, 2004:13-16), the update to the White Paper on Housing, has further promoted this objective, particularly under its chapter titled, Promoting Densification and Integration.

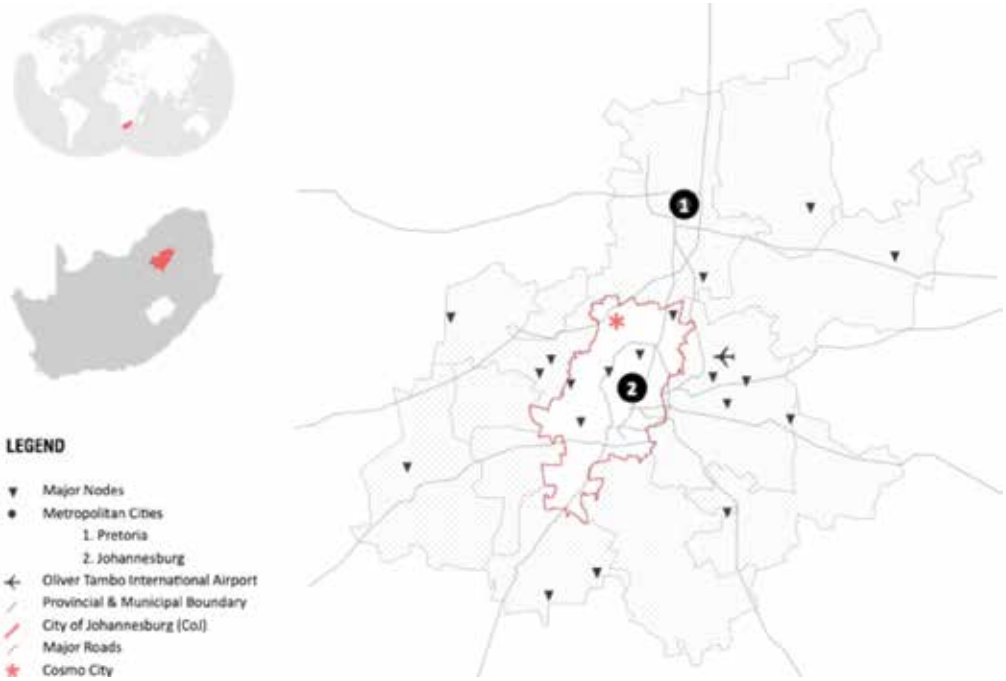
More recently, integration has featured most prominently in the Integrated Residential Development Programme (Department of Human Settlements, 2013), which was introduced to the Housing Code in 2009. The Integrated Residential Housing Programme is largely a practical programme, providing the means for the development of integrated settlements on greenfield sites. "[P]roviding a tool to plan and develop integrated settlements that include all the necessary land uses and housing types and price categories to become a truly integrated community" (Department of Human Settlements, 2009:9). The programme creates a platform that allows municipalities to become developers, and if the municipalities lack the capacity, responsibility can be transferred to provincial government or private developers. The programme allows for different housing typologies in a single settlement, including a mix of RDP, Finance Linked Individual Subsidy Programme, rental and bonded units. In such developments the programme encourages zoning beyond residential use alone.

South Africa's First Large-Scale Integrated Settlement: Cosmo City

Near Johannesburg's north-western municipal boundary, past townhouse complexes, shopping malls and the Kya Sands industrial park, towards the end of Malibongwe Drive, Randburg, an arterial road 25 kilometres from Johannesburg's Central Business District, lies Cosmo City. It is South Africa's first attempt to achieve the envisioned housing policy. The various required ends were put together and the result is Cosmo City (Map 5.1).

It is a large-scale integrated suburb in South Africa of considerable size developed through a public-private partnership, a joint venture between the COJ, Basil Read, a developer and Kopano Ke Matla, the investment arm of the Congress of South Africa Trade Unions (COSATU). The need arose when residents of Zevenfontein and Riverbend informal settlements lying to the north-east had to be relocated. So the government took the opportunity to use the development to realise the policy imperative of integration. Behind this initiative was the understanding that integration included households of different income levels, giving rise to different classes in a single suburb. By having three housing typologies, households would have access to shared amenities as roads and other bulk infrastructure, schools, parks and other amenities would be provided. Three facilities were offered: RDP units for low-income households; finance-linked units for the gap market; and bonded units for middle-income households. Thus, beyond relocating the residents and attempting to integrate the suburb, the development provided the opportunity to develop much needed RDP units (Onatu, 2010). Moreover, it also increased the supply of units to the gap market and local government's revenue from rates and taxes that could then be used to develop units for middle-income households (ibid.).

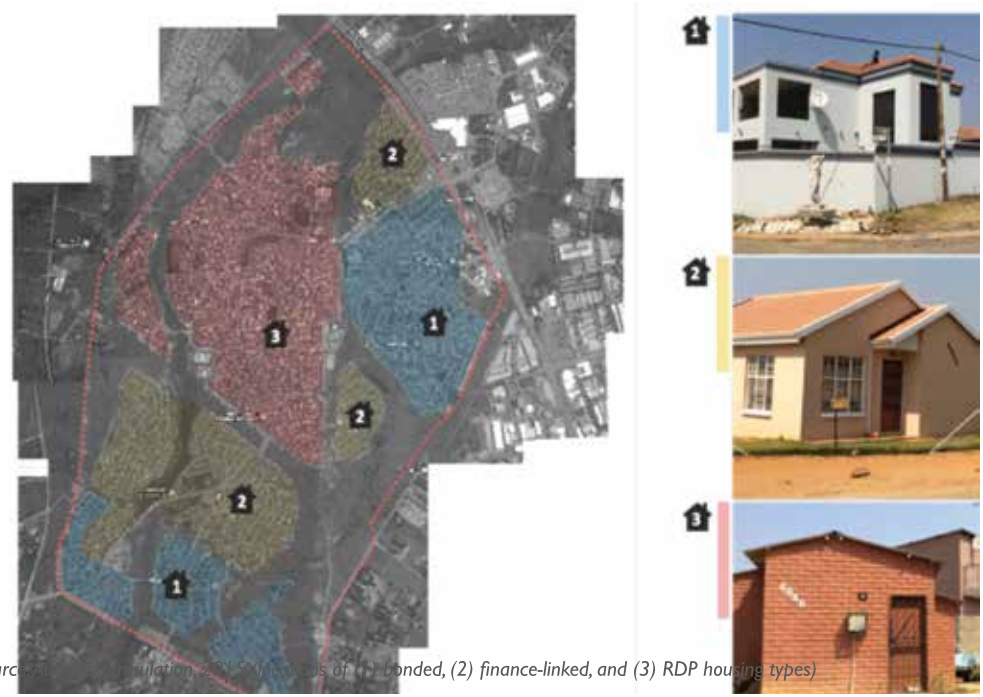
Map 5.1: Location of Cosmo City in Johannesburg, Gauteng



Source: Authors' formulation, 2015

Cosmo City is criss-crossed by wetlands, protected environmental zones, fenced off with palisades. These delineate and maintain a sense of distance, dependent on the width of the protected zones, as visible on the map (Map 5.2). They lie between the 3 300 bonded units, the 5 500 RDP units and the 3 000 finance-linked units. The bonded areas, which are on the boundaries of the suburb, consist of conventional suburban houses: plastered and painted, roofed with terracotta tiles, and with walled yards. Private developers bought the serviced stands from Codevco Pty. Ltd, the partnership-based developer of Cosmo City made up of Basil Read (a construction company) and Kopano Ke Matla (a Trust with Congress of South Africa Trade Unions (COSATU) as its beneficiary. They constructed the houses before selling directly to the public (LP, Pers. Comm., 2015). As with the finance-linked houses, which are smaller, Codevco carefully sold the stands in batches, gradually developing the settlement to convince households that purchasing a unit would be a sound investment. It would also allow them to profit off the increase in property values associated with a more established suburb (ibid.). Mortgages were used to finance the purchases of the bonded and finance-linked typologies, with the Finance Linked Individual Subsidy Programme subsidy off-setting the cost for finance-linked housing. Meanwhile, Codevco was also responsible for the construction of the RDP units, for which they received the capital subsidy (FPD, Pers. Comm., 2015) (Box 5.1 records a view of Cosmo City through the eyes of its residents).

Map 5.2: Location of housing typologies within Cosmo City



Source: Author's own simulation, 2015 (locations of (1) bonded, (2) finance-linked, and (3) RDP housing types)

Box 5.1: Cosmo City through the eyes of its residents

Kabelo[i] owns a house in the bonded areas of Cosmo City i (Kabelo, Pers. Comm., 2015). He has lived, now with his wife and daughter, in his house since 2007, having moved from a rented townhouse in Weltevreden Park. Kabelo bought the house—which is on a perimeter road of the area, adjacent to the wetlands—off-plan from one of a small number of top structure development companies that sold units on the serviced stands bought from Codevco. Kabelo's house is around 100 m2, and his stand is 250 m2— part of the only typology constructed without a government subsidy for the top-structure.

Kabelo's house directly overlooks both the wetlands and the RDP areas beyond it. It is in this RDP area that Joseph lives, with his wife and three children (Kabelo, Pers. Comm., 2015). He received his RDP house in 2007; the top-structure for which was completely subsidised by the Provincial Department of Housing, known today as the Provincial Department of Human Settlements. Through two unsecured loans (one of R20 000, to which he added R60 000 of his own savings; the other worth R70 000), Joseph has built eight backyard rental rooms in a 'U' shape around his 40 m2 house on the 235 m2 property. Most of the households in RDP areas have built backyard rooms, the majority of which are for residential rental; the remaining are retail spaces, hosting a wide variety of shops, including spaza shops, salons, shebeens and restaurants. Joseph is unemployed but earns between R800 and R1 200 in rental income from each backyard room. While this is his only source of income, his wife works as a part-time cleaner for a family in Bryanston, five kilometres away. Many believe that the rental accommodation provided by the backyards has increased Cosmo City's population to three times the intended size (LCO, Pers. Comm., 2015).

In the same extension, Jessica, Andile, and their daughter live in one of a collection of finance-linked houses (Jessica and Andile, Pers. Comm., 2015). That there are finance-linked houses in a RDP area is unusual, the result of unfavourable geological conditions that increased the cost of construction beyond the amount provided by the RDP subsidy. The result is the unique (for Cosmo City) adjacent placement of two different housing typologies—the finance-linked units ringed by RDP units. Jessica grew up in Zevenfontein, and moved to Cosmo City as her mother was a beneficiary of a RDP house. Before buying their house with a mortgage and a Finance Linked Individual Subsidy Programme subsidy, the couple lived in a rented backyard room in the RDP area. Samantha, Andile's wife, works for a large company, while Andile is a construction labourer. Unlike Jessica and Andile's house, Lunga's finance-linked unit, like most of the finance-linked units, is in a section of an extension constituted only of finance-linked houses (Andile, Pers. Comm.unicaiton, 2015). Though he works fulltime at an engineering consultancy, his main income is from an events business that he runs from his house. He has extended his house to accommodate this business on his 285 m2 stand.

[i]As residents interviewed requested anonymity, this and all other names mentioned in this chapter are pseudonyms.

Source: Authors' formulation

The land on which Cosmo City was constructed was owned by the COJ (Murray, 2011:198), who also financed the bulk infrastructure (Onatu, 2011). The subsidy for the RDP units was provided, as always for RDP units, by the provincial Department of Human Settlements. The first units were completed only in 2007, as after the 1997 announcements of the plans to develop Cosmo City, fierce opposition delayed commencement until 2006. The 1 100 hectare project was worth R3.8 billion in 2008 (ibid.), with the contributions being 13% from the COJ, 21% from provincial government and 66% from Codevco (ibid.). The final figures are not publicly available, in terms of total cost of the project, the amount contributed by each party and the return on profit for Codevco (PCC, Pers. Comm., 2015).

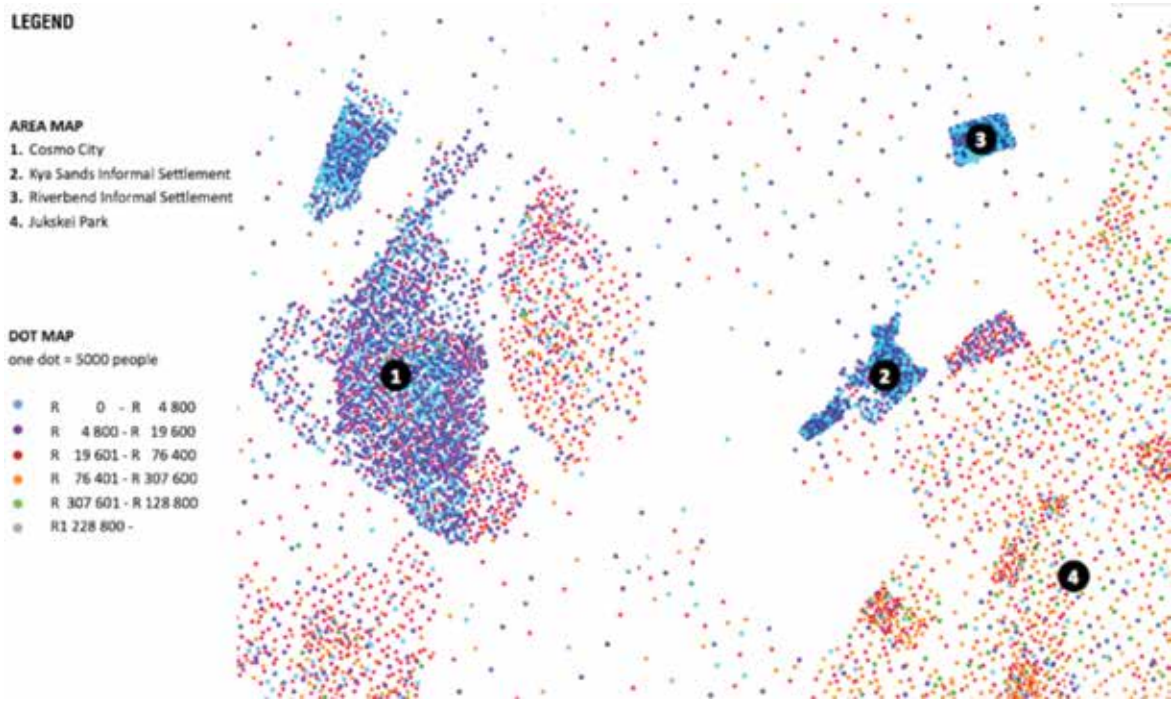
Cosmo City is now near final completion, with only a final few stands still to be developed. In some cases, households have improved and extended RDP houses with their own financing (Photograph 5.1 below). Cosmo City has been hailed as a success by the COJ (n.d.). Yet, despite a core objective behind the development of Cosmo City being an integrated suburb, many socio-economic and socio-spatial divisions are evident (Map 5.3).

More recently, Codevco started pushing ahead with a similar integrated development, Malibongwe Ridge, on the northern border of Cosmo City. It is denser, the stands are smaller, and a second subsidy was used to create rental units on the ground floor, with the RDP unit above on the first floor. Malibongwe Ridge will, like Cosmo City, include finance-linked and bonded units, though, without the wetlands to develop around, the different typologies will not be as spatially separated. With some of the lessons Codevco learned from the development of Cosmo City, Malibongwe Ridge offers the possibility to develop a more substantively integrated suburb.

Photograph 5.1: Original RDP houses and privately-extended double-storey RDP unit

Source: Photograph from Ivan Turok, 2015.

Map 5.3: Income distribution map of Cosmo City and surrounds



Source: Authors' formulation, 2015, based on data from Frith (2011)
(note low-income households concentrated in Areas 1-3 as represented in blue)

Practices, Preferences and Paradoxes: Understanding Cosmo City

Cosmo City came to be because of the visions and aspirations of various actors that sometimes seemed contradictory. This section explores how the concept of a paradoxical habitus works through Cosmo City. It is one that is both concerned with integration but simultaneously resistive to it. It is used to provide insights into how the dispositions of the various actors involved in this initiative shaped the possibilities and constraints of the suburb's development and its planning. Then finally, it will be applied to analyse the observed everyday practices of its residents.

Market imperatives and the integration agenda

Given what has been presented already about the current housing context within Bourdieu's framing, Cosmo City can be seen as the result of a paradoxical habitus, a synthesis of market concerns and the imperative for integration. These dispositions identified enabled the development of Cosmo City, an integrated development on what has proved to be well-placed land, where resident have reasonable equal access to infrastructural provisions. Considering conventional developments in Johannesburg, Cosmo City challenges narrow views that Johannesburg, its spaces, government, private sector actors and inhabitants is predominantly subject to financial interests. The existing assumption is that development only acts to maintain segregation or the antithetical view that a truly progressive government pursues only an integrationist agenda. Rather, it is the functioning of the paradox of the habitus that has allowed for progress towards integration. Understanding the prevalent dispositions reveals some of the conditions that shape the outcomes of its development.

The market and 'NIMBYism'

In north-west Johannesburg, developers have focused their attention on the development of upper income housing, shopping malls and office parks rather than low-income housing and integrated settlements (Murray, 2011). Murray is among a number of writers who see the uncontrolled rate of these developments as the result of a local government that complies with the needs of business over and above those of its residents (Bond 2003; Naidoo 2005), a phenomenon that is part of a larger global trend governing of cities (Brenner and Theodore 2002; Ong 2006). Perpetuating this dynamic is the dogged 'NIMBYism' opposing any proposed development for low-income housing located near middle-income suburbs has to face (Murray, 2011:171-203). From its inception, this opposition was particularly vociferous in the case of Cosmo City. Murray describes, somewhat starkly, "the steadfast resistance of affluent suburban residents to the planned construction of low-income residential development", which, for him:

exemplifies the kind of protracted and bitter power struggles that have pitted the narrow parochial interests of high-income homeowners against the needs of low-income (largely black) households and desperately poor squatter communities for decent, affordable accommodation close to places of work (Murray, 2011:196).

The opposition went to the courts, delaying the development by three years. At the same time, there was the fear that the tax base of the surrounding suburbs would be jeopardised through property devaluation caused by the proximity of low-income housing, or middle-class households boycotting payment of rates and taxes, as had occurred before (LP, Pers. Comm., 2015). To avoid this possibility, developers undertook various measures to placate the pre-existing middle-class communities. Beyond engagement with the protestors, it even extended to the planning of the development. For example, out of concerns that the RDP units would result in the perception of the suburb being a township, the bonded housing was deliberately zoned on the boundaries of the suburb (Map 5.2).

The logic of the planners was that entering the settlement through the bonded area would provide passers-by and residents with a more 'suburban experience'. A senior planner involved in Cosmo City explains:

We started with the high-income [units]—we didn't start with the low-income [units]—to set the scene, to say to people, that is not going to be a normal township, that this project is different (LP, Pers. Comm., 2015).

Starting the development with the bonded housing was also used to ensure the sale of the units to the middle-income market, as there were fears that, if the RDP units were built first, it may have dissuaded potential buyers to finalise a purchase.

The prominent concern driving the 'NIMBYism' against Cosmo City was that its development was perceived to be a threat to property prices. The issue was salient for all actors as a part of the habitus from which Cosmo City emerged, necessitated a concern for investment. The success of the development depended on the sale of the bonded and finance-linked housing to cross-subsidise the RDP areas. Prospective buyers had to secure mortgages from banks. Yet banks are only willing lenders if the property maintains its value since it serves as collateral security on the mortgage. At first, banks were doubtful that this would be the case. They believed that low-income housing devalued the surrounding houses and were wary of lending for purchase in the first integrated settlement, without knowing how it would turn out (FPD, Pers. Comm., 2015). Those interested shared the same concern, as their choice of a house was most likely one of their more significant investments. Local government had the same view in addition to uncertainty about the value and reliability of the revenue from rates and taxes (Huchzermeyer, 2001:23). In Johannesburg's progressive taxation system revenue is directly related to the value of the house. A former employee of Basil Read confirmed the COJ's concern, stating that the City wanted to maximise its fiscal return from its investment (FPD, Pers. Comm., 2015). Thus the entire development depended on the perceived changes to the value of the housing unit. Property values became a guiding concern evident at every stage of the development.

Historically, there has been a broad unwillingness among financiers to provide mortgages or finance developments for lower-income households. The case of developers in Johannesburg's inner city who struggled to secure financing for purchasing and refurbishing buildings exemplifies this reality. The result was that suffocating the area from investment meant it underwent a period of decline in the late 1990s (Morris, 1999). In this instance, through alternative financiers, developers have been able to invest in and stabilise the area, preserving its low-income housing stock (Mosselson, 2015). These resistive dynamics, based around property prices, not only show the complicated market dispositions with which government has to deal, but it also illustrates that government takes part in the creation of this habitus, sharing the same concerns as other actors. Ultimately, the effect of this way of thinking will inhibit the possibility for more integrated settlements, and more low-income housing being developed. For Cosmo City to be realised as envisaged, action and understanding cannot simply rest on how the market works to reinforce segregation. Rather, the focus for South Africa's first integrated development should be achievement within the experienced constraints.

A disposition for integration

The presence of the low-income households seems to be the main concern and the biggest obstacle regarding integration when it comes to inclusionary housing policy in South Africa (Klug et al., 2013:668). Yet, existing within the same schemata of dispositions is a desire for a reality that is "reflective of the new democratic dispensation and socio-political context in which they are embedded and demonstrate the ways in which this context produces attitudes, outlooks and habitus" (Mosselson, 2015). The concern of government, local and national, is the preservation and maximisation of property prices, yet with the need and desire to also redress of the legacies of apartheid too as essential. In contrast to Murray's (2011) criticism of non-acceptance multi-status homes in the same area, developers, at least in the case of Cosmo City, cannot be described as being singularly opposed to the low-income development, as they actively encouraged the integration agenda in this development.

The interviews with the formal actors involved in the implementation of the Cosmo City initiative revealed a disposition towards integration. The lead official in the COJ currently working with the Cosmo City development pointed out that the virtue behind integration in the suburb was equal access to social provisioning (LCO, Pers. Comm., 2015). A former Basil Read employee also emphasised this, explaining that particular attention was paid to ensuring the equal provision of infrastructure for serving different households (FPD, Pers. Comm., 2015). Murray (2011:200) quotes Des Hughes, the then public relations officer for Codevco, saying that Cosmo City "will be a fully established suburb with all the service provided … serving people from widely varying financial, cultural, and social backgrounds".

The most striking example that highlights the developer's inclination towards greater integration is the development of a small number of finance-linked units within a RDP area (Photograph 5.2 below). Geological conditions required additional preparation of the land to support the top structure, making the construction of RDP units not financially viable, taking the value of the government subsidy into consideration (FPD, Pers. Comm., 2015). Because of this, Codevco decided to experiment with the possibility of further integration by adopting the relatively risky strategy of constructing the finance-linked units within this zone (ibid.). This required the placation of the banks by proving that there was existing demand for these units in spite of their location. A survey of potential buyers to prove demand existed for finance-link units in a RDP area was undertaken. It verified that their location in Cosmo City was not a deterrent. The units sold soon after completion, demonstrating that even with the conventions of the planning of housing developments in Johannesburg, as seen in the separate zoning of different housing typologies in Cosmo City, developers are willing to actively go beyond this when an incentive to do so exists.

Photograph 5.2: Typical finance-linked units in RDP area

Source: Google Maps (2015)

Cosmo City came into existence through contestation, opposition and an obstinate desire to develop integrated housing at a time when there were doubts about their feasibility. The doubts surrounding communities expressed loudly and clearly, as well as local government and banks, about the values of their houses; and about the value of the areal units within Cosmo City as also voiced by households, banks and local government, form part of the paradoxical habitus. Yet, it stems from the very same habitus that represented the initial desire for integration that led to South Africa's first integrated development coming into existence. This is justification for emphasising the importance of understanding the 'actions and passions' (Dewsbury, 2011:150) that are present and through which developments occur. Exposing such understandings open up new possibilities for future developments, as they go against both the gloom of simplistic understandings of an unnavigable market that prevent progressive outcomes; and a situation in which developers are solely concerned with maximising returns (Box 5.2).

Box 5.2: Finding and recommendation 1

Key Finding

Government and developers partake in the same habitus—both are concerned with property prices and integration. This demonstrates both the limitations of government action, and the potential to leverage the cleavage that is the shared concern for integration.

Key Recommendation

The geological conditions in the RDP area allowed the developers to experiment with a more substantive form of integration. Considering this, deliberately and carefully created incentives by government for developers who are concerned with integration can allow for further experimentation that opens up new opportunities for integration.
An evaluatory framework that takes into consideration a developer's dispositions—particularly, in this instance, the extent to which there is a concern for integration—should be utilised when contracting for the construction of an integrated residential development.

Source: Authors' formulation

In noting the practices and preferences that came to the fore in analysing the events and reactions during the establishment of Cosmo City, the presence of paradoxes is evident and attention now turns to planning for these.

Paradoxical Planning

A disposition for integration allowed for the development of Cosmo City. The next stage for a large-scale housing development involves appropriately planning it for its future residents. Yet, the views and motives of the formal actors involved in the development are antithetical to the everyday practices of residents in Cosmo City with regard to the planning, design and aspirations for the suburb. Most prominent among these practices is backyarding. This entails the construction, often without planning approval, of additional rooms on the property, predominantly for residential rental accommodation purposes but also for retail activities (Photograph 5.3 below).

Photograph 5.3: Pervasive construction in backyards on stands in RDP area

Source: Photograph from Ivan Turok, 2015.

Many RDP beneficiaries in Cosmo City have engaged in some form of backyarding on their properties, much like Joseph (Pers. Comm., 2015) who has financed, developed and rented out the eight rooms surrounding his house. The backyards in Cosmo City are often considered the result of relatively large stand sizes and an insatiable demand for well-located rental accommodation, combined with the economic imperative of earning an income. Measuring around 250 m^2, the stands provide ample space for the construction backyard rooms. Ultimately, the provision of RDP housing has created "cash-poor homeowners who are dependent on income from backyard dwellers' rent" (Lemanski, 2009:472). In many ways their size is responsible for this practice being perpetuated.

The formal actors interviewed view their visibility as undesirable and presence as unsustainable and their antipathy towards backyarding is clear and explicit. Yet they have undertaken to accommodate the practice to some extent. This has taken the form of developing controls for backyarding while still allowing, and even providing for it. Conservative planning limits these acts of accommodation but it does not attempt to accommodate retail activities. Theoretically, this situation highlights the paradoxical habitus, which consists of dispositions that cater for needs of the residents but which also repudiate them based on normative conceptions of how the suburb should be. Ultimately, what is required, are "more pragmatic approaches and responses to the forms of urbanity" (Mosselson, 2015) that adapt to and consider the practices of residents.

The backyards are the result of a lack of by-law enforcement, which legally allows for the construction of only two additional units on a stand with prior approval (FPD, Pers. Comm., 2015). Before Cosmo City was handed over from Codevco to the COJ, Codevco employed scouts who surveyed the settlement on bicycle.

Any by-law infringements were noted and structures that were in violation were demolished. Since being handed over to the COJ, this level of surveillance and enforcement has not been maintained. This has enabled residents with the space to engage in the practice. Now government, justified by the legitimate concerns about increased pressure on the infrastructural provisioning, wishes to reduce the number of backyards. A Basil Read employee said that it was "unfortunate" that people were constructing backyards rather than beautifying their houses (LD, Pers. Comm., 2015). This is a sentiment shared by the Gauteng Member of the Executive Council for Human Settlements, Jacob Mamabolo at the time, who stated that new integrated developments would be more "beautiful" than Cosmo City, as the backyards have "turn[ed] [Cosmo City] almost into a slum" (Mashego, 2015). But government lacks the scope of action needed to demolish the backyards. Protest demonstrations that prevented an attempt to demolish a small number of backyards in March of this year made residents' opposition to the action patently clear (Wakefield, 2015).

In contrast to this revanchist approach expressed by some of the formal actors (LCO, Pers. Comm., 2015; LP, Pers. Comm., 2015; LD, Pers. Comm, 2015) and the Member of the Executive Council for Housing, there have been attempts by the same actors to integrate the practice into the suburb. A feature of Cosmo City's backyards is that "all are constructed out of bricks, rather than the more impermanent corrugated iron and wood found in other suburbs" (Rubin and Gardner, 2013:23). This can be considered the success of the municipal induction programme for RDP beneficiaries. According to Joseph (Pers. Comm., 2015), the beneficiaries were informed that they were permitted to construct backyards if they were in brick and if they received planning approval. Most residents adhered to these instructions; Joseph, for example, accessed an extremely expensive unsecured loans (his second, at an interest rate of 35%), and used his personal savings, to construct his eight brick backyard units. Later, he attempted to formalise his dwellings, paying a consultant to draw property plans and submit them to the COJ for approval. Though Joseph's attempts were ultimately unsuccessful, they illustrate the partial effectiveness of the induction. The attempt to control and regulate backyarding highlights the formal actors' nuanced approach to the practice. It shows the importance of adaptive strategies that arise when an awareness of the practices of the residents exists. Many of these ought to be considered, as they are often necessary and arise out of severe socio-economic circumstances.

In contrast, and with an awareness of the failure to limit the practice of backyarding in Cosmo City, stand sizes have been drastically reduced in size from approximately 250 m2 to 80 m2 in the new Malibongwe Ridge development. This leaves no space for such constructions whatsoever. The planners and developers, in an attempt to cater to needs of the beneficiary households, as well as the COJ's requirement to accommodate households who do not qualify for the RDP subsidy effected a compromise. They decided to include two rental units on the ground floor of each unit, with the RDP house located on the second floor. The rental units are meant to replace the practice of backyarding, providing formally planned rooms that households can rent out. This demonstrates a habitus that has emerged from contextually embedded experiences and knowledge of urban South Africa and RDP developments.

Rather than using design to limit the possible acts of households, this was an effort to source the second subsidy to provide the rental units. Consideration is given to the needs of residents, catering for a set of practices that may otherwise have been excluded from planning. Yet, as flexible and aware as the habitus is, there are limitations to what is possible due to the adherence of normative conventions that can neither accommodate, nor design for all the retail activities that exist in backyard structures, predominantly those along the more traversed streets of Cosmo City (Photograph 5.4 below). These structures are occupied by spazas (informal convenience stores commonly found in poor South African communities), salons, car repairs workshops, taverns and a variety of other shops. Due to zoning regulations in Cosmo City, not only are these structures illegal, so too are the retail activities conducted within them. The first attempt to address the needs of these smaller traders in Cosmo City was the designation of 18 areas for small businesses. These areas, primarily located at intersections adjacent to housing, were meant to be formally developed to allow for local economic activity. This followed the COJ's objective to have informal trade taking place within markets rather than along street edges (Benit-Gbaffou, 2015).

Photograph 5.4: Construction of structures for retail along busier Cosmo City streets

Source: Photograph from Ivan Turok, 2015.

The zoned sites have not been developed, and are now used by informal traders, and for dumping, as they do not accommodate the established practices of backyarding for retail. In contrast, spaza and other shops have thrived along the busier streets, particularly in the RDP areas. The view that retail should be zoned separately exists even when there is awareness that households will establish stores out of their houses; a Basil Read employee stated, "people will [invariably] make their homes an informal trading area" (LD, Pers. Comm., 2015). This illustrates the limitations of the habitus. An awareness of the practices did not result in innovative attempts to accommodate them in the built form of new developments (Box 5.3 below).

Box 5.3: Finding and recommendation 2

Key Finding

Planners, developers and government officials who are embedded in the Cosmo City development have an increased awareness of the social dynamics within communities, and can therefore intervene more appropriately to accommodate the needs and acts of communities.

Key Recommendation

Many RDP households are cash- poor and will develop backyards to derive the potential rental income. Although sourced for the new Malibongwe Ridge development, providing subsidies for the construction of backyards may not always be feasible. Thus, RDP houses should be carefully designed to accommodate the future construction of backyards by the beneficiaries, as this will be a likely outcome considering the RDP housing typology and the opportunity to create an income.
Given the socio-economic context, in line with the adaptation of RDP units to accommodate backyard rooms, the lack of accommodation of retail space in residential units should be reconsidered.

Source: Authors' formulation

Residents' Habitus: Aspirations and Distinctions, Lifestyles and Fears

Framed within an existing social order, residents' habitus drive particular practices and ways of engaging in the world. This order is reproduced, according to Bourdieu (2005), through social class which is not simply the sum of economic resources, but also enacted through the socio-cultural context that influences individuals' styles of life, perceptions, classifications, tastes and preferences. As the materially constitutive element of these practices, housing forms a particularly significant system in which residents' habitus predominates. The decisions people make are shaped by their socially produced aspirations, identity and classificatory systems. Thus, the section that follows moves beyond a traditional economic reading to establish a more nuanced understanding of how housing markets function through the manifestation of the cultural, aesthetic and moral evaluations people make. It also looks at the practices that members of particular classes adhere to or diverge from. Simply put, in investigating such practices through a spatial lens, an understanding arises of how integrated developments create both barriers and conduits between different social groups. Furthermore, this mediates people's positions within society.

Aesthetic aspirations and distinctions

In Cosmo City, the ways in which single-family homes are marketed have come to symbolise a particular type of cultural representation, beyond market rationality alone. Advertisements, used by developers, highlight the cultural tropes that are mobilised to sell a particular form of suburban life. Kabelo, who moved from a townhouse complex in Weltevreden Park, first saw "the graphics from a brochure [for the bonded housing] and [was] very impressed" (Kabelo, Pers. Comm., 2015). The advert showcased a young family, with two happy children, a loving mother and wife, and a caring, successful father, complete with a lush green garden, place for a 'braai' (barbeque) area and luxury family sedan (Figure 5.1). Cosmo City developers use the nuclear family as the prevailing trope through which to impart the ideas of prosperity, security and success.

Figure 5.1: Graphics used in developer's brochure of Cosmo City's bonded housing

Source: Mitula Homes (2016)

Although Kabelo attributes location and affordability as the primary factors for choosing to buy his fully bonded house in Cosmo City, what is evident is that beyond economic imperatives alone, the development offers the kind of suburban house to which the resident's interviewed aspire. They conform to the dominant societal cultural tropes and standards. The modern exterior wall (Photograph 5.5 below), the neatly manicured gardens and ornately painted pot plants in Kabelo's house (Figure 5.2 0) are therefore an expression of the conventional middle-class aesthetic and a lifestyle to which, in many ways, he aspires. Realising this particular aesthetic form is a recurring and cross-cutting narrative amongst social classes in Cosmo City. The lead developers speak of their hope for the distinctions between housing typologies to disappear as residents increasingly invest in their homes over time (LD, Pers. Comm., 2015; LP, Pers. Comm., 2015). Although residents like Andile and Jessica cannot afford one of the fully bonded houses to which they aspire, the exterior of their finance-linked house is nevertheless the picture of traditional suburbia complete with colourful flower beds, a dog kennel, and even a space allocated to build a garage for the car that they do not yet own (Figure 5.3).

Joseph's 40 m2 RDP house (Figure 5.4 below) follows similar aesthetic cues to create "a nice place like the houses in the [Cosmo City's bonded areas]" (Joseph, Pers. Comm., 2015). He has planted a 3m2 rose garden along four of the short five metres of the house's front wall, paved portions of the outside area, and installed a retractable green awning over the front door. In these ways, the provision of freestanding housing units, across mixed-income markets in Cosmo City, have partly reduced aesthetic delineations between housing typologies. To some extent, this has blurred the boundaries between the different classes who live in them. However, the different barriers to entry into the market for different social groups perpetuate existing social structures.

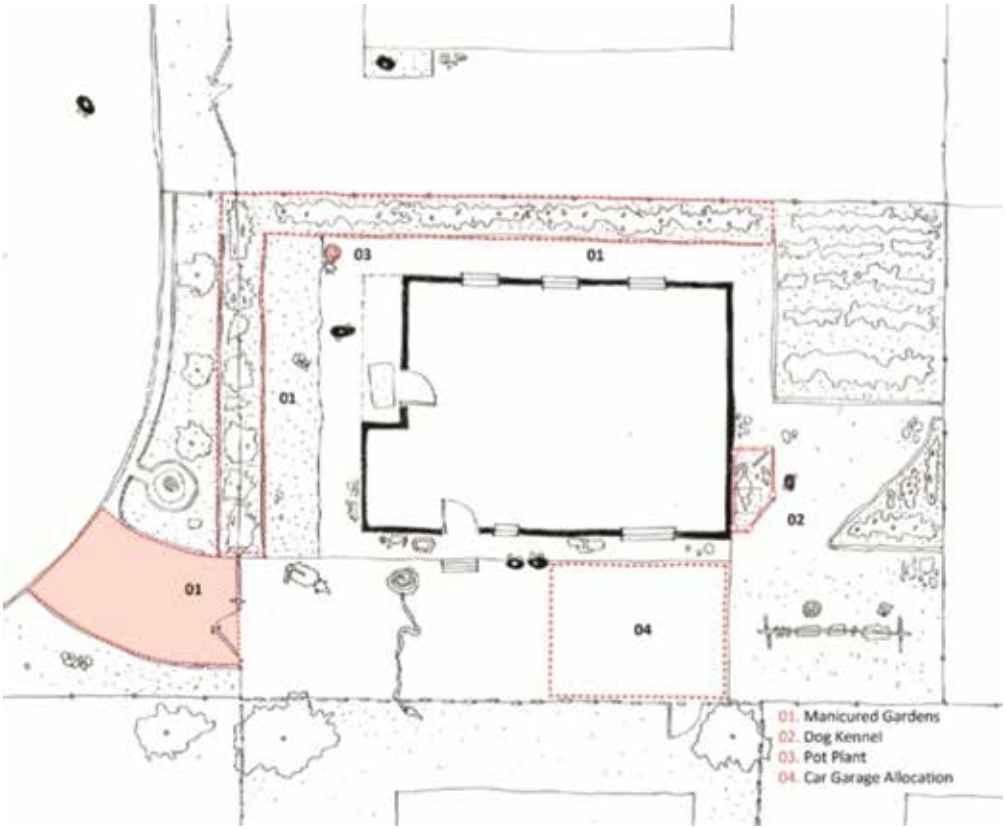
Photograph 5.5: Modern exterior walls

Source: Photographs from Ivan Turok, 2015, (from left to right: bonded unit, finance-link unit and RDP unit)

Figure 5.2: Socio-spatial floor plan of bonded unit

Source: Authors' formulation, 2015

Figure 5.3: Socio-spatial floor plan of finance-linked unit in RDP area



Source: Authors' formulation, 2015

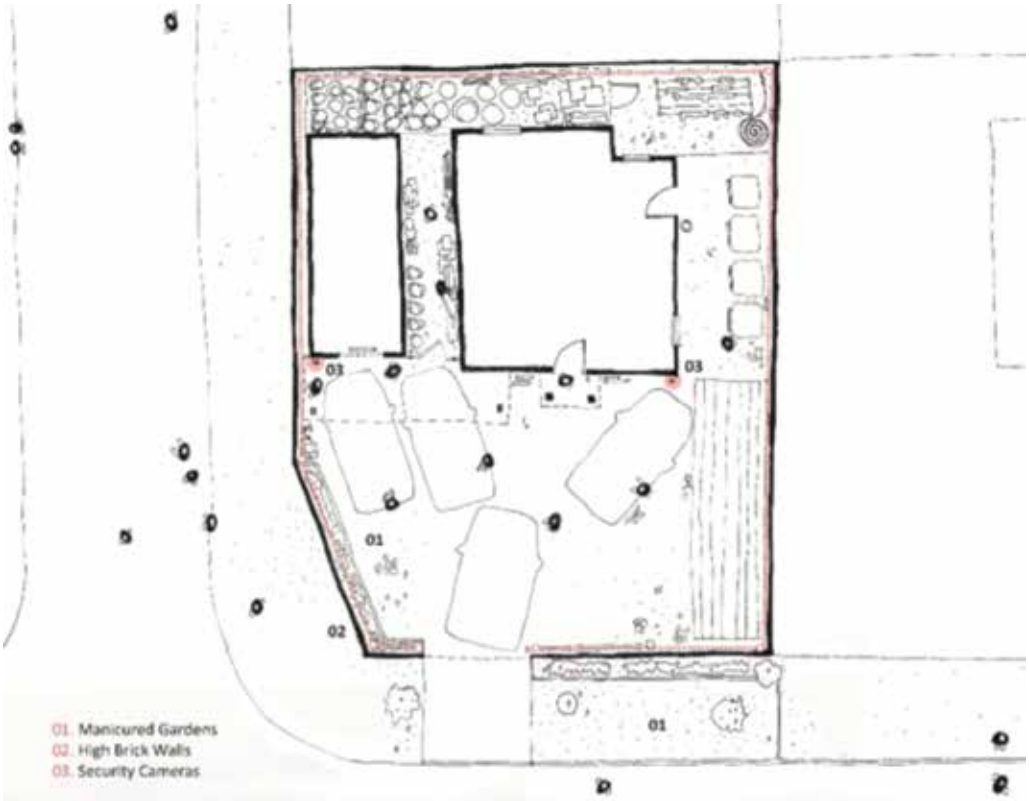
Joseph, for example, is not able to afford the upgrades he would like to do to get his house to look "like the [luxury] house [he] saw in Limpopo" (Joseph, Pers. Comm., 2015). Often, despite their attempts to achieve a particular suburban aesthetic feature, the financial limitations of lower-income households galvanise the differences. Their inability to create the desired aesthetic effect is obvious to the observing passers-by. Barriers to class segregation that many of the residents so fervently attempt to transcend, sometimes unsuccessfully, make further integration impossible. Aesthetic distinction is something that residents seek to achieve. Like Lunga (Pers. Comm., 2015), in the finance-linked extensions, who deliberately tries to maintain a symbolic indication of difference and financial success.

Figure 5.4: Socio-spatial plan of RDP unit

Source: Authors' formulation, 2015

At the inception of Cosmo City, developers built both finance-linked units and RDP units with the same textured face-brick (Figure 5.5). This later led to finance-linked homeowners protesting, as they wanted their houses to be distinguishable from the houses in the neighbouring RDP extensions. In an effort to ensure market desirability, developers responded by plastering the walls of finance-linked houses that followed in the next phases of construction. It is therefore evident, that buyers are as concerned, if not more than general, and influenced by the status of the house they are purchasing, and the image that it portrays, than they are about its affordability.

Figure 5.5: Socio-spatial plan of finance-linked unit



Source: Authors' formulation, 2015

Thus, on one hand, residents' aesthetic preferences illustrate their shared aspiration to meet particular cultural representations by employing patterns of distinction. In doing so, social differences are reduced. On the other hand, their action also elucidates how social stratification is reproduced. It represents a disconnect between people's habitus, their aspirations, and their objective means to realise them. Ultimately, the habitus that the homeowners of Cosmo City seek and try to develop aspires to a home ownership model that is often unrealistic, because of many households' limited financial reach. This also means that they are continually unable to completely realise their idealised aesthetic standard. Thus, the housing habitus of the residents of different social classes in Cosmo City simultaneously enables and inhibits integration (see Box 5.4 on the right).

Box 5.4: Finding and recommendation 3

Key Finding

In understanding homeowners' aesthetic aspirations, preferences, and need for distinction, we can begin to understand how socio-spatial integration is either enabled or inhibited.

Key Recommendation

This provides the platform from which more meaningful policies which take aesthetics into account can be developed, and used as a tool for more effective social integration, and ultimately transformation, in greenfield integrated residential development projects.

Source: Authors' formulation

Between township and suburb

Importantly, housing does not simply represent residents' tastes and desires; it also epitomises different ways of being in the world and relating to social orders (Bourdieu, 1984). Cosmo City reveals a hybrid suburban way of life that moves beyond the Howardien assumption of northern suburban housing habitus (Drummond et al., 2013). Ebenezer Howard's visionary solution to the urban problems of Victorian England, which focused on suburban development, was published in the second edition (1902), under the title, "Garden Cities of To-Morrow".

Cosmo City is a suburb that is neither uniform nor unchanging, despite the fact that City officials and planners envision it taking a very particular form. Following Drummond et al.'s (2013) reading of the so-called Anglo-American model of suburbia, such an envisioning limits more nuanced understandings of the everyday experiences that shape the complex and layered cities of the Global South.

The townhouse complex in which Kabelo (Pers. Comm., 2015) previously lived imposed tight controls on things like sound levels and visiting hours, which he explains as a key reason for moving to Cosmo City. With little garden space in the boundaries of his property, Kabelo has appropriated the publicly-owned pavement across the road where he has planted grass and trees. He maintains it as meticulously as he does the rest of his house (Figure 5.2). For him, it provides, as he explains, a "nice place" to host friends for 'braais' (barbeques) and parties with music, without being limited by the restrictions imposed in the more established and historically white suburban areas.

Yet, Kabelo also paradoxically speaks of envisioning a quiet, ordered life that the extension in Cosmo City provides. Andile and Jessica share this seemingly paradoxical habitus. They too ascribe to an ordered middle-class lifestyle, but one that allows for, and embraces, the "disorder of township life" (Jessica, Pers. Comm., 2015). This, Andile calls a "suburban-township", a place where he does not have to "compromise his African well-being for [white] culture" (Andile, Pers. Comm., 2015); where he can play loud music; visit friends; and watch the soccer on the pavement or in the street; without complaints from neighbours (Figure 5.3) and Photograph 5.6 below). These viewpoints illustrate that, within the sphere of formal regulation, adaption needs to be accommodated. These are not antithetical ideas, but can be blended in ways that make everyday life possible, and even enjoyable.

Photograph 5.6: Township or suburbia?

Source: Google Maps (2015) (using the street-facing entrance area to sit and socialise)

In this way, Cosmo City is not simply a place where different housing typologies offer homeownership for residents of varied socio-economic backgrounds. It offers the potential for residents to move up the ranks of existing social orders. But it is also a place where residents' dispositions and aspirations, while seemingly paradoxical, represent the ways in which greenfield integrated residential developments are accepted for their "idiosyncrasies, experiences and possibilities" (Mosselson, 2015:16) rather than for the more imitating image of western modernity found elsewhere. Instead, it rather represents what Mosselson (ibid.) sees as the manifestation of new ways of living beyond the historical reminders that apartheid townships so vividly bring to bear. Significantly, this framing allows for alternative theorisation around new forms of habitus, the emerging space of the African suburb or the African modern vision (Nuttall, 2004) (Box 5.5 on the right

Box 5.5: Finding and recommendation 4

Key Finding

Cosmo City is an example of a more shared, public way of life, although within a suburban setting. Despite this, the "township-suburb" is designed in accordance with 'western' ideals of suburbia implanted from elsewhere. There is little consideration for how residents use (sub)urban space beyond the conventional conceptualisation that government and developers envision.

Key Recommendation

Perhaps then more attention should be payed to the urban design of the suburb, with a shift in focus from that of the individual houses to a more nuanced consideration for how shared public space may be planned and included.

Source: Authors' formulation

Fear of crime and the segregated city

Superficially contradicting this, but part of the same paradoxical habitus, is, ironically, little tolerance for the alternative livelihood practices associated with 'township' or 'informal' life. Residents in Cosmo City, many of whom are originally from townships, find themselves caught in the habitus of an established suburbia. As such, a powerful sense of 'NIMBYism' prevails in favour of suburban envisionings. As Drummond et al. (2013:48) explain of cities in the Global South, some suburbs have been "subsumed under the negative image of 'spontaneous' or informal [urban] settlement" typologies. In the case of Cosmo City, the tendency for residents to form strong associations has typically tended to prevent particular forms of 'vernacular development' from happening.

Spaza shops, in many of Cosmo City's bonded housing extensions, are perceived as a magnet for opportunistic crime due to the pedestrian activity they attract. According to Kabelo (Pers. Comm., 2015), at residents' association meetings that he attends, the shared view is that RDP dwellers seems to be the perpetrators of crime of this nature, attributing it to their need to engage in it due to the poor socio-economic conditions. Residents further consider the lack of by-law enforcement, as exemplified in the pervasive and often illegal backyarding in the RDP extensions, as the "cesspool" from which a range of "illegal activities fester", describing it as "chaos there" (ibid.). He presents the idea that the bonded, and to a lesser extent the finance-linked housing extensions, are different from the RDP extensions. This is not simply a geographical point of reference but one which refers to the 'others' who reside within it; people who, by Kabelo's (ibid.) account, are not "literate and professional", people who are "of a different calibre". These categorisations represent qualities that are seen to be lacking in the 'other' and are ideals that come to constitute various class identities. This translates into the reproduction of subjects and practices based on class, who live according to the rules of distinction.

With only a 1 km wide wetland area between the RDP and bonded housing extensions at certain points in Cosmo City, Kabelo says he "never thought it would be arranged like this" (Kabelo, Pers. Comm., 2015). He imagined the RDP area would be further away, and out of sight from his house. Andile, despite not living in a fully bonded extension, echoes this sentiment: "If I buy a bonded house [one day], I don't want to see RDPs" (Andile, Pers. Comm., 2015). Residents' fear of the perceived imminence of crime in the extension have resulted in the domestication of public space defined as a controlled and "fully self-contained environment where the anxieties of public encounter are largely absent" (Koch and Latham, 2012:3).

Expressed as a way to reduce crime and increase property values, the community is building a 2.5 m high wall around the periphery of their extension (Photograph 5.7 below). This effort to keep pedestrians out, mainly those coming from the RDP extensions, has been approved by the COJ. Following Haferburg's (2013:262) assertion, this is a "spatial arrangement that continuously [sends its] often not so subtle messages to [social actors from different classes]". Through a particular habitus, wealthier residents adjust the symbolic and material meaning of the built form, in an exercise of domination and control. Lower-income residents, like Andile, often walk through the area to draw inspiration for the house they aspire to build one day. They therefore remain segregated from wealthier areas in which they "do not belong" (Andile, Pers. Comm. 2015).

Photograph 5.7: Wall to be built along existing fence separating bonded housing and RDP areas

Source: Photograph by authors, 2015

Nevertheless, fear of crime is a reality that not only affects the middle-classes. Much like Kabelo, who has built high boundary walls, Lunga has also built high walls and added three surveillance cameras on the exterior of his house (Figure 5.2; Figure 5.5). Joseph would also like to build exterior walls and increase security around his house, but financial constraints mean that for now, he is forced to rely on the voluntary security patrol group that he and his neighbours have established.

Security measures are considered integral for proper protection of property investment as well as social order. This is particularly so in the context of Johannesburg and its environs, where fear, both imagined and real, has come to characterise much of people's daily practices. Thus, the habitus that circulates within it too is affected. While Joseph and Andile hope to live in Cosmo City's bonded extension one day, Lunga, like Kabelo, aspires to move to a "quiet [gated] suburb [near Midrand] with a big yard and peace of mind" (Lunga, Pers. Comm., 2015; Kabelo, Pers. Comm., 2015). Gated communities therefore become "important spaces in which ideas of what is and how to be middle-class are played out" (Drummond et al., 2013:49). As such, multiple issues are brought to bear around the physical form of development in Johannesburg. Security in integrated residential development is seen to reduce the crime rate, creating an important sense of safety for households. Yet such measures simultaneously perpetuate patterns of social exclusion, and therefore reduce integration. Ultimately, then, although Kabelo "wants to co-exist" (Kabelo, Pers. Comm., 2015) with residents of different socio-economic backgrounds, as Andile contends, "classes are not equal" (Andile, Pers. Comm., 2015). Therefore practices that maintain orders of separation perpetuate (Box 5.6 below).

Box 5.6: Finding and recommendation 5

Key Finding

The residents' habitus, and the decisions that they take around the issues of fear of crime, has social ramifications. Particularly where higher income household areas segregate themselves from lower income household areas, for example, where walls are built around entire extensions, limiting interaction between classes and, therefore, reducing integration.

Key Recommendations

When walls are built, entire extensions become gated and limit access to, usually lower income residents outside of these areas. In this way, local government (COJ) follows market logic and favours protecting property prices over the segregatory impact such decisions have on communities. Therefore, the state becomes complicit in segregating residents along class lines, despite the mandate for such projects to realise social integration. To this end, local government should implement policy that prevents it from supporting segregatory practices, encouraging temporary solutions rather than permanent alterations to the built form.

Source: Authors' formulation

Conclusion

Post-apartheid, South Africa's housing and human settlements policies have attempted to redress a history of extreme inequities. While the priority has been to provide housing, relatively successfully policy has also maintained a continuous concern for how this inequity manifests in segregated cities such as Johannesburg. A particular example is through the distinctive provision of RDP units. Integrated developments are one approach government has adopted to alter these dynamics, with only partial success. In an attempt to begin to reveal why this is the case, this research points out that integrated developments should not only be assessed according to narrow understandings of integration but to also give credence to social processes to the extent that is necessary. In employing the theoretical concept of habitus as the framing device through which to read such processes, particular insights are provided concerning the dispositions of developers, local government officials, planners and residents, In turn, the potential for more substantive and equalising social transformation is revealed.

Despite the envisioned project of integration, this adopted approach illustrates that government and developers are an integral part of a paradoxical habitus that both limits and enables the possibility to achieve such a goal. One shared disposition creates a risk averse, sclerotic professional practice that maintains separation simply to protect property prices. While in another instance, established planning conventions result in the lack of accommodation for the everyday practices of many disenfranchised urban residents. As many of these practices tend to limit the more nuanced approaches of the professional actors, their habitus simultaneously encompasses a shared desire for social integration. The physical embeddedness of professional actors in the spaces in which they act, in some instances, fosters a habitus that is exposed to and aware of the practices of residents. This has contributed to "more pragmatic approaches and responses to the forms of urbanity which currently define the area" (Mosselson, 2015), Cosmo City in this case.

As habitus involves enduring schemata, it will be impossible, and undesirable, considering the limitations imposed by market forces and design conventions, to completely overcome the inhibitors to integration. Importantly then, is the necessity to uncover the conduits through which more substantive attempts at integration are enabled. Further to this end, these conduits should be informed by the habitus of residents. Residents' aesthetic preferences illustrate aspirations for particular representations that inform the social distinctions that prevent or encourage integration, and reproduce or reduce social stratification within Cosmo City. Residents' ways of being have importantly resulted in a new South African suburban form, one that provides spaces for differing practices. These require careful consideration and planning. Yet, residents' fear of crime continues to shape the way in which interaction between different social classes occurs in the suburb, most often exacerbating segregation. These practices and distinctions play out within all communities, acting as a centrifugal force for effective social integration. Therefore the potential for societal transformation across the divided reality that is urban South Africa does exist.

Replicability

Beyond the findings that resulted from this research, and forming the overall agenda of the research, is the attempt to understand, assess and evaluate integrated development projects differently. Rather than looking at more reductionist concerns for equal access to the provision of infrastructure and services, integrated settlements should also be assessed through their own attempts to integrate socially. This importantly compelling challenge is further stimulated when it plays out in a largely segregated populous confined area with different dispositions at play.

Attention should focus on the feelings, tastes, social distinctions and concerns of the relevant actors involved. These ways of being form an important dynamic that shapes the planning, both intangible and physical, of integrated developments, as well as the social relations that take place within them. The research therefore offers a conceptually and methodologically innovative approach to deal with such challenges. Replicating it in other contexts could provide the necessary tools to arrive at localised, place-specific insights. It simply requires a shift in focus as it is ready for adoption. More importantly, it is desirable, as it arrives at a robust understanding of how to account for the enablers and inhibitors of integration that shape the success of such developments more holistically.

What approaches like these shed light on, beyond simply building integrated settlements, are the less tangible barriers to integration that also address the forms of hierarchy, distinction and prejudice that still so strongly divide our urban environments. It is this very aspect that limits the potential for re-ordering historical social structures. Since the aim of this research was to emphasise the need to account for the role that social conventions play in government's realisation of policy objectives, it offers a second opportunity for replication. Ways must be found to include what government can do to take cognizance of all operating dynamics. Despite the challenge this presents, it opens up an opportunity for government to adopt innovative approaches to deal with a host of urban challenges. New ways of seeing and thinking about urban South Africa can reveal more effective ways to realise genuine social transformation more than two decades after democracy.

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Jessica (Personal Communication, 13 June 2015), Resident from Link Housing in the RDP Area, Cosmo City, Johannesburg.

Joseph (Personal Communication, 13 June 2015), Resident from RDP Area, Cosmo City, Johannesburg.

Andile (Personal Communication, 27 June 2015), Resident from Link Housing in the RDP Area, Cosmo City, Johannesburg.

FPD (Personal Communication, 1 July 2015), Former Planner for the Developer, formerly of Basil Read, Johannesburg.

Personal Communication (PCC), 1 July 2015), Planning Consultant for the City, City of Johannesburg Metropolitan Municipality, Johannesburg.

LCO (Personal Communication, 6 July 2015), Lead City Official, City of Johannesburg Metropolitan Municipality, Johannesburg.

LD (Personal Communication, 6 July 2015), Lead Developer, Basil Read, Johannesburg.

LP (Personal Communication, 7 July 2015), Lead Planner, Urban Dynamics, Johannesburg

Kabelo (Personal Communication, 12 July 2015), Resident from Bonded Housing Area, Cosmo City, Johannesburg.

Lunga (Personal Communication, 15 July 2015), Resident from Link Housing Area, Cosmo City, Johannesburg.

cemetery

noun

an area set apart for or containing graves, tombs, or funeral urns

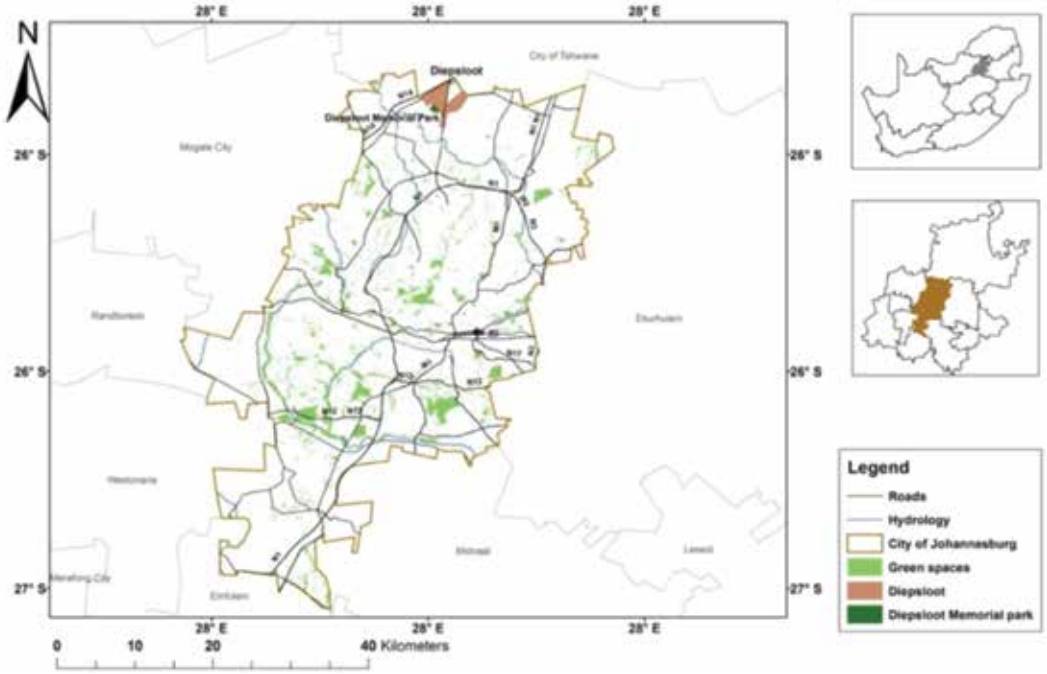
6. RETHINKING CEMETERY DESIGN AND MANAGEMENT: JOHANNESBURG AND THE DIEPSLOOT MEMORIAL PARK

Tsepang Leuta

Introduction

In Johannesburg, South Africa, there has been an attempt to introduce more innovative approaches to cemetery planning. The Diepsloot Memorial Park is one of the City of Johannesburg (COJ) Metropolitan Municipality's ground-breaking cemetery developments. Its development was a response to Johannesburg's diminishing burial land. Instead of designing a conventional style cemetery that most people are used to, Johannesburg City Parks and Zoo, an entity of the COJ, proposed a development to serve as both a place for internment and as part of the city's green lung open park area to benefit the residents of Diepsloot and the surrounding areas of Johannesburg (Nelana, Pers. Comm., 2015). It was appropriately designated the Diepsloot Memorial Park and cost R17 million to develop. It opened its gates to the Diepsloot community and its surrounding areas in April 2007 (Johannesburg City Parks and Zoo, 2007). The cemetery is located in one of the COJ's seven regions, Region A in the province of Gauteng (Map 6.1 below),. It was envisioned to accommodate a total of 120 000 burials not including second burials or interring the cremains, the ashes from cremation. In responding to shortage of space in for burial ceremonies, the cemetery would relieve others such as Avalon Cemetery in Soweto and serve the growing Diepsloot community.

Map 6.1: Location of Diepsloot and Diepsloot Memorial Park



Unlike other older cemeteries, from conception the Diepsloot Memorial Park was designed with a slightly different purpose. It is located in the Diepsloot Township an area facing many social ills. These include accelerating unemployment rates, crime, and youth unemployment, poor service delivery and inadequate housing. Looking from the outside, the memorial park gives the area a visual break from the congested informal structures characterising the township. When the cemetery first opened its gates, it allowed only flat plaques. Neither full-body memorials nor headstones were permitted. That changed as the cemetery has since developed a section that allows tombstones, according to Mr. Moloi (Pers. Comm., 2015), the Cemeteries and Crematoria Manager at Johannesburg City Parks and Zoo. This was the culmination of community uproars provoked by a range of socio-cultural and political influences (Nelana, Pers. Comm., 2015).

This study identified a recently completed cemetery that shows an element of innovation by recognising elements of creativity and originality. By exposing reasons that led to its development and users' perceptions, research was undertaken to assess whether its construction has had any significant impact on the area where it is located. Since the design integrates both burial and recreation functions the general public's view of this different approach for a cemetery was sought. It is against this background that the study took Diepsloot Memorial Park as a case study as it reflects a move towards an innovative design in the provision of cemeteries. After briefly discussing the background of cemeteries as a social institution, the objectives of the study are stated. The theoretical framework that grounds the theme of this research looks through the lens of Rogers' (1995) 'diffusion of innovations' theory. This chapter scrutinises the innovative practice employed in the design of Diepsloot Memorial Park. The extent to which people are open to seeing cemeteries beyond their primary role and the barriers that affect the diffusion of its adoption are identified. Assuming a shift took place, the design itself and its objectives are examined, and the challenges the final product faces are determined, as is the possibility of it merely being a replication of other international cemeteries.

A description of the methodology that addresses the objectives follows, and then the conclusions and recommendations emerging from the findings are presented. Two particular points to note are an assessment of the potential of the design of the Diepsloot Memorial Park for upscaling and adaptation in other South African cities, and how a cemetery and adapted models could potentially be used to transform the functioning of the areas in which they are located.

Background to Cemeteries

South Africa is home to a rich variety of cultural and religious belief systems, in which cemeteries play a crucial role in people's lives. This is visible on important holidays such as Easter and Christmas Day when families and friends visit cemeteries, and gather by gravesites to remember and pray for their dead. In Johannesburg, families own graves in perpetuity. This means that the Johannesburg City Parks and Zoo incurs ever-increasing demands for burial space and increasing maintenance costs.

However, due to their land-consuming nature, cemeteries occupy significant areas and thus echo the historical legacy of these areas. Cemeteries are under immense pressure from urban growth and development. Like most basic services and bulk infrastructure, they are susceptible to impacts of rapid urbanisation, increasing population growth, and environmental and climate change. Integrating some green infrastructure elements within cemeteries as the Johannesburg City Parks and Zoo is currently doing, could help them respond to urban development challenges. For instance, they could potentially provide ecosystem services such as climate regulation, carbon sequestration, water infiltration and curbing erosion. Increasing greenery within cemeteries could help reduce run-off, increase natural infiltration and can thus help to control flooding. The use of vegetation instead of impervious surfaces increases interception levels. The current climate change impacts will continue to negatively impact the built environment and further intensify urban challenges. These challenges cut across continents and will eventually require governments and insurance companies to incur greater costs for repair and to provide new infrastructure (Development Bank of South Africa, 2011).

Generally, people are uncomfortable with considering the realities of death. Any discussion concerned with the planning, design and management of cemeteries is bound to be sensitive. Hence, any proposed change could lead to resistance from the users of these spaces. However, eventually change will have to be effected, given the number of pressures facing government. These concern the diminishing availability of land suitable for burial, fiscal constraints, environmental concerns and the reluctance to move away from conventional planning practices. In most cases, the upkeep of cemeteries is depleting municipal budgets. It is clear that with many of the solutions being applied to the use or reuse of the cemeteries in South Africa, practical approaches tend to outweigh other factors (Wilkins, 2011). For these and other reasons, cities will have to be proactive and innovative, whilst cemetery users will have to eventually adapt. Religious and cultural beliefs impact strongly on the acceptability of solutions being proposed by metropolitan authorities (Wilkins, 2011) particularly regarding cemeteries.

Often a cemetery is the only relic left from early settlements and as such is a critical link with the past (Uslu, 2010). Cemeteries provide quiet places to honour and celebrate the deceased, whether it is of a most personal nature, or on a local, regional or even national scale (King et al., 2004). "By viewing cemeteries as incarnations of personal and cultural identity and history, people are motivated to be custodians of such spaces, taking action to maintain, restore, and improve their community, the landscape, and larger ecosystems" (Hester, 2006:364). Such efforts also have the potential to bring community members together for a common cause (Harker, 2012) using different platforms.

In cities, cemeteries are part of the urban system and can improve quality of life for urban dwellers through providing the aesthetic, recreational, educational, cultural and spiritual experiences in people's daily lives. For those still living, cemeteries hold deeper meanings as they are believed to house loved ones whose memories are rarely forgotten. According to Murray (2003), cemeteries are established for the disposal of human remains but also offer solace and education to the living: "The cemetery landscape was central to the cemetery ideal's vision, where nature and religion combined to produce a sublime environment" (Murray, 2003:130). Due to its distinctive function and sanctity, a cemetery is perceived as essential in enforcing public morals (ibid.). Moreover, they are also viewed as a space that helps uplift a community's dignity, a state that can be observed from how these places are maintained.

Cemeteries contest with other land uses, including housing. Looking at current urban development challenges, cemeteries can be planned so that they are able to respond to some of the identifiable challenges. For instance, apart from their role as places of interment, they can provide other community benefits. The current trends in cemetery design and provision include garden sections, places of passive recreation and contemplation. Outdoor activities that have minimal environmental impact on the recreational site are most desirable, especially as they require minimal facilities and development, for instance, for walking, hiking and nature observation.

Reviving cemeteries that are already full and ensuring the adequate use of active ones is an important item in present-day town planning. A significant recent trend in European, Asian and American cemeteries that is taking on and ushering in a new era of fresh thinking is the idea of integrating interesting functions that generate revenue for their upkeep, whilst benefitting the surrounding communities.

A good example is Mandaluyong Cemetery in the Philippines, which plays an important cultural role in the life of close-by communities. Valmero (2014) illustrates photographically that at night the surrounding community enjoys congregating amid the cemetery's park-like and green features. Most North American cities have introduced different themes for their cemeteries. Cemeteries can also be used as venues for wedding ceremonies (Photograph 6.1 below), theatrical performances, music concerts, tourism and heritage tours, and arboretums. Some even have restaurants.

Photograph 6.1: Marble Cemetery in New York as venue for weddings and photo shoots

Source: Fleming (2014)

Research Objectives

Taking Diepsloot Memorial Park as a translation of innovation in a diversified cultural context, the objectives of the study were to:

- Understand the reasons that led to the development of Diepsloot Memorial Park and whether users were involved in the development process

- Establish the local community's perception of the memorial park
- Determine the general public's view of newer cemetery designs that integrate the burial and the recreational functions of this particular cemetery site.

The intent behind the formulation of these research objectives was able to show whether the design model of Diepsloot Memorial Park has the potential to be adapted for use in other South African cities and for upscaling, and whether having the idea of having different functions on a cemetery site would transform other urban areas too in some way. Before describing the methodology used in this study, the theory applied is discussed.

Theoretical Framework

The 'diffusion of innovations' theory grounded this research to inform the focus, orientation and approach to the study. In 1962, Everett Rogers made the 'diffusion of innovations' theory famous in his seminal work that synthesised prior research on diffusion. He later on published more work on diffusion, some of which incorporated and criticised past research, including his own. Although the theory was initially influenced by fields such as anthropology, education, rural, medical and industrial sociology, scholars from a range of disciplines successfully apply a diffusion perspective in their work covering diverse themes in development studies, geography, history, agriculture, marketing, public health and many other research endeavours (Sahin, 2006).

An innovation is an idea or object that is perceived as new while the diffusion of an innovation is described as the process through which an innovation is communicated over time within a social system through certain communication channels (Rogers, 1995:5). The diffusion of innovations theory has been selected as the most applicable theory for this research because it is versatile and can be tailored to the needs of multidisciplinary analysis. It cuts across different social science disciplines and can be applied in very different contexts (ibid.).

The theory focuses on a social system's awareness and knowledge of the innovation, the attitude towards the innovation and the decision making that could lead to the innovation being adopted or rejected (Rogers and Singhal, 1996). The theory also centres around how and through what media an innovation is communicated; the attributes of innovations; the decision process that leads to adoption or rejection of an innovation; and the characteristics of adopters. Roman (2003) reasons that contextual factors shape the diffusion and adoption of innovations; and that the focus of the theory is not only on economic and general infrastructure indicators but also on, for instance, local value systems, living habits, social norms and culture (ibid.:560). Drawing on Rogers (2003), five variables affect decisions to adopt an innovation: perceived attributes of the innovation (such as its compatibility with social values and norms); the properties of the social system; the type of communication used to diffuse an innovation; types of innovation adopters; and the time to diffuse an innovation.

Perceived attributes of the innovation

Rogers (1983) identified a number of attributes through which an innovation is perceived. These are relative advantage, complexity, compatibility, observability, and trialability. Among these attributes, compatibility is of particular relevance to this study although they all apply in some way or another. In applying diffusion theory to cemetery design research, the most relevant point to understand the perceived attributes of innovations, especially the compatibility attribute, is how the community perceives the new cemetery design and the new elements integrated within it. Compatibility is selected in this study as the most appropriate attribute to analyse Diepsloot Memorial Park users' perceptions of cemetery design because it assesses the degree to which an innovation is perceived to match the needs, capacity, values and social norms of prospective adopters, as Roman (2003:224) explains.

Compatibility is "the degree to which an innovation is perceived as consistent with existing values, past experiences, and needs of potential adopters" (Rogers, 1995:224; 2003:240). Rogers (1995) shows that an idea can either be compatible or incompatible with socio-cultural values and beliefs, ideas that supersede it, or the user's needs for the innovation. An innovation's incompatibility with cultural values can block its adoption (ibid.). An idea that is more compatible would be less uncertain to the potential adopter, and fit more closely to the individual's needs. Dubois (1972), in fact, notes that many studies conducted showed that innovations had failed to diffuse because of incompatibility with the existing norms of the socio-cultural system.

The diffusion of innovations theory applies to this study because it makes known how and why an innovation is adopted, how social factors affect its adoption and through which channels diffusion can increase its adoption. The nature of the social system as a variable is selected to ground the argument of this study because of its emphasis on the process of social change.

Properties of the social system

The nature of the social system in which the innovation is diffusing affects both its acceptance and rate of adoption. It includes its norms and degree of network interconnectedness (Rogers, 2003:207). The diffusion of an innovation operates within the boundaries of a social system. In this study, a social system is defined as a community of Diepsloot as users of Diepsloot Memorial Park.

Lekhanya (2013:1563) too draws attention to socio-cultural beliefs playing a fundamental role in the diffusion and the adoption of an innovation. The belief that cemeteries remain spaces that facilitate ongoing relationships between the living and the dead is constantly influenced by cultural norms and values. The acceptance and adoption of new designs can be reduced if these norms and values are not taken into account in the design and development of cemeteries. Usually, individuals are influenced by others in their communities when considering acceptance of new ideas. According to Lekhanya (2013), this could shape their attitudes towards the adoption of something different.

In this research, distinct examples of cultural values and norms are the residents' strong beliefs that only one body should occupy a grave and the erection of large tombstones identifies a grave. The basic accepted belief system is that cemeteries should be used for interment only and should not be combined with any form of recreation, passive or active. By virtue of their common membership as residents of Diepsloot residents would come together as a community and share a core common understanding and many customs among which would be agreeing on a fitting design pertaining to places of burial. Planners of the Diepsloot Memorial Park should have had detailed knowledge of the community's social and cultural characteristics prior to developing a social facility for this resident community. Consideration of these is vital for successful adoption.

The diffusion of innovations theory introduces the principles of homophily and heterophily, where homophily is "the degree to which pairs of individuals who interact are similar in certain attributes, such as beliefs, education, social status, and the like" (Rogers, 1983:18). However, Rogers points out that the diffusion of innovations requires at least some degree of heterophily too. This is "the degree to which two or more individuals who interact are different in certain attributes" (Rogers, 2003:19). The most distinctive problems that arise from this theory are perceives to relate to participants having many different attributes, as communication channels will not be adequately effective (ibid.). The mere fact that diffusion occurs in a social setting is because interpersonal channels exist. It is the changing of strong personal attitudes toward an innovation that subsequently can lead to its adoption (Sahin, 2006).

Type of communication to diffuse an innovation

Rogers (1983) categorises the main information exchange methods as two distinct categories: mass media and interpersonal channels. Mass media channels are said to be more useful in generating knowledge about an innovation, while interpersonal channels are more advantageous in changing perceptions and mind-sets about a new idea (ibid.). Diffusion of innovations emphasises the fact that word of mouth is particularly effective in persuading people to accept new ideas (Rogers, 1995). Rogers (2003) and Robinson (2009) contend that word of mouth, the interpersonal, and showing by example are far more influential than mass advertising. Rogers (1995) observed that most people are not influenced by facts or results but by hearing from others who had already adopted the innovation when making a decision about an innovation.

Types of innovation adopters

Adopter categories are "classifications of members of a social system on the basis of innovativeness" (Rogers, 1995:22) and an innovation needs to be widely adopted to be self-sustaining. In his research Rogers (2003) divides the population into five categories: innovators, early adopters, early majorities, late majorities and laggards as defined in Table 6.1 below. It is understood that each group has its own attitude toward a specific innovation and that innovations are adopted when they advance to meet the needs of subsequent clusters (Robinson, 2009) to complete the sequence of adoption.

Table 6.1: Five-adopter categories

ADOPTER CATEGORIES	DESCRIPTION OF ADOPTERS
INNOVATORS	• Are gatekeepers bringing the innovation in from outside of the system • Are active information seekers about new ideas • Have a high degree of mass media exposure and their interpersonal networks extend over a wide area, usually reaching outside of their local system • Are able to cope with higher levels of uncertainty about an innovation than are other categories
EARLY ADOPTERS	• Are more likely to hold leadership roles in the social system, other members come to them to get advice or information about the innovation • Have the highest degree of opinion leadership among adopter categories • As role models, early adopters' attitudes toward innovations are more important; their subjective evaluations about the innovation reach other members of the social system through the interpersonal networks • Put their stamp of approval on a new idea by adopting it
EARLY MAJORITY	• Have a good interaction with other members of the social system • Seldom hold positions of opinion leadership in a system • Are deliberate in adopting an innovation and they are neither the first nor the last to adopt it
LAGGARDS	• Their innovation-decision period is relatively long • The last to adopt a new idea • As the most localized group of the social system, their interpersonal networks mainly consist of other members of the social system from the same category; because of the limited resources and the lack of awareness-knowledge of innovations, they first want to make sure that an innovation works before they adopt • Have the lowest social status

Source: Rogers (1962; 2003)

Two other issues important in the adoption of an innovation are change agents and opinion leaders. On the one hand, change agents are mediators between change agencies and clients. They facilitate the flow of innovations from change agencies, the resource systems, to clients who are the adopters (Rogers, 1983:313). On the other hand, Rogers (2003) notes that opinion leaders are the most influential in spreading either negative or positive information about an innovation during the evaluation stage of the innovation-decision process and on late adopters. As noted by Rogers (1983:332), the change agent can accelerate the diffusion process by concentrating communication efforts on opinion leaders in a social system. Opinion leaders are said to have greater exposure to the mass media; greater contact with change agents; more social experience and exposure generally; usually have higher socio-economic status; and are more innovative than others. According to Rogers (2003), people in elected positions in the community are recognised as opinion leaders. He comments on the fact, for whatever reason, opinion leaders are able to influence adoption decisions through informal persuasion. On the one hand, ward councillors could be viewed as opinion leaders as they hold positions of leadership, are respected members of the community, and are known to be influential in the use of Diepsloot Memorial Park. Their views about it could have influenced the community through mouth-to-mouth communication. On the other hand, the community as a whole could fall between the late majority and laggard categories as their decision to use Diepsloot Memorial Park or not depends on what they know about the experience of others who have already buried loved ones there.

The time to diffuse an innovation

Once an innovation has been completed, adopters look for elements that they perceive as important; to some it might be availability, to others it might be effectiveness, and to many, it might be cost (Robinson, 2009). Over and above these criteria, other social pressures, inadequate information about an innovation, bad timing for its introduction and a lack of political support could potentially constrain the adoption of new ideas. Although an innovation could have inherent potential to bring about positive change, adoption is not automatically guaranteed. If the innovation does not meet the social system's perceived needs, it could be rejected. This study proposes that the diffusion process will be quick when the perceived attributes of the innovation are compatible with the values and norms of the social system and vice versa. A rapid process in this case would imply a larger segment of the social system adopting the innovation with relative ease and within a short space of time.

Methodology

To address the objectives, interviews were held with key participants and users of the Diepsloot Memorial Park. The latter group comprised community members who were given information sheets, which explained the purpose of the study. To adhere to ethical considerations, anonymous questionnaires were distributed after those willing to participate had given oral consent and they were assured anonymity would be respected. Interviews were conducted with officials from the Johannesburg City Parks and Zoo as a source of the key information required and a semi-structured designed set of questions were followed. This choice of procedure guided the interviews and gave flexibility affording the opportunity to probe for further clarification.

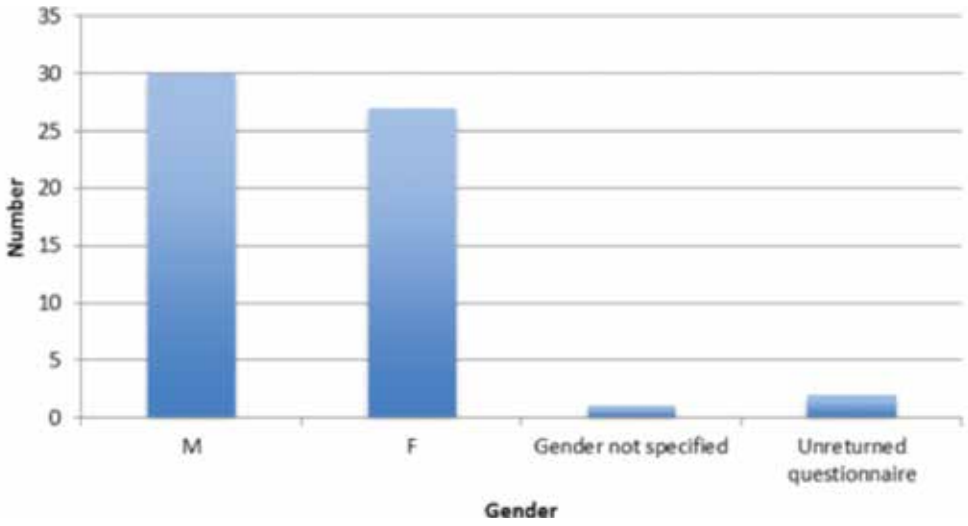
First, the interview with Mr. Moloi (Pers. Comm., 2015), an official from Johannesburg City Parks and Zoo, focused on specific issues that concerned the reasons leading to the decision to establish the Diepsloot Memorial Park; to establish if and which international cemetery had been replicated in the development of Diepsloot Memorial Park; to discover possible reasons for the community's apparent poor level of acceptance of the cemetery; and to find out the COJ's plans for the future development of cemeteries that would add to the users' well-being. Then two executive officials from the Johannesburg City Parks and Zoo, Mr. Nelana (Pers. Comm., 2015), the Managing Director, and Ms. B. Njingolo, Chief Operating Officer, were also consulted regarding the processes that led to the development of the cemetery and the city population's response to its poor uptake.

Another perspective of the research topic came from the interview conducted with Mr. M. Sibiya (Pers. Comm., 2015). He is a senior undertaker at Lalakahle Funeral Undertakers providing burial services to the township of Diepsloot and the surrounding areas. Due to the long service he had been providing families, and the level of respect he had earned in Diepsloot, Mr. Sibiya's contribution was fundamental to the study in portraying an undertaker's view. At the conception of this study the plan was to interview three undertakers for the sake of representivity and to reduce sampling bias. Several attempts were made to track down two undertakers in the township. One office was closed on days that the township was visited while the other left his phone unanswered. Although this was disappointing, due to time constraints the situation had to be accepted.

Thirty participants were approached to fill in questionnaires in Diepsloot and another thirty at four distribution points in the Johannesburg City area. Non-probability sampling was the process followed to gather a sample of respondents although not all the individuals in the population have an equal chance of being selected (Explorable, 2009). This was feasible in this densely populated case study area of Diepsloot. To increase representivity and to get a diverse mix of participants, every tenth person was approached to participate in the study. The study's objectives were explained to all the approached individuals and then they were handed a questionnaire to complete. Participants had the opportunity to ask questions of clarification as they filled it in. All questions were answered in twenty-nine questionnaires in Diepsloot.

Using non-probability sampling technique as well, thirty questionnaires were distributed across four points in Johannesburg: Bree Taxi Rank, Noord Taxi Rank, Johannesburg Park Station and Braamfontein. Due to their functionality as entrance and exit points into and from Johannesburg, these locations were selected because they offered a broad distribution of people from Johannesburg and outside. Extending the area beyond Diepsloot allowed people from further afield to complete questionnaires. Diverse backgrounds, age groups and genders could provide different perceptions of the current move toward more user-friendly cemeteries. The same process of approaching participants used in Diepsloot was followed at these four points. Of the thirty questionnaires completed outside Diepsloot, twenty-nine were successfully answered, although one of the twenty-nine did not specify a gender. Altogether, as represented in Chart 6.1, fifty-eight of the sixty distributed questionnaires were filled in; gender representation was close to even and responses came from thirty males and twenty-eight females. One questionnaire did not specify the gender.

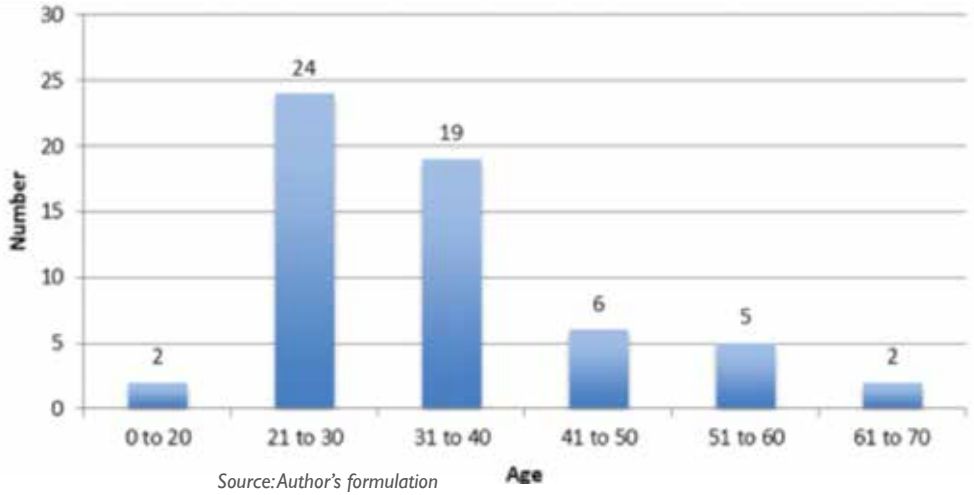
Chart 6.1: Number and gender of participants



Source: Author's formulation

The age distribution of the respondents shows predominance of young adults (Chart 6.2 below), with most of the participants being the 21-30 age group with a quarter being over the age of sixty. For the purposes of this study, this spread could be deemed satisfactory because the sample is gender representative and only 4% of the respondents did not answer the questionnaire. Although, participants filled in the questionnaires, brief discussions were held with them regarding some of the issues they raised in the questionnaires. This was a great opportunity to clarify matters

Chart 6.2: Age range of participants



Source: Author's formulation

Further to the interviews, two visits were made to the Diepsloot Memorial Park. Photographs were taken to capture the landscape, to explore the different sections, for the children, for full-body memorial ceremonies and for plaques. The use of the cemetery and some of the elements that were raised in the questionnaires were observed. There were no burials on both Saturdays that the cemetery was visited. Field notes were taken in Diepsloot on the day of the distribution of the questionnaires.

Challenges faced during the fieldwork

Fieldwork is hardly ever without challenges. Efforts to study all documentation that was produced prior to, during and after the development of Diepsloot Memorial Park could not be accessed nor could reports drawn from consultations with the community. Although three officials from Johannesburg City Parks and Zoo were engaged and provided information, the documentation would have been critical to tracking all processes that followed from conception to final development, and to give the overall perspective of the COJ as representing local government.

Brief account of Johannesburg cemeteries

This section offers an overview of the history and development of cemeteries in Johannesburg and how Diepsloot Memorial Park fits into the evolution and changing attitudes of cemetery development in the light of larger historical and political processes. Just like other urban green open spaces, cemeteries have the potential to contribute to the rich biodiversity and multiplicity in terms of mixed use, of urban systems that face and need a response to urban development challenges. However, the COJ is trying to move away from conventional planning processes as today some cemeteries in the Johannesburg encompass tracts of land with unsightly views of rows of headstones and lack of greenery. It is hoped that new ways of dealing with cemeteries will prevent this happening in the future.

The COJ has instituted programmes aimed at changing the old grey appearance of cemeteries through tree-planting initiatives in diverse public open spaces to improve their appearance. Although these initiatives are geared toward beautification and equality of care, it is imperative to note that cemeteries offer opportunities to increase not just a multiplicity of uses within them but diversity in respect of biodiversity, cultural groups and governance institutions as well. Despite the involvement of local residents in the design of local parks, they do not participate in the planning of cemeteries. The COJ has the opinion that the topic of cemeteries is taboo to most people and that they would not be interested in the systems and processes of cemetery formation (Moloi, Pers. Comm, 2015).

Old cemeteries in previously disadvantaged areas reflect the country's socio-political history when segregation was emphasised. While religion determined the place of burial in colonial times, where sections were divided into different religious denominations (Christopher, 1995), it was during apartheid, however, that race and ethnicity became the determining factors and each race was allocated its own cemetery (ibid.). The COJ is in the process of redressing the spatial and ecological imbalances inherited from apartheid. In this study ecological imbalances means the unequal distribution of natural and man-made green spaces between the northern and the southern areas of the city. According to Mr. Moloi (Pers. Comm, 2015), currently, cemeteries are neither established along religious nor racial lines. This is evident in one of COJ's recent establishments, the Diepsloot Memorial Park where racial desegregation is practised as the burial of all races from diverse economic backgrounds are allowed in the one setting.

Research Findings

The diffusion of innovations theory shows that for an innovation to be adopted by the critical mass, it must be considered socially acceptable and compatible with the social system's values, norms and practices. It must also supersede other ideas perceived by the population that came before it. According to Rogers (2003), some innovations require much time and persuasion before they can become socially acceptable. If the innovation is incompatible with the social system's current practices it will not be adopted (ibid.). The Diepsloot Memorial Park was introduced as a new approach to cemetery design and provision. It faces resistance mainly because it is perceived as culturally inappropriate. Although some people view it as a necessary shift from the old dominant cemetery models, the majority do not see the need to have incorporated the different design elements that distinguish Diepsloot Memorial Park from other cemeteries. According to them, the cemetery should have either looked like the old type of cemeteries, or the space should have been developed into a recreational park. The two should have not been combined.

This section reports on the research findings that cover five themes. It starts with the design and development aspects of Diepsloot Memorial Park and then proceeds to deal with creating space for the activities of people living in Diepsloot. The empirical findings from engagements with different stakeholders and the general antipathy towards the new cemetery are discussed. The section closes with some thoughts on the future of cemeteries with particular reference to the prospects of the COJ's garden cemetery and its potential for upscaling.

Design and development of Diepsloot Memorial Park

According to Mr. Moloi (Pers. Comm., 2015), the new design was influenced by several factors. The first reason was to redress the ecological imbalances left by apartheid. Second, an urgent need to provide cemeteries that are dignified, unlike the appearance of old ones that were not necessarily assessed, or even planned with future growth in mind. Today identifying and planning land for burial in previously disadvantaged areas includes identifying open space. Moreover, environmental and geotechnical assessments have to be done before burial places are chosen. Third, due to the diminishing land available for graveyards, possibilities to maximise land use while addressing the increasing demand could be to allow multiple bodies in a grave and ensure that not much land is left between graves to increase usage density.

It was important to establish whether any international model influenced the design of Diepsloot Memorial Park, and if it did, which elements were adopted. If not, how its design was conceived and brought to fruition. According to Mr, Moloi and Mr, Nelana (Pers. Comm, 2015), no particular international model influenced Diepsloot Memorial Park's design, and especially the general move towards creating greener and more beautiful cemeteries in Johannesburg. They said that besides the need to redress ecological inequalities between the northern and southern areas of Johannesburg, the design was influenced by the need for easy maintenance.

The big tombstones found in old cemeteries apparently do not facilitate easy maintenance; for example, lawn mowing around the tombstones is difficult. Although there are examples in other cemeteries that headstones facilitate quicker maintenance in comparison to the use of full-body memorials, the use of flat plaques in this memorial park would make the job even easier. Although the Johannesburg City Parks and Zoo officials could not admit to having replicated the Diepsloot Memorial Park design from any other existing cemetery elsewhere in the world, it is clear that there is a growing trend in the development of cemeteries that appeal to the general public as well. Mr. Nelana (Pers. Comm, 2015) firmly asserted that the decision to allocate space in the area for a cemetery was based solely on finding ways to enable the cemetery's efficient upkeep.

Similar to the use of artefacts of Iron Age cultures from archaeological digs in the vicinity of the Cradle of Humankind, South Africa's heritage site lying some 40 km directly west of Diepsloot, its memorial park has an Afrocentric theme. These represent cultural aspects of burial practices beneath circular cowsheds (Visser, 2008). Diverse heritage elements, indigenous flora and naturally occurring habitats have been integrated into the cemetery's design, thus allowing it to function as both a cemetery and a conservation area (Nelana, Pers. Comm, 2015). Apart from its circular layout, the cemetery has incorporated natural stone pillars (Photograph 6.2 below), which represent typical African designs also seen at the Zimbabwean ruins. The gabion tower, a special feature commonly used in landscaping, is a tall structure made of dry-packed stonewalls or cylinders contained within wire-mesh baskets (Cape Contours Landscape Solutions, n.d.).

Regarding the cultural significance of the memorial park, Mr. Moloi illuminates:

> *The design embraces Africanism and each section has its entrance and has gabions in the centre. This theme emulates the old African village in the olden days when houses of the community would surround a king's home (Moloi, Pers. Comm, 2015).*

According to Johannesburg City Parks and Zoo, the idea behind the cemetery was to design a space for the use of 'living' people and not only the dead. The greening of the cemetery remains the COJ's aim for the developing of cemeteries that will remain vital components of the city's 'green lungs' for oxygen regeneration even after they have reached capacity as burial places. Over 5 000 trees were planted to change the feel of the cemetery (Moloi, Pers. Comm, 2015). The greenery, pathway nodes and pillars give the cemetery a park-like feel. The cemetery was designed around the nature conservation section. This section was not developed for burial purposes because it contains indigenous trees and flowers, and large rocks that give the cemetery a "nice feel" (Moloi, Pers. Comm, 2015). This section will therefore never be used for graves.

Photograph 6.2: Pathway leading to gabion tower

Source: Photograph by author, 2015

The focal point of the cemetery is the large gabion tower that acts as an artistic landmark for the entire site (Figure 6.1; Photograph 6.3). The tower also creates a sense of orientation surrounded by the nodal structure, which resembles an African kraal. Every visitor to the memorial park passes through this node. Stone-built pillars line some of the walkways to create avenues (Visser, 2008) (see Photograph 6.4). The aim was to use it for passive recreation purposes, hence the inclusion of relaxation sections demarcated by benches made from recycled plastic, drinking fountains, large African urns and dustbins in its design (Photograph 6.5; Photograph 6.6). The use of flat plaques upholds the eco-friendly design of the memorial park in place, since the use of headstones and full memorials were prohibited.

Figure 6.1: Design of gabion tower during planning phase

Source: Johannesburg City Parks and Zoo (2007)

Photograph 6.3: Gabion tower during development phase

Source: Johannesburg City Parks and Zoo (2007)

Photograph 6.4: Avenue to gabion tower

Source: Photograph by author, 2015

Photograph 6.5: Contemplation/relaxation sections in winter

Source: Photograph by author, 2015

Photograph 6.6: Contemplation/relaxation sections in summer

Source: Photograph by author, 2015

The overarching goal was to have an environmentally friendly cemetery with costs as low as possible and minimal maintenance requirements. In keeping with the feel of a healthy green environment, large sections of the cemetery were not paved. Concrete was not used in making paths lest they needed more burial space in the future (Moloi, Pers. Comm, 2015). Bricks that are easily removable were used instead.

Over recent years, the cemetery has won international awards for having integrated and embraced diverse African cultures, thus shifting away from the Eurocentric models with the typical square block layout, seen in old cemeteries. One of the accolades was the LivCom Awards launched in 2007 and endorsed and organised by the United Nations Environment Programme (Visser, 2008). Within the "Cities Environmental Management" category, the awards observed the objective "to improve the quality of life of individual citizens through the creation of liveable communities" (ibid.).

When asked whether it was important for the community to be part of the planning of the cemetery, Mr. Sibiya, the undertaker, felt that, as users of the space, both the community and the undertakers had to be consulted. He acknowledged that it would be critical for undertakers particularly to be in the process as they work closely with the community and thus have first-hand knowledge of their needs. Mr. Sibiya suggested that City Parks should consult them in future developments, as "we'll tell them what will work and what will not work". Using the issue of not allowing full memorials space at Diepsloot Memorial Park as an example, he would have told the COJ that although it was a new idea at the outset, it would not work, as it was not the traditional way of burying a deceased person.

As the main users of the cemetery, the community of Diepsloot strongly felt that their opinions had to be considered by the authorities who were developing new social facilities, particularly cemeteries. The community has since grown in size since the opening of Diepsloot Memorial Park and some people have moved away. It is possible that if any consultation was undertaken in the community then, it is likely that might now be outdated as opinions and needs change over time.

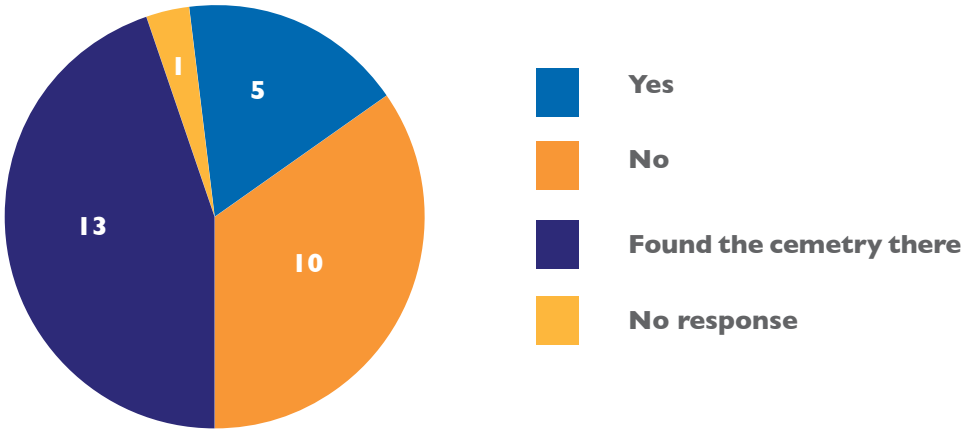
Of the twenty-nine Diepsloot community members, only five knew that a development was being planned but could not say how they found out about it (Chart 6.3 below). Ten of the participants did not know of the plans to build that a memorial park prior to development and fewer than half only found out about it when the cemetery started operating. When asked what their input would have been had they taken part in its planning stages, only eight participants indicated that they liked it the way it was and would not have changed anything. The majority intimated that the community would have ensured that gravestones were allowed, the service improved unlike in other older cemeteries, and that graves were adequately spaced to give visitors some privacy. Two other comments were:

It was supposed to be a park because it's inside the houses.

They should bury one person six feet under.

Participants would have preferred this space to be developed into a park because it is located close to houses. Further, seeing that it operates as a cemetery now, instead of interring multiple bodies, participants would rather have only one body buried in a grave.

Chart 6.3: Participants with awareness of Diepsloot Memorial Park before development



Source: Author's formulation

In conversation, some respondents did not like the integration of park features and the cemetery function. Participants clearly did not support the burial of multiple bodies in one grave but would rather have only one body in a grave.

Different responses were given regarding whether the community was engaged in the design of the cemetery or not, hence the interpretation is based on both. On the one hand, there is the likelihood that some members of the community of Diepsloot were consulted before implementation, but they might no longer reside in the area. This means that the newer residents either have to accept and adopt the current design or reject it, or set a process in motion to request a reinvention. The reinvention would be a compromise on the part of the COJ to provide a section for the erection of tombstones. Rejection would mean that most members of the community would simply choose to use other cemeteries.

On the other hand, because the township has expanded extensively in the last decade or so, most of the people who could have participated in the consultative processes conducted by City Parks could have moved into other areas opened up for new residents and thus spread out across the township. If no consultation processes were held, that would remain a challenge for the use of the cemetery, as most members of the community would not understand the reasoning behind its design and function.

Multiple channels can be used during the communication of an innovation. One network could focus on transferring information to instil awareness and knowledge about the intention of intervention, while another channel would encourage people to adopt the innovation. This would be in keeping with the first phase of diffusion of innovations model (Table 6.1). For ultimate acceptance of an innovation this is a vitally important stage. However, in the case of Diepsloot Memorial Park, communication could have been handled by the change agency, in this case, City Parks on behalf of the COJ, before the development of the cemetery. Since this step was not carried out, later on many people were strongly swayed from adopting the cemetery. In engagements with community members as participants in this survey, it was realised that rumours were spread in the early adoption phases of Diepsloot Memorial Park. These would have prevented its adoption. The rumours influenced members of the community as they were told that some of the cemetery's design elements went against the community's cultural beliefs. The issue they wanted addressed was to request sections that allowed full-body memorials. Although the foundation of these rumours was not confirmed or verified, some participants thought that local political leaders could have instigated the rumours.

Although the decision to develop a beautiful user-friendly cemetery could have been for the benefit of the community, incompatibility with users' values and norms remains the main obstacle in people having a positive attitude to the cemetery and being willing to use it. Because the cemetery is located next to houses, some participants would have preferred it to be a park. The community does not understand some of design elements integrated in the complete picture of the cemetery. In particular, the park-like features and the use of ground plaques instead of tombstones. The lack of understanding, and wrong information fed to the community, are matters to be addressed. To achieve this, communication channels between officials of the Johannesburg City

Parks and Zoo and the community as users of this cemetery have to be improved.

The people do not understand the reasons behind combining facilities that offer recreational opportunities with the allocation of space for burials that follow special traditional practices and rites. Inevitably, the consequence of local government action with regard to establishing a cemetery that negates their beliefs arouses their emotions negatively and they seek an explanation and a solution. Although not everyone will use the cemetery, other socio-ecological benefits can still be gained from its existence and the way it is designed. Two particular areas would be of benefit, protection of the natural environment and space set aside for people's enjoyment of nature with potential for educational benefit for young and old. Hence it is the responsibility of City Parks to explain to users the motivations that led to this integration and the challenges both the COJ and the community faces regarding the Diepsloot Memorial Park.

Of the twenty-nine city-wide participants, only two females between the ages of thirty-one and forty did not see the need for communities to be informed and involved in the planning and development of cemeteries. One responded that, "it would cause lots of confusion and people would make demands that would take long to implement". Twenty-seven participants thought it was important to consult communities before development of a cemetery, as the cemetery belonged to the community. They believed that engaging them in the proposed plans would help to align the community's cultural beliefs and interests with the cemetery planning processes.

As intermediaries, change agents, the COJ in this case, should know the needs of the community while also trying to facilitate national goals as is expected of them. The community knows its priority needs and could engage with change agents effectively. Taking their current practices into account in an initiative should increase the likelihood of having innovations rapidly diffused and subsequently adopted.

Creating spaces for recreation

Although the cemetery has a park-like feel, passive recreation by all members of the community would not be allowed as "it would be abused" according to Mr. Moloi (Pers. Comm, 2015). He explained, "the plan isn't to attract everyone to the cemetery, but to provide a comforting environment to those visiting their loved ones". Because most people still view cemeteries conventionally, Diepsloot Memorial Park will not be open for active recreational use by people other than those who have buried family and friends there so as to avoid attracting noise, public consumption of alcohol and unruly behaviour. Mr. Moloi indicated that because there were paved paths, children could ride their bicycles whilst their visiting parents visited graves (Photograph 6.7 below). However, the Johannesburg City Parks and Zoo would also allow the filming of local soap operas and movies, a strategy that is being used to generate revenue.

Photograph 6.7: Paths where children could ride bicycles whilst parents visit graves

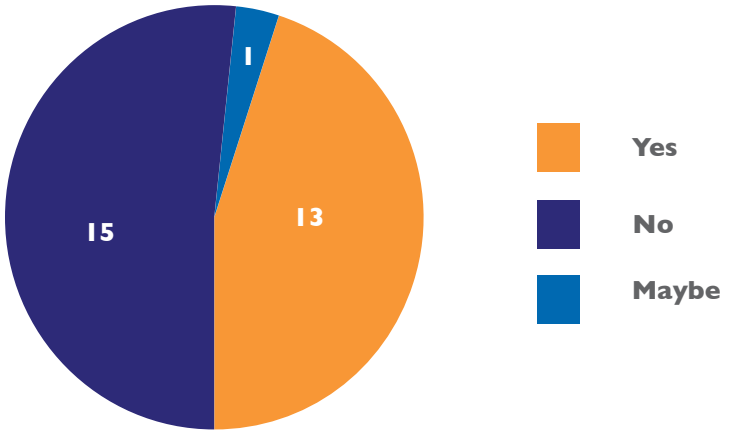
Source: Photograph by author, 2015

Another avenue the research explores was to see whether the people who live in the area are actually taking up the COJ's intentions. Although the idea was to develop a beautiful green space for those visiting the cemetery to use, City Parks would not allow people who did not have loved ones buried there to use the cemetery. The reason was to minimize any potential unmanageable behaviour. The Johannesburg City Parks and Zoo's understanding was that anyone who had loved ones buried in the cemetery would want to respect it and uplift its dignity through observing quietness whilst being there. When asked whether they would visit the cemetery for reasons other than burial, Diepsloot participants' responses were still related to the functioning of the cemetery. When the question specified clearly whether they would use the Diepsloot Memorial Park for recreational purposes, one person was not sure, thirteen showed interest whereas fifteen were not open to that idea (Chart 6.4 below). Those participants not interested in visiting Diepsloot Memorial Park said they had no need to visit the cemetery as there were no tombstones and they objected to the fact that multiple bodies were buried in a single grave. Two pertinent responses were:

- *Because of the way they are burying people, there is no way to visit loved ones.*
- *There is no one of my family buried there. We don't bury there.*

Even though the question clarified the potential use of the cemetery for recreational purposes, the first response shows that participants' wish to visit the cemetery to visit loved ones buried there, whether recreation is incorporated in the cemetery or not.

Chart 6.4: Willingness to use Diepsloot Memorial Park for recreational purposes



Source: Author's formulation

There were feelings of confusion as some of the participants felt the environment could be used beyond just for burials, however, they would be afraid to relax there. One participant replied, "to sit. It is very quiet. But I would be afraid to sit because of fear of being around the dead". Although some people appreciated the quietness in the cemetery it posed a problem for others who highlighted that it was unsafe, especially for women. One of the two women who were concerned about security in the cemetery responded, "It's not safe and it is hidden". Responses of participants open to using the memorial park for recreation included:

- *Just maybe if I want to take a walk.*
- *It is a really nice place to relax.*
- *Because of the trees and the grass there.*

Although all the participants had been to Diepsloot Memorial Park, most had gone there for burial purposes. One person had been to the cemetery to fetch water, two had attended community meetings and two used the cemetery as a shortcut path.

City-wide participants were also asked whether they would visit cemeteries for reasons other than to visit to remember loved ones or to attend funerals. Out of the twenty-nine participants, only three said that they would visit cemeteries as a community service such as to clean in an effort to keep the cemetery neat, and to show others where family was buried. The remaining twenty-six would not visit a cemetery for any reason unrelated to its normal functioning. Examples of their responses were:

- *It would be very uncomfortable.*
- *Cemeteries should not be used for purposes other than burial.*
- *My religion does not allow that.*
- *I don't believe in visiting graves.*

The notion of using cemeteries beyond anything unrelated to interment is foreign to most people and it can be deemed as culturally unacceptable. Based on the fact that cemeteries are respected and the dead are feared, it could take time before people would open up to a notion other than that. Because recreation is sometimes attached to insubordinate behaviour, the thought of having cemeteries act as places of recreation might possibly offend many. The Diepsloot Memorial Park could then be understood as being inconsistent with the values and needs of present day users in this location. This incompatibility with users' values, norms and what they are presently used to implies that the cemetery will not be adopted as rapidly as a cemetery that is compatible with current beliefs.

Perceptions of cemetery users

The primary objective of this study was to investigate community members' perceptions of the Diepsloot Memorial Park. One could view the development of the Diepsloot Memorial Park as a positive shift, especially with the COJ's goal of redressing spatial and socio-ecological disparities left by apartheid. However, to the majority of those who were repressed and segregated in the past, the new design could be a sign that they are being prohibited from practising their freedom and will. In discussion with some of the Diepsloot community members who were participants in this survey, the opinion was expressed that they felt that they had been suppressed in the past and were not allowed to have access to certain opportunities. They perceived the regulation to use only flat plaques was a continuation of this suppression, however, even by a different government. The introduction of different innovative design elements was seen in the same light with socio-political and cultural implications that denied community beliefs. If the ability to decide to erect an enormous tombstone that is perceived as a current cultural practice and provides a status symbol for some families is taken away, old wounds are opened.

Mr. Sibiya, the undertaker, seemed to be in favour of the memorial park, especially since "it looks like a botanical garden". Although he viewed the cemetery as a modern form of cemetery development, he was, however, concerned that it had not maintained the standard with which it started. He said that when it first started, it was neat and beautiful. However, the standard dropped when City Parks sub-contracted a private company to attend to its maintenance and upkeep. He was of the opinion that the cemetery was not properly managed and that it lacked signage. The example he gave was, for instance, to show where visitors could find drinkable water. Walking through the entrance of the cemetery, there was a sign indicating that water was undrinkable. However, no other signs were visible in the cemetery to show where to find drinkable water. Mr. Sibiya complained that the "grass is outgrown, there is running water, sewerage from houses; the standard is now no more the good standard that it started with" (Sibiya, Pers. Comm., 2015). When asked whether he supported the shift to a modern cemetery design, Mr. Sibiya indicated, "let's not make graveyards something for people to be scared of. Let's move with the times; something different from what our fathers had". He further emphasised the need for City Parks to advertise the cemetery to local communities, as people did not know of its existence. It would depend on which adopter categories it identifies as the most resisting and then apply appropriate communication channels for each segment of the population.

Several of the Diepsloot community members mentioned that Diepsloot Memorial Park was a good move towards cemeteries that catered for the inclusion of other activities in people's everyday lives not only for ceremonies at the end of a person's life. Concerns that the graves were not sufficiently spaced (examples in Photograph 6.8 below) and that the stacking of the bodies of the deceased was a main issue remained dominant. Thirteen people, almost half (45%) of those consulted, thought good care was taken of the cemetery and that it was well-developed. Because taxis sometimes drove through the cemetery, one participant was really unhappy as it forced him to pass through the cemetery; he felt this was disrespectful, as his religion did not allow him to frequent the cemetery for reasons other than burial. His response, when asked what his perceptions were of the cemetery, was: "I never really got to appreciate it because I just feel forced passing there". Responses from those who do not like the memorial park expressed their perceptions of the memorial park in these ways:

- *I don't think their design looks like a gravesite.*
- *Design is poor because there is no fence.*
- *No security and it is close to the houses.*

Photograph 6.8: Closely packed children's graves at Diepsloot Memorial Park

Source: Photograph by author, 2015

The Diepsloot Memorial Park is different from old cemeteries that are dominant in Johannesburg. Several respondents mentioned that tombstones are features that make a cemetery look like a dignified resting place for loved ones. However, interestingly, most of the old cemeteries do not have the essentials that can be found at Diepsloot Memorial Park, namely security guards and fencing. These were identified as essentials. The security guards are not situated by the cemetery's entrance and this concerns people as the cemetery is located near people's homes. Their argument is that, due to this proximity, the cemetery should have rather been developed into a park. Had this been done, everyone in the community would have access to it, unlike now when only a select few can use it for passive recreation.

Participants who seemed to support the cemetery's design had this to say:

- *Well-designed but they should allow for tombstones.*
- *The design is different and nice.*
- *It's 100% because it goes with the times.*

There could be multiple reasons why these participants were open to Diepsloot Memorial Park's innovative design. This reaction can be seen as an indication that these participants are open-minded and not really culturally rooted in their beliefs. Most of the participants who were positive about the design were females in the 31-40 age bracket. Few people had mixed feelings and concerns about the cemetery. Other expressed concerns were about the grave layout, the lack of identification of the specific features and facilities, and general access to the cemetery.

A recurring perception was that the authorities forced the burying of several bodies in a grave. Other clearly expressed perceptions were:

- *The graves are fine but I would like to see my family or friend's name rather than a number. It also looks like you abandoned a family member when you bury them there.*
- *I have an impression that when they give space to bury, someone is already buried there.*
- *I don't understand how the graves are laid out because I see numbers close to each other.*

These responses show a lack of understanding of Diepsloot Memorial Park's design elements and requirements for burying there. For instance, multiple bodies can be buried in a grave but City Parks only allows the family to make this decision. They strongly dismiss the idea that families are allocated graves already used by strangers. Because of the COJ's plans to utilise space efficiently, little space is left between graves. This does not please the participants at all, as it is sometimes difficult to follow the numbering of the graves. Participants feel that a cemetery without visible tombstones is unusual and therefore does not seem dignified enough to bury loved ones.

When asked about their perception of the cemetery's design, four participants clearly wanted the cemetery's appearance changed to what they were used to, whereas others identified specific aspects they were not happy with and named the elements they wanted to include. One participant who had difficulty accepting the cemetery lamented, "Just if it was a conventional gravesite or maybe just be turned into a park" (a 38-year-old Diepsloot female participant, 2015). Two participants suggested that the flat plaques should rather be used to identify children's graves while the graves of adults remain identifiable by the engraving on normal tombstones.

The study was also conducted to establish the general public's perception of newer cemetery designs and their implications. This was achieved through the distribution of questionnaires at different points across the city. The majority of participants felt that, to avoid resistance from the community, cemetery users should be engaged in the initiative and their cultural and religious beliefs taken into account from the outset. As the primary users of cemeteries, it would perhaps be in their best interests to know the COJ's plans associated with designing such spaces and to let their views be known. Failure to do so could run the risk of having white elephants that win awards yet fail to meet the users' basic needs.

According to Robinson (2009), the best way to attain successful adoption of an innovation would be to ensure that its users are made active partners in an ongoing restorative process. "By applying participative action research, techniques can be followed to ensure that partners participate actively in the improvement of innovations" (Robinson, 2009:2).

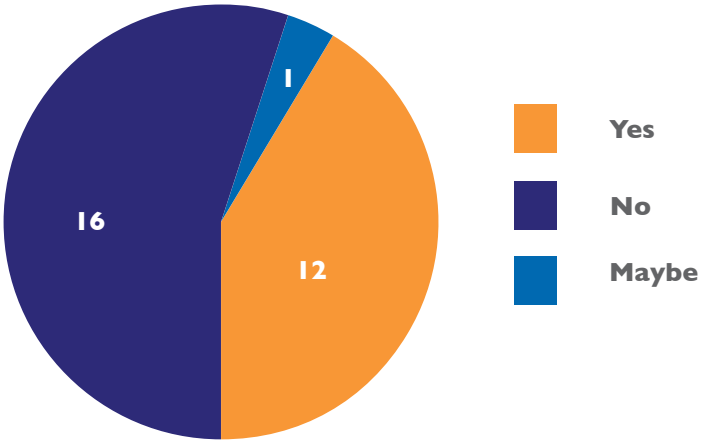
Although people may take time to adjust to the new cemetery design and approach, they could eventually accept it. As Rogers (2003:1) documents, "getting a new idea adopted, even when it has obvious advantages, is often very difficult. Many innovations require a lengthy period, often of some years, from the time when they become available to the time when they are widely adopted". The theory endorses this contention. Based on the concepts homophily and heterophily in the theory, it could be difficult for the Diepsloot Memorial Park to be adopted without significant effort on the part the Johannesburg City Parks and Zoo as the source of the innovation. The reason is essentially because the Diepsloot community members as the receiver might share the same attributes and lack the heterophilous ties needed for effective diffusion of acceptance of the memorial park in line with the objectives formulated for its purpose.

Sahin (2006) argues that, to reduce the uncertainty of adopting the innovation, individuals should be informed about its advantages and disadvantages to make them aware of all its consequences. Some participants have requested that the cemetery be expanded. Ongoing engagements on the part of City Parks could actually increase the cemetery's acceptance and thus chances of adoption. Once differences of opinion are settled between the provider and the receiver, as something new and modern, the Diepsloot Memorial Park could play a helpful and valuable role in the lives of all users or its well-considered structure and purpose. However, trust within the community and acknowledgement of community needs have to come together as the pattern of the diffusion of an innovation takes its course.

Burial practices at Diepsloot Memorial Park

Participants' choice of Diepsloot Memorial Park as a burial place gives an insight into how the community perceive the issue. The argument is that one would not want to be buried in a cemetery that is viewed as inappropriate. The result (Chart 6.5) obtained from asking Diepsloot participants whether they would want to be buried at Diepsloot Memorial Park does not yield a decisive answer. Twelve of the participants were open to being buried there whilst sixteen were not. One participant could not give a definite answer and responded, "I can't say yes or no because if you know that you are paying insurance you know where you want to be buried. If you are poor, you must be buried there. It's up to your family or your insurance" (a 40-year-old-male participant, 2015). This is an intriguing response as the participant feels that only poor people should be buried at the cemetery, probably because they lack choices.

Chart 6.5: Choice of Diepsloot Memorial Park as a burial place



Source: Author's formulation

A few participants had conflicting feelings as they liked the cemetery but hated that they were not allowed to erect full memorials, at least so they thought. They reasoned, "if the lawn must not be planted on top of the grave. If there was a tombstone allocation" (a 67-year-old male, 2015). Those who preferred to be buried at Diepsloot Memorial Park gave the following reasons:

- *Because I am going to be near my family.*
- *Because my child is already buried there.*
- *I like the place. The place is nice that why we buried there.*
- *It's not expensive; there is no need for transport. It is close.*

It is clear that participants who have previously buried loved ones at Diepsloot Memorial Park would continue to do so for several reasons. First, the mere fact that they will be close to their family is motivation to be there too. Second, proximity plays a huge role in their decision concerning a burial place. Since it is located close to their homes, they do not incur any transport costs when visiting the cemetery. Third, due to its appearance, the cemetery gives the impression that loved ones will lie in a dignified place permanently. This consideration eases the bereavement of those remaining behind.

While six people indicated that they would be buried back home, one said that it was up to his family and that he would not have a choice. The majority of participants who did not want to be buried at the memorial park gave the following reasons:

- *We would lose track of which number belongs to who.*
- *Because someone else will be buried over me.*
- *Because it is not what we are used to. Our culture requires us to visit the tombstones and have that tombstones as remembrance for even generations to come.*
- *We always know we will get buried back home.*

Most participants seemed to share the sentiments that the cemetery's design is incompatible with their cultural beliefs. The community's concern that tombstones are not allowed supports this contention. The responses also demonstrate a lack of understanding of how the grave numbers and plaque allocation work. They do not understand that both can be used to identify a grave and that none is preferred over the other. The number allocation is obligatory. Some participants think that grave numbers are the only type of identification allowed. They do not understand that plaques contain the same information found on common tombstones and that their graves will still be identifiable. Although the Johannesburg City Parks and Zoo has since introduced a section that allows headstones and full-body memorials, most members of the community are not aware of this.

Acceptance of Diepsloot Memorial Park

In the first few years after development, local interest in the cemetery was very high (Moloi, Pers. Comm., 2015). However, this changed as the number of burials started to drop. According to Mr. Moloi, Diepsloot Memorial Park has seen slow acceptance based on cultural differences. The cultural beliefs of the population do not accept the use of ground plates. Prohibiting full-body memorials in the beginning and levelling the ground surface after burial, and disallowing heaps of soil near the grave, aggravated some community members who claimed these practices were against their culture. Declining burial numbers were the result (Moloi, Pers. Comm., 2015). Mr. Moloi and Ms. Njingolo pointed to the fact that cemeteries close by were competition for Diepsloot Memorial Park. Their appearance too differed from the old traditional style. Besides that, these cemeteries have been properly planned, they allow for full-body memorials, have a working infrastructure, are green and lush, and well-maintained. Through community protests, people showed dissatisfaction with the park-like feel of the Diepsloot cemetery in the memorial park (Moloi and Nelana, Pers. Comms., 2015). The COJ was then forced to develop a full-body memorial and headstones section.

In discussion with different participants, five reasons were identified that could have led to the poor adoption of Diepsloot Memorial Park as a community asset.

First, the memorial park is perceived as culturally unacceptable because it combines a park and a cemetery. Although the recreation part of the cemetery is meant for use by only those who have buried loved ones in it, participants believe that everyone should be able to use it for recreation. They are also adamant that using the cemetery beyond its distinct function as a cemetery goes against their culture.

Second, to respond to the diminishing burial land in Johannesburg, the COJ introduced ways of adequately utilising space within the cemetery. It encourages the burial of multiple bodies in a grave and leaves very little space between graves. Most participants do not favour either of these measures since they are against their cultural beliefs. They felt that the limited space left between graves does not offer the required privacy during the burial ceremony and visitations afterwards.

Third, another new design element introduced was the use of flat plaques instead of tombstones. Participants protested that their culture did not allow them to have flat, ground plaques instead of full memorial tablets. According to Mr. Sibiya (Pers. Comm., 2015), ward councillors supported this outcry. According to some participants, the local politicians could have potentially perpetuated this dissatisfaction and, in exchange for votes, promised to give residents the option to erect either full memorials or headstones. There was speculation in the community that the funeral undertakers endorsed the uproar as they had a great deal to lose if the decision was not rescinded. Besides this, a poor understanding of the appearance of flat plaques prevailed among community members. Most participants were not aware that the detail contained on the common tombstones would still be engraved on the plaques. Some participants thought that if tombstones were prohibited, then the only identification method used would be a grave number.

Fourth, families were deprived of maintaining their prestige in the community as is often showcased through the erection of massive tombstones; something also perceived as reflecting culture. The tombstone plays a bigger role than just as a grave identifier. It is a remnant that will link generations of past ancestors with those of the future. Although they will have not met their ancestors, the grave offers a sense of identity. Since the use of flat plaques was formally introduced, the large tombstones had to find space elsewhere. This could be another reason why families have decided to bury loved ones elsewhere, a place where they are able to display love for their deceased whilst also claiming their social standing.

Fifth, funeral undertakers drive a commercial business and most of their profit comes from the extras included in funeral and burial packages. Tombstones are part of these extras. If the COJ prohibits the erection of headstones and full-body memorials, the undertakers are bound to lose some of their profit on the service they offer. Hence they would not support the shift to the use of flat plaques (Nelana, Pers. Comm., 2015), which would be the most cost-effective choice between headstones and full-body tombstones. Interestingly though, no gravestones have been erected in the full memorial section despite it being used for burials for almost a decade. Addressing the question of whether the problem was truly a cultural one, or whether it was politically or commercially-driven, it could be speculated that there has been some motivation from influential leaders or other key players in the community that could account for this practice continuing.

According Mr. Sibiya, a funeral undertaker in Diepsloot, there were several reasons for the community's reluctance to use the Diepsloot Memorial Park. First of all, some people chose not to bury here as they complained the cost of the grave was too high. Secondly, families who had relatives living in nearby townships, like Tembisa, preferred Waterval Cemetery because it was central. Thirdly, there was a perception that people were forced to inter multiple bodies in a single grave. However, Mr. Sibiya said that he had made a point of educating his clients explaining that only two bodies could be buried in a grave, and that it was a family's choice. He also stresses the fact that, when speaking to his clients, only family members could share a grave. After explaining this to some of his clients, they had agreed to bury at Diepsloot Memorial Park.

In addition, according to Mr. Sibiya, Diepsloot Memorial Park was located in an area that was previously a swamp, which was a causal factor for the flooding that the participants constantly complained about. City Parks, however, deny these claims, showing that geotechnical and environmental impact assessments were undertaken prior to the development and proof was given that the cemetery's physical location was suitable for burial purposes. According to Mr. Sibiya and over half the participants (55%), during the rainy season water tended to accumulate in the graves. This necessitated City Parks coming to drain the water the day before a burial. Mr. Sibiya showed that sometimes the water had to be drained on the day of the burial. This seemed to be a huge problem for the community as families had gone to the extent of burying loved ones "wearing leather jackets lined with fur on the inside so that they did not get cold from the water" (Sibiya, Pers. Comm., 2015). He asserted that the impact of this inconvenience was both cultural and emotional, as people strongly believed that the deceased had a sense of what was going on around them, hence they would freeze from the cold rain water. He alleged that the water was from underground and that City Parks could not do anything about it. When Mr. Moloi, an official at City Parks was asked whether there were high water tables, he denied that that was the case (Moloi, Pers. Comm., 2015).

Robinson (2009:2) reminds us that "[i]personal marketing methods like advertising and media stories may spread information about new innovations, but that mouth-to-mouth conversations spread adoption". Mr. Sibiya, as an undertaker, showed that he has played and continues to play the role of educating his clients about the benefits of Diepsloot Memorial Park as burial place. He confirmed that those who had taken his advice would attest to that. His reason for educating his clients was that he did not see the point of burying family members faraway as the memorial park was located close to them should they wish to visit graves of loved ones after the ceremony and in years to come. Robinson's remark supports the value of taking advice: "it is usually people we know and trust, and who we know have successfully adopted the innovation themselves who can give us credible reassurances that our attempts to change will not result in embarrassment, humiliation, financial loss or wasted time" (ibid.). Perhaps those who have already buried the deceased at Diepsloot Memorial Park would be in a position to persuade others into choosing to be buried there as well.

The Diepsloot Memorial Park case is a good example where the characteristics of the social system can affect the adoption process leading to the users either accepting or rejecting an innovation. According to the diffusion of innovations theory, Diepsloot Memorial Park as an innovation is not compatible with the social values and norms of the target group, the Diepsloot residents. As a result, the rate of adoption of the Diepsloot Memorial Park did not reach a critical mass, as the diffusion process had not yet become self-sustaining by the time of this survey was done, over a decade after its inception.

The change agent, Johannesburg City Parks and Zoo, could still fail to convince the resident late majority or the laggards, that the innovation would benefit them. Due to the leadership role they hold in the social system and as the opinion leaders, the local ward councillors managed to convince the community not to use the cemetery but suggested that instead they should request a section that would allow people who choose to, to bury one body per grave and to erect tombstones.

According to Rogers (2003), the opinion leaders' personal judgements about the innovation reach other members of the social system through the interpersonal networks. Robinson (2009) suggests that one way of working with the late majority is to promote social norms and show that other conservative people find the innovation essential. Robinson also points out that other ways of ensuring that the general public, especially the late majority, take an idea up is to emphasise the risks involved if left behind, or the promoters can decide to reduce the cost of adopting the innovation.

The future of cemeteries

The Johannesburg City Parks and Zoo's plans will embrace the garden cemetery theme further even in future developments (Moloi, Pers. Comm., 2015). To ease in the idea and give people time to get used to it, smaller sections that would allow full-body memorials would be incorporated in future cemetery developments. Younger participants in the study believe that integrating technological advancements would be an advantage. Navigation aids to find the location of a grave on a map of the cemetery would be a possibility. A screen where people would type in details of the grave site, such as names and home addresses, would be a helpful innovative element. Eventually other advancements will be created thereby changing the cemetery's design, use and management, and perhaps attract more users.

According to Mr. Moloi (Pers. Comm., 2015) the Diepsloot Memorial Park is one of the first cemeteries in South Africa to incorporate innovative elements in the design of cemeteries in disadvantaged areas in Johannesburg. That some of the users in the community did not show any resistance to the design can be viewed as a positive sign. According to Robinson (2009), when designing a project, the change agent needs to know the percentage of those who have already adopted the innovation in a social system. Robinson specifies that it is this fraction that guides the change agent as to which part of the population to address next, and what communication channels to use. City Parks can use this approach when upscaling this facility if necessary and in other areas. Other municipalities that decide to adapt the Diepsloot Memorial Park model and contextualise it in their own areas. Change agents would have to get the buy-in of opinion leaders who are influential in a social system and who have the authority to either spread positive or negative information about an innovation.

The Diepsloot Memorial Park model can be replicated in other areas across South Africa since it responds to the burial demand while also creating healthy spaces for people in the community. Due to the country's cultural and religious diversity, different elements of the cemetery design can be adapted in different areas to make them relevant in their context. In this way, only appropriate features need to be adopted in response to each area's specific challenges. To ensure the success of future innovative cemeteries, the Johannesburg City Parks and Zoo

and other departments responsible for cemetery development and provision across South Africa, would have to involve diverse stakeholders in important decisions. Projects that have strong cultural implications require the buy-in of multiple stakeholders. This may entail involving a range of community members, funeral undertakers and diverse faith-based and cultural groupings. Listening to their concerns, which can be discussed and considered in the project implementation, is an imperative. Although change is inevitable, people will always be anxious and uneasy about what they do not know and are not used to. When introducing a new idea and solution, it is important to cover all the relevant ground issues, plan ahead to overcome possible challenges in the execution and adoption of the innovation.

Conclusion

Through its design, the Diepsloot Memorial Park can be understood as an innovative solution, albeit with a partly unsuccessful outcome. The innovation that coupled burial demand with a recreational function, which although can be enjoyed by a select few (those who have buried loved ones in the cemetery), will provide ecosystem services such as water percolation and reduced erosion and aesthetic benefits in its setting. The allocation of open spaces, designed to combine both burial and recreational functions, are also one of the latest of these innovations. The challenges to their wider adoption and sustainability can be understood within the diffusion of innovations framework Rogers (2003) specifically describes in this context. Some of the variables of the diffusion of innovations theory are considered and applied in this study, such as the nature of the social system, the compatibility attribute and communication channels used to diffuse an innovation. Going forward, it would be important to examine other variables of the general diffusion theory when examining the broader perceptions and adoption of innovative cemeteries.

Diepsloot community members share similar attributes that can be perceived as homophilous, according to the diffusion of innovations theory. Rogers (1962:19) shows that a certain degree of heterophily is required to gain knowledge of the innovation. Because homophilous individuals are said to engage in more effective communication, which could potentially lead to attitude and behaviour change, all they need is a degree of heterophily to introduce a new idea to increase the effectiveness of its diffusion. Hopefully, once the homophilous group, in this case study, the Diepsloot community, increases ties with a slightly different group, the early adopters, then more of the community members are likely to adopt the innovation, the Diepsloot Memorial Park.

According to the findings of this research, and based on the diffusion of innovations theory, Diepsloot Memorial Park might be perceived as a failed diffusion if failure refers to a diffusion that does not reach complete adoption. Although the cemetery was partially adopted in its initial stages, its diffusion remains incomplete possibly due to a lack of community involvement and participation in its development. A network of negative influences, a lack of awareness of the project, and competition from close-by cemeteries as far as appearance and cost, were identified as negative influences that retarded the diffusion process.

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Commuter

noun
a person who travels to work over an appreciable distance, usually from the suburbs to the centre of a city

7. THE CASE OF THE SAN FRANCISCO COMMUTER BENEFITS ORDINANCE: POSSIBLE REPLICABILITY IN CAPE TOWN

Julia Letang

Introduction

This chapter aims to provide a case for the use of public transport incentives for both users of and investors in public transport, to ultimately ensure that investment in public transport in South Africa is both feasible and well-utilised. The chosen instance of innovation is the San Francisco Commuter Benefits Ordinance, which allows commuters to claim public transport costs as a pre-tax expense. This case will be interrogated for its replicability in the South African context, with Cape Town used as an illustration.

The chapter begins by ascertaining the need for public transport incentives in South Africa, concluding that increased public transport ridership is necessary to ensure the sustainability of the public transport system. A brief literature review uncovers the benefits of public transport subsidies, before specifically analysing different 'Transportation Demand Management' (TDM) incentives that aim to stimulate demand for public transport. Thereafter, the chapter interrogates the case study in terms of five main elements: policy and governance; institutional arrangements and partnerships; and requirements for implementation, including urban form, infrastructural requirements and other supporting incentives. The purpose of this is to ascertain the criteria for success in San Francisco.

The same criteria are then applied to Cape Town to explore replicability of the San Francisco model in a South African city. While there may be some merits to the adoption of a demand-side incentive, the contextual differences between the two cities, and their public transport systems, mean that the innovative commuter benefits identified may require other supportive measures if they are to be implemented as a programme in Cape Town.

The need for public transport in South Africa

According to the 20 Year Review: South Africa 1994 to 2014, providing effective public transport systems may be the single most important intervention to support environmental, economic and social sustainability in the country (RSA, 2014). Public transport in South Africa refers to any mode that transports commuters, and includes rail, Bus and Minibus Taxis as well as pedestrian and bicycle infrastructure to support the use of public transport. The report found that transport is a major component of the budget of households, while the transport sector globally is the second largest contributor to the presence of greenhouse gases. Environmentally, the benefits of public transport on reduced energy usage and decreased carbon dioxide emissions have been well-documented. The use of public transport, as opposed to private vehicles, also decreases road congestion.

This too reduces road maintenance costs borne by the state, as well as lowering the economic costs of time spent commuting. An efficient public transport system also possibly promotes more equitable cities. According to Cass (1990:11), "one of the conditions which may exacerbate and perpetuate disadvantage is locality, living in a region (often as a result of severely restricted housing options) where access to a range of necessary education and public sector services is limited, where suitable jobs are scarce, and the potential journey to and from work long and expensive".

Recently, in large South African cities like Cape Town and Johannesburg, large investments have been made in public transport infrastructure, such as the Bus Rapid Transport which began in Cape Town, and the Gautrain commuter railway line that links Johannesburg and Pretoria. These investments are still to continue, as R51 billion has been budgeted for commuter rail infrastructure and new rolling stock over the next three years (South Africa.info, 2014). However, despite the increase of public transport infrastructure, the percentage of car ownership in South Africa rose from 22.9% in 2003 to 32.6% in 2013 (Statistics South Africa, 2013). It is estimated that in 2013, 39.1% of workers used public transport as their main mode of travel to work, compared to 38.4% who used private transport (ibid.). These findings indicate the importance of changing current patterns of commuter behaviour to decrease private car dependence, if public transport investments are to be feasible and well-utilised.

Demographics of public transport use

In South African cities, household members earning higher incomes mostly commute via private vehicles. Private vehicles are used by only 18.8% by the poorest fifth of households, whereas 65.7% of the trips the wealthier fifth of South African households make are in private vehicles (ibid.). This suggests that policies to stimulate increased public transport use should target the middle-to-wealthier class of South African commuters, as these income groups predominantly commute by private vehicles. Policies that stimulate the use of public transport would thus not directly affect the lower income population, as this demographic group already relies heavily on public transport. Indirectly however, poorer people in cities can also gain from such policies as increased ridership would increase the revenue generated by the system as a whole, which may translate into a lower individual fare rate, making public transport more affordable for all users, and more viable overall.

Public transport subsidies

Most city authorities in the developed world substantively subsidise urban public transport. From an economic perspective, such subsidies are justified by the scale of economies, the congestion and environmental benefits, as well as the potential for redistribution (Asensio et al., 2003). The benefits of public transport subsidies are, however, hard to quantify as they are usually externalised (Serebrisky et al., 2009). To put it differently, the justification for public transport subsidies is that they ultimately compensate for externalities in other parts of the economic system. This is particularly true of private transport use.

Users of private cars do not pay the full cost they impose on society, considering infrastructure use, pollution, congestion and road safety risks (Elgar and Kennedy, 2005) are part of the care use deal. By subsidising public transport, competition between these alternative modes is placed on a level playing field and improves resource allocation (ibid.). cost of the service to final users. Studies have found that demand-side subsidies perform better than supply-side subsidies. Commonly, the supply-side subsidies often result in higher costs and inefficiencies, and thus do not always result in reduced fare prices (Serebrisky et al., 2009). Furthermore, supply-side subsidies will be less targeted than demand-side subsidies, since they are given to operators who will usually not discriminate between different types of users (ibid.).

In developing countries it is important to move away from supply-side subsidies, towards demand-side subsidies (ibid.). This is because they display greater potential for targeting a particular income group or specified area (ibid.). In these cases, the objective of transport subsidies is usually to increase the affordability of transport to the users, rather than, for instance, curbing greenhouse gas emissions, (ibid.).

Transportation Demand Management

Transportation Demand Management is a means to influence the demand of public transport through specific incentives. It is defined as any action or set of actions aimed at influencing people's travel behaviour in a way that alternative mobility options are presented and/or congestion is reduced (Meyer, 1999). It is, however, widely accepted both internationally (Burton, 2000) and in South Africa (Wilkinson, 2006) that sustainable transport is dependent on urban form and land use patterns, with low density, sprawling cities often non-viable for public transport. The relationship is multi-directional as provision for private vehicles, including freeway systems, encourages mono-functional sprawling land use development, which also results in further travelling distances. Transit-orientated development promotes more compact, mixed-use cities. These are structured around public transport in a way that synergises interventions to improve transport access, with those to support more efficient and equitable spatial form. These dense, mixed-use environments result in more people being able to access the various land uses needed to carry out daily functions and activities, without the use of private vehicles (Owens, 1992; Wilkinson, 2006). Furthermore, denser urban environments structured around public transport also provide higher volumes of potential public transport passengers. Hence they are crucial for the financial sustainability of public transport systems. From this understanding, it is evident how the sustainable finance of public transport, Transportation Demand Management and the promotion of denser urban environments cannot be dealt with in isolation. They are inherently dependent on one another.

There are many different ways to incentivise or encourage the use of public transport: increasing the desirability of the transit trip, such as trip reduction strategies and 'Non-Motorised Transport' (NMT) improvements; penalties for Single Occupancy Vehicle (SOV) trips, such as congestion charges and parking policies; and subsidies to incentivise the use of public transport. The next sub-section briefly discusses these various forms before directing attention to tax-related incentives and employer subsidies which are the focus of the particular innovation described in the case study.

Increasing desirability

Trip reduction strategies help transit vehicles, such as buses, to avoid congestion delays and make travel faster. This increases their operating efficiency, since transit vehicles can carry more passengers in a given period, making transit more competitive against automobile travel (Litman, 2015). Methods used to achieve this include prioritising managed transit lanes, traffic signal pre-emption, special intersection design and preferred loading and parking locations. Non-motorised modes, walking and cycling, are important travel modes in their own right. However, inadequate or undesirable conditions of non-motorised modes can be a major constraint to the desirability of using public transport, as walking or cycling is often necessary to connect between different modes (Litman, 2015). Improved non-motorised modes have the potential to leverage shifts to transit, and they also often account for the first and last portion of the transit journey.

Single Occupancy Vehicle penalties

Congestion charges have gained popularity over the last twenty years as both environmental and economic pressures to reduce it have intensified (Balcombe et al., 2004). While the availability of new electronic billing technologies has enabled such schemes to be implemented efficiently (ibid.), it has been seen to be particularly effective where the revenue generated from these charges is invested back into the public transport system (Oram Associates, 1995). The two types of road user charges are either route-based, which charge for the use of a single stretch of road; or zone schemes which charge users to enter a demarcated zone. London is one example of a zone scheme, where the introduction of congestion charging has proved to be effective. The number of vehicles entering the zone during charging hours dropped by 16% and bus capacity was increased to accommodate 15 000 extra passengers per day at peak periods (Litman, 2006).

Parking policy can also influence the demand for private vehicles through either increasing the price or limiting the available parking spaces in certain areas (Wang and Sharples, 1999). In 1990, a study of nine cities in the United States of America found that parking fees and restrictions were the most effective means of traffic management although strict enforcement is required to monitor such restrictions (Valleley et al., 1997).

Commuter tax incentive, employer subsidies

In both the United States of America and the United Kingdom over the last twenty years, there has been increasing efforts to restrict employer subsidisation of private transportation, such as parking subsidies, and rather move towards public transport subsidisation (Balcombe et al., 2004). Commuter financial incentives aim to incentivise commuters to use sustainable modes of transport, like public transport or cycling, through the use of tax-based incentives and other government policies (Shoup, 2005). Such incentives are usually managed through the provision of transit passes which the employer purchases on behalf of their employees. TransitChek, offered in New York and Philadelphia, allows employers to purchase the travel vouchers and offer them to employees as a tax-free benefit or a performance bonus (WageWorks, 2015). These transit voucher programmes have been found to shift 20% of recipients' commute travel from auto to transit (Oram Associates, 1995).

Case Study: San Francisco Commuter Benefits Ordinance

The goal of the San Francisco Commuter Benefits Ordinance is to reduce Single Occupancy Vehicle trips to and from San Francisco by encouraging the use of sustainable transportation modes. These include transport by bus, rail and ferry or by walking and cycling. The aim is therefore to reduce congestion and greenhouse gas emissions through incentivising greater use of public transport (San Francisco Department of Environment, 2015b). The San Francisco city council introduced the ordinance in 2009, which required that companies larger than twenty employees provide pre-tax benefits to those employees who utilise public transport to get to work. This meant that employees were able to pay for a portion of their public transport costs before their income was taxed. The purpose of the programme was to encourage the use of public transportation and car-pooling by providing significant savings on commuter costs (ibid.). The programme enables employers to save up to 9% on payroll taxes, and employees to save up to 40% on their transit costs. The benefit works like other pre-tax plans such as retirement, dependent care and medical reimbursement (Green Cities California, 2013). The programme requires employers to offer at least one or a combination of the following employee benefits:

- Pre-tax Transportation Benefits: employer sets up a deduction programme which allows employees to make monthly pre-tax deductions up to $130 per month to purchase transit passes or vanpool rides (multiple commuters share a van and receive benefits for doing so)
- Employer-Paid Transportation Benefits: employer pays for workers' transit fares on any of the transit agencies and reimburses workers for their vanpool expenses, up to $80 per month
- Employer Provided Transportation: a company-funded bus or van service to and from the workplace (Green Cities California, 2013)

The case of San Francisco is an important study as it demonstrates there is still scope to increase ridership through public transport incentives, even though it is a city which is well-served by many modes of public transport. These are necessary for the sustainability of the city and for the public transport system. To understand the success of the case study, and also to ascertain how it could be replicated, the commuter benefits programme in San Francisco is analysed in five categories: policy and governance; institutional arrangements and partnerships; requirements for implementation that include infrastructure requirements and urban form; and the outcomes of the programme.

Policy and governance

The San Francisco Commuter Benefits Ordinance operates in combination with similar public transport incentive programmes that are managed at different scales and by different spheres of government. The Commuter Benefits Ordinance is directed at the city scale, and targets those who commute to the City-County of San Francisco. In the United States, a City-County is a city and county that have been merged into one unified jurisdiction, comparable to a local government administrative unit in South Africa. However, there is also the regional Bay Area Commuter Benefits Programme, which is based on the San Francisco Commuter Benefits

Ordinance, but targets those who commute from the wider bay area (San Francisco Department of Environment, 2015b). Map 7.1 shows the location of the City-County of San Francisco in relation to the larger bay area. Both programmes operate in parallel and share the same goal of reducing Single Occupancy Vehicle travel within San Francisco and the wider bay area. The requirements for implementation discussed in this chapter will apply to both programmes since many elements of both programmes are implemented the same way.

Map 7.1: Location of San Francisco City-County in the Bay Area

Source: California Environmental Protection Agency (Air Resources Board, 2013)

Pre-tax benefit policy

Pre-tax deductions are certain expenses that are deducted before taxes. They reduce the total amount of income that one has to pay taxes on, known as taxable income. An employer may provide commuter pre-tax benefits for public transportation that are essentially tax-free up to a certain amount. In the United States, there is a federal pre-tax benefits programme that applies country-wide, however, certain states and local areas also offer the programme (National Centre for Transit Research, 2013).

Federal pre-tax commuter benefits

Established in 1993 under the Bill Clinton administration, as part of the Federal Tax Code section 132(f), federal commuter pre-tax benefits are one of the eight types of statutory employee benefits that serve as fringe benefits which are excluded from an employee's total income (ibid.). Transportation benefits available include transit passes and vanpooling. Bicycle commuters can also be reimbursed for certain expenses. At federal level, tax-free commuter benefits are voluntary and are only available through an employer. However, it is advantageous for the employer to offer pre-tax benefits as they can reduce their payroll taxes, as they are not required to pay payroll taxes on the amount the employee designates as a deduction from their gross income (ibid.).

The City-County of San Francisco, made commuter benefits mandatory to effect the tax code's Section 132(f). Thereafter the San Francisco Bay Area followed suit. Although there is no policy governing pre-tax commuter benefits in the State of California as a whole, the Senate Bill 1339 authorises the Metropolitan Transportation Commission and the Bay Area Air Quality Management District to implement the Bay Area Commuter Benefits Programme (Metropolitan Transport Commission, 2013).

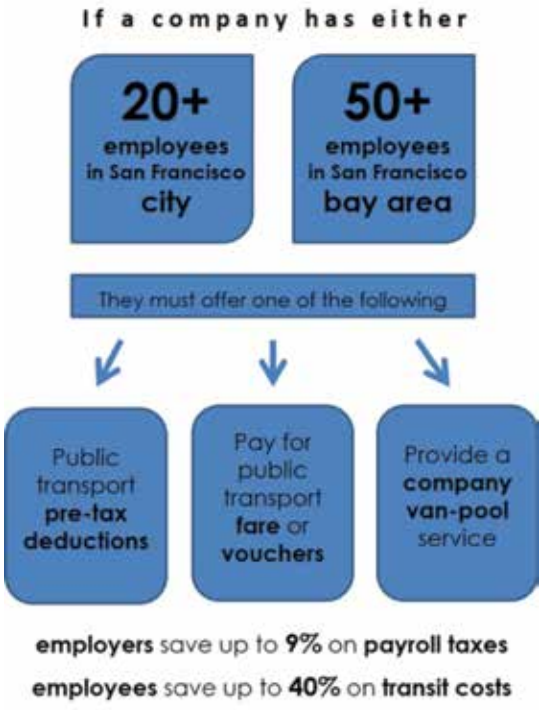
Regional pre-tax commuter benefits

The Regional Bay Area Commuter Benefits Programme started in 2014. It is governed by the Bay Area Air Quality Management District, and is based on the San Francisco Commuter Benefits Ordinance. This programme requires employers with 50 or more full-time employees in the Bay Area to provide commuter benefits to their employees. It applies to all public, private and non-profit employers within the geographic boundaries of the Bay Area Air Quality Management District (ibid.).

Regional pre-tax commuter benefits

The San Francisco Commuter Benefits Ordinance, which is the selected case study presented in this chapter, was adopted in 2009 and is governed at the City-County level by the San Francisco Department of Environment (San Francisco Department of Environment, 2015b). The ordinance requires that all employers in San Francisco that have twenty or more persons performing work for compensation on a full-time, part-time, or temporary basis, and who work an average of at least ten hours a week are to offer their employees the commuter pre-tax benefit (ibid.). Figure 7.1 below illustrates the different requirements for both programmes.

Figure 7.1: Requirements of San Francisco Commuter Benefits Ordinance



Source: Author's formulation

It can be seen that there are policies that govern pre-tax commuter benefits at different levels. Provisions for pre-tax commuter benefits are allowed according to tax policy set at the federal level country-wide; however, at this local level they are voluntary. If a local area or region is willing to take up provisions offered, federal laws are supportive and encourage transit incentives. In this case study, federal law has been effected, thus commuter benefit programmes that are on offer are compulsory both at the city and at the regional levels. Both programmes, although mutually exclusive as they target different boundaries spatially, and cater for different business sizes, work together to promote fewer Single Occupancy Vehicle trips within the region as a whole.

Institutional arrangements and partnerships

Public transport mandates

Public transport in the United States is funded by a combination of local, state and federal agencies. At federal level, the Federal Transit Administration provides financial assistance and technical assistance to state governments and local transit providers. Within the State of California, the California Department of Transportation (Caltrans) manages the state highway system and is actively involved with public transportation systems. The Metropolitan Transport Commission is responsible for regional transportation planning and financing in the San Francisco Bay Area, and administers state funding through the Transportation Development Act and various grant programmes.

Within San Francisco, there are many departments that have different transport-related mandates, which are described below (San Francisco City County Transportation Authority, 2014):

- The San Francisco Transportation Authority develops the long-range San Francisco transportation plan and congestion management programme; and undertakes policy studies focused on Transportation Demand Management and pricing, administers and oversees fund sources to support such programmes
- The San Francisco Municipal Transportation Agency is responsible for the planning, management and operation of the city's surface transportation network, including the municipal transit system, pedestrian and bicycle network, parking, traffic, taxis and paratransit
- San Francisco Department of Environment administers the city's CommuteSmart programme, which supports sustainable travel choices particularly for workers and businesses in the city through information and education, commuter benefits, rideshare and telecommute programmes, the emergency ride home programme and other services
- The Planning Department's key role in the city's existing Transportation Demand Management programmes includes implementing its general plan policies, and overseeing the implementation of its requirements in private development projects

Partnerships and departmental integration

The Metropolitan Transportation Commission awarded the San Francisco Transportation Authority a grant to coordinate the San Francisco Transportation Demand Management Partnership Project. The Partnership Project is jointly managed by the four mentioned departments. Its mandate is to coordinate Transportation Demand Management policies and programmes across the four above-listed agencies; improve the management and capacity of employer provided shuttle services; and research parking management strategies (San Francisco City County Transportation Authority, 2014).

The project also includes the formation of a Transportation Working Group, whose aim is to collaborate with employers and institutions to develop mutually beneficial Transportation Demand Management initiatives (ibid.).

The literature consulted highlights that public transport issues are best handled in the local government sphere, as it is better able to coordinate them with other municipal functions, such as urban planning. In San Francisco, the Metropolitan Transportation Commission does all the necessary regional transportation functions and the administration of state funding at the local level. Under it are at least four departments that are responsible for different public transport-related functions, from planning to Transportation Demand Management strategies. Integration between these departments goes through the joint coordination of the Transport Demand Management Partnership Project, where collaboration is envisioned not just between the different departments, but also with and between private institutions.

Requirements for implementation

An interrogation of the case study has shown that there are a number of requirements to be met for the implementation of the Commuter Benefits Ordinance. These include both hard infrastructural elements, such as those associated with public transport; and soft infrastructure, which is necessary for the technical and electronic aspects of programmes; also required is an urban form that is conducive to public transport; and the presence of other supportive programmes that help to incentivise commuters to use public transport. Discussion on these specific examples of the requirements for implementation follows.

Urban form and location

San Francisco houses a population of 852 469 people within an area of about 121 km2 and has a density of 7 022 people per km2 (City-Data.com, 2015). It is the second-most densely populated major city in the United States after New York City (ibid.). The city area of San Francisco and its surroundings are known as the Bay Area. The metropolitan area consists of San Francisco and four neighbouring counties (United States Census Bureau, 2015). San Francisco itself has a high urban density of almost 70 persons per hectare (ibid.), which exceeds the viable threshold for public transport and Non-Motorised Transport modes. It also has a mix of land uses.

In contrast, the wider Bay Area has a much lower population density of four persons per hectare and a distinct polycentric urban form (Cervero and Wu, 1997). The city area of San Francisco has three tiers of hierarchical employment centres encircling it (ibid.). The transport implications of this are that the lower density, outlying employment centres averaged far higher rates of drive-alone automobile commuting with insignificant levels of transit commuting (ibid.). The relative locations of the San Francisco Bay Area, San Francisco Metropolitan Statistical Area and San Francisco City-County are illustrated in Table 7.1.

Table 7.1: Location and details of San Francisco Bay, Metropolitan Statistical and City-County areas

San Francisco Bay Area	San Francisco Metropolitan Statistical area	San Francisco City-County
Location of the San Francisco Bay area within California	San Francisco–Oakland–Hayward Metropolitan statistical area	Location of San Francisco City-County (red) within the Metro area
Population: 7 561 755 (2014)	Population: 4 594 060 (2014)	852 469 (2014)
Area: 18 088 km2	Area: 6 410 km2	Area: 120 km2
Density: 411 per km2	Density: 705 per km2	Density: 6 880 per km2
4 people per hectare	7 people per hectare	69 people per hectare

Source: Author's formulation

It has been found that incentives tend to shift the commuting mode to transit and walking in urban areas, while in suburban areas it tends to shift more to ridesharing and vanpooling (Victoria Transport Policy Institute, 2014). It is therefore important that the ordinance provides options for both urban forms. It is not surprising then that the commuter benefits offered in the larger less dense region are taken up more by vanpooling. Within the city area of San Francisco, the introduction of commuter benefits saw an increase in public transport usage (San Francisco Department of Environment, 2013b).

Hard infrastructure

It is necessary to include transit ridership in the entire Bay Area, not just within the city boundary of San Francisco, as it involves those travelling to San Francisco, and not just within it. In 2013, the primary mode of commuting for those in San Francisco and the Bay Area were sustainable modes. In San Francisco itself bus, rail and ferry transport, car-pooling, walking and cycling were common (ibid. 2013a). The transit infrastructure includes two subway networks, two commuter rail agencies, eight trans-bay bridges, a ferry, local bus service, three international airports, and an extensive network of roads, tunnels and bicycle paths. Furthermore, San Francisco has a history of encouraging Non-Motorised Transport modes for public transport (Callwell, 1999). This has resulted in an urban environment that is conducive to such modes, where priority passage is often given to pedestrians and cyclists. Each public transport mode is further elaborated on next.

Rail

Rail infrastructure that serves the San Francisco Bay Area is extensive, and includes one heavy rail system, one commuter rail line and two light rail systems. There is also an Amtrak inter-city rail service which primarily supports the city area of San Francisco, but which also links to the rest of the Bay Area. Of the two light rail systems, one of them, Muni Metro, operates solely within the city area of San Francisco (San Francisco City County Transport Authority, 2014).

Bus

A series of overlapping bus agencies provide additional public transit coverage to Bay Area regions both served and not served by rail. The four largest agencies, Muni Metro, AC Transit (Alameda-Contra Costa Transit District), SamTrans (San Francisco Municipal Transportation Agency), and the VTA (Santa Clara Valley Transportation Authority) operate within the city of San Francisco itself, East Bay, the Peninsula and South Bay respectively. In addition, the four bus agencies are each independently pursuing the possibility of constructing Bus Rapid Transit systems with the accompanying separate right-of-way and traffic signalling on busy transit corridors.dfdf3

Ferry

Although certain bus agencies provide travel over or under the San Francisco bay and across the Golden Gate bridge, ferry services also operate across the bay.

Bicycles

The ferry system, along with all the major train and bus operators, allow bicycles onto their systems with no additional charge (CBS SF Bay Area, 2013). In addition, Bay Area residents may purchase a membership card from the Bay Area Bike Share programme which has bicycles available for renting 24 hours a day, seven days a week (ibid.). Dedicated cycle lanes are provided (Photograph 7.1 below).

Photograph 7.1: Prioritised bicycle lanes in San Francisco

Source: From website of San Francisco Department of Environment (2015)

Thus transportation in the San Francisco Bay Area consists of extensive multi-modal infrastructure. Such variety of modal choice is one of the factors that support increased use of public transport. Importantly, the different modes of public transit are also well-integrated: spatially the bus systems are connected to rail systems and the ferries and most facilities allow bicycles on them.

Soft infrastructure

Communication

The San Francisco Department of Environment is responsible for communicating the details of the ordinance and other related public transport incentive programmes to businesses, employees and public transport operators. It also assists companies with compliance and the implementation of the ordinance requirements by providing free consultation and tools for easy compliance (Green Cities California, 2013). Various community workshops are hosted to educate employers specifically on in this issue (ibid.). A business and employee's website was established as a hotline service.

Integrated payment system

Employers can choose the form of the benefit they decide to offer, although purchasing transit vouchers and monthly tickets for up to $130 a month is the easiest for the employer (San Francisco Department of Environment, 2015b). However, a popular choice of most businesses is to appoint a service provider such as Clipper Direct or Commuter Check Services, to manage the transit payments. These platforms offer an all-in-one transit card on which the employer can load funds directly for the employee to use. This facility generally costs $3 a month per employee (WageWorks, 2015).

Almost all the larger public transit agencies accept the Clipper Card, a reloadable contactless smart card, as a universal electronic payment system. The Clipper Card for example, is accepted on the Metro rail service, two out of three of the Commuter rail services, both the light rail services, all four of the bus services and the public ferry services (San Francisco Department of Environment, 2015b). There are also other payroll and benefit management companies whose business it is to assist employers with the implementation of a commuter tax benefits programme (ibid.).

Supportive programmes

Identified in the literature is the point that although financial based incentives have the greatest effect on influencing public transport ridership, the combination of many Transportation Demand Management programmes has the most success in increasing the use of sustainable transport modes. In the San Francisco case, the success of the programme is therefore also be attributed to the fact that the municipality offers the following programmes in addition to the Commuter Benefits Ordinance (San Francisco Department of Environment, 2015a)

- Emergency Ride Home provides a variety of transportation options in the case of a personal emergency for those who utilise public transport, and is successful as it takes out the perceived risk for some of the journey back home if there is an emergency. The Emergency Ride Home benefit is offered to a maximum of four times a year per commuter
- Rideshare Matching is a programme offered by the City-County and connects commuters with others in their surrounding area who also seek participation in vanpooling
- CityCycle is a programme where the municipality offers free bike share programme to all city employees for work-related trips
- The Private Employer Shuttle Partnership Programme involves developing and launching a pilot programme to minimise the impact of commuter shuttles, such as safety issues and competition with bus services, while supporting their own operations. The pilot programme involves developing a network of shared municipal bus zones, identification of shuttles through visible placards, increased law and by-law enforcement and data sharing

Outcomes

Success of the programme

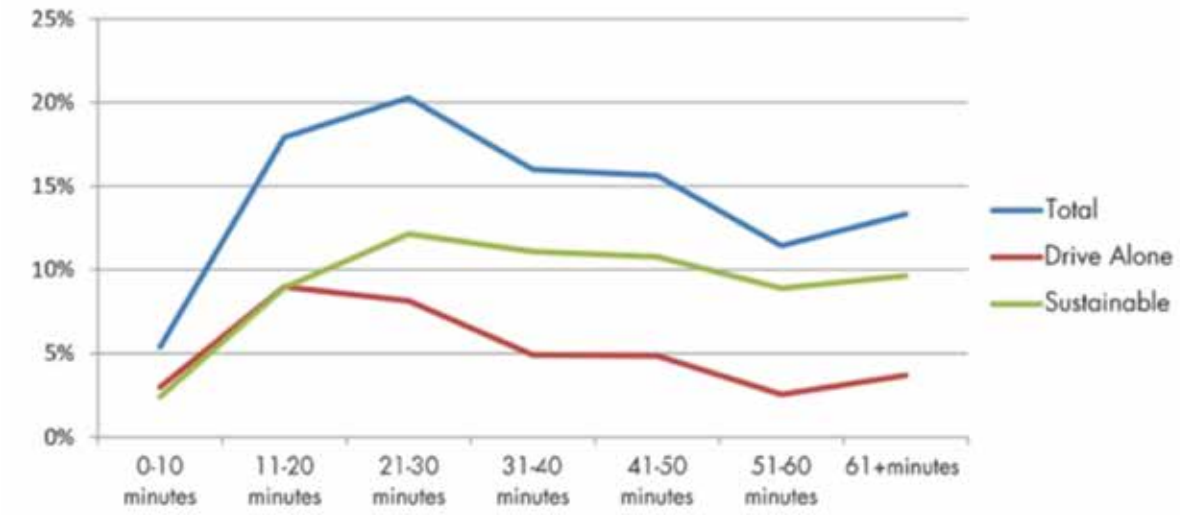
The Commuter Benefits Ordinance successfully resulted in 40 per cent of businesses reporting adoption of benefits programmes during the 2012 compliance cycle (Green Cities California, 2013). Thirty-four per cent of San Francisco employees, or more than 40 000 commuters, were using commuter benefits to save on the cost of public transport (ibid.). This is evident in the fact that the public transit and non-motorised modal split increased between 2010 and 2012 (San Francisco Department of Environment, 2013a). The San Francisco Commuter Benefits Ordinance's Second Annual Report 2012 reported that the ordinance contributed to an estimated reduction of 455 000 metric tons in carbon emissions from commuter traffic in 2011 and 2012. The Annual Report also found that employers are increasingly offering multiple benefits, such as a combination of a pre-tax deduction benefit and an employer-paid subsidy (ibid.).

By implementing the pre-tax transportation benefit option, employers are able to reduce their payroll taxes while providing at least one benefit to their employees. It is largely for this reason that the ordinance had the backing of the San Francisco Chamber of Commerce and other business groups (Buck Consultants, 2009). Research has also shown that involving the employer has increased the success of the programme, as employees are much more likely to consider alternative transport options when an employer encourages them to do so (San Francisco Department of Environment, 2013a).

Challenges

The ordinance has not had much of an effect on short distance trips (Chart 7.1 below). Commuters still prefer to use private vehicles for trips less than twenty minutes duration. This finding suggests that increased emphasis is needed on Non-Motorised Transport facilities to facilitate a modal switch to Non-Motorised Transport modes and bicycle-sharing options for short distance trips.

Chart 7.1: Commute mode choice by commute time



Source: San Francisco Department of Environment (2013a:12)

Under current United States of America tax law, commuter benefits are only available through an employer. An employee cannot directly take advantage of these tax benefits by simply taking a tax deduction or credit on their personal individual tax return. The programme also does not address the issue of compensating people who work remotely from home as a sustainable means to reduce trips to work.

Spin-offs

The Commuter Benefit Ordinance has also created an opportunity for innovation in the private sector, through the establishment of spin-off industries that provide services that are associated with the programme. Some of the spin-offs are:

- Integrated payment systems service providers
- Benefits management companies who are responsible for managing the tax records and administering the programme
- Establishment of vanpool companies with which employers have contracts to transport employees
- SliceRides, an application and social network that facilitates trusted peer-to-peer rides between professionals on their way to work (San Francisco Bay Area Planning and Urban Research Association, 2014)
- Real-time transportation information service providers such as TransitScreen or RideScout, also through an application (ibid.)

Analysis Matrix

A synthesis of all the criteria that are necessary for the success of a public transport pre-tax benefit programme such as the Commuter Benefits Ordinance, from the analysis of the case study and the literature on public transport incentives and Transport Demand Management, is provided in Table 7.2 below. The five broad categories identified that are pertinent to the success of public transport incentives in the form of commuter benefits are identified as the policy environment; institutional arrangements; infrastructure requirements; the types of incentives; and urban form and location. It is these criteria that will be looked for when Cape Town is analysed.

Table 7.2: Analysis matrix

CATEGORY	CRITERIA
POLICY ENVIRONMENT	• Supportive federal/national government law for pre-tax commuter benefits • Equates to a federal or national government subsidy • Compulsory at the regional and local level • Multiple supporting public transport incentive programmes offered in conjunction with each other • Pre-tax savings benefit both employer and employee

CATEGORY	CRITERIA
INSTITUTIONAL ARRANGEMENTS	• Public transport is a local government mandate • Many different departments are integrated through a Transportation Demand Management partnership programme, including integration between transport and planning departments • Partnerships are established for communication and research in Transportation Demand Management
INFRASTRUCTURE REQUIREMENTS	• Variety of public transport modes • Spatial integration between modes • Integrated payment systems • Transit-based investments should support all public transport initiatives
INCENTIVE TYPES	• Financial incentives have the greatest effect • Transportation Demand Management strategies are most effective when several are used together • Most effective when the revenue generated is reinvested back into the system • Non-Motorised Transport programmes and incentives are necessary in reducing Single Occupancy Vehicle use for short trips
URBAN FORM AND LOCATION	• High urban densities • Mixed land uses • Integration between land use planning and transport planning • Best applied to urban and large suburban centres that experience high traffic volumes, parking and pollution problems

Source: Author's formulation

Cape Town Analysis

From the analysis of the San Francisco case that focused on implementing public transport pre-tax benefits programmes in its city area, a number of necessary supportive elements came to light. A literature study of public transport incentives endorses the conclusion drawn. In order to consider the replicability of such a programme in South African city context, and Cape Town in particular, some comparisons must be highlighted. In San Francisco, the main objective was to decrease the use of Single Occupancy Vehicle trips to reduce resource use and greenhouse gas emissions. This section however, takes the stance of increasing public transport ridership, mainly for a redistributive effect on the existing public transport system. This second case study reflects the point that South Africa's urban poor have a need for increased access to public transport.

It is thus necessary to give a general overview of the spatial form of transport infrastructure in South African cities to illustrate this phenomenon. In the analysis of Cape Town the various identified elements are framed in the light of the objective of creating a more equitable public transport system. These relate to the policy environment, institutional arrangements, infrastructure and incentive programmes.

Public transport in South African cities

The public transport industry in South Africa consists of three main modes of transport: the traditional commuter rail system; the subsidised and unsubsidised commuter bus industry, including the Bus Rapid Transit systems; and the 16-seater minibus taxi industry. Minibus taxis are included under the umbrella of public transport modes since they transport such large numbers of commuters, although they are privately owned and receive an official subsidy. South African cities display an apartheid structure that is characterised spatially by radial patterns of transport infrastructure, rather than the more efficient and equitable grid layout. A second feature, also attributable to apartheid segregation policies, is the very low population densities in South African cities. Moreover, the highly fragmented urban form that has extremely low overall population densities, in itself often renders public transport inefficient (Dewar and Uytenbogaardt, 1991). The demand for adequate public transport however, is extremely high for most South Africans for two reasons: the low density urban form means that places of employment are often located far away; and the rising prices and running costs of private vehicles makes their use for commuting too expensive.

Public transport in Cape Town

The movement patterns in Cape Town resemble a largely radial structure, where all metropolitan movement radiates inwards and outwards from the Central Business District (CBD) (Dewar and Uytenbogaardt, 1991). This pattern of movement is not only highly inefficient in terms of congestion, but the lack of adequate north-south and east-west movement axes means that transportation between areas within the city often has to happen via the Central Business District. Those located on the periphery experience both higher time and monetary costs to access other parts of the city. In 2011, Cape Town had a population of 3.7 million people, of which 55% were estimated to rely on public transport only. Most importantly, within lower income groups, between 45% and 70% of their income was spent on travel and access, compared to the international standard average of between 5% and 10% (City of Cape Town [COCT], 2013a).

Cape Town, like other South African cities, has a marked duality when it comes to the use of public transport. Members of lower income households, predominantly situated in geographically peripheral townships and informal settlements, constitute the majority of public transport users across all the relevant modes or otherwise they walk (Wilkinson, 2008), whereas members of middle and higher-income households, situated in suburbs that are better located relative to the urban centre, utilise private vehicles rather than public transport (ibid.). Over half (52%) of all trips are made by car (Table 7.3 below).

Table 7.3: Daily modal split in Cape Town excluding Non-Motorised Transport

PUBLIC TRANSPORT MODE	MODAL SPLIT (%)	DAILY PASSENGERS
CAR	52	1 310 833
RAIL	25	634 837
CONTRACTED BUSES	9	240 000
MYCITI	1	21 820
MINIBUS TAXI	13	320 041
TOTAL	**100**	**2 527 531**

Source: City of Cape Town (2013a)

Policy environment

There is no national government policy that makes allowances for pre-tax deductions for public transport use. Furthermore, in South Africa, employers do not pay payroll taxes as is the case in the United States, the consequence of this will be noted. These sub-section deals with the current policy environment for public transport in South Africa, with reference to institutional mandates to better understand how such a pre-tax benefits programme would fit into it and what the challenges would be.

In post-apartheid South Africa, there has been a greater emphasis on public transport and Non-Motorised Transport use since the development of the White Paper on National Transport Policy in 1996, which included the following main policy thrusts (Bickford, 2013):

- The prioritisation of provision for public transport and Non-Motorised Transport modes, particularly walking and cycling, to address the mobility needs of the more disadvantaged sectors of the population
- The introduction of Transportation Demand Management strategies especially to promote public transport-orientated land use patterns, road space management and road pricing measures to 'dis-incentivise' private car usage (Wilkinson, 2010)

Mandates and funding

National government is mandated to assist and monitor provinces and municipalities that lack the capacity or resources to perform their land transport functions (Walters, 2008). Provincial government is to ensure planning, coordination and facilitation of these functions in the province. Local municipalities are responsible for ensuring the coordination between departments and agencies in the municipal sphere and preparing transport plans for their area.

The National Department of Transport funds the commuter rail system by transferring funds to the Passenger Rail Agency of South Africa (PRASA) (RSA, 2013). The National Passenger Rail Plan of 2004 was developed to ensure that rail services are offered where they perform best such as in high density corridors where demand is substantial. The most typical are the metropolitan areas in South Africa. However, only 9.2% of commuters in these cities actually use rail transport to get to work (Statistics South Africa, 2013).

Commuter bus services, aside from Bus Rapid Transit systems, are managed provincially and funded through a public transport operations grant from the National Department of Transport (2013). They consist of tendered services. However, no new tendered services have been allowed since 2001. Operators are also not allowed to increase their subsidised bus kilometres because of a lack of funds (Walters, 2008). This has meant that they have to resort to introducing services on their own accounts with no state assistance and this has led to financial instability (ibid.). There is considerable emphasis on developing Bus Rapid Transit systems in South African cities as they are seen as the backbone of the Integrated Rapid Public Transport Networks (IRPTNs) to be developed in the metropolitan municipalities (Pillay and Seedat, 2007). Currently, Cape Town has an operational Bus Rapid Transit system that is being implemented in phases.

The minibus taxi industry, mostly operating 16-seater vehicles, transports an estimated 65% of all commuters in the country, largely due to its competitive pricing and demand-responsive nature (Wilkinson, 2010). The industry has experienced a significant oversupply, suffered capital replacement problems and considerable inter-association rivalry because of a lack of a proper regulatory regime. Hence, and in line with the White Paper on National Transport Policy of 1996 and the Moving South Africa Strategy of 1998, government has implemented the Taxi Recapitalisation Programme.

This programme aims to formalise and regulate the industry by replacing existing vehicles with new vehicles that comply with specified regulations to ensure safety standards. To assist owners, a once-off scrapping allowance of R50 000 for old vehicles is provided. It is a facility that is regarded as a capital subsidy, which is implemented in phases. The particular programme also requires taxi operators to legalise their operations by registering their vehicles and routes with a provincial taxi registrar. The process requires that taxi operators convert their radius-based operating permits to route-based operating licenses. The Taxi Recapitalisation Programme also aims to expand the services the industry offers to operate on lower density, public transport routes through contracts for cooperative or joint ventures, or as subcontractors to bus operators (Walters, 2008).

Another serious concern is the financial burden that the Taxi Recapitalisation Programme places on taxi operators as additional costs are involved. These include vehicle insurance, increased minimum wages, regulated driving hours and tax compliance. Furthermore, the market that patronises the service is generally not in the position to pay higher fares to overcome these additional costs (Walters, 2008).

Fragmentation and lack of integration

The institutional structures that govern public transport can be seen to follow a modal approach, as they are generally planned independently of one another (ibid.). Furthermore, the funding framework for public transport is regarded as highly fragmented, which hinders integrated transport planning as each of the many funding streams has its own set of funding requirements and criteria (Figure 7.2). This ultimately results in a transport system that is not spatially or operationally integrated (ibid.).

Change of institutional mandates

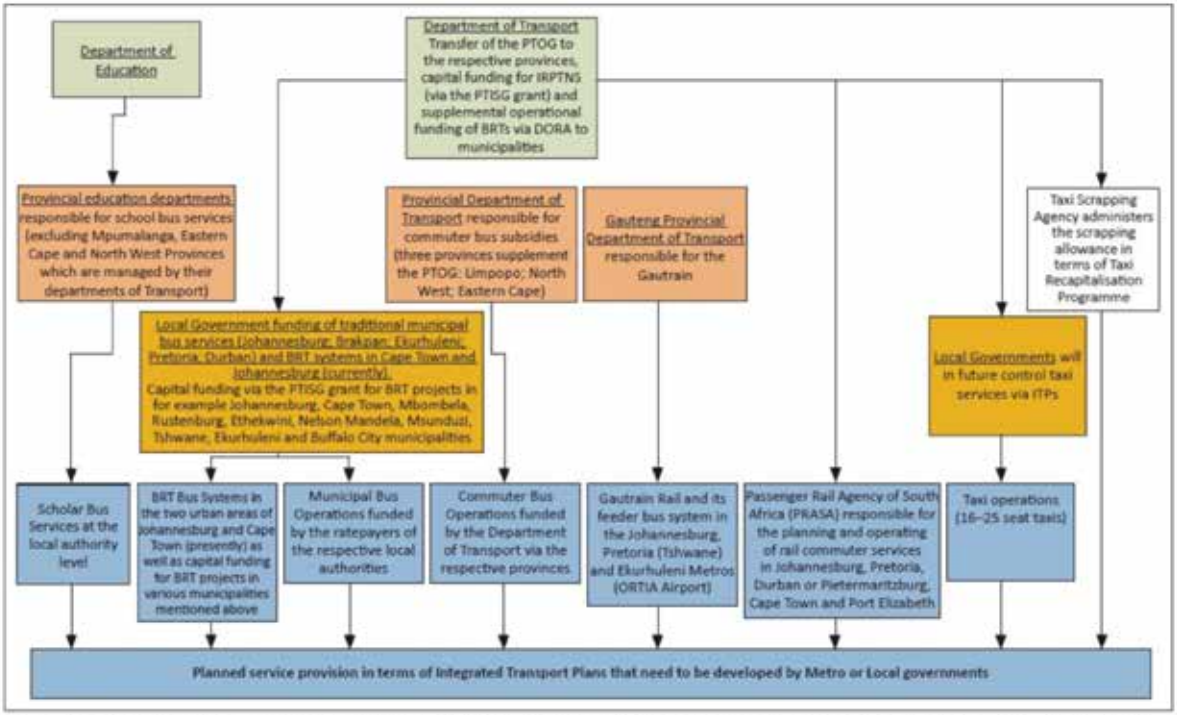
The National Land Transport Transition Act of 2000 advocates for the devolution of the management and operational transport function to the local sphere. This is because urban planning occurs at the local municipal level and transport needs are better understood in conjunction with other aspects of planning done at the local level. There has, however, been much debate as to whether local municipalities are able to afford financing and implementing the public transport function (Hetherington, 2011; Palmer, 2011). Although the Public Transport Infrastructure and Systems Grant is available for local municipalities to use as the initial investment capital, the state is concerned about the operating expenses these systems do incur.

Institutional arrangements

The institutional framework that governs the provision of road and rail-based public transport services in Cape Town at present is highly fragmented. Various bodies play a significant, and sometimes conflicting, role in the system and represent all three spheres of government. Elaboration on this issue follows as a response to the national mandate to devolve transport responsibilities to the local sphere, the trend in most metropolitan municipalities is the creation of a local government transport authority that has control and decision-making powers over all transport matters. The formation of such an authority has the potential to improve the integration of transport modes as institutional arrangements governing transport remains fractured across the three government tiers (Bickford, 2013).

Amongst other benefits, these local government transport authorities can address institutional weaknesses through ensuring coordinated planning with other agencies such as the Passenger Rail Agency of South Africa. Furthermore, local strategies can support integrated rather than silo-based modal transport planning; institutional memory can be retained; and the shortage of specialised skilled labour can be addressed by concentrated employment where needed rather than dispersing it over a range of transport sectors (Walters, 2014).

Figure 7.2: Numerous funding streams funding public transport in South Africa



Sources: Author's own creation with sources consulted – Department of Transport (DoT), 2013a, Annual Report 2012/2013, Pretoria and Department of Transport (DoT), 2013b, 'National Road Based Public Transformation Plan: A negotiated approach', presentation to the Annual General Meeting of the Southern African Bus Operators Association, University of Johannesburg, 30 May

FIGURE 2: Illustration of the numerous funding streams that are currently used to fund public transport in South Africa.

Source: Walters (2014)

Transport for Cape Town

The City of Cape Town (COCT), in response to their increased public transport functions, established a single local government transport authority in October 2012, named 'Transport for Cape Town' (TCT). Its purpose is to enable the municipality to accept full responsibility for road and rail-based transport within its boundaries (Holtzhausen and Abrahamson, 2011). It is expected to facilitate the full rollout and achievement of integrated, inter-operable and inter-modal transport across Cape Town and its functional area (COCT, 2013a). Moreover, Transport for Cape Town is responsible for planning, costing, contracting, regulating, monitoring, evaluating, communicating, managing and maintaining the Cape Town's transport infrastructure, systems, operations, facilities and network (Transport for Cape Town, 2015). Its proposed documented Comprehensive Integrated Transport Plan will be implemented over the next ten years (ibid.). An important aspect of this plan is that it not only helps to promote modal integration between the current unintegrated public transport systems, but will also integrate transport modes across administrative boundaries.

Infrastructure requirements in Cape Town

This section outlines the presence of the elements required for the implementation of a pre-tax public transport benefit programme and their current limitations. Most of the infrastructure required is currently available within Cape Town city's public transport services.

Rail

The rail network in Cape Town consists of 610 km of rail line and 118 rail stations, comprising both passenger and freight rail lines, operated by the Passenger Rail Agency of South Africa and Transnet Freight Rail respectively. The stations are typically fed by minibus taxis, buses, private cars and walking, although some bicycle activity does exist. Land adjacent to the stations is generally privately owned and the often poorly maintained quality of the station areas discourages some users from utilising rail as a mode of transport (COCT, 2013a). In the poorer areas of the city the passenger rail is often highly under-capacitated, for example, the Nolungile rail station in the Cape Flats in Cape Town is one of the busiest in Cape Town and has an average of 14 566 boarding passengers per day, yet in 2009 the demand for rail service in that area was estimated to exceed capacity by an average of 67% (ibid.).

Bus Rapid Transport

MyCiti is a Bus Rapid Transit system which is to be rolled out in four phases, for completion within 15 to 20 years (ibid.). Phase 1 focuses on the central city and the Blaauwberg corridor to the north towards Table View/Du Noon, as far as Atlantis and Mamre. Phase 2 is currently intended to address the substantial public transport needs of the Metro South East to include Khayelitsha and Mitchells Plain. Phases 3 and 4 will serve the Durbanville and Delft/Helderberg areas respectively (ibid.).

Commuter bus services

Golden Arrow and Sibanye commuter bus companies both provide direct metropolitan-wide origin-destination type services that are predominantly operated by subsidised contract services. Their contracts are currently being extended on a monthly basis, which could explain why most of the vehicles are in bad condition (Walters, 2008). The combined fleet size is 1 134 buses, of various capacities. The services are provided in accordance with timetables and some 240 000 passenger trips are made each day (ibid.).

Minibus taxis

Minibus taxis provide services in an unscheduled manner, either on a specific route or within a particular radius, without a timetable and where passengers are charged fares individually. Minibus taxis operate roughly 565 routes across the Cape Town metropolitan area. The majority (55%) of their services are considered to be line haul services which, in effect, means they compete with services offered by buses and trains (Western Cape Provincial Government, 2011).

The minibus taxi operators are organised into 102 different taxi associations, some of which are affiliated to two mother bodies. The COCT intends to utilise the benefits of the Taxi Recapitalisation Programme in the implementation of an Integrated Public Transport Network (IPTN) throughout the city as long as taxi routes do not compete with the Integrated Public Transport Network or rail implementation phase. The Transportation Reporting System database has a total of 6 035 unique registrations that were observed at the various taxi ranks in Cape Town between January and March 2013 (COCT, 2013d). Although it is known that there are a number of illegal minibus taxis that operate in the area, it is very difficult to accurately establish which and how many there are. However, in 2007 it was estimated that 46% of taxis operating were illegal (COCT, 2007, p. 37).

Non-Motorised Transport

Cape Town has an extensive Non-Motorised Transport network, and since 2010, the COCT has allocated a number of projects for the construction of roughly 435 km of walkways and cycleways. These include the Klipfontein Corridor Non-Motorised Transport project that was initiated under the city-wide Non-Motorised Transport programme, as well as the cycle lane along the R27 Integrated Rapid Transit (IRT) system route (COCT, 2013a). However, Non-Motorised Transport facilities in the Metro South East are generally lacking (ibid.).

Bicycle lanes are provided as a part of the infrastructure of the Integrated Rapid Transit system as far as possible. There is, however, a general frustration from cyclists who complain that it is Metrorail policy not to allow bicycles on trains. However, Metrorail explains that during peak commuter periods the passenger demand exceeds train capacity and space for bicycles is problematic.

Universal payment system

Cape Town already uses an electronic card payment system on the MyCiti service, the MyConnect card, and has plans to integrate the electronic card payment system across all modes, along with an integrated timetable within the next five years (ibid.).

Incentive programmes in Cape Town

This section outlines incentive programmes available in Cape Town that could ultimately support a public transport pre-tax benefit programme, making public transport more desirable. Up until recently, public transport incentives have tended to revolve more around land use mechanisms than around the user. However, the concept of Transportation Demand Management is not new in Cape Town as such a strategy was developed in 2006. It proposed interventions to diminish car-orientated behaviour, and piloted several programmes in support. The Comprehensive Integrated Transport Plan for 2013 to 2018 (COCT, 2013e) builds on the existing Transportation Demand Management strategies. Only programmes that would support pre-tax public transport benefits are described in this section.

Land use incentives and Public Transport Zones

Cape Town's urban form and low urban densities do not adequately provide the thresholds for public transport use. However, the COCT has begun the rollout of its Bus Rapid Transit system, which thus means that land use mechanisms need to retroactively support public transport investment through incentivising and supporting higher urban densities and mixed land uses.

The COCT's densification policy (2013b), targeting increased development in already-developed areas to maximise land use potential, aims to ensure the optimal and efficient use of infrastructure, services, facilities and land; as well as to support the development of a viable public transport system. One tool for the implementation of the densification policy is the reduction of minimum parking requirements in designated Public Transport Zones, which is provided for in the Zoning schemes. Despite the positive contribution to behavioural change in favour of public transport, the private sector often pursues the practice of parking reduction to reduce construction costs. The reduction of parking space thus frees up valuable urban space and thereby contributing to higher urban densities. These kinds of zones are allocated around public transport interchanges and corridors.

Travel Demand Management strategies

Parking management programme

There are eight managed parking areas within the Cape Town where priced on street parking and time limits have been introduced: all major Central Business Districts in Cape Town central, Bellville, Claremont and recreational areas such as Gordons Bay. Priced parking improves the turnover and availability of parking bays more equally in cases where demand exceeds supply. Priced parking areas are currently managed through official municipal contracts that are procured via tenders. They are regarded as important tools for transport demand development (COCT, 2013c).

Bus lanes and priorities

The MyCiti service has dedicated bus lanes on certain routes, areas and intersections within the city to increase the operational speed of public transport during peak hours. Dedicated Bus and Minibus Taxi (BMT) lanes are provided on major roads, such as the N2 highway, and although this service is not seen as car-competitive, the lanes are still important in retaining existing users. Aside from the dedicated MyCiti lanes and the N2 bus priority lane, the other Bus and Minibus Taxi lanes within the city are generally not enforced (COCT, 2013a). Traffic signal settings are also implemented in certain areas to give priority to bus and taxi services.

Park-and-ride facilities

Most of the park-and-ride facilities in Cape Town are located close to residential areas and function mainly to facilitate an increase in public transport use to the Central Business District. The programme also focuses on improving park-and-ride facilities and increasing the safety and convenience of the rail station precincts. The project relies on the rail system to provide the necessary capacity for the additional commuters who want to use park-and-ride facilities. Non-Motorised Transport infrastructure and feeder routes also assist (COCT, 2013c).

Bicycle-sharing programmes

Transport for Cape Town piloted a bicycle-sharing programme within the Cape Town Central Business District which is currently only available to employees of the COCT. However, the intention is to rollout the project to the public in the near future (Transport for Cape Town, 2015). The facilities are envisaged to be available within the surrounding suburbs too and will be integrated with other modes of transport, like being placed near railway stations (ibid.). A feasibility study will also consider whether a smart card payment system, such as the MyConnect card currently in operation on the MyCiTi buses, could be used for this project. This kind of electronic payment system would allow the COCT to monitor the use of the bicycles and consider improvements to enhance the system in the future (COCT, 2013a).

Travel Smart programme

After beginning as a project to reduce the number of trips the COCT municipal employees make to work, the Travel Smart programme was expanded to a number of large employers within the Central Business District as a campaign to promote awareness of sustainable modes of transport. The programme also developed an online platform that integrates information about all the public transport modes, routes and departure times. Its 24-hour call centre also provides information on all the bus services. The Travel Smart programme has a facility to match commuters to a lift club in their area, where multiple commuters can travel to work in one person's vehicle (COCT, 2015).

Replicability for Cape Town

In this chapter's final section, the possibility of replicating the Commuter Benefits Ordinance used in San Francisco as a pre-tax public transport incentive in Cape Town is considered. First, it presents the challenges and highlights the aspects that need to be changed to do this. It then discusses the criteria needed to support such a programme and identifies which are already in place in Cape Town. After justifying the need for pre-tax benefits for using public transport, the last section offers suggestions on how such a programme should be implemented and the tools required.

Challenges

The devolution of public transport functions to the local level has raised major concerns about the financial sustainability of municipalities, and is therefore something that needs to be addressed in parallel with any further public transport initiatives or programmes. Currently in Cape Town, as in many South African cities, the multiple institutional role players that govern different modes of transport, as well as the fragmentation that exists regarding funding each mode, means that modes of public transport are not well-integrated, neither operationally nor spatially. Bus, minibus and rail routes compete with each other rather than supporting each other. This lack of integration decreases the ease of multi-modal transport which, in turn, makes the change from using private vehicles to other more sustainable modes less desirable for users.

For all commuters within Cape Town to benefit from pre-tax public transport benefits, effective regulation of the minibus taxi industry would have to be in place. In 2007, 46% of the minibus taxis in Cape Town were believed to be illegal (COCT, 2007:37). Regulation is necessary, not only to integrate these routes into the larger public transport system, but also to create a more desirable mode of transport. Especially important is the fact that commuters are able to produce a record of payment so that they and their employers can claim the pre-tax expenses with proof. Although the Taxi Recapitalisation Programme is in place to regulate the industry, there are concerns that the cost of legalising the service will be transferred to the user, the one most generally unable to afford higher transport costs. Furthermore, if an integrated payment system is to be implemented, similar to the TransitCheck system in San Francisco, a number of challenges would arise when implementing it in the minibus taxi industry.

Lastly, the barriers to entry for new users need to be addressed. For some middle-class users, the undesirability of the service may outweigh the pre-tax savings. Although the COCT has plans to upgrade Non-Motorised Transport facilities, the integration between them and other modes has to be efficiently implemented if people are going to change to public transport facilities. For example, that bicycles are not permitted on Metrorail lines during peak hours greatly hinders the user's ease of movement. The environment around the rail stations is all too often not pleasant for pedestrians, and will deter many people from utilising rail transport.

Criteria that would support the programme

The establishment of a transport authority in Cape Town, namely Transport for Cape Town, can assist in the implementation of a public transport tax incentive effectively. It has the authority to manage and coordinate different modes of public transport within the boundaries of Cape Town and can thus align the schedules of different services and ensure the spatial integration of different modes. Achieving this will make commuting by public transport more desirable for the user, as the speed and ease between modal changes will be reduced. In addition, the users will be able to take up the option of pre-tax commuting benefits. Since the Comprehensive Integrated Transport Plan oversees transport in the entire Cape Town functional region, if a pre-tax public transport benefit is introduced, it will be in the best position to also target those who commute to the COCT even from outside its borders as well.

Cape Town is relatively well-serviced by a range of public transport options. Implementing the final phases of the MyCiti Bus Rapid Transit system and increasing the efforts to improve non-motorised modes of public transport should serve to further increase desirability of commuting by public transport. This is important as non-motorised modes often account for a significant portion of the public transit journey. Furthermore, if the Taxi Recapitalisation Programme is successfully rolled out, it will mean that the minibus taxi routes will move from a radius-based area of operation, to being route-based. This will promote the integration of minibus taxis as feeder routes in the public transport system. However, for bus and minibus modes to compete against the use of cars, greater enforcement of the right use of minibus taxi dedicated lanes will be required on urban roads. Furthermore, the plan to rollout an integrated payment system will not only increase the desirability of commuting due to ease of payment, but is also a necessary requirement in the operation of a commuter benefits programme. That electronic payments can be electronically captured and monitored and will supply a record of payment is an important benefit for efficient operation.

The current Transportation Demand Management initiatives in Cape Town are mainly incentives, and relate to land use and strategies to increase the desirability of public transport. Cape Town can be seen to have supportive densification policies that encourage not only the use of public transport, but also the required densities to support it, which is necessary for the success of such a programme. However, there is little in the way of financial incentives, other than parking pricing, which rather disincentives private car usage. There is therefore room for the introduction of a financial based incentive within the system, such as pre-tax commuter benefits.

The COCT has a number of Transportation Demand Management strategies to increase the desirability of public transport and the environment in which it functions. Furthermore, it has also been noted that Transport for Cape Town seems open to innovation and piloting new projects. The introduction of suitable programmes aligns with the Comprehensive Integrated Transport Plan's outlook that financial incentives that generate tax revenue could subsidise public transport. The promotion of tax rebates should incentivise public transit use.

Justification for pre-tax public transport benefit

There have been many concerns regarding the ability of local governments to cover costs associated with the devolution of public transport functions. The implementation of a pre-tax public transport incentive programme can be seen as a way to increase the revenue generated for public transport. This can happen through increased ridership and thus an increase in the fares collected. If the COCT is to become the custodian of all public transport functions within the city, it would thus profit from this increased revenue. This may help to cover some of the associated costs that the devolution of functions requires.

The prolific minibus taxi represents a significant contextual difference between Cape Town as compared to San Francisco that would require attention in the implementation of such a programme. Its services would need to be properly integrated into the public transport system, if the objective of increasing equitable access of all users to public transport is to be met. However, since the regulation of the industry represents increased costs, ultimately the end user will have to be bear these costs. Increased fare prices should balance out with such costs in the implementation of the programme. There is also the question of public transport users within the informal economy of the city, such as domestic or casual workers. These users would not directly benefit from the incentive as they often do not pay tax, but will benefit from the overall improvement of the public transport system.

It is however expected that, in the middle-class suburban areas, the introduction of such a programme will shift commuters from private vehicle use to vanpool trips, rather than to the established public transport services. The overall objective of the benefits programme is to increase public transit ridership with the emphasis on improving the quality and desirability of the public transit services. Hence vanpooling would be viewed at the last option. However, the establishment of vanpool providers also presents an opportunity for the regulated taxi industry to diversify its service.

Implementation

One of the reasons for the success of the programme in San Francisco was due to the fact that not only employees saved money through a reduction of taxes, but employers saved on payroll taxes. However, South African tax requirements do not include employer payroll taxes.

Therefore, if a similar programme was to be implemented in the South African context, only employees would receive a financial benefit. It is therefore suggested that in order for such a programme to be successful in a South African city, incentives are needed that benefit the employer as well as the employee. This last section thus recommends that for such a programme to be implemented, specific tools would be needed to incentive employers, similar to Urban Development Zone (UDZ) incentives, which would also aid in the spatial targeting of the programme, as explained below.

Urban Development Zones and spatial targeting

The objective of the Urban Development Zone tax incentive is to promote urban renewal in South African Central Business Districts through private sector investment in the construction or improvement of commercial and residential buildings. The incentive is in the form of an accelerated depreciation allowance for the investing company, which represents a before-profit tax reduction (South African Revenue Service, 2009). Municipalities have delimited the area, known as the Urban Development Zone, where the incentive applies for approval by the national treasury. The money the private sector saves serves as a reduced tax expenditure. However it does not equate to increased costs to the local municipality, as the incentive is regulated at the national level. Thus, theoretically, it is national government that forfeits the loss of tax revenue (South African Revenue Services, 2009). The incentive, if taken up by developers, can benefit local municipalities as the application of such an incentive encourages increased investment in property, which may increase in value, which eventually will increase the local authority's rates base (ibid.). However, municipalities could lobby the national treasury to reconceptualised the Urban Development Zone incentive as a national initiative supporting local municipality investment in public transport initiatives in selected spatial areas, and not only in the Central Business Districts.

For the implementation of pre-tax public transport incentives, it is suggested that such incentives could use the same tax framework that supports Urban Development Zone areas and have these apply to businesses in a zone demarcated by the local municipality, such as the Central Business District or urban regeneration zones. This benefit from a tax reduction could encourage their employees to utilise public transport. It is recommended that in these zones, a programme similar to the San Francisco Commuter Benefits Ordinance be implemented. The mandate would be that employers with more than twenty employees in such zones have to offer their employees pre-tax public transport benefits. It is further recommended that the requirements of the Bay Area Regional programme be implemented within the entire Cape Town Metropolitan Municipality. In this case, any company with 50 employees or more who work within the boundary of Cape Town municipality, has to offer their employees the same benefits.

Conclusion

A feasible and well-utilised public transport system in South Africa is vital in terms of both decreasing the reliance on cars, and increasing the investment in public transport to support an initiative to extend the demand for public transport amongst all income groups. Ridership would increase and ultimately, the sustainability of public transport would follow. Moreover, such a public transport system would facilitate that all residents have sufficient access to the opportunities of the city. This chapter therefore suggests that any investment in public transport infrastructure should be accompanied by incentive programmes to increase the demand for commuters to utilise public transport. The San Francisco Commuter Benefits Ordinance was the chosen case study, and demonstrates that the use of an incentive that is financially beneficial for the commuter can help to increase public transport ridership.

The chapter, however, concludes there are many other aspects that are important to consider if such a programme is to make a successful contribution to sustainable public transportation. These aspects include the quality of the public transport service, infrastructure and station environment; institutional integration to ensure that different modes are well-integrated; and the use of other incentives or programmes in parallel to a commuter benefits programme to entice commuters to use public transport.

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organic waste

term

material that is biodegradable and comes from either a plant or animal

8. ORGANIC WASTE MANAGEMENT IN THE CITY: FORMAL SYSTEMS, INFORMAL PLAYERS

Marijana Novak and Joanna Glanville

Introduction

This chapter investigates the alleviation of poorly managed waste disposal in Hillbrow, a dense Inner City residential precinct in Johannesburg. The proposal is based on the design of an innovative complementary waste management system for the area, drawing on international case studies and experience.

Waste management is introduced generally as a global issue with a focus on the organic waste stream, general methods of handling it and the economic feasibility of organic waste management systems. Three case studies are detailed with components that are later drawn together to form a system that might be replicated in Hillbrow. The first two case studies cover medium-scale bio-digesters implemented in the different contexts of the EARTH University (as Escuela de Agricultura de la Región Tropical Húmeda is commonly known) in Costa Rica and a semi-formal market in Colombo, Sri Lanka. Costa Rica was chosen as a fully-functioning example of an organic waste management system with clear management systems, technical expertise and successful community participation. In contrast, Sri Lanka's market bio-digester was discontinued due to a multitude of social and technical difficulties encountered. The scale of these two cases is comparable to the locale of Hillbrow. The third case study describes the informal but extensive waste management system operating in Cairo, Egypt. This is valuable as an indication that informal systems can serve a wide and useful service in a city context, and even assist in poverty alleviation.

The final part of the chapter investigates the potential for replicability of organic waste management systems in the context of a local high-density residential neighbourhood in Johannesburg, Hillbrow. Beginning with a detailed description of this area, the researchers attempt to design a complementary organic waste management system, drawing on the lessons of the three cases studies. It serves to respond to some of the specific features of Hillbrow especially the aspects of informality, transience, the high level of unemployment and existing formal and informal waste management systems.

Approach to Study

The theme of this chapter draws on international waste and waste management techniques and strategies as documented in relevant technical reports, journal articles and books. The structured framework of this research was applied to Hillbrow, an urban suburb in a major South African core business and industrial region in the province, Gauteng. Predominantly qualitative methods were used to gather information about waste management in the selected location through site visits, interviews with appropriate experts and an analysis of three case studies. The Costa Rica case study relied on website and site visit reviews, and relevant newspaper articles. The Sri Lanka and Cairo case studies drew on research reports, archival information and articles, maps and books. The South African case was informed by the analysis of the case studies, and an assessment of current waste management in Hillbrow, which resorted to research reports, books, maps, archival information from the City of Johannesburg (COJ) and newspaper articles. The fieldwork done in the area comprised site visits, interviews and a survey through questionnaires with key stakeholders and individuals living and working in Hillbrow, and thence provided supplementary data. Representatives of the academic, private and public sectors that had experience and knowledge of waste management in Hillbrow were consulted regarding the feasibility of the proposed waste management system.

A focus group was organised by Gerard Bester, the Outreach Foundation's coordinator of the Hillbrow Theatre Project, at the Hillbrow Theatre on 19 June 2015, and was conducted independently by the researchers and recorded. It was attended by a group of 26 women, men and children aged between 8 and 50, all residents in Hillbrow. Some of the women were also members of the Boitumelo Project, a skills development initiative started in 2001 for Hillbrow residents. Approximately a dozen informal interviews were conducted with residents, traders and restaurant owners in Hillbrow. In addition, approximately five participants at EARTH University were interviewed on site, and three expatriate Egyptian residents were informally interviewed, one in South Africa, and two in the Netherlands. This fieldwork gave a general view of the waste management situation in the study area. However, a larger sample size and more extensive analysis would be required to ascertain residents buy-in regard the proposed project. Establishing partnerships with other participating actors and bodies would also be beneficial.

Further, during 2015, formal interviews were conducted with:

- Mr. Zacharia Ramatula, president of One Voice of All Hawkers Association
- Ms. Thoko Shomane, Small Business Initiatives section at Pikitup
- Ms. Rochelle Ludick and Mr. Mkhuseli Sobantwana, General and Regional Area Managers at Pikitup
- Mr. Mvuselelo Mathebula (Deputy Director) and Ms. Noni Letsoela, both employed at the Waste Policy and Regulation, Environment and Infrastructure Services department of the COJ (the interview was observed by their colleague, Siphiwe)
- Mr. Umra Konoboy, student and operator of the bio-digester at EARTH University, Costa Rica

Waste as a Global Issue

Cities and their citizens rely either directly or indirectly on industries for survival and these industries and their products have an impact on the natural resource base of civilization (Brundtland et al., 1987). This happens through the entire cycle of raw materials exploration and extraction, transformation into products, energy consumption, waste generation, and the use and disposal of products by consumers (Ibid.). Until recently, many of these industrial processes operated linearly with regard to waste, opting to dispose of waste in landfills, or burn it, instead of reusing it within the industrial cycle (Binder et al., 2001; McDonough and Braungart, 2002). This means that, in addition to negative localised impacts of waste on air, water and land pollution, there is sub-optimal use of the limited resources available on this planet, mostly through inefficient use of land (Hardoy et al., 2001; Lehmann, 2007; South African Waste Information Centre, 2011).

In response to the public concern and debate on the compatibility of economic growth and environmental concerns, much effort is being out into reducing waste in industrial processes (McDonough and Braungart, 2002). In addition to the environmental and social benefits, companies and institutions do see economic benefit in adopting a more cyclical approach to waste management (Krueger, 2014). From an individual perspective, a safe and clean urban environment is a public good and should be pursued with an effective waste management system as a key tool (South African Waste Information Centre, 2011). Many waste reduction and management solutions exist. Each focuses on a different concern, strategy and scale from the individual level to factory level, such as pollution prevention, or as Berrone and Gomez-Mejia (2009) refer to it, 'end of pipe', or 'end user behaviour'.

This chapter dissects how to use existing successful waste management practices to leverage the economic benefits currently reaped by companies for the betterment of communities and their individuals. A crucial component of end of pipe waste management solutions is the sorting of the waste stream into its various components, inter alia plastic, glass and organic waste as part of the reuse or recycle mechanisms. The waste stream is the total mass of solid matter from various organisational institutions that as to be prepared for disposal. Different materials require different handling processes (Binder et al., 2001; McDonough and Braungart, 2002) for recycling processes. Some recycling arrangements, for example those for glass or paper, are sophisticated and have been successfully integrated into societal and commercial processes with defined methods to collect the materials and remunerate the collectors. These systems serve both large-scale collectors and individuals, many of whom are informal collectors who earn a living from operating within this form of recycling infrastructure (Didero, 2012). Indeed, the development of related recycling industries has also led to a boom of informal collectors all over the world (Strasser, 1999).

Waste Management in Urban Areas

Poor urban waste management affects the safety and comfortable living standards of residents adversely (Peters, 1998; Kosoe and Amoah, 2014). Moreover, the lack of adequate garbage disposal in an area often results in negative attitudes that contribute to a general deterioration of community development and cohesion (Mwaura, 1991). The ubiquitous presence of waste indicates a lax attitude towards abiding by a set of common norms of conduct. The implication of stricter by-law enforcement around litter and waste, demonstrated by a clean space, communicates a zero-tolerance approach to all infringements of the law that eventually translates into lower non-appliance levels (COJ, 2014). Large quantities of unregulated waste also have the capacity to directly impact the health of the inhabitants interacting with the waste (Hardoy et al., 2001). This is especially important for the health of children who play in, or are exposed to these open areas. Dumping of organic waste leads to higher instances of disease vectors such as rodents, birds and insects (Hardoy et al., 2001; Kubanza, 2010).

Excessive waste also puts strain on pre-existing structures; for example, spillover into a storm water drainage system can cause blockages and damage to existing infrastructure. The resulting sewage coupled with excessive waste on the sidewalk becomes a hazard for pedestrians who are forced to walk in the street to avoid waste (Hardoy et al., 2001; Togarepi and Tsiko, 2012). Functional waste management systems do well to mitigate these negative effects and such a strategy can create a dignified living space for residents (UN-Habitat, 2015).

Dealing with the Organic Waste Stream

The organic waste stream is chosen as the subject of interrogation for this chapter because it applies to the locale of this case study. Currently there are no waste management systems in or near Hillbrow that deal directly with the organic waste stream. However, other waste handling processes for glass and plastics already exist to some degree, even if in an informal way. The negative effects that result from waste, as described, hold true for organic waste, and are particularly true for disease vector components.

Organic waste

Organic waste consists of all organic material such as food scraps, human and animal waste, as well as any plant-based material and some degradable materials such as paper and cardboard to a lesser extent. Organic waste biodegrades naturally over time and feeds valuable nutrients back into the soil (Food and Agricultural Organization, 1996). Thus, the dumping of this organic waste into landfills is both an inadvertent waste of natural resources, as well as an inefficient use of land. Additionally, the decomposing waste results in heightened greenhouse gas emissions which could be avoided if organic waste was dealt with in a closed cycle. An attempt should be made to return waste organic material to the soil or their emissions should be harvested for other uses (Taylor, 1999; Zurbrügg et al., 2004).

Managing the waste stream

There are essentially only two forms of managing the organic waste stream: either the waste is composted; or the waste forms the input into a waste-to-energy system. Composting forms the relatively easier route but is the less useful of the two options, with fewer skill requirements and less specificity about the organic waste input (Peters, 1998; Zurbrügg et al., 2004). Composting has been in existence for thousands of years, and has in present times evolved into a huge industry with sophisticated technology. Moreover, this industry can produce fertiliser that is specific to the needs of a crop or one that can limit the effects of pests and climates of particular localities. A downside of composting is that it is very difficult to produce commercially competitive fertiliser especially with the inconsistency of the feedstock received from urban areas. Nevertheless, the compost created from household organic waste is suitable for non-agricultural green land or household farms (ibid.; Cornell Waste Management Institute, 2015). Another difficulty is that the space required for large-scale composting is not trivial, especially in urban areas (Rodrigues, M. and Lopez-Real, J. 1999). This can be mitigated via household-scale composting bins which require user education as well as higher capital investment. Composting has some benefits, but is generally not applicable in the dense urban context on a large scale (Hart and Pluimers, 1996; Peters, 1998; Togarepi and Tsiko, 2012).

Waste-to-energy systems in the context of this discussion refers to the use of organic waste as an input into a system that produces gas as one of its outputs (Abbasi et al., 2012; also Konoboy, Pers. Comm., 2015). Such input is a combination of foodstuff, human waste and manure. It is a biological process in which organic matter is essentially 'digested' by bacteria through anaerobic digestion to produce gas and solid matter (Food and Agricultural Organization, 1996; Abbasi et al., 2012; and Konoboy, Pers. Comm., 2015). The gas, termed bio-gas, is the primary output and differs in its exact composition but comprises mostly methane and carbon dioxide (ibid.). The second output, solid matter, is rich in nutrients and can be used to produce fertiliser (ibid.). The bio-gas produced can also be upgraded via removal of carbon dioxide and water vapour that is used in a generator to create electricity and heat. The fertiliser can also be processed to create compost (ibid.). Although the system remains largely the same, the technical differences between different installations can be quite complex as considerations of the site, inputs, bacteria types and quantities, and other local conditions must be taken into account in the design of the system (Dilhani et al., 2011; Coolsweep, 2013; Biotech, 2015; and Konoboy, Pers. Comm., 2015).

Reflection on World Wide Waste Management Systems

Waste management systems exist in diversity and abundance, and to describe the exhaustive set of these systems is outside the scope of this paper. In this discourse, a balance between breadth and depth is sought in a general discussion of the economic feasibility of organic waste management systems, through providing some detail on specific case studies. The first case explores the functionality and effectiveness of a bio-digester in the largely formal context of a university, although it has a transient student population. The second case offers the context of a semi-formalised organic market, while the third case study explores the possibilities and limitations within the informal sector. These components inform the proposed solution outlined in the next section of the chapter for the South African local context, Hillbrow in Johannesburg.

Economic feasibility of organic waste management systems

The notion that the reuse of waste provides an economic benefit, both from a financial and efficiency perspective, is not new. Extraction or collection of gas from decomposing organic matter dates back to the late 1800s and was used throughout the 1900s in various forms in agricultural systems in predominantly India and China (Abbasi et al., 2012). Interest in waste-to-energy systems increased in the 1980s across the globe in response to a spike in the oil prices. The trend continues, and today it is fuelled by additional economic trends resulting in paradigms based on limits to growth, the circular economy, industrial symbiosis and bio-based economies. These are all premised on the idea that waste is actually valuable and should be used as an input into the relevant symbiotic industrial process, instead of being disposed of and actually wasted (Hart, 1995; Binder et al., 2001; McDonough and Braungart, 2002).

Policy and regulations have also evolved in line with these trends to promote and prioritise investment in the field of waste-to-energy (Coolsweep, 2013). Currently the European Union sits as the leader in this regard, with the most widespread and sophisticated business models. However, significant progress is also now being made in other contexts such as East Asia and Latin America (ibid.). There are now countless examples of successful businesses dealing with waste management across the globe at a variety of scales, and suitable business models can be derived for a range of contexts. Large-scale solutions are offered by large, often national or international, companies that partner with agricultural processors or industrial manufacturers, and municipalities. In this instances the by-products of the factories or agricultural processes are converted into gas, and then used to produce electricity which is sold to local municipalities (Coolsweep, 2013). The plants are designed to optimise the production of gas for the constant and uniform supply of organic waste. These projects are capital-intensive but offer an efficient and ultimately cost-effective solution to utilising organic waste (Coolsweep, 2013; Biotech, 2015; Sustainable Sanitation and Waste Management, 2015).

However, there are also business solutions for smaller scale enterprises, for example, at a household or smallholding level. The packages on offer typically have the technology already developed and offer user education for maintenance as part of their product (Biotech, 2015). These products often allow municipalities to partner with businesses in rolling out the technology in poorer areas where households lack the means to adopt the technologies themselves. Examples exist across, inter alia, India, Bangladesh, China and Vietnam (Abbasi et al., 2012; Biotech, 2015). The technology is relatively simple to install, and offers a cost-effective solution to reduce electricity consumption and utilise waste as the waste a household often generates is enough gas to supply most of the household's energy needs (Biotech, 2015). The maintenance is generally fairly simple but does require conscientiousness application (Abbasi et al., 2012). The constraint is not the availability, complexity or appropriateness of technology, but difficulties that come with user education and its related cost and other requirements, and with its maintenance (Estoppey, 2010; Hojnacki et al., 2011; Research for Development, 2015). This is problematic despite the fact that small scale solutions are generally simple and readily adaptable to different contexts.

Two examples of this form are investigated in the following section, which illustrates more specifically how systems operate in specific locales, and in formal, semi-formal and informal contexts. Medium-scale solutions as a system in which the waste is centrally treated are defined and the actors in the system are individuals who contribute directly to or benefit directly from the system.

Case Studies

EARTH University, Costa Rica: Medium-scale bio-gas in a university with transient students

The EARTH University is a small undergraduate institution in Costa Rica which brings in 1 000 students a year from 40 countries to study Environmental Sciences (EARTH University, 2015). This university takes a hands-on approach and facilitates practical projects for all levels of students, as well as participation with and support for neighbouring communities (Konoboy, Pers. Comm., 2015). The university itself is carbon-neutral through sustainable practices, such as disallowing plastic bottles and utilising energy efficient buildings (EARTH University, 2015). Waste management practices are taught as a compulsory module to all students in all degrees (Konoboy, Pers. Comm., 2015). EARTH University undertook to reduce both its overall waste level and the use of Liquefied Petroleum Gas that was used to cook in the cafeteria. They achieved this through the installation of several bio-digesters on campus (EARTH University, 2015; and Konoboy, Pers. Comm., 2015). Four aspects are discussed next: the system, participation, impacts and replicability.

System: the system has eight bio-digesters installed strategically at EARTH University with five currently in use on the main campus and three are used in the agricultural grounds (see bio-digester in Photograph 8.1). On campus, direct pipelines from the kitchens, dormitories and bathrooms feed waste water as well as solid mass and any food matter into the digesters. The water and solids feed are mechanically stirred to prevent blockages, and fed into a tank, or pit, typically but not necessarily underground. These tanks where the digestion takes place are oxygen-controlled. For example, a tank must be sealed to prevent continuous free-flow of oxygen, although some is permissible and even useful to aid digestion (ibid.). The bio-digesters produce two by-products, liquid fertiliser and methane gas. The gas is collected above the pits in a large sack, and the liquid fertiliser runs out. The liquid fertiliser is used in the grounds and the gas is filtered and used in the kitchens for cooking (ibid.).

Photograph 8.1: Bio-digester at EARTH University

Source: Photograph by Novak, 2015

Participation Required: Students, staff and professors participate actively in this system by separating their waste at source. They do this to promote the correct use of the system. It is compulsory for all new students entering the university to spend a term in the manual waste sorting facility. Pipes and tunnels transfer the waste directly to the bio-digester which is monitored by the student group allocated this task and overseen by the corresponding professor. The culture of the university promotes environmental awareness: students are taught that everyone generates waste either directly or indirectly and understand the reasons humankind should

reduce its footprint on the planet. Bio-digesters are proposed as one possible model to aid natural resource management (ibid.)

Impacts: The impact of the bio-digester system at EARTH University is multi-faceted. On an environmental level, it reduces the waste and footprints of all activities taking place at the university, as well as providing fertiliser for the agricultural lands on campus. Economically, the university has reduced its Liquefied Petroleum Gas costs in the cafeteria, as well as waste clearing and fertiliser costs. At community level its effect too is real as the functional and useful bio-digester system raises environmental awareness and a culture of ecologically conscious behaviour, with a possibility for hands-on experience (ibid.).

Replicability: Bio-digesters are most effective if their use is implemented so that separation takes place at its source. An attitude that accepts this practice needs to be propagated through the community or institution utilising the bio-digester, otherwise maintenance and repair costs will begin to overtake its benefits. Alternatively, a sorting system has to be implemented. A barrier to replication is the technical skill required to operate and monitor the bio-digester. In this case study, students manage the plant but with appropriate oversight and management. Assistants have to be trained to help in the operation of the plant (ibid.).

Colombo, Sri Lanka: Medium-scale bio-gas and compost production from market garbage

Kahikatoa in Narahenpita, Colombo, Sri Lanka, is a busy market area in the commercial capital of the Sri Lanka. It is a market that generates about one tonne of fruit and vegetable waste per day (Dilhani et al., 2011; de Alwis, 2012). Prior to the implementation of the digester, all the waste was dumped in alleys and in footpaths. Because of the high level of bio-degradability of the waste matter, all those operating in the market were exposed to the health hazards created by this prevalence of waste which allowed rats and other disease vectors to thrive (ibid.). Sri Lanka's Sustainable Energy Authority initiated a multi-objective project to deal with the large quantities of waste in collaboration with the National Engineering Research and Development (NERD) Centre, and the Colombo Municipal Council. The objective of the project was to demonstrate that processing waste into bio-gas was feasible as both a waste management system and as a means to create electricity. Moreover, a saleable by-product of organic fertiliser was simultaneously produced (Dilhani et al., 2011). It is important to note that at this initial stage long-term objectives around community engagement and environmental awareness were neither set nor even engaged in (Dilhani et al., 2011; Muneera, 2012). The project was rolled out over one year, and several difficulties were encountered. Ultimately, the project was limited to a reduction in waste but not a significant reduction in costs. The reason for this decision was because of unexpected expenses due to technical errors and poor community engagement. As a result, the project was discontinued (Dilhani et al., 2011; de Alwis, 2012; Muneera, 2012).

System: four digesters, with the capacity to deal with 480 tonnes of market waste each year, were installed in outhouses near the market. Both market participants and other outsourced individuals were engaged to collect the organic waste from the market and transport it to the plant (Figure 8.1). At the plant, the sorting or filtering

of the waste was done manually but not in a sophisticated manner; for example, a carefully thought-out process to ensure non-contamination was not in place. The organic waste was prepared for the digesters by chopping it into 1-2cm pieces using a low-energy chopper. The bio-gas eventually provided the fuel to run the chopper. Wastewater and the chopped matter fed into an airtight tank. The gas was piped from the digester and used to power an engine and a catering size gas burner in the area. The gas burner formed part of a cafeteria that could then offer reduced cost meals to its clients. The plant was monitored daily on the following metrics: the rate of bio-gas production, pH values, pressure variation and details of feedstock. Whenever problems arose, appropriate adjustments were then made to continue the operation of the plant at unexpectedly high costs (Dilhani et al., 2011; Muneera, 2012). The operation eventually was deemed unsustainable for that community, and closed down.

Figure 8.1: Installation and operation of the bio-digester in Sri Lanka

Source: Muneera (2012:2,5,6)

Difficulties encountered in the system: the system failed both in the dimension of community involvement and technical management. From the perspective of the market participants, there was a marked reluctance to participate in the system as dealings with organic waste were considered as 'dirty' (Dilhani et al., 2011).

This can be attributed to insufficient education about the benefits of the project, as well as the situation that there were no clear direct benefits for participating (Dilhani et al., 2011; de Alwis, 2012; Muneera, 2012). The technical aspects of the project were not planned for and managed correctly as several setbacks and difficulties arose throughout the implementation of the digester and accompanying system. Poor understanding of the waste stream, both in quantity and composition, led to inappropriate materials used in the construction of the tank which then suffered repeated damage that required repair (Dilhani et al., 2011). Eventually the tank system had to be re-evaluated and rebuilt entirely (ibid.). Additionally, there were damages to the bio-digester from contamination via non-organic materials (ibid.). Lastly, too much waste was fed into the digester and there was considerable damage from the overproduction of gas and fertiliser (ibid.).

Cairo, Egypt: Informal waste collection

As waste management becomes modernised, privatised and mechanised waste management services become common strategies. The focus is often on efficient collection and disposal rather than on recovery and recycling waste. It is significant to note that the design of formal waste collection systems has more potential to deny the informal sector access to waste as a resource that the actual outcome. Nevertheless, where the means to monetise publicly available trash exists, an informal sector for this exists as well. Unfortunately, the role of informal practices alongside formal waste management systems is not well understood. For instance, plastic, tin and glass reclaimers are present in cities across the globe, and there is some indication of a will to elevate their value in society (Didero, 2012). Attempts to assist informal arrangements for waste reclaimers via formalisation and regulation might do more harm than good when poorly managed (Didero, 2012; Fahmi, 2005). This case study in Cairo, Egypt examines one of the largest informal waste collection systems in the world. It is immensely complex, having evolved over time, growing with the population of the city and largely without formal rules and regulations to guide it. This section provides only a brief and simplified overview highlighting key points and lessons, with references providing further detail.

Informal Organisation: in the early twentieth century, a group of migrants entered Cairo and were known as the Wahiya. They established themselves as being responsible for the collection and disposal of all household waste in Cairo, for which they collected a fee from the residents (Haynes and El-Hakim, 1979). Several decades later, another group of migrants entered Cairo, and the Wahiya and this group came to be known as the Zabbaleen as they collaborated in setting up a mutually beneficial waste collection system (Fahmi, 2005). In this arrangement, the Zabbaleen became responsible for the collection of all waste (ibid.). They collect garbage on donkey-pulled carts or small pickups, and transport it back to their village. There they separate out recyclables, and other valuable pieces, and then use the organic waste for feeding pigs and other livestock which are then sold (Ecomena, 2015). They also sell the sorted secondary materials such as paper, tin, rags, glass and plastics to intermediaries. For all of this, the Wahiya have retained control over payment for, and access to the waste and collection rights, and the Zabaleen, typically, have had no share in the fees paid by those residents, but pay the Wahiya to gain access to the waste garbage (Fahmi, 2005).

Some Successful Interventions: on receiving some funding from, inter alia, the World Bank and the Ford Foundation, the Zabbaleen formed the Zabaleen Environmental Development Programme themselves. It concentrated on establishing community-based recycling enterprises designed to maximise the resource value of waste and to generate income (Neamatalla, 1998). In addition to advanced plastic handling, the Zabaleen Environmental Development Programme set up a composting plant designed for simple operation and maintenance. "This plant aimed to transform the vast amount of accumulated organic waste in the settlement into saleable fertilizer" (Fahmi, 2005). Responsibility for managing the composting plant was assumed by a local Non-Governmental Organisation, the Association for the Protection of the Environment (ibid.). "Uncontaminated organic waste was sorted for the production of a higher-grade compost, with retrieval of 80 per cent of the materials and with the remaining 20 per cent being dumped on the outskirts of the city" (Neamatalla, 1998). This recycling system prevented the need for unsanitary landfills, as well as protecting the environment from the uncontrolled disposal of organic waste (Fahmi, 2005).

Replicability: The choice to include this Egyptian case study is twofold. The first is to illustrate both the immense possibility the informal sector offers for supportive participation and the potential that exists for an effective informal waste reclamation service. The replicability of such a sector in South Africa is evident as waste reclamation is already a thriving industry in Johannesburg alone with a particular focus on the reclamation of plastics, steel and tin (Zack and Charlton, 2011). The possibility therefore of establishing a strong network of reclaimers in other waste matters appears strong. The second point of importance drawn from this case study is that formalisation of such a market, or network, can do more harm than good and remove people's livelihoods as opposed to improving them or providing opportunity. As the possibility of replication is considered, caution and sensitivity should be exercised.

Lessons from the Case Studies

The three case studies illustrate several important lessons that will be used to design a system for the South African suburb of Hillbrow. Although it is apparent that bio-digester systems can operate successfully at an economically feasible level at a variety of scales, there is still substantial room for failure in the implementation of such a project. Reasons for failure can either be attributed to technical difficulties or lack of community engagement, or some combination of the two. Technical difficulties can lead to significant delays and cost overruns, as the second case study indicates. However, these difficulties might be avoided with careful planning; analysis of the site and the waste stream; and proper design and construction of the plant as well as the processes used to run and manage it. This form of failure is evident in the case study of Sri Lanka, but successful mitigation is seen in the case study of Costa Rica.

Community based organisations are more likely to reach their objectives in a certain project, but inevitably, the community, or a sense of it, will have to be fostered first. For example, if a community with some sort of common objective does not already exist, it might be difficult to resolve conflict of interests within a specific space. In Sri Lanka, a relationship with the community did not exist, nor were there any significant attempts to encourage one. In Costa Rica, the culture for environmental awareness already existed and engagement was

carefully and continuously fostered. All relevant parties should be made clear about the objectives of the project, goals should be aligned and there should be clear reasons for each of the parties to participate. Ultimately, community engagement and committed buy-in is equally important as technical robustness. Responsiveness and support from the targeted community engaged in the initiative will improve its overall efficacy and the capacity to deal with any problems should they arise will be available.

Replicability in the South African Context

Hillbrow as a specific context in South Africa was chosen to explore the potential for replicability of a waste management system for a number of reasons. Hillbrow is an area with a severely degenerating infrastructure of which poor waste management is a key component, but it is also an area that the COJ has recently been identified as a key area for rejuvenation (COJ, 2005). Hillbrow as a space is constantly under pressure with different relationships always being renegotiated: it is a fluid space with a complex history, and interventions must have the flexibility to respond to its history and current context.

This section starts with a consideration of its context that refers to an examination of the current forms of waste generation in Hillbrow and how it is handled. In proposing a new system that might function well in Hillbrow, consideration is given to both lessons learned from the international case studies described and the successes and failures of the existing systems in Hillbrow.

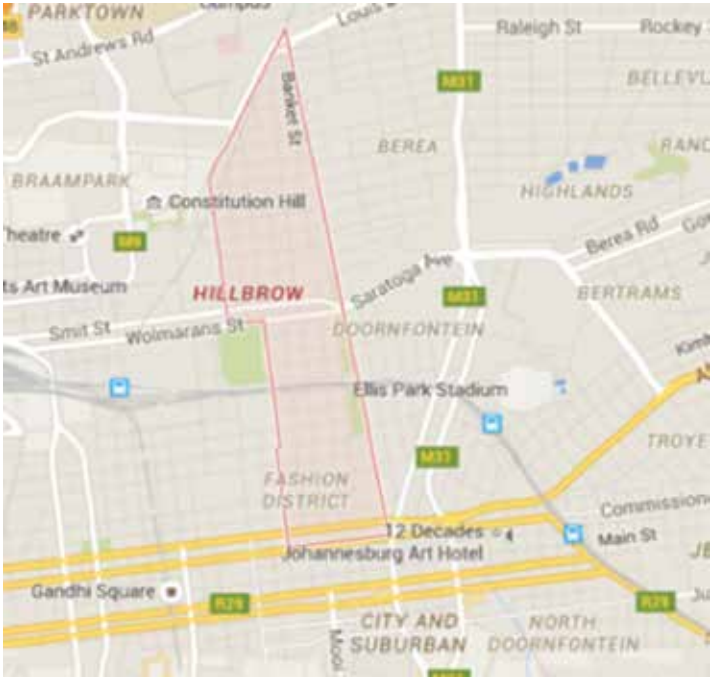
Introduction to waste management in Johannesburg

The waste management policies of Johannesburg are devised and determined by the Environment and Infrastructure Services Department in the COJ. In its most current form the approach to waste management is contained in its Integrated Waste Management Policy (2011). An interview with the Deputy Director in the department, Mr. Mvuselelo Mathebula (Pers. Comm., 2015), indicated that while the waste management policies in Johannesburg are aimed at integrated and environmentally sustainable strategies, they are generic for the city as a whole, with the operational service provider on site translating it into an area-specific strategy. Pikitup, established in 2001, is the official waste management service provider for Johannesburg (COJ, 2002). It is a company the COJ owns and is charged with the responsibility of removing and managing waste in Johannesburg. Pikitup functions operationally according to the regions into which the city has been demarcated that are numbered from A to G. Hillbrow falls within Region F, which includes the other parts of the Inner City and also the southern suburbs.

Context of Hillbrow

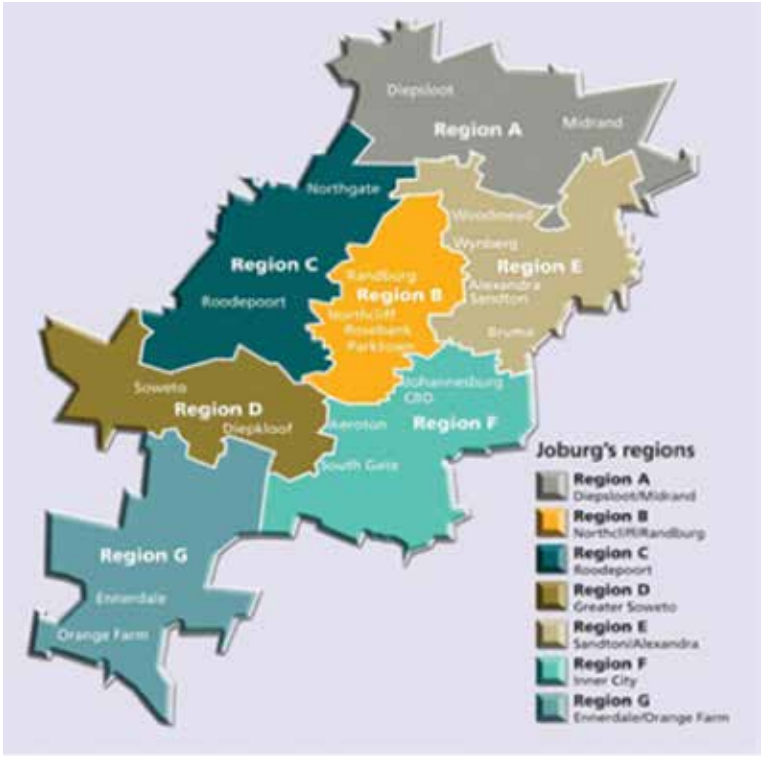
Hillbrow has a geographical location of being sandwiched between Berea, Braamfontein, Doornfontein and the historical Central Business District (CBD) (Map 8.1 below). As part of Region F (Map 8.2), and for waste management service delivery, the operational area of Hillbrow is bounded approximately by Louis Botha Avenue to the north, Catherine Avenue to the east, Kotze Street to the south and Hospital Street to the west (Sobantwana, 2015) (Map 8.3 o).

Map 8.1: Location of Hillbrow



Source: Google Maps (2016)

Map 8.2: Johannesburg's municipal regions



Source:CommonwealthNetwork (2016)

Map 8.3: Pikitup's operational area in Hillbrow

Source: Map Studios (2016), with operational area superimposed by authors

Built Environment and history of occupation

First proclaimed in 1890, Hillbrow has a long history of transience. As the original semi-detached houses of the 1920s gave way to high-rise buildings of the 1950s, the earlier lower middle-class Jewish neighbourhood became a more mixed, but still largely white, immigrant precinct (Rubin, 2008). Racial integration began with departure of white residents from Hillbrow in the 1970s when banks offered low-interest bonds to first-time home buyers in suburban Johannesburg (Morris, 1999). With this new opportunity, black residents struggling to gain a foothold into the city progressively filled high-density areas during the heyday of influx control regulations. Hillbrow, a whites-only area in the 1970s, under the restrictions of the Group Areas Act (Silverman and Zack, 2007) meant that black residents were wary to draw attention to themselves, so problems with building maintenance often went unreported (Morris, 1999). The infrastructural demise of the buildings was further affected by landlords taking advantage of vulnerable tenants by charging extortionate rents. This tended to force residents to erect makeshift areas to sub-let in order to afford the rental costs (Rubin, 2008). Dangerous structural deterioration in over-occupied buildings resulted, as the infrastructure to accommodate the growing densities of residents did not exist (Silverman and Zack, 2007). With the deteriorating building stock, and growing numbers of tenants, conflict emerged between tenants and property owners, and a number of buildings were abandoned by the owners (ibid.).

By the mid-1990s, large numbers of African immigrants moved into Hillbrow, once again changing the character of the area. What characterised Hillbrow across these periods was transience, flux and heterogeneity (ibid.).

The transience of the area, combined with increasing densities, means that the area has historically challenged sound urban management. With the income profile of typical residents declining over time, the ability of residents to undertake their own maintenance has also reduced. Sub-letting is still common. A number of buildings having been hijacked and are now controlled by slumlords who intimidate tenants into paying rent. Payments are then pocketed rather than being used to pay for municipal service charges and the necessary maintenance of the buildings. There is also evidence of private businesses operating from inside residential apartments, which may be putting additional strain on the services and infrastructure of the buildings. This, combined with relative local government neglect, has contributed to a deteriorating environment (ibid.). However, while physical decay is a feature of Hillbrow, it exists alongside still well-maintained, or recently refurbished, buildings. Although a comprehensive regeneration programme has not been in place, there has been some state-led investment the Johannesburg Development Agency. A curious combination of decline and improvement, in physical terms at least, is observed (ibid.).

Street life and public infrastructure

The buildings are situated on lively, busy streets dominated by non-residential activities, notably pedestrians using Hillbrow as a thoroughfare between the Central Business District, Berea and Doornfontein and trading economies. Hillbrow contains both formal and informal retail activities (COJ, 2011). The formal retail stores are tightly packed on the ground floors of the buildings along the edge of the narrow sidewalks. The street and building layout of the area has provided very little interstitial space, and this has resulted in almost all informal trading activities taking place on the already congested pavements, mainly but not only along Pretoria and Kotze Streets, or at the end of service roads (Silverman and Zack, 2007). The intensive pedestrian traffic, combined with an estimated residential population of 74 000 inhabitants in 2011, makes Hillbrow one of the densest neighbourhoods in Africa (Statistics South Africa, 2011).

Important demographic features

Transient residents

Multiple sources and interviews have indicated that a defining feature of Hillbrow's demographics is the transience of its residents. Statistics from a 2007 study indicate that 38% of the residents in Hillbrow had only moved into the area in the past two years (Silverman and Zack, 2007). Furthermore, 90% of residents were not living there 10 years ago (COJ, 2015). This being said, interviews with women living and working in Hillbrow did reveal that some of the residents have lived there for more than 10 years and have well-established relationships with their communitie (Focus Group, 2015). This intersection of permanence and impermanence creates a space where participation in long-term education and the implementation of municipal or community systems or services is not always feasible.

Foreign nationals immigrating into Johannesburg experience Hillbrow's liminality as a space in many ways. Hillbrow has historically been a port-of-entry neighbourhood with clusters of foreign national communities providing support networks and informal economies before, generally, moving out of the area (Winkler, 2008) in various directions. It is expected that 25% of the residents who are in Hillbrow are foreign born (Kihato, 2011), although other sources suggest that this number is a very low estimate even at that time with its definitely continuing increase in numbers from an even wider range of countries. Many of these transient residents are undocumented and unable to participate in the formal economy due to their illegal status. Foreign nationals who work and live in Hillbrow also have to contend with xenophobia which limits their integration into the host community further limiting their chances of finding employment (Silverman and Zack, 2007).

The transient groups in Hillbrow comprise young, upwardly mobile professionals who are waiting for the opportunity to leave the area and recent migrants who are struggling to find an economic foothold and social acceptance. What the different groups have in common, however, is their limited participation in both the invented and the invited spaces of participation. They are excluded for various reasons, particularly legal status, social discrimination and lack of interest in an area they accused of only passing through and, significantly, a lack of willingness of state officials to engage with these groups.

Young, unemployed and resourceful

According to the most recent census data released by Statistics South Africa (2011), Johannesburg tends to have a young population between the ages of 18-35 years. As Hillbrow is often a port-of-entry for both migrants and immigrants, this leads to another dominant demographic feature of Hillbrow, the youth and a high level of unemployment (COJ, 2011). Statistics indicate that, in central Johannesburg in which Hillbrow lies, more than a third of the unemployed youth are actively seeking work but have been unable to find employment (ibid.) and this figure will have increased in past five years. The statistic for Hillbrow's youth unemployment is higher than the estimated percentage of unemployed residents unemployed nationally (ibid.).

In Winkler's (2012) work the roughly two-thirds of Johannesburg's population in some form of employment, whether, self-employed, causal or more permanent, earn between R800 and R3 200 a month, which is barely enough to cover the rent of accommodation. This amount is also often intended to cover funds to send home to family members in other parts of the country and even neighbouring countries in Africa, thus does not represent a sustainable income (Winkler, 2008). Many job seekers, as part of a low income group, turn to entrepreneurial, sometimes survivalist, strategies to make money (Rubin, 2008). Much of this informal employment appears to respond to the needs of the space available and the community members, although formal data is limited. Most of the informal employment is tied to trading, either in the formal markets, or informally in designated or illegal areas, as well as casual labour (Silverman and Zack, 2007). There is also evidence of informal businesses thriving in Hillbrow's residential flats like shebeens (un-licensed taverns selling alcohol), crèches, laundry services and salons (ibid.). Another strategy for making money is the practice of reclamation of plastic and its sale to Buy-Back Centres (Zack and Charlton, 2011).

Because of the volume of waste generated in Hillbrow there is a strong presence of the mobile reclaimers in Hillbrow and the surrounding areas (ibid.). The reclaimers have the capacity to function as a very useful complementary waste management system. However, because those disposing of plastic items do not generally bother to be separate these from the other waste, the rubbish bins the municipality provides are often upended to find the plastic goods and the remainder of the waste is then left on the street and this further contributes to the waste disposal problem instead of solving it. The Zack and Charlton study conducted in 2010 reports that the amount of money generated for the reclaimed material is between R17 and R270 per week depending on the nature and amount of material collected (ibid.). Based on the desire to find work in the area and the willingness and innovation of residents to create work for themselves, it is possible that if there was a legal complementary waste system from which to make money residents, would be willing to participate in it.

Waste in Hillbrow

Waste generation

There is an estimate that Pikitup removes 12 tonnes of allocated waste daily and an additional 900 tonnes of illegally dumped waste monthly from Hillbrow (COJ, 2007a). The generation of this waste appears to come predominantly from four sources: from places of residence, from the pedestrian traffic of Hillbrow and the activities of the formal and informal economies in the area.

Residents

As indicated in the section framing the context of Hillbrow, many of the residential buildings are unable to accommodate the strain of overcrowding. One of the results of this is an intense mismanagement of waste in some buildings. In interviews with residents have mentioned that facilities available to accommodate the volume of waste generated are inadequate. In the worst cases, plastic bags are filled with waste and left on the street. The other option for residents is to throw the waste directly out of the windows into service lanes below (Focus Group, 2015). This can lead to a massive accumulation of waste some of which enters storm water drains damaging the infrastructure that causes sewage to rise to street level (Silverman and Zack, 2007). In interviews with residents, it came to light that the largest proportion of this generated waste from individual households is of organic origin (Focus Group, 2015).

Thoroughfare and pedestrian traffic

There are an estimated 800 000 people moving through Johannesburg's Inner City daily (COJ, 2011a). Much of this through traffic is directly via Hillbrow which is situated along many of the public transport routes. The effects of this are obvious as waste often builds up around the street bins but there is also a scattering of litter along the sidewalks.

Retail trade

Hillbrow is home to both formal and informal trading economies. Formal trading is associated with registered businesses of people who work for themselves or have employees who work for them and who have employment contracts and are protected by labour laws. According to Tissington (2009), informal traders are those who operate outside of this domain, are self-employed or work for small unregistered businesses. Hillbrow is fertile ground for small to medium-sized informal trading enterprises. They perform an important function in sustaining and developing the area. The informal trading visible in this study area tends to focus on the sale of necessities like food, drink, clothes and daily provisions that are predominantly of organic origin as observed during site visits on 17 and 20 June (see Photograph 8.2: Informal market in Hillbrow below).

Photograph 8.2: Informal market in Hillbrow

Source: Photographs by authors, site visit, 20 June 2015

Statistics on the exact percentages of waste generated at such Inner City markets especially by category are not available. This may be because of the type of wares being sold, but also due to the efficiency of the mobile plastic recyclers who have removed much of the recyclable waste from the markets. Interviews with residents of the Inner City in general and the area managers of Pikitup raise another point, namely, that the waste restaurants generate appears to be one of the primary culprits of illegal dumping. This would include plastic bags that are filled with waste and are simply placed outside restaurants, around trees and on the pavement (Ludick, 2015).

Current Waste Management systems

Pikitup has initiated multiple long-term systems and short-term campaigns to address the excess waste that abounds in this study area.

Bins

The COJ reports that Pikitup has two rotational shift systems in the larger Inner City, comprising 700 staff members and 30 vehicles (COJ, 2007a). There are currently three components to the waste collection service that operates in the Hillbrow area: large, black Pikitup dustbins, street dustbins and very large underground dustbins (COJ, 2007b). Pikitup manages all three of these services. Typically, large black plastic bins with a volume of 240 litres are provided to residents of Johannesburg at a rate of 1 per single stand dwelling unit or one-third per flat (COJ, 2007d). During an interview conducted on 2 June 2015 with the Pikitup general and area managers of Hillbrow, their vehicles clear these residential bins in the Hillbrow area every day, working throughout the day (Sobantwana, Pers. Comm., 2015). Bins are also allocated to restaurants, formal trading areas and to permanent residents. Pikitup also clears areas that have been utilised as dumping grounds, generally, in the alleys found between the buildings (Ludick, 2015). Residents estimated that Pikitup removes this waste twice a month although Pikitup said that there are some areas that are inaccessible and are not cleared as often (Focus Group, 2015).

The second system accommodates pedestrian traffic using immovable street dustbins with an estimated capacity of 0.2 metres cubed. It is evident from the placement of the street dustbins that foot traffic has been correctly mapped as dustbins are clustered close to denser areas of pedestrian movement. The third service component addressing waste management in Hillbrow was developed in 2007. The COJ installed two large underground bins with a capacity of 1-3 tonnes that would be cleared when full. They are specifically designed to accommodate Pikitup trucks. Accompanying this project, street prefects were employed to facilitate the education of the residents on the use of new bins. They had to give feedback on this initiative to Pikitup (COJ, 2007).

Additional manual street services

Pikitup appears to be responding to the specificity of Hillbrow's needs through a variety of supplementary services that also have street sweepers who follow the trucks and remove any debris. In addition, an area team leader interacts with the workers and the community to ascertain any specific issues around illegal dumping and bins that need to be replaced.

Markets

Although not an initiative of Pikitup, there is an ongoing attempt to address the waste management issue in trading areas to create a clean and safe working environment particularly for trading areas (COJ, 2007c). The COJ refers to this as 'block cleaning' and the initiative began in 1999 under the auspices of the Metropolitan Trading Company, a Municipal-Owned Entity.

Its purpose is to meet the needs of the traders (COJ, 2007d) and the Johannesburg Property Company now facilitates the markets. The market requires traders to pay a rental fee which drives up the cost of their wares and increases competition with those continuing to trade at lower rates outside of the formal space (Simone, 2004). Many traders have chosen not to participate in the formal market and continue to trade on the streets but are at risk of being targeted by-law enforcement for infringement of by-laws (COJ, 2012). The by-laws surrounding the process of informal trading emphasise cleanliness, hygiene and their aesthetic appearance. Section 7 points specifically to the sanitation of the area and the issue of littering (ibid.). To address this, Pikitup insists that the traders use plastic bags for debris both inside and outside of the market to leave the area clean once they have completed their trading day (Sobantwana, Pers. Comm., 2015).

Community education and upliftment

Pikitup works to involve the community in the waste management issue through educational campaigns in the area and holding municipal meetings. One of Pikitup's goals is to facilitate the integration of the efforts by independent entrepreneurs working in waste management and the current Pikitup strategies applied in Hillbrow (Shomane, Pers. Comm., 2015); one of these is to comply with the Jozi@Work co-production programme launched in September, 2014 (COJ, 2014a). According to interviews with a specialist contracted by Pikitup, part of participating in Jozi@Work results in 10% of the budget being allocated to tenders intended to involve community members in the management of the waste (Shomane, Pers. Comm., 2015). To facilitate this process Pikitup is attempting to formalise sectors that are currently fluid and informal (ibid.). Once formalised, there will be co-operative bids for the Jozi@Work tenders. One such attempt has been the formalisation of the plastic reclaimers. In this case, the formalisation process meant the personal identification of reclaimers on a Johannesburg-wide database, and the provision of protective gear and new trolleys for the reclaimers (ibid.). Pikitup also assists with funding and structuring by facilitating relationships between those trying to formalise cooperation with the private sector (ibid.).

Success of systems

The residents interviewed were asked to evaluate the success of implemented waste management systems in Hillbrow. They were requested to comment on the visibility of Pikitup in the area; how effective the Pikitup's systems were; and to draw attention to any areas of waste management that needed to be reassessed.

During interviews with the Pikitup area and general managers of Region F were asked to point out what issues had to be addressed during the implementation of some of their strategies concerning the bin and street services provided, community education and upliftment and the markets.

Bin service and manual street service

The following information was drawn, predominantly, from the focus group session with residents held at the Hillbrow Theatre on 19 June 2015. Although residents were provided with bins after the 2007 Census, many have since been lost, damaged or stolen (Focus Group, 2015). One particular resident commented that the material of the waste containers was an issue as they are sometimes stolen for scrap (Focus Group, 2015).

Another resident mentioned that members of Pikitup's teams were removing and reselling the bins to other residents (Focus Group, 2015). There is a fee of R385 to replace the bins which residents are unable or unwilling to pay, particularly as the possibility of it being stolen again was so high (COJ, 2007d). Many of the residents interviewed remarked that there was a shortage of bins to accommodate the number of people living in their buildings. If waste was put next to the bins in plastic bags, the bags would be taken back inside the buildings by Pikitup (Focus Group, 2015). The areas where the street dustbins are allocated seem appropriate to the position of the footpaths. However, because of the lack of residential bins in certain areas, these smaller street bins are now used for both residential and street stand waste disposal purposes. These bins are nowhere near large enough nor are they placed at frequent enough intervals to accommodate all waste that needs disposal. Since there are so many overflowing bins, rubbish is placed next to trees or at street corners to form "organised trash dumps" (Focus Group, 2015). Despite attempts to find enough space to place bins, there is still excessive scattered littering throughout Hillbrow (COJ, 2014b). The Hillbrow area manager of Pikitup (Sobontwana, Pers. Comm., 2015) indicated that the large underground bins are still in Hillbrow, although they are not currently being used, as they are need of repair. The inadequacies of the maintenance of this particular system could account for this situation. There is a possibility that this technological innovation was inappropriate for use in this community.

Community education and upliftment

For their experience, the residents reported that the team leaders Pikitup had assigned to liaise with them had never consulted them about how many bins were required for their immediate living area (Focus Group, 2015). Ms. Ludick and Mr. Sobantwana (Pers. Comm. 2015) mentioned that it was difficult to enforce by-laws regarding illegal dumping, particularly around restaurants, because of the lack of residential bins in use in the area. Pikitup attempted to formalise the informal sectors so that people in this sector could participate in the community tenders, an initiative that has potential, both foreign nationals and undocumented residents are excluded; this increases their vulnerability, as they are unable to participate in formal economies and often have to rely on informal practices to survive.

Markets

On a walkabout on 25 June 2015 at one of the main formal trading markets in Hillbrow, it was observed that the waste generated was primarily organic and that only a limited strategy was in place for managing it. On this site visit there appeared to be no running water and the most prominent disposal method was the use of street bins or it was merely left on the streets (Photograph 8.3 below). This was confirmed during an interview on 1 August 2015 with the president of One Voice of All Hawkers, Zacharia Ramatula who also intimated that there was very little consultation with the representatives of the informal traders about the needs for the market. Complaints from this organisation's members about facilities for sanitation and waste disposal have been ongoing (Ramatula, Pers. Comm., 2015). Although Pikitup claims that they provide traders with bags, it is not clear where the bags are expected to be thrown (Ramatula, Pers. Comm., 2015). Pikitup area and regional managers, Ms. Ludick and Mr. Sobantwana, have indicated that in other areas with large trading grounds larger bins have been allocated for waste, but this is not the case in Hillbrow (Ludick, 2015).

Photograph 8.3: Evidence of street litter in Hillbrow

Source: Photographs by authors, site visit, 20 June 2015

Potential reasons for inadequacies in the waste management system

Despite its many efforts, the municipal service of garbage collection and disposal has failed in Hillbrow. The possible reasons for Hillbrow being a supremely difficult suburb to manage could be ascribed to the following:

Buildings

The over-occupation in and a lack of maintenance of many of the Hillbrow buildings has led to dangerous living conditions, especially as the infrastructure can neither contain nor manage the excess waste generated within the buildings. The waste is typically thrown out of windows into alleys and also placed around overflowing dustbins and trees on the streets.

Street life

Traders and restaurants generate large amounts of solid waste with little capacity to dispose it. In the absence of enough street bins much of this is then left on the streets (Silverman and Zack, 2007). Some of those who buy from informal traders and general pedestrians also generate large amounts of waste by littering on public streets.

Lack of a sense of community

The instability of the area creates a reluctance to invest in it financially and emotionally. The desire to move onward and upward means that resources are held until occupants are able to leave and very little investment occurs (Winkler, 2008). The lack of a settled community affects the development of a sense of accountability to look after the environment in the area. Residents attempting to organise themselves and participate in waste management projects to benefit their communities struggle to do so with the volume of transient people moving through the area.

Complementary Waste Management System in Hillbrow

The following system is designed to complement the existing waste management systems that exist in Hillbrow by targeting the organic waste stream which, as yet, is not effectively managed.

The proposed system is based on the case studies presented in this chapter but also acknowledges both the informal practices typical of Hillbrow and its characteristic complexity. The system in many ways mirrors the Sri Lanka case, but aims to avoid the same pitfalls. In applying the lessons learned from all the cases, the apparent success of the system in Costa Rica is noted. A key starting point is to acknowledge that many of the informal practices and processes (especially with cardboard as seen in Photograph) have flourished as a necessary antidote to the failure of formal processes. An example is especially the use of cardboard. Some of these practices have the capacity to contribute positively to a functional waste management system in Hillbrow. Instead of vilifying or criminalising informal systems, it is possible to integrate some of these practices into a multi-faceted waste management system that responds to the complexity of the area.

Photograph 8.4: Informal collection of cardboard in Hillbrow

Source: Photographs by authors, site visit, 20 June 2015

Proposed system

Essentially the proposed system would centre on the digestion plant that would have to be built. Tanks would be installed and relevant actors hired and trained. Importantly, the surrounding community would be involved and integrated into the process. Restaurant owners and street market vendors generate organic waste in Hillbrow that residents would collect, check for contamination of non-organic matter, and then fed into the bio-digester situated within the area. Collectors and checkers would be employed via a hybrid informal-formal system. A trained technician would oversee the correct operation of the plant with the help of trained assistants. Long-term residents are preferable in this role to avoid redundant training and continuity costs. The by-products of the bio-digester are fertiliser and methane gas.

The fertiliser would be packaged on site and sold to fertiliser companies or local relevant Non-Governmental Organisations. The methane gas will be filtered and used either directly in buildings that have a gas infrastructure or compressed, packaged and sold.

Actors in the system

Generators of organic waste

Informal interviews conducted with residents, the focus group discussion and site visits indicated that the largest generators of organic waste could be drawn into a system. They are the informal traders, the restaurant owners and the residents in buildings with badly managed waste. Borrowing from the formal plastic recycling processes of separation, large bins would be distributed in key areas with negotiated buy-in from representatives and communities to avoid theft and destruction of the bins. The bins should be a manageable size so that they can be stored inside and then taken outside. Organic waste will be deposited directly into the bins and moved to an accessible area once full. The collectors would deal then with them appropriately.

The bin distribution would be done by the informal traders. It might be better to have the bins at the more formalised markets where they could be better controlled and stored to avoid theft. Engaging those associated with restaurants, and building management, to agree to participate would be beneficial.

Collectors and checkers

Bearing in mind the need for poverty alleviation and the existing long-standing practice of cardboard-recycling practices in Hillbrow, the collection portion of the waste management system could support residents in the area looking for short-term employment. This would afford the opportunity to engage with the transient and unemployed groupings in Hillbrow. Participants in this component would be able to buy a large, subsidised, durable bag and protective gear from the bio-digester plant, and use it to transport organic waste from the bins back to the plant to be checked and weighed. A suitable remuneration schedule will need to be determined. The amount and type of remuneration will depend on what is currently the norm for informal work and what participants are willing and able to work for. The work is low skilled and requires moderate to no training. However, it will create an additional revenue stream in the informal sector.

Operation and administration

The operational portion of the waste management system would use residents in the area looking for medium- to long-term employment. Participants in this component would receive training in the operation and maintenance of the bio-digester. Technical and administrative assistants would have to be numerate and literate at a secondary school level. It is likely that people with the capacity to fill the employment positions this complementary waste management system would offer would be found in the local settled Hillbrow community in which unemployment is a recurring problem.

Structured participation

Structured participation is key to the success of this project and needs to be carefully attended to avoid the shortfalls that arose, as in the Sri Lanka case. Some preliminary insights into participation are presented as relevant to the Hillbrow context.

The markets and centralised collection point

Participation from the generators of waste in the market areas would be elicited not with the promise of monetary remuneration, but with positive long-term benefits. Effectively disposing of the organic waste in the formal markets and designated areas would result in a cleaner, safer working environment. Hopefully too, the possibility of harassment from law enforcement agents around the infringement of the by-laws would be reduced.

Representatives of the informal traders have already expressed willingness to participate in a system that would keep the area clear of the organic waste. It is felt that it is organic waste that tends to be the primary cause of unpleasant odours in which it is unpleasant to work and which drives customers away (Ramatula, Pers. Comm., 2015). Restaurants would benefit by avoiding fines for illegal dumping of waste outside their establishments and from not ensuring that the sanitation of their restaurants is maintained. Some residents in the buildings have already attempted to better manage their own waste and have offered to participate in any system that alleviates the mismanagement of waste in their buildings and all the negative impacts associated with it (Focus Group, 2015).

The bins with pre-sorted waste could help alleviate the issue experienced with some plastic reclaimers who turn street and residential bins upside down in search of plastic. If a proper waste management system is established, then individual traders will then not need to maintain the system through long-term participation. Given the transient character of the area this is not easy to effect. That being said, many narrative accounts of the area do indicate that most of the traders in Hillbrow have been operating there for many years. They have established networks and systems already and these would be able to absorb the introduction of a new system. The difficulty in establishing fair remuneration in such a system might be relieved to some extent by having a centralised collection point.

Buildings and tenants

Service charges for waste management in managed and maintained buildings can be very costly. The installation of a bio-digester might tangibly reduce costs in both electricity provision and waste management. An incentive for building owners to investigate the feasibility of installing a bio-digester in the basement of the building, and educating the tenants to utilise it correctly could be offered.

Current policy and precinct planning

There is potential for incorporating the system into a larger overall policy for precinct planning. The system could be incorporated in future developments in the area. Suggesting how to negotiate such an initiative is outside the scope of this research. The COJ has identified Hillbrow as a key area for rejuvenation. There might therefore be an increased possibility of leveraging the owners of buildings that have been identified as bad buildings into participating in improvement plans. Waste management could be a component of the provision of a cluster of emergency services. If the complementary waste management system was integrated on a smaller scale into the pre-existing infrastructure, it could provide gas directly to the buildings and lower the cost of living in those buildings. There is also the possibility of incorporating the system in currently operational systems like Jozi@Work. However, strong caution should be exercised to ensure that the formalised nature of Jozi@Work does not threaten the survivalist strategies encouraged by the collection process of the system. Should the system be too tightly regulated, a similar situation as described in the Cairo case study might result. This would stymie the potential this area has for informality.

Technical considerations

An important consideration would be to test the viability of this project for determining the waste stream in Hillbrow. Currently there is no available data as to the composition of the waste in Johannesburg let alone a detailed examination of this situation in Hillbrow. Field trips and resident commentary on the amount of waste generated would establish the nature of the noted high levels of organic waste. It would be necessary to know that there is enough waste to justify implementing a system that would affect the entire area. A more rigorous study of the organic waste component would be essential. An engineer would deal with the technical requirements for constructing the bio-digester, its tank shape, size and materials needed. This could only be done once an appropriate location for the plant had been determined. Existing infrastructure may need to be assessed on its ability to hold the bio-digester. An assessment of any health and safety regulations of those operating the plant would be imperative. The size of the bio-digester would be determined by the available organic waste and possibly be adjusted and extended once the system gains momentum. Digesters offer the possibility for relatively simple upscaling and the design the engineer creates should be able to accommodate change easily as the needs of the market will grow and change.

Community engagement

Moving forward and securing buy-in from community residents would require negotiation with specific actors and groups. The informal trading unions like the One Voice of All Hawkers Association, the South African National Traders Retail Alliance (SANTRA) and the South African Informal Traders Forum (SAITF) are well organised and established. Their representatives have already shown interest in participating in the system should it come into fruition. However, the recycling of waste should be structured as a livelihood strategy for the collectors. Outside of participation for the sake of cleaner living and working environment, generators of the waste in the residential buildings and the formal economies should be offered worthwhile incentives.

A note of concern from a resident in the area was around who would be able to work as a proficient and reliable collector. The ease and volume with which organic waste becomes accessible could create such a lucrative a practice that collectors would be tempted to start stealing organic products if they had enough worth once processed. Another resident suggestion was to start a youth initiative to give them the capacity to work as collectors. This would target the specific issue of unemployed youth in the area. However, this could be questioned as a new set of difficulties could arise around registering the collectors if they are not legal residents.

Conclusion

This chapter assessed the use of bio-digesters as a possible tool to manage organic waste in an urban context. It proposed a complementary waste system for the locale of Hillbrow in Johannesburg. To do this, three international case studies were examined and lessons extracted for local application in the South African context. First, in the Costa Rican EARTH University, the fully-operational and advanced bio-digestion system is willingly supported by students and staff who separate their trash at its source. The by-products of the system are used in the university to reduce its carbon footprint and some general running costs. Second, in a Sri Lankan market, the attempts to install a bio-digester system without community buy-in resulted in a lack of participation and an expressed disdain from the users. In addition, although the technical aspects of bio-digesters are not particularly advanced, they were not overlooked and would still require careful consideration. Lastly, the third case was a highly complex yet informal waste collection service in Cairo, Egypt. It provided evidence that the informal market can and does participate meaningfully alongside formal systems.

From the results of this research, the conclusion is reached that bio-digesters can be a viable method of dealing with the organic waste stream. When installed correctly, they serve to create a cleaner environment that is a valuable asset for the people living and working in the vicinity. There is potential for such a system to be implemented in Hillbrow. It would both service the great need for more and better waste management systems in the area and offer increased job-creation opportunities to improve livelihoods. However, care must be taken to avoid the pitfalls evident in the case studies and yet draw from their successes. Especially important is the point that, although technical soundness is a necessary condition for success, the lack of community buy-in will topple even the most robust system.

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User Experience

noun
the overall experience of a person using a product or service

9. KNOWLEDGE-DRIVEN SOLUTIONS: IMPROVING USER EXPERIENCE WITHIN THE PARATRANSIT SECTOR

Nonjabulo Zondi

Introduction

The considerable challenges of rapid urbanisation in the Global South are widely recognised (World Bank, 2002; United Nations, 2014). One of the most daunting of these challenges in rapidly growing cities is that of human mobility. Each day, transport systems must move huge numbers of people around large cities, and do so efficiently, affordably and sustainably. This challenge also exists in urbanising South Africa where the National Development Plan (RSA, 2011) has identified human mobility as one of the key dimensions of human capability. As Harrison (2015: 125) explains:

> Although transportation is addressed in detail in Chapter Four of the National Development Plan (which deals with economic infrastructure), it features in almost all chapters of the Plan. It is a concern in relation to the economy, environmental sustainability, spatial transformation, global connectivity, state capability, social cohesion and health. Transportation is truly a cross-cutter rather than a sector-based concern.

In South Africa, there is the additional challenge of the legacy of apartheid policies and modernist spatial planning (Orcutt, 1997) that have led to unsatisfactory land use arrangements. These arrangements have resulted in physical breaks in the spatial and social fabric of communities, thus reducing urban mobility and accessibility (United Nations Department of Economic and Social Affairs, 2012; Roman, 2015). The urban poor, who remain largely concentrated on the outskirts of economic centres, are most seriously affected by both social and spatial exclusion (Wolpe et al., 2012). In more recent decades, efficient, reliable and inclusive public transportation is recognised as one of the crucial drivers of social and economic transformation for the urban poor to achieve increased accessibility to economic opportunity.

Meeting mobility challenges requires innovation, especially in resource-constrained contexts where the public purse and household budgets are limited, and expensive mass transit solutions are not feasible. This research seeks to contribute to identifying opportunities for the state to collaborate with private sector actors in initiatives that will provide knowledge-driven solutions to urban growth pressures.

The research focuses on the need for integrated, inclusive and accessible urban transportation solutions to improve social and economic conditions of the urban poor. It investigates whether 'civic data mapping' (a technique allowing formal stakeholders and members of the public to collaboratively collect and collate data, using a common technology platform, which is then mapped and potentially used for policy-making processes), as a knowledge-driven tool, can be replicated in Johannesburg, South Africa, to support the integration of public transportation. The subject is pertinent as the provision of adequate urban transport facilities is essential to the social and economic fabric of the rapidly expanding metropolitan areas.

An integrated urban public transport system comprises different modes of transport and characteristic sectors. This chapter focuses on the 'paratransit' sector, in particular, the form of public transport, that consists of the Nairobi 'matatu' (or minibus taxi, or 'matatus' for more than one 'matatu') industry as the form of 'paratransit' transportation. There are issues of definition regarding the use of the term 'paratransit'. Existing literature does characterise the matatu as an example of informal 'paratransit' (Mc Cormick et al., 2013; Thaimatu and Moronge, 2014). Graeff (2009:3) calls the matatu industry in Nairobi a form of "organised chaos". In this chapter, although it might lack the formal structure and recognition as a form of formal public transport, the matatu industry is internally organised and therefore represents a hybrid system appropriately labelled as 'paratransit'.

In this study the Digital Matatus project of Nairobi, Kenya, is used as a lens to interrogate how knowledge creation can be used to spur innovation within the transport sector. The project is a collaborative venture by researchers from the Massachusetts Institute of Technology (MIT), the University of Nairobi and a design firm, and is made available on Google Maps for users on cell-phones or as a printed map (Digital Mataus, 2015). It draws on nearly ubiquitous cell-phone technology to make an open-source data platform accessible to both city officials and public users. The Nairobi case study was chosen as it was based on the practical yet innovative use of relatively accessible technology to transform the way in which urban residents relate to their city using a comprehensive matatu route map of Nairobi. The public transport sector in Nairobi improved significantly through public and private actors having the knowledge to create and use digital strategies innovatively.

The context of the research project is presented first, followed by a more detailed introduction to the paratransit sector. The methodology used in the research is detailed and a literature review explores the relationship between knowledge creation and innovation to support civic data mapping as a way of prompting innovation within the minibus taxi industry. Public transportation in developing countries is outlined next with a specific focus on the role of private transport providers of mass transit. This serves as background for the context of the Digital Matatus case study that is analysed in more depth. The research findings are presented and in the last section, conclusions are drawn and recommendations for further exploration, investigation and/or implementation of the findings offered.

Introducing Paratransit

Public transportation can be categorised as two forms, institutional transport and paratransit transport. Institutional transport has been referred to as planned or scheduled transport services, provided by public or private companies with a formal structure, according to the regulations defined by the relevant urban transport authorities, according to the Coopération pour le Développement et l'Amélioration du Transport Urbain known as CODATU (CODATU, 2015). Institutional transport brings the benefits of regulation and established standards. However, for a city where a large proportion of the population is poor it has a downside. Abiding by the regulations and meeting the set standards often forces the cost of transport up, hence institutional transport struggles to offer the poor majority a reliable and affordable service (Ibid.).

In many cities, paratransit modes of transport have emerged to fill the gaps in service provision (Cervero and Golub, 2007; CODATU, 2015). Cervero (1998:15) explains that paratransit is a form of "adaptive transportation" that involves "the spectrum of vans, jitneys, shuttles, microbuses and minibuses that fall between the private automobile and conventional bus in terms of capacities and service features". Internationally, forms of paratransit include the jeepneys of Manila (converted American army jeeps), the jitney vans in Miami in the United States of America, the carros pur puesto minibus cars in Caracas in Venezuela, the minibus taxis in South African cities and the matutus in Nairobi (ibid.). Proponents of paratransit transport argue that the sector provides the important benefit of access to critical services and economic opportunities, particularly for the poor (Cervero and Golub, 2007) as it is more widely available than institutional transportation. That minibus taxis cater for 60-65% of all public transport daily commutes in South Africa (Barret, 2003), demonstrates its importance to the majority of all South Africans. Many writers recognise the challenges of the paratransit transport sector, particularly safety, pollution and illegal practices, but cannot deny it is an integral part of public transport provision and opens access for the poor in ways that institutional transport cannot achieve (CODATU, 2015; Cervero and Golub, 2007).

The characteristics of the paratransit sector in comparison to institutional transport (Table 9.1 below) differ in respect of regulatory frameworks, vehicle capacity, services offered and their internal organisation.

Table 9.1: Characteristics of the paratransit industry

ELEMENTS	PARATRANSIT SECTOR	INSTITUTIONAL TRANSPORT
REGULATORY FRAMEWORK	• Emphasises the absence of adequate regulation - standard routes, fares, quality of vehicle etc. • Services that do not fit with the idea of a modern urban public transport system -. schedule and reliability of service • Flexible regulatory environment or even total deregulation - semi-formal routes, fares, quality of vehicle etc.	• Sector is governed by regulatory frameworks put in place by transportation authorities
VEHICLE CAPACITY	• Small and medium-sized vehicles - 4-seater sedans to 35-seater minibuses, most often ageing	• Buses, trains
SERVICES	• Flexible mode of transport lacking schedules or frequencies • Often direct service networks (minimal pax transfer) • Cash fare collection • 'Fill-and-go systems' at ranks	• Scheduled services • Makes use of both cash and pre-loading systems, like the Rea Vaya bus card
INTERNAL ORGANISATION OF THE SECTOR	• Route associations/cooperatives • Two main business models: owner-employee model vs. owner-lessee model	• Systems governed by local and/or regional government structures • Outsourcing: contractual agreements between private service providers and government • Government directly provides transportation services

Source: Author's formulation based on Bruun and Behrens (n.d.), Cervero and Golub (2007) and CODATU (2015)

The paratransit sector is often seen to be in direct competition to institutional transport (Woolf and Joubert, 2014). It is this that has led to local government authorities pushing for formalisation of the sector (ibid.). The sector is also seen as cornering the market unfairly; providing cut-throat competition for institutional transport by avoiding regulations and all related costs; resisting reform; and pushing out competition from lucrative routes (Ayodele, 2008; Woolf and Joubert, 2014). Paratransit transport, therefore, is often deemed detrimental to the overall transport system (CODATU, 2015). However, the stance taken in this research is that the presence of the paratransit sector is justified as it fills the gaps of service provision due to its key value propositions for the urban poor, affordability and accessibility (Ibid.). In this regard, promoting the minibus taxi industry therefore holds a number of scientific, social and political opportunities (Woolf and Joubert, 2014).

Since institutional transport is generally insufficient to meet the demand on its own, and the paratransit sector continues to provide a vital supplementary role, it is clear that establishing a sustainable and inclusive urban transport system, that integrates both institutional and paratransit transport, is required. Such a system would depend on developing a comprehensive and integrated approach to policy decision making, with the aim of developing affordable, economically viable, people-orientated and environment-friendly transport systems (United Nations: Department of Economic and Social Affairs, 2012). In many contexts, paratransit is likely to play a continuing, or even greater role, although this does not mean that the shortcomings of paratransit transport should not be overlooked. There are multiple problems that accompany a lack of adequate regulation, critically, safety and unreliability. The one particular challenge addressed in this chapter is the lack of accessible information for users in the paratransit industry. While information does flow through informal networks it is often only partial and accessible only to those who are part of these networks.

Given this situation, this research investigates ways in which these limitations could be resolved. In particular, the use of civic data mapping tools that have the potential to make paratransit systems more visible to users. The particular case used is that of the Digital Matatus project in Nairobi. Before moving to it, however, the research method employed and an outline of some helpful scholarly literature are presented.

Research Method

The study adopted a qualitative research approach designed to examine how and whether the Digital Matatus project, which made use of civic data mapping, could be replicated in a city such as Johannesburg in South Africa. The case study approach allows for a contextually situated analysis of existing experience with replicability receiving concurrent consideration (Tellis, 1997). Use of a variety of data gathering methods supported the research process (Yazan, 2015).

Problem statement

Institutional transport on its own is generally insufficient to meet urban residents demand. The paratransit sector provides a vital supplementary role in the provision of a public transport service that is affordable and accessible, particularly for the urban poor. Integrating and legitimising the paratransit sector can be challenging, but the integration of suitable modes of transport adds value as they fill key gaps. Economically viable, people-orientated and environment-friendly transport systems (United Nations Department of Economic and Social Affairs, 2012) come from sound decision making. Through an analysis of the Digital Matatus case study, this research introduces the use of purpose-built technology for mapping of complex, semi-formal transport systems. Multi-purpose tools, such as a comprehensive visualisation of the matatu system in Nairobi, can be used to inform policy making and find appropriate ways to place routes in cities. The use of civic data maps has the potential to expose key points of overlap where integration can be pursued.

The research identifies the relationship between knowledge creation and innovation using the civic data mapping case study. The value and credibility of knowledge is recognised as an approach to innovation to address urban pressures in the paratransit sector; and the possibility of the replicability and adaptability of the Nairobi matatu case study in the South African context is assessed to illustrate that knowledge creation and innovation in combination have the potential to yield results.

Data gathering and analysis techniques

Project and documentation reviews as well as individual and group interviews provided the data required. The selection of interviewees was purposive (Table 9.2 below), and were key stakeholders within public institutions, the private sector and civil society. Normal procedures were followed for conducting interviews (duration 25-80 minutes) which were voice-recorded with the consent of the individuals. Recordings were transcribed and data analysed. Field notes and databases were used to categorise and reference data for subsequent interpretation. In addition to the interviewing process, direct observation was used. In a case study approach observation occurs when the investigator makes a site visit to gather data.

Table 9.2: List of interview respondents

RESPONDENTS	NAME		THEMATIC AREA	SITE	DATE
Knowledge Manager – Bus Rapid Transit (COJ)	Ms. Zarina Goondiwala	Female	Knowledge creation	Site	6 July 2015
Digital Matatus founder (innovator)	Ms. Sarah Williams	Female	Kenya, Civic data mapping replicability	City of Johannesburg offices	25 June 2015
Director of School, Technical University, Kenya, Nairobi (academic)	Dr. Nixon Ochara	Male	Innovation and technology Transport landscape of Kenya	Skype interview with respondent in Nairobi	13 June 2015
Founder of Moovah App	Ms. Megan Harrison	Female	Transport (taxi) industry Innovation	University of Pretoria	26 June 2015
Academic/Artist/Taxi Hand Signal Author (innovator)	Ms. Susan Woolf	Female	Innovation	Moovah App offices in Johannesburg	18 June 2015
Researcher at the Institute of Research and Innovation and Tshwane University of Technology (academic)	Mr. Lindelani Ndabeni	Male	Innovation Knowledge	Tswhane University of Technology	13 July 2015
Associate Professor, Department of Industrial and Systems Engineering, University of Pretoria	Mr. John Joubert	Male	Transport Engineer Taxi Industry	University of Pretoria	20 August 2015
Taxi owner, member of ARMSTA (Alexandra, Randburg, Midrand, Sandton Taxi Association) and TATA (Tembisa Alexandra Taxi Association)	Mr. John Dladla* (pseudonym at respondent's request	Male	Taxi industry Transportation industry	Alexandra Taxi Rank (Pan African Mall Taxi Rank)	13 June 2015

Source: Author's formulation

Literature review

A growing body of knowledge seeks to reshape the understanding of the relationship between knowledge creation and innovation. Knowledge creation has been referred to as the hidden driver of innovation (Riordan, 2013). Sometimes knowledge is almost used interchangeably with innovation when innovation is referred to as new knowledge (Popadiuk and Choo, 2006). Knowledge, and knowledge creation, is claimed to be a central tenet of innovation (Katsikis, et al., n.d.), and seen to drive innovation (Pei, 2008; Tekic, et al., 2012; Agile Innovation, n.d.). In accord with the theme of this research to relate knowledge creation to promote integration in the paratransit transport sector, a conceptual framework of the innovation system is used to build the argument for civic data mapping. It will be applied to route mapping as an innovative way to find areas of overlap and potential. The Nairobi case study will also be reviewed as a body of knowledge that could potentially shed light on how research for this case study could be used in Johannesburg.

Process of knowledge creation: the innovation system

Literature on knowledge creation and its link to innovation generally has two main approaches: first, the Nonaka and Takeushi (1995) model, the Socialisation, Externalisation, Combination and Internalisation (SECI) model of new knowledge creation that is based on innovation within a single firm or company; and second, the innovation system that is based on innovation among a number of organisations, institutions and various actors.

Based on the work of Polanyi (1967), the Socialisation, Externalisation, Combination and Internalisation model accepts that knowledge has two dimensions: tacit and explicit. Tacit knowledge is defined as knowledge that is difficult to formalise, not easily expressed, such as experience and opinions. Explicit knowledge is described as knowledge that is formal and systematic and is typically documented or expressed, inter alia, as words, numbers, codes, formulae (David Skryme Associates, 2011). New knowledge is created through the conversion and interaction between tacit and explicit knowledge (Riordan, 2013), and is a social process taking place among the interactions of individual actors. New knowledge is created either when tacit knowledge is converted to new tacit knowledge, a process called socialisation; or explicit knowledge, a process called externalisation; or when explicit knowledge is combined with other explicit knowledge, called combination; or becomes tacit knowledge known as internalisation (Fischer, 2001; Riordan, 2013). Within this model the new knowledge created is viewed as the innovation. In the context of the taxi industry and the Digital Matatus case study, tacit knowledge, knowledge about taxi routes, rider experience and the like, that has historically been shared through socialisation is now being transformed into explicit knowledge such as maps and visualisations, making them innovations in and of themselves.

The innovation system is the other model of knowledge creation. It follows a Systems of Innovation approach and has been gaining ground in policy and academic circles the past two decades (Fisher, 2001; Dantas, 2005). The innovation system differs from the Socialisation, Externalisation, Combination and Internalisation model as the approach represents a major transformation in the way that the knowledge creation is viewed (Dantas, 2005). It shifts attention away from research, towards the whole process of innovation, in which research is only one element (Fischer, 2001; Dantas, 2005).

The concept of 'innovation' in this model refers to the search for, development, adaptation, imitation and adoption of technologies that are new to a specific context (Dantas, 2005). An innovation system is therefore a network of organisations within an economic system that are directly involved in the creation, diffusion and use of scientific and technological knowledge. Organisations responsible for the coordination and support of these processes are also part of the process (ibid.). In this approach, innovation is seen as an iterative process that begins with research, development, design, engineering and production, and ends with the successful introduction of new products and processes (ibid.).

This innovation system is a more appropriate lens for this research, as its approach is geared to ultimately informing and creating policy that will benefit society as a whole. This view is opposite to the Socialisation, Externalisation, Combination and Internalisation model that is more geared to increasing the competitiveness of individual organisations within an economy. As integration within the transport sector requires a number of local, provincial, regional and national institutions, private actors, both formal and informal, commuters and private business, the innovation system can guide policy integration by shifting the focus of policy from individual organisations to both the organisations and the interactions between them (ibid.). The model also shifts the focus of policymakers to begin looking into the processes involved in introducing new products and methods to a particular economy (ibid.). This approach allows the emphasis of policy to move away from deciding on whether to support the supply or the demand for innovation, and move towards issues that affect the interaction between the supply and demand of knowledge and innovation (ibid.).

Civic data mapping as a process includes interaction among people and the interpretation of knowledge, as the mapping of elements such as routes requires the interaction of both formal and informal actors. Therefore, civic data mapping shows a definitive link between technology, knowledge creation and innovation. This research seeks to demonstrate that it is thus part of an intricate and iterative knowledge creation process; and that it is a grassroots knowledge creation process that has the potential to convert tacit knowledge to explicit knowledge. In this capacity it can spur on various types of innovations. This is because the success of a civic data mapping process relies on the experiences of the commuters themselves as well as the geo-mapping skills of specialised institutions, as was the case in the Nairobi study. Attention now turns to the paratransit sector in a developing country context, using a particular example.

Digital Matatus as Case Study

Background of paratransit in Nairobi

The dominant mode of transport in Nairobi is by informal paratransit vehicles known as matatus (Preston, 2009). The use of this mode of transport started in the late 1950s when an increase in the number of rural migrants came to Nairobi, which led to the development and proliferation of informal settlements (ibid.).In most informal settlements, there was no public transport and many of the residents could not afford private vehicles hence a new mode of transport was introduced (Graeff, 2009).A matatu is defined as a 14 seater minibus which provides transport for those travelling between the rural and urban areas and from the informal settlements to other parts of the city (ibid.). Over time, the matatu have become one of the most important transportation modes in Nairobi (Intellecap, 2012.).As a paratransit mode they contribute 24% of the modal share in Nairobi, the highest (ibid.). Beyond the numbers, Gonzales et al., (2008) point to the critical role played by matatus in Nairobi's transport system because of their ability to serve a need that is unmet in the city. Patinkin (2014) reinforces the size of the matatu industry, saying that these vehicles ply hundreds of routes in Nairobi and comprise the vast majority of the city's public transportation system but are almost totally informal and unregulated.

The informal and unregulated nature of this mode of transport is due in part to the lack of involvement on the part of local authorities (Graeff, 2009). The routes the matatus use are based on a bus network that existed in Nairobi 30 years ago, and have since multiplied and expanded to incorporate further routes as the city has grown in population size (Badger, 2014). Information about the direction and paths of routes, cost of fares and any other enquiries can only be obtained through interaction with another matatu user.This makes this form of knowledge creation that of socialisation, where the knowledge moves from tacit to tacit.

As the main mode of transport for most people to commute to work, the lack of consistency in routes, endless delays and changing fees per shift, not only affects the passengers but the industry as a whole (Timbs, 2015).The lack of regularity of fixed stops means routes can easily be diverted "in response to passenger needs, congestion, construction or the presence of the traffic police" (Klopp, 2014).As Klopp (2014) notes "Matatu operators and owners – in interaction with their passengers – are Nairobi's invisible public transit planners". Nairobi citizens have a complex relationship with this home-grown system. It elicits admiration, as is evident in websites that are devoted to matatu art and culture, but also anger, as seen in frequent editorials in the newspapers about the 'matatu menace'. Commuters and the community at large generally complain about poor driving behaviour from the matatu drivers as well as security issues because of the traffic congestion (Graeff, 2009).

Ample opportunities for criminal activity abound as matatus often bring movement in the city to a standstill due to a lack of updated transport infrastructure, as well as the large number of matatus on the roads. At the same time, the matatu drivers complain about the lack of job security, and having to constantly deal with police bribes (ibid.). Furthermore, the matatu owners complain that they have to recover high initial and operational costs, leaving the industry competitive and profit driven (ibid.). There is also a lack of data and transport knowledge on the part of the local authority which means there is lack of general planning and poor implementation of existing plans.

All stakeholders spontaneously agree that it needs to be better regulated and planned. The question is how. Importantly, it is essential to fully understand the context of the industry and look at the different stakeholders within this system. There are also constituencies that are often indirectly affected by the industry on a daily basis, such as businesses through their employees. Graeff (2009) identifies seven stakeholders of the matatu industry (Table 9.3).

Table 9.3: Description of actors operating in the matatu industry

ORGANISATION	DESCRIPTION
Matatu owner	Owns matatu vehicle(s); owners can choose to drive their vehicle
Matatu operator	Vehicle driver, often hired by matatu owner to drive a vehicle
Commuters	Users of the vehicle
Regulators/Civil Associations Ministries, Transport Licensing Board (TLB)	Local and national government officials whose responsibility it is to implement rules and regulations the various transportation departments set
Matatu Owners Association (MOA)	Association formed by matatu owners that governs the matatu routes. All matatu owners need to be registered with the Association to operate on a route
Matatu Welfare Association (MWA)	Trade union of people working in the matatus industr
Transport Licensing Board	Ministry whose mandate is it to ensure all vehicles are roadworthy and compliant in terms of safety
Support industries	Established roles within the matatu industry such as conductors, drivers, mechanics, car-washers, etc.

Source: Author's formulation based on Graeff (2009)

Rationale for choosing the Digital Matatus project

The case study was chosen based on the practical yet innovative use of relatively accessible technology to transform the way in which city residents relate to their city. This research has the potential to address critical issues of access to the city, scaling requirements and addressing informal transport. It could begin a process that would involve recommending implementation strategies and frameworks to proactively manage the development of transport facilities in a city through collaboration among various actors. Most importantly, the case study could produce knowledge for the general public in the form of a civic data map compiled with data accessed with readily-accessible technology. This could be used to spawn a number of related urban innovations, making it a project that could support considerable further research, development and innovation in a range of spheres.

The Digital Matatus project addresses a major challenge in the availability and use of data within informal and hybrid formal-informal systems. As Williams et al. (2015) have noted, informal systems are often regarded as too chaotic or complex to offer reliable data. There are also often active attempts to prevent data collection as operators either try to keep information hidden from government, or colluding with government officials to prevent openness. Where data is collected there are major challenges of cost, reliability and standardisation across sectors. It is in response to these challenges that the Digital Matatus project is a potentially important exemplar

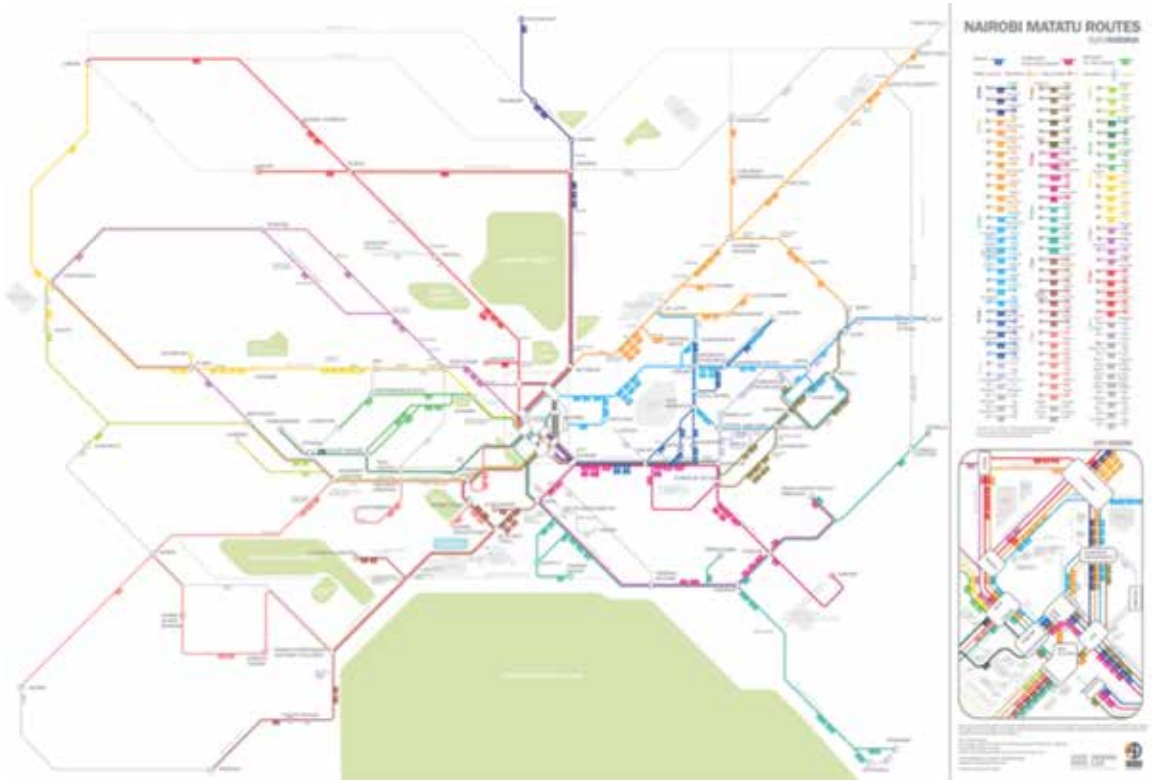
The Digital Matatus project

The Digital Matatus project is an innovative city intervention which sought to ensure that transportation in the City of Nairobi becomes more efficient and open. The study collected and standardised transit data for Nairobi's matatu system to make information about the various routes publicly available. It thus created Nairobi's first comprehensive visualisation map of the matatu system (Figure 9.1). The data collected and the map are most noteworthy achievements as the information and the finished map are now used as planning tools for local government (Digital Matatus, 2015). Matatu owners and commuters both put the map to very good use (Klopp et al., 2015). The Digital Matatus project of the Civic Data Design Lab at the Massachusetts Institute of Technology[4] is in partnership with the University of Nairobi, Groupshot, a private design firm, and Columbia University's Centre for Sustainable Urban Development (Digital Matatus, 2015). The aim of the project was to demonstrate that the use of specialised data-recording phone apps, equipped with an integrated Global Positioning System (GPS) tracking function for cell-phones, can effectively and efficiently capture important transit information, especially in informal transport contexts. This will support better ways of finding data for mapmaking and journey planning (Klopp et al., 2015). The project utilised General Transit Feed Specification (GTFS), a form of data collection using a Google Maps platform that was first used in 2005 by Portland's TriMet transit agency in 2005. Also used was the General Transit Feed Specification Exchange, a web-based programme for sharing data (Williams et al., 2015). These systems were developed in the United States of America but the innovation was applied in the semi-formal Kenyan paratransit system.

[4]This entity develops alternative research and data collection practices to enhance the quality and reach of data and information, making information and information sharing more relevant and responsive to the needs and interests of citizens traditionally on the margins of policy development. The practice of civic data mapping develops data visualisation and collection tools that expose urban phenomena that might previously have been hidden or understood differently (Civic Data Design Lab, 2016).

The project emerged in Kenya as an example of a low cost solution to collecting data using commonly available technology, in this case the cell-phone. As Williams et al. (2015) explain, Kenya has a higher rate of cell-phone penetrations than Africa as a whole, and Nairobi has a higher rate than the average for Kenya. There is also a recent history in Kenya of the innovative use of technology to resolve urban problems, M-PESA (M stands for 'mobile telephone' and pesa means 'money' in Swahili), for example, is a mobile banking service, while Ushahidi is a community crisis mapping tool using mobile technology that was first used in Kenya, before being applied internationally (Ibid.).

Figure 9.1: Digital Matatus' stylised route map for Nairobi



Source: Digital Matatus (2014)

The Digital Matatus project was, importantly, the result of a transnational partnership. Although the approach was introduced from the United States of America by the Massachusetts Institute of Technology, Columbia University and Groupshot, the University of Nairobi led the data collection process. The 136 matatu routes were identified and students were sent on each to collect detailed information during the data collection phase (Ibid.).

The project achieved the development of a standardised route map through the use of off-the-shelf, purpose-built cell-phone technology that allowed for data collection to take place directly while riding in a matatu on a specific route. Due to the semi-formal nature of the matatu routes, the research team, with the help of Nairobi residents, commuters and operators, mapped all stops, signs and shelters along the routes. Their mapping efforts on larger, popular and central stops and terminals (ibid.). University students also contributed to the map by adding places of interest (Klopp et al., 2015).

Testing was conducted to ascertain which would be the most suitable cell-phone app to use and a decision was made based on experiments in the field. Data was collected, cleaned and formatted into the standard General Transit Feed Specification used by Google. Importantly, the data was placed on open and shared platforms including the Digital Matatus website and Facebook page, and the General Transit Feed Specification Exchange, a website that collects General Transit Feed Specification feeds from various cities (ibid.). Many of the technical details of collecting, compiling and disseminating data are available in Williams et al. (2015).

The Digital Matatus project may be regarded as a successful civic data mapping effort, in terms of its innovativeness, as the creation and sharing of the knowledge spurred the development of several applications that made use of the data, such as a phone based routing application called Ma3Route[5], proving the capacity of knowledge creation to not only be an innovation in itself, but to have the capacity to stimulate other innovations. Furthermore, the knowledge was shared with Nairobi communities who might not use mobile technology for their daily commutes. To enable accessibility of this facility, the stylised map by Digital Matatus was created with a style borrowed from transit maps such as those found in New York, London and Paris. The map was extremely well received and adopted as the official transport map of the city.

The programme director of the Kenya Alliance of Resident Associations, currently Mr Henry Ochieng, who works closely on transit policy, is quoted saying, "You cannot do a policy or a plan without having a clear understanding of where the public vehicles operate or the stages" (Patinkin, 2014). This successful mapping method has the potential to enable critical discussion within local governments to address challenges that not only have deep social impacts but also profound economic implications for trade and investment, such as Nairobi's traffic congestion problem (Klopp et al., 2015).

[5] Ma3Route is a mobile/web/SMS platform that crowd-sources for transport data and provides users with information on traffic, matatu directions and driving reports. Ma3Route aims to make traveling easier in developing countries by democratizing timely transport information.

Findings and Analysis

Relevance of civic data mapping for Johannesburg

Knowledge creation is a frequently overlooked driver of innovation. Civic data mapping provides an avenue for revealing information that is often inaccessible, such as the way communities feel about their places and the way that commuters feel about their user experience. The creator of the Digital Matatus map referred to civic data mapping as an alternative practice or method of representing and collecting data to make it richer, smarter, more relevant and more responsive to the needs and interests of citizens traditionally on the margins of policy development. Therefore, civic data mapping provides an opportunity to experiment with and develop data visualisation and collection tools that highlight complex urban phenomena and represent them in widely accessible ways. Further, the creator noted that this mapping allows the researcher to borrow from traditional method of science and design by using spatial analytics to expose patterns and communicating those results, through design, to new audiences (Williams, Pers. Comm., 2015).

During the interviews for this research, it emerged that the concept of civic data mapping was broadly understood by the interviewees. Mr. Dladla (Pers. Comm., 2015), a taxi owner, highlighted areas where civic data mapping could be used to change the taxi industry for the greater benefit of taxi owners and operators as well as commuters. The taxi owner mentioned that the map could assist in putting key governance and management systems in place for the taxi industry as much of the knowledge and processes within the taxi industry exist in the form of tacit knowledge and then are shared through the socialisation process (moving from tacit to tacit knowledge). Mr. Ndabeni (Pers. Comm., 2015) noted that the strength of mapping knowledge systems is the ability to expose areas where solutions are most needed. The suggestion was also made that such maps could reveal solutions that might exist already but are previously untapped.

Participation and consultation

Participatory literature has stressed the importance of community consultation on urban development to ensure the buy-in of the community for the success of the interventions and the sustainability of the programmes. A critical question is the extent to which this initiative, brought from the United States of America involved locally based collaboration. The partnership with the University of Nairobi has been explained but did the initiative include the matatu operators, local government, and the users of paratransit? There were indeed focus group discussions involving matatu owners to gauge reaction to the paper-based map, which did introduce a participatory and collaborative element to the process. There was also a partnership with the Kenya Institute for Public Policy Analysis, which is a government think tank concerned with improving public transportation. The Nairobi city government was also involved in many of the workshops held in the course of the project, and its support for the project is indicated in the way in which it has designated the product as an official transit map (Williams et al., 2015). There were, however, limitations to the participatory nature of the project, given its origins as a research initiative. For example, students collected the data; and the operators and users of paratransit service actually collected the data and become deeply involved in the initiative, which could have affected its conception.

From the perspective of the taxi industry, Mr. Dladla (Pers. Comm., 2015) acknowledged the importance of consultation, especially with local government. He noted that, although structures and procedures for participation were in place, "true participation" was not ensured and taxi owners often feel steamrolled by local government decisions. He felt also that taxi owners themselves were not well represented either by the associations that represent them or by government as a whole. He questions the continued exclusion of the taxi industry from the greater urban planning debates, discussions and decision making. While the Digital Matatus project initially developed as a research endeavour rather than as an initiative from within the matatus industry, an attempt was at least made to engage the industry.

Perceived value and appropriateness of innovation

The recognition of innovation seems to be highly linked to the perceptions of the value of the innovation to the end user. Dr. Ochara (Pers. Comm., 2015), for example, questioned the value of the Digital Matatus map as he noted that cell-phones, internet connectivity and maps were fairly accessible in Nairobi, essentially arguing that the Digital Matatus map is redundant. Dr Ochara's argument can, however, be deepened as his argument not only bring into question the value of the Digital Matatus map but also whether everyone in Nairobi would have equal access to the high degree of connectivity required, whether everyone would choose to make use of maps on their cell-phones or even whether the end-users are digitally literate. The value of the Digital Matatus map therefore lies in its accessibility from a variety of platforms such as paper-based, online and General Transit Feed Specification formats. This value needs to be built into the system from the very beginning to ensure the success of the project.

To support his argument, Dr. Ochara (Pers. Comm., 2015) asserted that:

With M-PESA, even though there's an issue of literacy, people went out of their way to learn how to use it… The issue is that applications need to be valuable. If people don't see value in it, then it won't work.

His view highlights the notion that the more valuable an innovation is perceived to be, the more people will tend to learn how to use that innovation. It is true that innovations are sometimes difficult to introduce to people as using them often requires a behaviour change whether concerning the products itself or having to learn how to use a new technology or rethinking the ways in which technology is used.

Mr. Ndabeni (Pers. Comm., 2015) argues that in many cases, informal activities are merely survivalist in nature and it is likely to be the case in this study area, with cell-phone ownership not a given. Therefore, he noted, innovating in this context is not always bound to succeed. He shared this thought:

What we shouldn't be confused with is that not every activity in the informal sector is productive. Some are just poverty alleviation. So no matter what you do in terms of innovation you may not succeed. You cannot succeed in turning every informal activity into an innovation that is, for example, productive and that can be mainstreamed. But you will find pockets of innovation within the informal sector that you can use.

This is critical to note, as the ultimate intention of any innovation should be agreed upon before it is pursued. Furthermore, the ultimate goal of innovations, especially within the informal sector, should ultimately be to improve the lives of the urban poor.

Lastly, Ms. Woolf (Pers. Comm., 2015) and Ms. Harrison (Pers. Comm., 2015) both highlighted that the consultation aspect of their Hand Signal and Moovah app projects respectively, was essential for the implementation of their projects. Both innovators had followed similar lines of engagement, making initial contact with the taxi associations and influential taxi owners before initiating their projects. The consultations were done to establish the value and benefit that taxi owners and associations would have from allowing these projects and innovations to continue. Thus, the expected value of innovations for users was highlighted as an important area that any innovator needs to question before carrying out their idea.

Innovation and exclusion

Questions related to participation also brought about discussions regarding inclusion versus exclusion, especially with respect to technology-based innovations. This is due in part to the contextual reality of innovating within an African context, as this requires dealing with high levels of inequality and also the reality of an often extreme digital divide. Mr. Ndabeni (Pers. Comm., 2015) pointed to the fact that technological innovations sometimes reinforced inequality, as uneven power dynamics meant that innovations responded mainly to the needs of already privileged actors in the formal sector rather than those of the more marginalised actors who operate informally. All respondents noted the lack of power that commuters have within the transport industry in Johannesburg which was seemingly an issue in Nairobi as well. Respondents indicated that there is a need for participation in urban development by taxi industry owners in particular and commuters generally. The respondents felt that being excluded from the transport planning processes was the fundamental reason for lack of buy-in into technology based innovations in the paratransit sector. One respondent cited the example of the cashless (card) system in Tshwane, South Africa, which failed as it did not include the taxi drivers as one of the key stakeholders in the planning process. Here, the cashless system was seen as cutting the income of the taxi drivers; it is common practise for taxi owners and drivers to agree on a set amount the owner wants at the end of the day and any extra income to go to the driver. Taxi drivers therefore did not want the new system as it would account for all the extra money and so be inaccessible to them, with the system thus seen to benefit owners but not drivers.

Commenting on innovation in Nairobi, Dr. Ochara (Pers. Comm., 2015) provided a clear perspective around the dynamics surrounding technology and innovation in developing country contexts. He noted that, although Nairobi, and Kenya as a whole, were booming with innovations and technology, there was still a sizeable majority of people who felt that the use of technology within the matatu industry would exclude a large proportion of the population that was poor, relatively uneducated and would experience the effects of the digital divide adversely (Ochara, Pers. Comm., 2015).

Technology can be divisive in that it can create a preference for those that are able to use it such as the youth and educated people in society. What is interesting to note is the pervasiveness of this division, in that Ms. Goondiwala (Pers. Comm., 2015), working with the Rea Vaya in Johannesburg, explained that the Bus Rapid Transit system was expanding to those members of society that are more open to technology and who can learn new innovations easier; and pointed out that innovation is highly susceptible to reinforcing exclusion. This reiterates what Mr Ndabeni (Pers. Comm., 2015) said when speaking about the System of Innovation, the power dynamics and how difficult it is to change institutions' ideas and underlying ideologies. Professionals and government officials who are unfamiliar with the priorities and circumstances of the informal sector would not be in a position to adequately represent their interests in debates in future planning processes, making it important to secure the participation of the urban poor in other ways to ensure their interests are met. A lack of technological knowledge limits potential use of a digital map. However, technology and innovation could be led by the youth, particularly young people within families of taxi owners (ibid.) who would possibly have understanding of the minibus industry.

While technology can often exclude a majority of people, this need not always be the case. The use of widely available technology for civic data mapping, for example, could be a pertinent tool to ensure the inclusion of the marginalised into policy development and into the greater economy and society. From these findings it would require a degree of adaptation to be able to match the matatus' innovations in Johannesburg. This suggests that innovation can either be a tool which has the potential to reduce inequality and increase inclusiveness or a tool which perpetuates the current realities of various members of society.

It is therefore quite clear from the examples given that the dualities of the role of innovation are present. Some respondents tended to instinctively associate innovation with technology-based systems, whilst others expressed concern that technology could alienate certain groups of people which would contribute to the failure to innovate and of innovations with potential to succeed.

Challenges and opportunities for innovation in Johannesburg and Nairobi

Respondents noted the lack of power that commuters have within the transport industry in Johannesburg, and it was seemingly an issue in Nairobi as well. There was agreement that taxi industry owners in particular and commuters generally should participate in urban development. The fundamental reason for lack of buy-in into any innovation was due to users being excluded from the transport planning processes. One of the main impediments to effecting improvements in this paratransit sector that those involved as users or providers of a service in the taxi industry were deprived of sharing their knowledge. Most important to developing the ability to innovate within the taxi industry is to understand the way the industry is governed as this is where the knowledge and innovations within this sector are created, used and disseminated. Taxi associations in Johannesburg are the main governing organisations for the taxi industry.

The level of decision-making power and the extent to which taxi associations make various key decisions seems to vary. It was noted by Mr. Dladla (Pers. Comm., 2015) that certain decisions are occasionally taken by associations and sometimes by taxi owners and although not often, by taxi drivers.

This seems to be directly linked to the power dynamics and internal relationships within and among individuals of a taxi association. Those with greater influence and power will tend to make critical decisions, like changing the prices of fares for the taxi routes. Taxi drivers, although located at the lower level of the chain of authority, also tend to have considerable power within the taxi industry. In groups, they have the ability to veto decisions made. An example happened in Pretoria when taxi drivers rebelled against the instituting of cashless ticketing systems being piloted in the taxi industry (Dladla, Pers. Comm., 2015). Respondents had varying views regarding the efficiency and effectiveness of taxi associations in Johannesburg, ranging from very good to poor. Mr Dladla called the taxi associations' governance into question (Pers. Comm., 2015). This was due to challenges such as delays in replacing out-going executives and the over-utilisation of interim committees. Therefore, what can be seen is that, although institutions govern the taxi industry in Johannesburg, there are a number of other dynamics that will affect innovations coming to the fore in this sector.

When asked to discuss the way in which decisions are made within the taxi industry, Mr. Dladla (Pers. Comm., 2015) spoke about the lack of relevant knowledge or not being able to use models to assist with forecasting and to make critical decisions, like increasing the price of a single ride. This, according to Mr. Dladla (Pers. Comm., 2015), has resulted in taxis on some routes experiencing losses, whilst others over-charge their passengers. Ms Woolf (2015), on the other hand, cautioned against the tendency to provide blanket statements of the general level of effectiveness of the associations. She made this statement based on her experience with a taxi association that was organising its responsibilities effectively during her interactions with association heads when conducting research for her taxi hand signals project. She mentioned that, like all institutions, the power of the organisation lies in its members and the overall way in which the actors in the taxi industry owners and operators relate to each other. The lack of a standard practice is apparent and each association operate differently, although the functions of such an association are well understood.

In Nairobi, the matatu industry relies strongly on associations (Ochara, Pers. Comm., 2015). He noted that unlike in Johannesburg, there are fewer entry points into the matatu industry as the taxi associations are the biggest gatekeepers and regulators of the industry. The associations in Nairobi are more formalised and are large institutions with hundreds of thousands of members who act as very strong lobby groups. They are effectively part of the governance of the cities in general and are in constant consultation and engagement with local authorities. The system seems to be much more centralised in Nairobi as opposed to Johannesburg (Ochara, Pers. Comm., 2015).

Associations in Nairobi manage the day-to-day operations of the industry, the hiring of taxi drivers and, importantly, they also manage the finances. Matatu owners, in this system, are actually equivalent to investors in a system. The associations oversee many of the operational functions. It is important to note here that blanketing the industry should also be avoided. Dr. Ochara (Pers. Comm., 2015) explains that the generally centralised way in which the matatus system is managed, means a number of innovations in the industry are now part of their organisation. These have benefitted matatu owners and commuters alike (Ochara, Pers. Comm., 2015.):

Formalising the registration of associations could be the best thing that could ever happen to the sector, especially for members. Commuters have also got somewhere to run to complain. And by the way there were also many spinoffs on businesses…associations started having courier services. So those who have started those businesses are increasing the profitability of the matatus

What is suggested is that the structure of the matatu alias minibus industry could be receptive to supporting the take-up of an innovation or inhibit its acceptance. In Nairobi, its relatively centralised and formalised structure could support the diffusion of the innovation whereas, in Johannesburg, South Africa, the more diffused and informal structure would make take-up more difficult. However, further research on the nature and effect of the manner in which the associations in both settings work and the impact they have on their overall capacity to innovate is required to confirm or reject this hypothesis. The next section concludes with various considerations in the replication of the Digital Matatus project in Johannesburg.

Conclusions and Recommendations

This research sought to contribute to the identification of opportunities for the state to collaborate with various actors within the innovation system to provide knowledge-driven solutions to urban growth pressures. The point of departure was the focus on the need for integrated, inclusive and accessible urban transportation solutions to improve social and economic conditions of the urban poor. It investigated whether civic data mapping, as a knowledge-driven tool, cold be replicated in Johannesburg, South Africa. The use of civic data maps has the potential to expose key points of overlap in routes, service provision and other areas where the integration of the use of minibus taxis as a paratransit service could be pursued.

Theoretically, the research showed that civic data mapping has the ability to transform tacit knowledge into some tangible, usable form of knowledge that can be used by a variety of actors like policymakers and innovators. The Digital Matatus project done in Nairobi, Kenya produced a critical body of knowledge that has the potential to represent civil society through exposing user attitudes, popular routes and other choices. Information of this nature is critical to have for effective policymaking discussions. The map produced as part of Digital Matatus project showing the routes and stops for the matatus in the City of Nairobi as a visual representation is not only of practical value, useful and marketable, but also provides an opportunity for integration of transport routes in a major city in Africa.

The power of civic data mapping is that it employs data visualisation and mapping techniques to expose and communicate identifiable urban patterns. The map can also be used to illustrate policy issues to broader audiences. In addition, and in the same way that knowledge sharing can create opportunities, so too could digital civic data mapping expose new data and trigger the development of new markets in the transport sector where demand exists. Moreover, gaps in knowledge can be identified and solved and methodologies shared with other African countries.

Findings showed that the civic data mapping could be used to change the taxi industry for the greater benefit of taxi owners and operators as well as commuters. Local, tacit knowledge truly does exist in numerous forms, both formal and informal. It is critical to continue to build on the knowledge that exists and use it to inform innovations and that new civic data is created to contribute to this. The strength of mapping knowledge systems is the ability to merge the formal and informal knowledge and expose areas where solutions are most needed and where they exist but are untapped. Overall, the objective of seeking innovations, especially in developing world contexts, should always be to resolve society's deepest challenges.

The success of an innovation is to a large extent determined by the interactions amongst actors. An important determinant of the success of innovations is the presence of interactions and flow of information amongst actors within the innovation system. As was mentioned by a number of respondents, maps of the taxi routes in Johannesburg do exist however, whether this knowledge is widely consumed can be questioned and this might be attributed to the power dynamics and relations amongst actors within the innovation system. This is even more interesting when realising the ultimate power of knowledge which, if shared, creates opportunities s to innovate.

Most important to the ability to innovate within the taxi industry is understanding the way the industry is governed, and therefore how knowledge and innovations within this sector are created, used and disseminated. Johannesburg and Nairobi seemed to have opposing governance structures within the taxi industry, which might therefore allude to the challenge that would exist in trying to replicate the matatus' route map. This requires further investigation. When innovating within the paratransit sector perceived value for users is significant. Innovators must question the value of the innovation before carrying it out. This value needs to be built into the system from the very beginning, to ensure the success of the project. Taxi owners must be involved in the innovation and use this process as the impetus to change the taxi industry for the greater benefit of taxi owners and operators as well as commuters. With knowledge of the possibilities of an innovation issues of sustainability can be dealt with through recycling, putting key governance and management systems in place.

Interaction and flow of information about the innovation should form the fundamental basis of innovations. Different actors such as universities, enterprises and civil society should interact and learn from one another as part of an innovation system. Since technology and innovation are intricately related, discussion regarding technology-based innovations and systems must ensure that no sector of society, especially that which the taxi industry serves, is excluded. Striving to eliminate inequality, innovations should be simple, user-friendly and easily accessible. Invariably, it will be through ensuring greater inclusion and participation that the innovation will instil a sense of ownership, and improve the user experience in the paratransit sector.

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Spatial

adjective
relating to, occupying, or having the character of space

10. REALISING SPATIAL TRANSFORMATION THROUGH THE CIVIC ACADEMY

By Adoné Kitching and Chido Muzondo

Introduction

While community participation in governance is widely regarded as positive, there are continual disappointments with the quality and outcomes of participatory processes. In many instances, the problem rests with state officials who offer lip service to participation, avoiding the uncertain consequences of real engagement. These officials may also have little concern with, or understanding of, the local knowledges that genuine engagement and partnership offer to development processes. But, there is an additional problem. Local residents often lack the information, knowledge, skills, contacts and resources to engage effectively with government authorities. As Marcus (2007:2) puts it, "[m]any individuals and interest groups are ill-prepared for participation in public planning processes and do not understand how municipal government functions, the key dilemmas it faces, or the urban planning concepts and procedures that shape economic, social and physical life".

The 'civic academy', sometimes also referred to as the 'citizen (or citizenship) academy' – two related but not entirely interchangeable terms with our preference for the former as it is not limited by any definition of who a 'citizen' might be – is a potential instrument to empower individuals and communities to engage more effectively in processes of governance by providing the information, knowledge, skills that make participation or community activism more effective. It also offers the opportunity for networking between local residents and government officials, opening the way for a blending of local and professional knowledge, and for new collaborations across the state-community divide.

This chapter is a response to the South African context where poor communities living in South African cities are still unable to fully enjoy the rights enshrined in the country's constitution. Although there is an official commitment to the making of inclusive cities, the planning and development often proceeds on a largely technocratic basis with participation often in name only. The recent proliferation of protest action highlights both the inability of the state to bring about tangible and lasting change in the urban environment, and the inadequacy of current structures of public participation for highlighting the needs, priorities and contributions of urban communities (Von Holdt et al., 2011).

South Africa's National Development Plan (RSA, 2011) does recognise the need for both spatial transformation and inclusive governance. The Plan "[requires] municipalities to provide as much information on local areas as possible on an open-access basis and support citizen training in spatial competencies" (ibid.:291). Prompted by the National Development Plan, Isandla Institute, a Cape Town-based public interest think-tank, has drawn on the idea of a 'civic academy' to propose a mechanism for both enhancing the capacity of citizens to engage meaningfully in development and creating platforms for deliberation and collaboration between residents and

local government. After reminding the reader of the challenge of urban spatial governance in South Africa the idea and history of the civic academy internationally is introduced. Isandla Institute's research on the civic academy to date is then introduced and used as a starting point from which to formulate critical questions regarding design and operationalisation of such an instrument within the South African context. Local and international case studies illustrate methodologies through which civic organisation, outcome-driven deliberation and collaborative engagement can be enhanced. The aim of this analysis is make practical recommendations for the refinement and implementation of the civic academy concept.

Inclusive Governance, Spatial Transformation and Idea of the Civic Academy

While there are many accomplishments to be celebrated in post-apartheid South Africa, particularly improvements in the provision of basic services, it is also necessary to acknowledge that the South African constitutional vision of a just and equal society is not yet achieved in South African cities. The National Development Plan notes that 'South Africa remains a highly unequal society where too many people live in poverty and too few work… The apartheid spatial divide continues to dominate the landscape' (RSA, 2011:24). In his analysis of the lingering effects of apartheid spatial planning, Berrisford (2011:249) insightfully puts it this way:

...each town and city in South Africa reflects not only an unequal distribution of infrastructure, amenities and accessibility, but the distances between the places in which the poor and the well-off live exacerbate that inequality.

The Presidential Twenty Year Review also picks up on the continuing tendency for South African cities to be divided by class and race, as it notes that "many of the state's urban settlement interventions and other affordable housing projects remain on the peripheries of cities" (The Presidency 2014:70). The urban poor are, for many reasons, relegated to the periphery of the city where there is limited access to economic opportunities. Even when the urban poor are able to access well-located land, their vulnerability does not improve due to precarious living conditions, exacerbated by a lack of secure tenure and limited basic services.

For Marcuse (2009:3), the reality of where resources are unequally allocated over space represents one of two cardinal spatial injustices, along with the involuntary confinement of any group to a limited space. Its inverse, spatial justice as defined by Soja (2009:2) is the "fair and equitable distribution in space of socially valued resources and the opportunities to use them", suggesting it is experienced not only as an outcome, but also as a process (Soja 2009:3). In similar vein, Marcuse (2009:3) contends, "[s]patial remedies are necessary but not sufficient to remedy spatial injustices – let alone social injustice." Following this line of thinking, the full realisation of spatial justice would imply both just outcomes, the equal distribution of resources over space, and just processes, the equal distribution of decision-making power between stakeholders. This is the stance adopted in this discussion. Spatial remedies must also be coupled with processes that promote justice.

While the value of public participation is recognised in South African policy and legislation, participatory processes related to human settlements development have not yet ensured that all urban residents, particularly the urban poor, have an adequate say in the creation of their living environments. Existing structures for public participation have encountered numerous challenges related to their design and management. Internal accountability systems have cultivated a 'compliance mentality' among local officials, and, as a result, public participation is often perceived as a box to tick, instead of being the result of a critical process that should significantly influence state action (Van Donk, 2012). A particular concern is that existing processes of public participation in South African cities are often poorly connected to the exercise of real power and decision making. Ward committees, for instance, were designed as "an attempt to ensure that democracy not only is the preserve of central parliament but that citizens have a stake in governance at the local level" (Naidu, 2011:1). And yet, according to Smith (2008:20), "available research suggests that ward committees are in general not having a significant influence on the decisions made by council and how resources are allocated at ward level".

The notion of a civic academy that focuses on spatial literacies offers a possible way of seeing spatial justice both as an outcome and a process. It puts forward a theory of change that is rooted in the recognition that citizens must participate in the development of urban living environments as equal partners. In doing so, the civic academy does not disregard the role of the state, but rather encourages greater emphasis on collaboration, and deliberative engagement, between stakeholders.

Evolution of the Civic Academy

The idea of the 'citizen' or 'civic' academy originated in the United States of America. Patrick (2000) relates the rise of civic education in the 1990s to a growing concern with civic apathy and a decline in direct political engagement. He calls for "education in citizenship for democracy" (Patrick, 2000:4). In the same edited volume, Battistoni calls for "civic education through service learning" as a "means to a more engaged and knowledgeable citizenry" (Battistoni, 2000:30). There was clearly a renewed interest in civic education in the United States, at least in the 1990s but, as Boyte (2000) reminds, there was an earlier history of civic education. He argues that civic education had its roots in the civil rights movement of the 1960s, and especially in the Civic Education Programme of the Southern Christian Leadership Conference. The citizenship schools that emerged from this programme taught mainly black children in the American South the skills of citizen action. This approach combined a philosophy of non-violent civil rights activism with a belief in the possibilities of American democracy. It was a period of experimentation in citizen democracy, and education for democracy, which was followed by the decline in engagement, described by Atherton (2000:94) as a "malaise in the nation's civitas".

In the 1990s the Center for Civic Education launched Project Citizen which was a curricular initiative in civic education designed to teach students how to monitor and influence public policy (ibid.). This initiative was, however, actually about inserting citizen or civic education in the existing curricula of schools and colleges. In addition to this, there was also a rise in community leadership programmes initiated by local government. A further development was the creation of separate citizen or civic academies. These academies were informed by the renewed interest in civic education and the community leadership programmes, but was also modelled

on existing citizen police academies (Morse, 2012). The citizen police academy had, in fact, originated in Great Britain in the late 1970s but had been taken up enthusiastically in the United States in the 1980s (Maffe and Burke, 1999). Like citizen police academies, 'citizen academies' were created by local governments and, like community leadership programmes, they covered a range of topics related to local government. However, while citizen police academies concentrated on the workings of the police department, a particular division of local government in the United States of America, citizen academies were geared towards increasing awareness and understanding of local government as a whole. Citizen academies also diverged from community leadership programmes in that they were less prescriptive about who was allowed to participate (Morse, 2012:86). In his analysis of citizen academies in North Carolina, Morse (ibid.) sets out three key features observed relatively consistently across a number of programmes. The first is that citizen academies require a significant investment of time on the part of participants. Second, they require substantial resources from local government as officials from different departments conduct different sessions of the programme. Third, and this is an important and positive point, citizen academies offer opportunities for hands-on learning. This observation is also made by Callahan and Young (2005:10), who show that:

The citizen academies provide comprehensive hands-on learning experiences that give residents an opportunity to interact with city management staff and learn about the challenges facing local government. A variety of interactive activities provide participants with a better understanding of the evolving principles advocated by the local government such as: cutting red tape; better customer service; creativity; shared decision making with community groups; and increased connectivity with other government agencies.

This hands-on approach allows for collaborative problem-solving, as citizen academies encourage participants to come up with solutions to existing challenges (Callahan and Young, 2005; Morse, 2012). Morse's analysis also considers what local governments hope to achieve through citizen academies. Three goals are highlighted, namely: transferring knowledge, increasing involvement and building community relations (Morse, 2012:91). Each of these goals have both basic and advanced manifestations. With knowledge transferral, the basic intended outcome is to share information about local government with citizens. Advanced outcomes however, include "feedback from citizens regarding governmental programmes and services" (ibid.:92); discussion on existing issues faced by communities; and engagement in dialogues that allow for mutual learning. Where citizen academies are conducted to increase citizen involvement in local government, an advanced outcome is for participants to serve on boards, commissions or councils (ibid.). A further advanced outcome of citizen academies is the establishment of strong relationships between citizens and local government, and the creation of opportunities "for local officials and citizens to engage in dialogue on important issues" (ibid.).

Civic academies were well popularised across the United States from the 1990s, with at least half the municipalities Morse (2012) investigated as having an existing or previous academy. While many of the civic or citizen academies in the United States of America maintained a broad focus on the workings of local government, some were more thematic. In particular, "citizen planning academies" had a strong focus on planning or spatial literacies (Marcus, 2007).

Recent research from the United States of America suggests that the outcomes of civic academies have been broadly positive, but that there are limitations and pitfalls. Marcus (2007:2) concludes that:

these academies do broaden citizen understanding of planning and government, foster improved personal relations between citizens and planners, improve citizen's (perceived) ability to influence decision-makers, and invigorate public interest in government boards and commissions.

However, Marcus also goes on to write that:

academies rarely integrate local and professional knowledge into what they teach and they face an inherent conflict between "capacity building" and "allegiance building".

The American experience of civic academies is clearly important for informing the possibilities and limitations of the model in contexts like South Africa. However, we do need to look at how the model has travelled internationally, and also at other models which may have similarities to the American-initiated civic academy. Importantly, other cases suggest that the civic academy need not always be initiated and controlled by local government, and also that the purpose of a civic academy may have wider objectives, including supporting local actors in more assertive and activist roles in relation to the state.

Civic education programmes resembling citizen academies have also been observed in the Dominican Republic, Poland and Zambia (Sabatini, 1998; Bratton and Alderfer, 1999; Finkle 2002). They differ from those found in the United States in that they were funded and conducted by non-governmental institutions rather than by local government (ibid.). Programmes such as Grupo Accion por la Democracia and Dialog Project in Poland illustrate the potential of civic education to move beyond merely sharing information to citizen empowerment and reconstituting governance relationships. Both Polish initiatives sought not only to enhance civic knowledge, but also to encourage collective problem-solving and cooperation between citizens and local government (Sabatini, 1998). In his analysis of the outcomes of civic education programmes, Sabatini (1998:25) finds that "[increased] participation appears to be related to mobilisation around particular goals rather than democratic norms" and "[is] also strongly related to programmes that promoted more direct participation compared to those that emphasised workshop or classroom-based approaches".

In 2011, South Africa's draft National Development Plan recommended that "every municipality should promote citizenship education and training to strengthen community organisation, planning and project management skills and competencies, perhaps through some kind of 'citizenship academy' run by a non-governmental organisation or educational institution" (RSA, 2011:258). While specific reference to a 'citizenship academy' is omitted in the final version of the document, the analysis and its component parts are retained. Prompted by the National Development Plan, and by their analysis of the shortcomings of existing mechanisms for public participation, Isandla Institute began to investigate what a citizenship academy could look like in the South African context. Given the National Development Plan's assertion that municipalities should carry the responsibility of ensuring that citizens are informed and organised, this organisation defined a citizenship academy as a local government-funded programme. As the Lublin Neighbourhood Revitalization Programme in Poland (Sabatini, 1998) did, Isandla Institute also emphasises spatial transformation as a critical outcome of a citizenship academy.

In June 2012, Isandla Institute hosted a national round table to assess the feasibility of such a programme to formulate its scope and functioning. In the input document presented at the event, Isandla Institute's analysis of the contextual challenges that warrant the creation of a citizenship academy was rooted in the recognition that "the consolidation of political participation and representation presupposes an active, engaged public that is able to claim rights, negotiate priorities and accept negotiated outcomes" (Isandla Institute, 2012:2). The organisation suggested that South African citizens are not adequately equipped with the capabilities necessary to make participation meaningful. Given that the state predominantly focuses its attention on addressing supply-side issues, the citizenship academy was thus put forward as a mechanism for shifting emphasis to demand-side challenges. The national government would make more funding available to already dysfunctional structures such as ward committees.

Participants at the round table discussion took issue with a citizenship academy that focused only on strengthening citizens' skills and competencies, without addressing the shortcomings of the participatory spaces in local government. While acknowledging the necessity to balance supply- and demand-side solutions, participants cautioned that such an approach "presumes that the problem is with citizens and not the state" (ibid.:18). In its contribution to the 2013 State of Local Governance Publication, Isandla Institute responded to these concerns by recasting the citizenship academy as a platform for both learning and deliberation (Görgens et al., 2013). At that point, the intention was "to create structured spaces where community groups, civil society organisations, state officials, politicians, and progressive professionals [could] be equipped with relevant skills and information, and have the opportunity to debate possible solutions to social and technical problems, thereby deepening their understanding of the motivations and positions of other stakeholders" (ibid.:40).

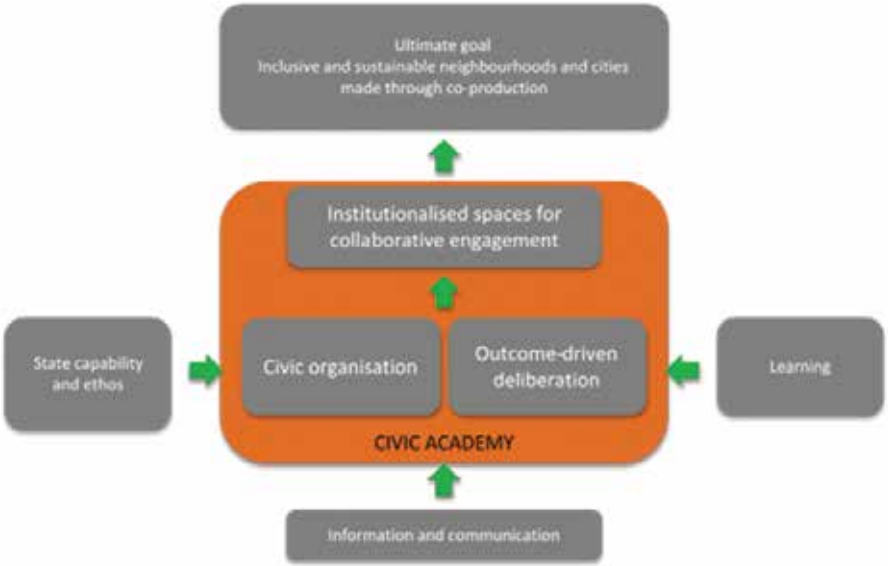
Between August 2013 and July 2014, the institute built support for what became known as the civic, instead of citizenship, academy through consultative forums. While the idea remained largely conceptual, Isandla Institute's analysis of contextual challenges, as well as its proposed solution to these, was received well. In developing the latest iteration of the civic academy, the institute took the definition set out in the 2013 State of Local Governance Publication (Görgens et al., 2013) as a starting point for considering the practical workings of such

a mechanism. At the time of writing, the civic academy is construed as a tool for realising the objective of liveable, inclusive and sustainable cities that result from genuine co-production. It is defined as a local government-funded programme aimed at enhancing citizens' capacity to act as partners in development and to create platforms for deliberation and collaboration between citizens and local government.

Current Conceptualisation of the Civic Academy

In a concept note entitled A Civic Academy: Towards better spatial outcomes through enhanced civic activism and deliberative local democracy, Isandla Institute (2015) identifies six critical 'missing ingredients', the absence of which impedes the achievement of transformative goals. The document suggests that the civic academy could address three of these ingredients, namely: civic organisation, outcome-driven deliberation and institutionalised spaces for engagement (see Figure 10.1).

Figure 10.1: Missing ingredients in local governance in South Africa and positioning of civic academy



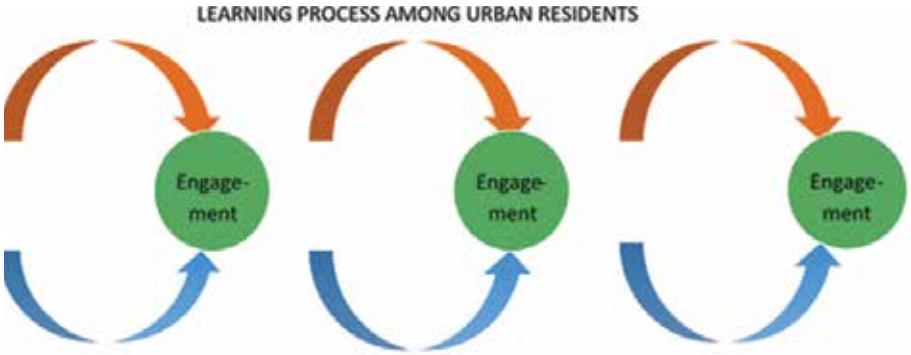
Source: Isandla Institute (2015)

As with previous versions of the concept, the intention is for the latest iteration of the civic academy to be funded by a municipality and conducted by a non-governmental or tertiary institution. This is to ensure that municipalities enact the responsibility stipulated in the National Development Plan, while also allowing the civic academy some independence from the state. On the one hand the civic academy is designed to empower citizens to engage meaningfully in the making of their living environments. On the other, its mission is to create spaces for collaborative engagement where urban residents and the state can work together to find solutions to prevailing urban issues. Participants in the civic academy therefore engage in a process of learning, where the skills necessary to organise for and deliberate about development are fostered. To strengthen citizens' ability to organise, the civic academy will emphasise skills like community mobilisation, electing leaders and coordinating and documenting meetings. In this way, the programme will aim to enhance skills that allow citizens to engage actively in the planning and design of their environments. Through learning skills of enumeration and community mapping a better understanding of the prevalent challenges in their neighbourhoods and settlements will stand the citizens in good stead when negotiating with local government authorities. It is these skills that improve spatial thinking that depends on an understanding of the concepts of space, access to tools of representation and an ability to engage in processes of reasoning (Bednarz and Kemp, 2011). To enhance outcome-driven deliberation, the civic academy will also strengthen citizens' ability to deliberate and negotiate.

The learning processes are also intended to cultivate a sense of readiness among urban communities to interact, collaborate and partner with government stakeholders. While Isandla Institute recognises that government itself has to learn and unlearn systematically, it is beyond the scope of the civic academy to take responsibility for such a process. Instead, the concept note suggests that other institutional bodies, like the Department of Cooperative Governance and Traditional Affairs and the South African Local Government Association, are mandated to ensure that local government engages meaningfully with their constituents (Isandla Institute, 2015).

Furthermore, the learning process will be complemented by and advanced through moments of collaborative and deliberative engagement processes where communities and local government officials can co-produce solutions to particular local challenges (see Figure 10.2 below). The intention is for these platforms of engagement, along with the learning process that precedes and follows it, to be outcome-orientated. If, for instance, a community identifies early childhood development as a critical issue an effective solution has to be design. Essential to the learning process is to ensure that residents have access to relevant information regarding their city's commitments to education. It will then have to hone in on the skills needed to plan for early childhood development centres and build the community's capacity to negotiate with government stakeholders. During moments of collaborative and deliberative engagement communities and government stakeholders will then work together to develop viable strategies for addressing the issue. Roles and responsibilities will have to be set and an action plan produced. These moments of engagement will be designed to enhance stakeholders' understanding of one another's perspectives and positions by allowing space for open discussion and for the negotiation of tensions.

Figure 10.2: Learning processes and engagement between communities and local government



Source: Isandla Institute (2015) (learning processes interspersed with moments of deliberative and collaborative engagement between communities and local government)

It is this dimension of the civic academy – facilitating the institutionalisation of regular forums for engagement and co-production – that offers an innovative approach to urban governance issues. While existing initiatives, both state- and civil society driven, endeavour to empower urban residents through education and training, these have not yet adequately dealt with the need for formalised spaces of collaboration and deliberation among stakeholders as equal partners in development.

Framing the Research

At the outset, interest lay in determining how urban innovation could best contribute to the refinement of the notion of a civic academy, in theory and in practice. The central emerging research question was how can the civic academy be operationalised in the South African urban context? It was clear that much work was required to better understand the tools and methods needed prior to the civic academy becoming functional. In an attempt to answer this question, local and international case studies that offer insight into two main issues were investigated. First, effective civic education methodologies which, as Sabatini (1998) suggests, involve a variety of activities ranging from voter education to the creation of civil society organisations (see Box 10.1 below). The interest of the civic academy resonates with the definition of civic education as those programmes that "explicitly seek to convey democratic values and/or promote the knowledge, skills and values necessary for democratic participation" (ibid.:5). Second, also considered was the institutionalisation of engagement between urban communities and the state. A desktop study and a review of relevant literature as well as personal correspondence with key informants[6] involved in local interventions profiled in the paper provided information.

[6]*We acknowledge the contributions of Jak Koseff (Pers. Comm., 2015), Carohn Cornell (Pers. Comm., 2015) who provided access to learning materials used in the Fellowship Programme (Pers. Comm., 2015), and Gavin Andersson (Pers.Comm., 2015).*

Box 10.1: Forms of civic education

Formal civic education: Incorporated into the formal school system, these programmes often weave teaching about democratic institutions, principles and practices into courses that emphasise national identity and unity.

General civic knowledge, value and skills: Often informal courses, these programmes seek to increase knowledge of democratic principles and a country's democratic institutions and practices. They promote democratic values especially compromise and tolerance. They may also teach skills in a limited fashion. The emphasis is on workshop learning, with the idea being that the transfer of basic knowledge, values and skills will translate into participation outside of the classroom. Fundamental is the idea that a basic set of attitudinal and knowledge-based are prerequisites for participation.

Issue-based or rights knowledge: Usually informal courses, these seek to raise awareness of particular political issues, and to increase knowledge of democratic, political and human rights. They may also teach skills useful for addressing the issues at hand. Trainees maybe encouraged to participate, but actual participation is not necessarily an element of the programme. Issue-based programmes deal with concerns like corruption. Rights programmes focus typically on groups whose rights are seen to be unfairly limited, such as women, certain ethnic groups, the economically underprivileged.

Voter Education: These programmes educate citizens on how to register and vote, and promote the sense of civic duty to vote, monitor the elections and to respect the outcomes.

Civil society creation and mobilization: These programmes seek to mobilise citizens and build constituency for civil society. In the classroom, the emphasis is on issue awareness and conveying knowledge of the political system and rights. Civic education in these cases is used as a means to generate participation in a particular civil society organisation, to build and mobilise membership.

Community/Group problem-solving: These seek to promote knowledge and skills for the exercise of rights and the use of democratic processes and institutions established for specified purposes. Examples are programmes in local communities to increase participation in local government matters or efforts to develop local community groups' abilities to address community issues. Participation is immediate and focused. Classroom work may be limited.

Source: Based on Sabatini (1998:5-6)

The research was shared with a reference group[7] during a meeting in August 2015 and served as a platform for meaningful feedback since the participants had been involved with the civic academy project. During round table discussions held in September 2015, the findings of the research were also shared with representatives from civil society organisations based in Cape Town and Gauteng.

[7] *Attendees included Edgar Pieterse, Mirjam van Donk, Hopolang Selebalo, Sonwabo Gqegqe, Scott Drimie, Xoliswa Dilata and Goitse Konopi.*

Lessons from Existing Practice

As illustrated earlier in Figure 10.1 on, Isandla Institute envisions the civic academy as a programme that will address the need for civic organisation, outcome-driven deliberation and institutionalised spaces for collaborative engagement. In this section, we investigate case studies that point to methodologies used in addressing each of these. While the essence of civic academies is not necessarily resembled, valuable insight is offered into the way in which capacity enhancement and collaborative engagement have already been undertaken. This is preparation for the discussion on the implications of the design it will implement that summarises the seven key lessons emerging from the analysis of the case studies looked at for this research.

Enabling and strengthening civic organisation

The ability to organise around pressing needs such as housing and access to basic services is essential for poor urban communities fighting for spatial justice. In her analysis of the impact of relocation on racial integration in Cape Town, Oldfield (2001) describes instances where communities have claimed rights, challenged the state and worked towards the betterment of a shared living environment through local organisations. According to Oldfield, the struggle for housing in Delft South built trust among families in the settlement, and contributed to racial integration. Indeed, she claims "[race], political affiliation, and individual and group politics were put aside explicitly in order to prioritise and organise the invasion of housing in Delft South" (ibid.:197).

To organise effectively, particular capacities are required on the part of urban communities to ensure the credibility of local structures that will influence development processes realistically and reliably. Primarily, leadership capabilities that adequately represent the interests of members in the organisation and make decisions on their behalf are essential. However, that the members accept leadership structures and decisions willingly (ibid.) too is as important. A shared history or a collective experience that connects members is a valuable asset. Indeed, community organisations that are created merely to fulfil project requirement rarely achieve significant influence, since they lack such a foundation (United Nations Human Settlements Programme, 2011) that unites and strengthens. Millstein (2008) also suggests that, in South Africa, the state requires community organisations to produce a constitution as well as a register of members as evidence of their legitimacy. While community organisations may claim legitimacy based on internal relationships and democratic processes of decision making, those that hope to enter into meaningful dialogue with the state must have the necessary capacity to comply with formal requirements. Finally, community organisations require the capacity to express their struggles, and establish networks through which activities can be coordinated (Millstein, 2008:39; United Nations Human Settlements Programme, 2011).

The Organization Workshop methodology that the Seriti Institute employs in South Africa offers important insight into the ways in which community organisations can be enabled and strengthened. The Seriti Institute is a non-profit organisation, established in 2009 that aims to "promote the use of community organisation methodologies to create socially healthy and economically vibrant communities, and thereby promote sustainable livelihoods and prosperity" (Seriti Institute, 2011).

The Seriti Institute is well-known for its role as an implementing agent for the Community Works Programme, the goal of which is to address unemployment and poverty by creating regular work opportunities in economically marginalised areas (ibid.). The institute also works towards the achievement of sustainability and prosperity through a learning and capacitation programme for co-ordinators of the Community Works Programme's, through the Youth Development Network, and through its Organization Workshop methodology (Carmen and Labra, 2011).

The Organization Workshop is an exercise that strives to promote economic and social development through training large groups of people (Seriti Institute, 2011). Its emphasis is on organisational methods, as it requires participants to act collectively as an enterprise. The Organization Workshop is defined as "a practical exercise in the creation of a real, but temporary enterprise aimed at facilitating the development of organisational consciousness through a planned acceleration of practice in a large group that needs to act in an organised manner" (Carmen and Labra, 2011). Through skills development and vocational training offered throughout the practical exercise, it is used to address extreme poverty and joblessness (ibid.). The exercise takes the form of a workshop that runs over six weeks, and between 150 and 350 participants can attend a session.

The Organization Workshop process begins with the identification of prevailing local issues. Mr. Andersson (Pers. Comm., 2015), the Director of the Seriti Institute, explained issues may include a lack of services or the provision of adequate infrastructure or educational and recreational facilities. Increasingly the need to address social issues like public and domestic violence, AIDS prevalence and food scarcity has arisen. The first step involves determining the priority issues in which the community members at the workshop form a Participants' Enterprise. The organisation engages the community in an extensive consultation process. This serves as a formal entity that represents and makes decisions on behalf of the community. Members of the Participants' Enterprise carry out the work needed to address the issues identified through public consultation and interact with the Facilitators' Enterprise (Seriti Institute, 2011). Participants, namely volunteers from the community with the Seriti Institute paying for time and labour, are given a free rein in the establishment of their Participants' Enterprise and therefore make independent decisions on its internal leadership structure and how funds are spent. Those serving on the Participants' Enterprise are paid according to market standards for the work undertaken (Carmen and Labra 2011), and they must determine how income is divided among the participants.

The Seriti Institute provides the resources required to complete the work in accordance with the Organization Workshop methodology. The cost of administrative work and construction material and equipment is met. Participants are also provided with food for the first few days of the Organization Workshop, after which they provide for themselves. Participants can work full days knowing that their children are taken care of as the Seriti Institute also provides a child-care service for the duration of the Organization Workshop (Andersson, Pers. Comm., 2015).

In addition to working a minimum of six hours per day, participants are also required to attend daily lectures on the Theory of Organisation offered by the Institute. According to Carmen and Labra (2011), the "lectures take place for one and a half hours a day for a period of two weeks, and enable participants to gain a perspective on their historical, social and economic context; working of the market economy; current patterns/models of organisation; as well as individual and collective behaviour". Mr. Andersson (Pers. Comm., 2015) mentions that the Theory of Organisation lectures inform the different ways in which participants choose to organise their activities during the Organization Workshop. Practical experience of managing an enterprise accompanies the lectures that present the necessary theoretical underpinnings of community organisation. Learning through going through this process prepares participants to implement what they learned once the workshop is over.

Positive outcomes of the Organization Workshop the Seriti Institute facilitates include the improvement of local living conditions. Since the Organization Workshop begins by identifying prevalent local challenges in consultation with the community, it ensures that the work the Participants' Enterprise undertakes meets the needs of local residents. During an Organization Workshop conducted in Diepsloot in 2010, for instance, a school was renovated, a gardening enterprise was assisted to expand by three hectares of production, six kilometres of crime hotspots were cleared of reeds and long grass, and four safe zone crossings were built for schoolchildren along a stream (Seriti Institute, 2011 that also has details of the outcomes in various communities). Furthermore, the Organization Workshop equips participants with the knowledge and skills that they need to establish new enterprises and to undertake development work, thereby preparing participants for entry into the formal employment market.

Examples given suggest that the skills required to effectively build community organisations are best taught through practice. This is also picked up in the Jozi@work initiative instigated by the Office of the Executive Mayor of Johannesburg (COJ, 2014; 2015) (Box 10.1). The Seriti Institute's Organization Workshop allows participants to make crucial decisions about leadership structures, decision-making processes, division of labour and the distribution of resources. Hence participants are able to test out various ways of organising themselves, and to experience first-hand the challenges that may arise from managing multiple interests and personalities. Importantly, evidence given shows that theoretical knowledge is a valuable resource for communities who use it to shape their own organisations. If a civic academy intends to strengthen citizens' ability to organise, both its content and processes must be geared to practical problem-solving. A civic academy must engage citizens in exercises that enhance their capacity to identify needs, to design solutions, and to organise themselves in ways that allow for the efficient implementation of projects that enhance the community's state of well-being.

Box 10.2: Harnessing civic organisation for service delivery

In September 2014, the Office of the Executive Mayor launched a programme called Jozi@work (Joziatwork 2015). It aims to address two prevalent issues faced in South African cities: inadequate service delivery and unemployment by lowering barriers to entry into the formal employment market for urban residents. Jozi@work sets up new supply chains that allow community co-operatives and micro enterprises to bid for work packages that directly address local service delivery challenges.

The programme is based on the recognition that poverty is multidimensional, and that it manifests not only as a 'deficit in basic living conditions, income, and education, but as a more complex and prohibitive deficit of capabilities' (Office of the Executive Mayor 2014). In addition to lowering barriers to entry into the formal market, the programme also aims to develop residents' organisational, administrative and vocational capabilities. To this end the Office of the Executive Mayor set up seven regional forums where residents are provided with a space to deliberate over possible approaches to particular service delivery challenges and to receive details about available work packages.

The programme's operational model also includes the appointment of sectoral capability support agents that act as members of the regional forum and provide administrative and compliance support, as well as vocational training, to community co-operatives and micro enterprises. The capability support agents are also responsible for implementing the apprenticeship programme, through which unskilled residents can become part of the City of Johannesburg's procurement process. Those enrolled in the apprenticeship programme are placed with existing community co-operatives or micro enterprises. In this way, they add to the labour force and receive on the job training. Apprentices are also given access to instructional material compiled by the capability support agent. These are to be viewed after hours or during break times, and apprentices are expected to access the instructional material using their own devices or communal viewing areas set up by capability support agents. The programme concludes with an online certification process, or skills developed while working, which may be certified through recognition of prior learning.

Source: COJ (2014; 2015)

Enabling and strengthening outcome-driven deliberation

Numerous authors agree that citizen deliberation is critical for the full realisation of democracy (Pimbert and Wakeford, 2001; Fung, 2006:74; Carpini et al., 2004). While a representative system is meant to ensure that all citizens have a voice, it "has been heavily criticised for its inability to protect citizens' interests" (Pimbert and Wakeford, 2001:23). The interests of the poor often fall by the wayside as representatives fail to take heed of their needs and priorities. Failure to adequately represent the interests of the poor results in a crisis of legitimacy (ibid.). Public participation and deliberation serve as mechanisms through which these gaps in the representative system may be filled, as they allow citizens greater influence over decisions that affect their lives.

As Carpini et al. (2004:317) suggest, deliberative democracy is not considered to be an alternative to representative democracy, but rather the expansion of representative democracy. Drawing on Gastil (2000:4), Carpini et al. (2004:317) note that:

[Full] deliberation includes a careful examination of a problem or issue, the identification of possible solutions, the establishment or reaffirmation of evaluative criteria, and the use of these criteria in identifying an optimal solution. Within a specific policy debate or in the context of an election, deliberation sometimes starts with a given set of solutions, but it always involves problem analysis, criteria specification, and evaluation.

The value of deliberation in a democracy lies in its effect on the perceptions and behaviour of both citizens and the state. Deliberation ensures that all citizens have a voice (Pimbert and Wakeford, 2001), and that they are able to participate in and influence decision-making processes. Deliberation may therefore also increase citizens' faith in democratic processes, and enhance perceptions of legitimacy (Christiano, 1997:244). Importantly deliberation helps citizens and the state to understand not only their own needs and preferences, but also the needs and preferences of others (Christiano, 1997; Pimbert and Wakeford, 2001; Carpini et al., 2004). Deliberation contributes to the cultivation of attitudes of tolerance, and of a propensity for negotiating trade-offs in the light of a deeper appreciation for the realities of others.

Of course, deliberation is not without limitations. Fung (2006) suggests that participatory ways of decision-making are complex; even where deliberative engagement between stakeholders occurs, the distribution of power is an important factor that determines the efficacy of the engagement for achieving just outcomes. Indeed, Pimbert and Wakeford (2001) note that those who facilitate deliberative processes hold disproportionate power over its outcomes. Facilitators are those who decide what will be discussed, and how issues will be framed. Inevitably, "[the] initial choice of problems and definition of criteria drives the end results" (ibid.:27). Effective deliberation requires the commitment of willing stakeholders who accept deliberation over other methods of public engagement as the best course of action. In the absence of such willingness, deliberation is insufficient (Fung, 2006).

Ndifuna Ukwazi's Fellowship Programme is an example of an initiative through which citizens' capacity to deliberate is enhanced. Ndifuna Ukwazi is a Cape Town-based activist organisation that promotes justice and equality through research and strategic litigation (Ndifuna Ukwazi, 2015). Ndifuna Ukwazi supports other activist organisations so that they deliver credible campaigns substantiated with reliable evidence. It also equips leaders with competencies needed to engage in discussion with the state. The organisation is closely affiliated to the Treatment Action Campaign and the Social Justice Coalition. In 2015, Ndifuna Ukwazi began offering short courses after an internal evaluation of their Fellowship Programme that indicated that community activists struggled to commit to extended courses if they had a job or were enrolled for formal studies.

The Fellowship Programme comprises a series of short courses mostly attended by practising activists from affiliated organisations. These courses allow attendees to gain deeper insight into their struggles through training in critical thinking, reading and writing. The Fellowship Programme encourages learning that draws on, and is relevant to their everyday experiences. The available courses include 'Politics, Law and Society', 'Struggle Histories for Activists', 'Community Police Forum Training', and 'Local Government and Basic Services'. All courses are coupled with an 'English for Confidence' module that aims to strengthen attendees' ability to speak, read and write English, and to develop their critical skills. The 'English for Confidence' sessions are conducted according to a set of guidelines that determine the interaction between facilitators and attendees, and between attendees as classmates.

The prescribed guidelines encourage students to ask questions; to feel comfortable to express themselves despite the trouble they may have pronouncing English words; to treat one another with respect; to look after work materials distributed by Ndifuna Ukwazi for use as resources by local organisations or consulted again after course completion; and to turn off their cell phones during sessions. In this way students develop their ability to facilitate discussion and negotiation between members of their organisations, as well as to utilise policy and legislation as tools for making assumptions to support an argument.

During 'English for Confidence' sessions that are explained in detail here, facilitators give students practical assignments that encourage storytelling in a structured manner. One such an assignment includes pair interviews. Facilitators sketch a scenario to be used for the assignment, in which attendees simulate being interviewed on BBC Africa Service radio. This channel broadcasts in English to communities in urban and rural areas across Africa. Each pair of students is given a list of twenty-two questions pertaining to life in their community, and to the work of their community organisations. Students take turns to ask and answer questions. In this way they practise articulating their experiences. Those participating in the programme are also tasked with presenting their narratives in written format. They receive individual feedback on their work. At the end of the course, Ndifuna Ukwazi collates attendees' personal narratives as a publication called Activists Write: 'Ndifuna Ukwazi fellows write about their lives'. In this way, learning and action become rooted in combination and a deeper understanding of their own context and their position in it develops.

The 'English for Confidence' module also covers context-specific, thematic issues such as 'Gangsterism in communities'; 'Exploring hidden/forgotten histories in our communities and our city'; and 'Voices of activists from around the world, past and present'. During learning sessions facilitators rely on various methods to elicit discussion on these themes. After engaging with material related to the theme, students may be asked to write and present monologues, rap songs, poems, dramas or speeches. The methods used during these learning sessions are valuable not only for strengthening activists' ability to speak, read and write English, but also for cultivating their ability to engage in deliberation over current local issues. In presenting their work to the group, the participants share their experiences and perspectives and are, in turn, exposed to experiences and perspectives that are likely to differ from their own.

Finally, the 'English for Confidence' module promotes deliberation by equipping attendees with skills that they can use to facilitate discussion at their local branch or community meetings. During workshops attendees are exposed to various learning methods like pair discussions, group brainstorming, moving debates and roleplaying. With each of these methods the intention is to encourage discussion about immediate issues that attendees face in their living environments. The stories or statements used during exercises can therefore be tailored to reflect local realities. Attendees are given guidelines on how to structure and coordinate these discussions, and are encouraged to do some research to ensure that their material is evidence-based. In order to assist attendees in implementing these methods at their local branch or community meetings, Ndifuna Ukwazi has developed a booklet entitled 'Stories about Youth Gangs: Ideas for group work in branch meetings'.

The booklet offers further information on how to use the methods set out during the 'English for Confidence' module, as well as over forty stories from young gangsters and other community members that attendees can draw on during their meetings. Another example that illustrates the value of deliberation is the 'Imagine Durban' initiative undertaken in eThekwini Municipality between 2006 and 2009. During this time the municipality set out to develop a comprehensive vision for the city's future, to formulate an action plan for realising this vision, and to educate citizens about sustainability. An interdisciplinary team drawn from the Policy and Research Unit, the Planning Department, the Communication Office and the Economic Development Unit within the eThekwini Municipality drove the 'Imagine Durban' initiative.

Throughout the process the team also recognised the value of drawing on the experiences of multiple stakeholders with an interest in the city's future. The team partnered with communities, schools, tertiary education institutions and local businesses to design and bring to life a collective plan.

During the scoping phase, a service provider was appointed to conduct a survey assessing citizens' priorities for the future. The research was supplemented by the distribution of postcards at public libraries, local restaurants and other venues that the public visited regularly. The city's residents were asked to send postcards back to the municipality with details of their aspirations for their neighbourhoods. Using the data gathered through surveys and postcards, the 'Imagine Durban' team distilled six draft goals as a starting point for their engagement with stakeholders. The goals were: to create a safe, accessible and prosperous city where everyone enjoys a sustainable livelihood; to celebrate cultural diversity, arts and heritage; to ensure a more environmentally sustainable city; and to foster a caring and empowering city (eThekwini Municipality, 2009).

Following the process of priority identification, stakeholders from across the city were invited to reflect on the draft goals and to participate in the development of potential strategies for realising these. In their reflections on the 'Imagine Durban' initiative, the team noted that these engagements differed from other participatory planning platforms like the Integrated Development Planning forums. Significantly, they relied on stakeholders to produce action plans instead of merely asking them to comment on plans already developed by officials (ibid.). By drawing the city's residents into the conceptualisation of a long-term development vision, 'Imagine Durban' public buy-in and commitment to the process was accepted from the beginning.

As noted, deliberation serves as an important strategy for ensuring that citizen voices are heard. In the case of 'Imagine Durban', deliberation over priorities for the city's future as well as over the most effective means of achieving a collective vision influenced the municipality's planning. As with the Organization Workshop model and the Ndifuna Ukwazi Fellowship Programme, participants in the eThekwini task team action learning methods were applied. All these initiatives also illustrate the value of both reflections associated with a personal narrative approach and the merit of empowering citizens through offering contextually relevant content.

Enabling and strengthening collaborative engagement

Communities that are enabled to organise themselves and engage in deliberative processes are indeed in a better position to negotiate improved spatial outcomes. However, if urban residents are to play a meaningful role in the co-production of South African cities, fundamental changes in governance relationships are required. It is the intention of a proactive civic academy to contribute to the realisation of a shift of entrenched thinking by creating institutionalised space for deliberative and collaborative engagement.

An initiative undertaken in Caracas in Venezuela offers valuable insight into the workings of spaces of co-production and collaboration. McMillan et al. (2014) trace the development of technical water committees (namely Mesas Técnicas de Agua), which first emerged in Caracas in the 1990s and were institutionalised across Venezuela by 1998. McMillan et al. (ibid.:203-204) describe the water crisis experienced in the city at the time:

Water service problems have long plagued Caracas, particularly the city's populous hillside barrios (low-income, informal settlements). Prior to 1999, government water service policy was highly discriminatory. It prioritized building networks in the formal neighbourhoods and within the formal city, and it privileged the high-income areas over the middle-income areas (Cariola and Lacabana, n.d.:6). The result is the present situation of 'water apartheid': the upper- and middle-class areas, where the majority of the residents self-identify as 'white' according to the most recent census, benefit from high-quality services, while the lower-income areas, where most residents identify as 'mixed-race', develop informally in the absence of attention from the state.

Before the establishment of the technical water committees, the only recourse for poor barrios residents was protest (ibid.:204). Under the auspices of a progressive mayor and his 'change team' however, the technical water committees were mooted as mechanisms through which to ensure the direct participation of the urban poor in the design and management of service solutions. Communities living in the barrios can establish a technical water committee through a three-step process: first, conducting a census; second, planning or sketching; and third, diagnosis (ibid.:208). The official utility supports communities throughout this process. The information gathered has a dual purpose that benefits the utility: the environments where services are to be provided can be analysed; and it also serves an important political function in that it allows communities to position themselves as meaningful partners in the development process.

Regular community water council (Consejo Comunitario de Agua) meetings were held in the city (ibid.). During these meetings, technical water committees met with utility staff to discuss service issues, as well as adequate solutions to these. The authors suggest that the three key functions of these meetings were "to prioritise issues from identified needs; to organise solutions and create work plans; and to follow up on work" (ibid.).

Through these regular engagements, community members and utility staff began to work together to identify pressing needs in the barrios and to produce solutions that could be implemented and monitored in a partnership. McMillan et al. describe the success of the processes of the technical water committees and regular community water council meetings by referring to the management of "water distribution in areas where piped water is delivered to households in rotation" (ibid.). Because the barrios are built on steep inclines, the city is unable to pump water to all areas simultaneously. Water is therefore delivered periodically. Before the development of the technical water committees and regular water council meetings, communities did not have access to a schedule with which they could determine when they would receive water. After the institutionalisation of these mechanisms however, "engineers work with communities to deliver water according to a predetermined schedule, so that communities can better plan their water storage" (ibid.). An important outcome of the technical water committees and regular water council meetings is therefore also the breakdown of barriers between communities and perceived experts (McMillan et al., 2014). Through these mechanisms barrios residents are recognised as the custodians of invaluable knowledge that contributes to the improvement of service delivery.

"It is not uncommon for community members to contradict an engineer's proposals, explaining to them why a certain proposed solution would not work" (ibid.:208).

This case study offers three key lessons that are particularly relevant for the refinement and operationalisation of the civic academy. First, it highlights the importance of political backing for the realisation of transformation in urban governance systems. While the initiative was highly successful when first implemented by the administration of the progressive mayor, it was disbanded when he lost to a conservative counterpart in the following election (McMillan et al., 2014). It was only when Hugo Chavez was elected as President that the technical water committees were again pursued in the interest of addressing the water crisis in the country. Under his administration, the initiative became institutionalised and still operates today. Second, the case study points to the importance of increased public participation occurring in parallel with increased public investment in service provision (ibid.:207). Third, the Caracas case shows that platforms for collaborative engagement can contribute to the recognition of different forms of knowledge as valuable in the process of spatial transformation. These platforms build trust between stakeholders, and allow for genuine co-production when the urban poor participate in development as equal partners.

Implications for Design and Implementation of the Civic Academy

The local and international initiatives examined in this chapter offer the following practical recommendations to guide further research and development of the civic academy concept.

Implement through partnership

While state commitment is vital to the establishment of a civic academy, it is also important that the initiative be undertaken through a partnership between a municipality or local form of government and one or more non-profit actors. As shown above, non-profit actors bring invaluable orientations, experiences and capacities to the table. These are essential in the process of reconstituting governance relationships and realising spatial transformation. A key lesson from 'Imagine Durban' is, in fact, that the involvement of civil society actors lends credibility to state processes (eThekwini Municipality, 2009). In practice, this means that stakeholders should formalise their partnerships through memoranda of understanding that detail roles and responsibilities from the outset of the agreement.

Make adequate resources available

The process of enhancing community capability is a costly one. It requires the involvement of a skilled facilitator who can manage and guide the learning endeavour. Costs are also incurred for materials and for additional requirements such as food and/or transport for participants (see eThekwini Municipality, 2009; Seriti Institute, 2011). The same holds true for the process of coordinating spaces for collaboration and deliberation. It is therefore necessary that adequate resources are available to support learning and such engagement. As demonstrated in the Caracas case study, this is a necessary and worthwhile investment for a municipality to make.

Ensure diversity among participants

The initiatives of a civic academy will target marginalised urban residents, because spatial transformation is a priority in the area within which they live. Residents are exposed to precarious living conditions, and must be drawn into processes that will enable them to make tangible changes to their living environment. Hence their neighbourhoods will become better integrated into the urban fabric. As with the Ndifuna Ukwazi Fellowship Programme, the civic academy will target participants who are already involved in civic organisation in some way. As such, the selection will be skewed in favour of a particular profile. It is necessary that careful attention be given to the selection process, and to the identification of ways in which representivity can be ensured.

Adopt a varied, context sensitive learning methodology

Ndifuna Ukwazi's Fellowship Programme and Seriti Institute's Organization Workshop both use various learning methodologies to enhance community capability. Ndifuna Ukwazi strengthens capability through action learning methodologies, such as role play and debate, as well as classroom style learning. The content of the Fellowship Programme, as well as the methodologies through which it is communicated, is tailored to suit the context of participants in the programme. The inclusion of learning methods and programmes is an important aspect of the function of a civic academy.

Learning material as well as classroom activities must be relevant to the lives of the participants to ensure that their experience of the programme offered is appropriate and applicable. Seriti Institute uses both action learning and classroom style learning methodologies. Given the positive impact the theoretical content is expected to have on the participants in the Organization Workshop, effective programme planning is an imperative. Classroom style learning is a recognised teaching strategy for communicating complex principles that can be altered and applied in action. However, from this research, it is recommended that the civic academy adopts a variety of methods. Equally important is that, throughout the design of its curriculum, serious attention be given to the context in which the programme will be implemented.

Dedicate time to learning prior to engagement

The Seriti Institute's Organization Workshop, Ndifuna Ukwazi's Fellowship Programme and the 'Imagine Durban' initiative illustrate the importance of dedicating adequate time to capacity building to ensure that citizens acquire particular skills and build their confidence to engage and negotiate with the state. While deliberation and collaboration between citizens and local government is critical, it is also necessary that citizens enter into engagements as capable partners.

Make moments of engagement outcome-driven

Seriti Institute's Organization Workshop, as well as the technical water committees in Caracas, illustrate the value of collective problem-solving and outcome-driven processes. For the moments of engagement between urban residents and local officials to be meaningful, it is necessary that they be designed to address particular challenges in the urban environment. From the outset of a partnership agreement, participants must agree on the intended outcomes of their engagement, irrespective the nature of the initiative, whether it be an action plan for addressing crime in the neighbourhood, or a new ablution facility. The adoption of specific outcomes will allow for greater clarity regarding the expectations and responsibilities of different actors in the process and will allow parties to hold one another accountable for a meaningful report back. Outcome-driven engagement also ensures that the residents do have an opportunity to voice their opinions concerning the development agenda. To date, current platforms for public participation have limited this option.

Establish clear rules of engagement for moments of engagement

A clear set of rules for engagement should be prepared prior to the implementation of the project at the first encounter between urban residents and local officials and maintained for its duration. This will enable a civic academy to begin to make a significant contribution towards the reconstitution of governance relationships in South African cities. On the one hand, rules of engagement as determined prior to implementation should be universal in that they are be applicable across all cities and neighbourhoods. This will ensure that the essence of the programme is maintained despite contextual variations. On the other, however, rules of engagement

should also be negotiated by participants and will thus inevitably be informed by local realities. In this regard, rules guide interpersonal communication, and ensure buy-in to a collectively defined process.

Conclusion

For spatial transformation to be realised in South African cities, it is necessary that governance relationships be reconstituted in ways that allow for deliberation and collaboration between citizens and local government. As it stands, the urban poor are barred from participating meaningfully in development processes. As a result, development outcomes are rarely considered to be responsive to their needs. On the one hand, some citizens lack the skills needed to act as partners in development and structures for public participation. On the other hand, opportunities for genuine collaboration between citizens and local government are often not available. At this juncture, South Africa needs a catalyst through which inclusive and responsive development practices and governance relationships become invigorated. This could bring about real and lasting change in South African cities. In this chapter, the mechanism the Isandla Institute promotes as a civic academy is seen have the potential to serve as that catalyst.

Morse's (2012) work on citizen academies in the United States indicates that such a mechanism is valuable for informing citizens about the workings of local government and cultivating democratic attitudes. The civic academy concept cuts to the heart of challenges facing South African cities in three special ways: by encouraging dialogue and collective problem-solving; by ensuring substantial citizen involvement in decision making; and improving relationships between citizens and local government. Drawing on the model the Isandla Institute developed, a civic academy can serve as a mechanism for addressing the need for civic organisation, outcome-driven deliberation and institutionalised spaces for collaboration. Investigated cases offer insight into how this could be done.

Given that the civic academy is still a conceptual model, it has been examined as a possible mechanism for operationalisation in the South African urban context. Lessons emerging the analysis of selected cases are intended to feed into ongoing research endeavours to inform the concept's refinement, piloting and implementation.

Can civic academies resolve the estrangement, anger and distrust between many urban residents and local governments? The answer to this question is probably not, qualified by, at least, not on their own. The introduction of civic academies would need to be accompanied by a deep transformation in the relationship between government and the people, with mutual commitments to accountability, responsiveness and engagement. However, civic academies could certainly be part of a packaged programme designed to build the skills and networks needed for broader transformation.

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Community

noun

a group of people living in the same place or having a particular characteristic in common

11. THE DISTRIBUTED CITY: EMPOWERING COMMUNITIES THROUGH SUSTAINABLE TECHNOLOGY

Azra Rajab

Introduction

The chapter seeks to understand whether it is possible for alternative technologies and processes to be used in the upgrading of informal settlements, with particular regard to the provision of electricity services to energy-poor communities, across South Africa. The research hopes to answer this question by investigating two projects, M-KOPA and the iShack Project, through a critical analysis of their institutional and funding arrangements, and success factors. It then considers the aspects of the cases that could be replicated in South Africa. In conclusion, an enabling institutional framework for the realisation of the broader use of alternative technologies in this country is recommended. The objectives of this paper are therefore to:

- Describe and assess the relevance of the 'Distributed City' concept for the South African urban context
- Identify and analyse implemented innovative case studies representative of the 'Distributed City' concept, namely the pay-as-you-go service for solar-powered, home-lighting systems in impoverished Kenyan communities through M-KOPA and the South African iShack Project
- Assess whether, and how, these examples are replicable in the South African urban context

Research Method

A literature review, desktop research and a policy review concentrated on gathering information about the concept of the theme of this discourse, the 'Distributed City', and the characteristics and processes typical of the South African urban environment. Research on the two examples to be used was carried out using a case study approach. All case studies start with "the desire to derive a close or otherwise in-depth understanding of a single or small number of 'cases' set in their real-world contexts" (Bromley, 1986:1). The case studies were chosen as they reflect the principles embodied in the theme of this chapter. The two case studies are:

- M-KOPA, a residential solar power system provider, nationwide in Kenya – the 'M' stands for mobile and 'kopa' means to borrow' in Swahili

- The iShack Project that focuses on the Enkanini – meaning 'force' – informal settlement in Stellenbosch, South Africa

The data collected for each case was analysed and a report on the results was written. The collected data was reviewed. Organisations and individuals involved in the development and implementation of the projects were consulted. A project documentation analysis was conducted using internal strategy documents, published project reports and qualitative interviews held with appropriate people. In presenting the findings from this investigation, the motivation, origin, intention, functionality, customer payment models, impact and funding mechanisms of each project were explored. This chapter presents the lessons drawn from all the information gathered, the success factors and delivery mechanisms that could meaningfully contribute to the replication of similar Pay-As-You-Go in South African urban areas.

The 'Distributed City'

According to Blowfield and Johnson (2013:second cover):

Three cities of the future are emerging. The first is Petropolis… locked into the century old technologies of fossil fuel-driven mass production… This is the city of rising inequality, credit-fueled consumption (and) climate volatility… The second city is Cyburbia. This is mass production on the steroids of IT… that risk(s) reducing (its) citizens to digital factors of production in the supply chain of big data. The third is the Distributed City, where technology is deployed with the intent to connect us not virtually but physically—from Nairobi's network of innovation spaces to Hamburg's Participatory Budgeting experiments, (and) from Barcelona's network for micro-manufacturing, to Austin's distributed smart grid.

These three models of how future cities could develop each have very different economic, social and environmental implications for urban citizens, businesses and state institutions. Blowfield and Johnson (2013) introduce and strongly advocate for a movement towards the third emerging cityscape – the concept of the 'Distributed City'. These authors propose that the 'Distributed City' is an innovative approach that provides a holistic and achievable response to many of the social, economic and environmental ills that urban areas experience. It envisions the collaboration of government, business, research institutions, civil society and communities, in the production and distribution of innovative technologies. These structures should provide opportunities for poor residents to sustain themselves while stimulating economic growth across all income groups to achieve equitable distribution of a city's capital and resources. It is not concerned with replacing existing market-driven systems but enhancing and expanding them. Furthermore, it suggests that advancing fields of technology such as Information and Communication Technology for Development (known as ICT4D) could bridge the digital disparity between different social and income groups (Toyama, 2010). Renewable energy generation, and the localisation of state services, offer the potential to respond to many of the socio-economic and development challenges facing cities (Blowfield and Johnson, 2013). When doing so, the concept as defined forms the basis of a model of development that aims to achieve inclusive economic growth within a society that is based on equality while conserving the natural environment (ibid.). Aside from improved distribution of urban resources across income groups, the strategy presented in this chapter offers opportunities to capture value from investment for those who usually do not benefit from development and are not involved in its progress.

One example of emerging technologies being used in the manner the 'Distributed City' model envisages is the smart micro-grid that distributes and regulates the flow of electricity to and from consumers at the local settlement level. These grids use renewable energy created by individual households that can then be used on the broader grid. This enables people to be independent co-producers of power. The impact of such initiative is not just on resource conservation and climate change mitigation, but also on mediating energy costs. Communities "become a group animated by the collective intent to build the city they want to live in" (Blowfield and Johnson, 2013:224). In this way, the residents become empowered and optimism increases.

The first example is the Kenyan M-PESA/M-KOPA project. M-PESA ('M' for 'mobile' and 'pesa' for 'money' in Swahili) uses mobile phone technology to allow poorer users without bank accounts to store and transfer money as mobile credit. This process can be used to pay for various services when their cash flow is limited. It also allows users to pay for services and goods in pre-arranged instalments, especially the Pay-As-You-Go services. M-KOPA then couples this advanced payment to the 'D.Light' portable solar home-lighting unit embedded with a SIM card that allows impoverished households to pay for the lighting unit in micro-instalments.

The second example is the iShack Project implemented at the Enkanini informal settlement in Stellenbosch, South Africa. It makes solar energy available and affordable to poor informal dwellers through a prepaid instalment system.

The benefits of these technical solutions and associated implementation systems go far beyond simply lighting up a home. The solar lights and associated easy-to-pay solutions have resulted in tremendous cost-savings in energy. This, in turn, led to low-income consumers investing in other technological products, developing businesses and accessing improved services and micro-finance. The result is a cycle of resident self-sustenance that provides the opportunity to break individuals and communities out of poverty (Johnson, 2013)

The 'Distributed City' as a possible concept for South Africa

The 'Distributed City' concept is a holistic response to the economic, environmental, social and institutional challenges many cities face (Blowfield and Johnson, 2013). The concept suggests that these global issues represent an opportunity for businesses to unleash a new wave of inclusive economic growth involving information technologies. The following section of the paper explores the 'Distributed City' approach further and investigates whether it is relevant to the South African context. It asks whether our urban challenges call for such a reform and illustrates the high-level strategic thinking behind the two case studies chosen.rty (Johnson, 2013)

The 'Distributed City' concept proposes a re-invention of the capitalist system – a system which has, arguably, contributed to the concentration of wealth in the hands of a few (Blowfield and Johnson, 2013; Picketty, 2014). It moves towards a market that facilitates the sharing of wealth amongst a larger base of goods and service producers. It is an approach that can be applied both in a top-down manner that incorporates government intervention, as well as from the bottom-up involvement of active citizenry or a collaboration of the two.

More importantly for the South African context, it allows for a move away from a dependence on social welfare, towards a means of increasing the productive potential of the poor, while simultaneously providing increased opportunities for all income groups. This form of governance, which increases citizen productivity, is what Blowfield and Johnson (2013) refer to as the 'entrepreneurial state'.

The importance and rationale for the South African government to progress from an emphasis on welfare to an entrepreneurial state occurs in circumstances where poverty persists, citizen dependency is high and there is a need for pro-poor economic growth. Beyond conventional social welfare of income grants, South Africa's support system for the poor also includes free basic housing, Free Basic Electricity (FBE) and Free Basic Water supply. In recent years, the number of welfare grant recipients has increased from an estimated 4 million in 1994 to 16.9 million beneficiaries by 30 September 2015. Such a high dependency on government assistance is not sustainable (Ferreira, 2015). Treasury's long-term fiscal study shows that "the current level of social spending will be sustainable as long as the economy grows by 3% a year" (Bisseker, 2015). Michael Sachs, National Treasury's head of Budgeting, stated that if growth continues to come in below 3%, which has been the case the past few years, the continuation of current social spending policies would place South Africa's public finances at risk, making it vulnerable to global economic shocks (ibid.).

Although studies consistently show that grants, particularly the child-support grant, are well targeted at very poor households and are central to poverty alleviation over the post-apartheid years, they have had little effect on creating sustainable livelihoods and improving the high levels of inequality in the country (Leibbrandt et al., 2012; Ferreira, 2015). The severity of this inequality is evident in the country's Gini Coefficient. In 2015, South Africa's Gini Coefficient ranged from about 0.660 to 0.696, which indicates that South Africa is a highly unequal society, more unequal than Brazil and India (Bhorat, 2015). Increases in wealth and an improvement in the standard of living have only occurred for selected groups of people – groups that were historically advantaged during apartheid and those that have managed to gain an entry point into the economy through post-apartheid economic policies (Bhorat and Khanbur, 2006). On the other end of the income spectrum, a large population still remains in informal settlements confronted by extreme poverty and unhealthy living conditions. The report on the Economics of South African Townships: Special Focus on Diepsloot by the World Bank, stated that half of South Africa's urban population lives in townships and informal settlements, accounting for 38% of working-age citizens, but is home to nearly 60% of South Africa's unemployed (Mahajan, 2014).

However, the majority of the South African population that remains in poverty is not solely a product of capitalist industrialisation as seen in many developing countries such as India (Blowfield and Johnson, 2013). Inequality and poverty continue to increase rather as legacies of apartheid, such as a lack of basic education, large-scale unemployment, entrenched spatial segregation separating poor communities from economic opportunities and a persistent backlog of basic infrastructure and services. In addition, the accumulation of wealth continues, for the most part, to sit in the hands of a generally white, elite group through the means and modes of production and administration.

Blowfield and Johnson's (2013) concept of the 'Distributed City' is then of particular significance in the South African context as it focuses on generating industry that allows poorer households to become involved in the production of goods and services. This could, in part, lower the persistently high levels of inequality and unemployment. Encouraging self-employment and increasing access to and affordability of renewable resources, could contribute to a more sustainable living environment. Given the emphasis on the redistribution of wealth in post-apartheid policy, the suggested concept is appropriate.

In addition, the country's current electricity supply relies on large-scale, centralised, coal-powered generation, and decision-making that is not transparent (Greenpeace, 2012). With an energy crisis manifest in the on-going series of load shedding schedules there is serious need for government intervention with regard to energy generation, management and supply. It has become evident that current energy supply and distribution systems are not going to address major energy issues such as access to affordable electricity, mismanagement of the current supply and the continued dominance of energy-intensive industries that are detrimental to the environment (ibid.).

Minimising human impact on the environment as a means of tackling climate change will increasingly be a key driver of government policy and public attitudes. The 'Distributed City' concept tackles the challenge of how society can replace conventional, high carbon energy sources with decentralised, low carbon alternatives. It achieves this while increasing the overall energy supply in response to population and economic growth (Blowfield and Johnson, 2013), unlike other types of climate change mitigation or adaptation strategies like carbon taxes and carbon pricing. This approach would entail the accountability and intervention of government and Eskom, South Africa's main electricity supplier to invest in the substantial roll-out of localised renewable energy projects as opposed to building new coal-fired power stations. Operational procedures like those the M-KOPA and the iShack Project employs, could be considered in such cases.

In South Africa, the development of renewable energy resources has been through the Renewable Energy Independent Power Producer Procurement Program whereby corporations were able to bid for the opportunity to feed power derived from renewable sources like primary solar and wind generated energy, into Eskom's distribution grid (Eberhard et al., 2014). The programme as it currently stands, however, does not allow specifically for medium, small, micro-enterprises or community involvement, and assumes that companies have the capital to construct large-scale renewable energy sources.

Similarly, attempts to install smart electricity distribution grids in South Africa, through the large-scale installation of smart meters to increase revenues and control resource-use, have been undertaken by the local city governments of Johannesburg and Tshwane. These initiatives have not considered the possibility of partnering with communities in electricity distribution and generation through renewable sources of energy and have been criticised for poor community participation, the use of inappropriate, low quality meter technologies and overpriced service fees (Serumula, 2014). This can be seen as an unnecessary imposition on the poor who can least afford to pay for electricity, while wealthy households remain exempt from municipal meter installation

requirements. Advances in technology, such as smart micro-grids, move away from the pollution, wastage of resources and structural issues associated with conventional, centralised power grids.

The promotion and empowerment of energy-independent communities allows residents to be involved in the co-production and selling of clean power and sharing in services like waste management (Blowfield and Johnson, 2013). This could be relevant in the case of South African cities where large numbers of informal settlement dwellers do not have access to basic services such as water, electricity and sanitation. For instance, available statistics show that more than half of the country's households do not have access to piped water (Statistics South Africa, 2011). In addition, Informal settlement upgrading under the government-led Upgrading of Informal Settlements Programme has been slow and largely critiqued as ineffective (Huchzermeyer, 2009; Misselhorn 2008; Tissington, 2011). The provision of Pay-As-You-Go services in informal settlements offers the state an alternative approach to service delivery.

Economic markets also benefit from the localisation of services such as small-scale manufacturing and urban agriculture where small businesses and informal traders have the opportunity to provide goods and services to communities through sustainable technologies such as smart water pumps and open-source 3-D printing (Blowfield and Johnson, 2013). This offers a way for individuals to share in the value they produce through self-employment or local businesses, as opposed to receiving a minimal wage for labour done through a large corporation. An increase in the amount of transactions within local areas also generates spin-off economic opportunities through an increase in money circulating within a particular community.

In summary, as an overarching macro-approach to South African circumstances and urban pressures, the concept of a 'Distributed City' offers relevant strategic principles and practical responses that can be applied to the South African context. These cover aspects like the distribution of production capabilities and opportunities through sustainable technologies; an alternate approach for the state to adopt for service delivery; the upgrading of informal settlements; the stimulation of entrepreneurship and economic opportunities in poverty-ridden areas; and a move away from fossil fuel reliance to environmentally conscious, renewable energy production.

Appropriateness of M-KOPA and iShack for South Africa

Beyond the broader urban challenges that South Africa faces, as explored in this chapter thus far, there are specific dynamics related to energy demand and supply in many South African settlements. The cases examined to support the objectives of this enquiry are the work M-KOPA Solar does and to which the iShack Project responds (Figure 11.1 below). Combining the results of their endeavours, the relevance and value of a solar-powered home-lighting system, supported by an innovative prepaid payment service, is recognised as a possibility for replication in South African urban informal settlements.

Figure 11.1: M-KOPA and iShack and project logos

Source: Images from M-KOPA (2016) and iShack (2016)

As previously introduced, the carbon footprint of the South African national electricity utility, Eskom, continues to grow substantially as it remains reliant on fossil fuels, damaging water resources through unsustainable technology choices and waste mismanagement (Greenpeace, 2012). In addition, households and businesses have begun to experience prolonged power-outages in the form of scheduled load shedding brought on by the mismanagement of electricity generation and supply.

Real prices for electricity which reduced by around 67% over a 20-year period, subsequently escalated by 300% over four years (ibid., 2012). Although Eskom has introduced alternative programmes like the Independent Power Producer Procurement Programme, its decisions to up-scale and develop more coal-based electricity generation plants (Kings, 2015) have confirmed the utility's commitment to large-scale centralised energy-intensive generation and grid-based distribution. The need for government intervention more sustainable

practices, accountability and renewable energy supply is evident. Government does have certain levers to elicit more sustainable practices from Eskom as shareholder, regulator, policy creator and political patron (Greenpeace, 2012:13). However, these numerous roles have led to confusion over who is to be held accountable for Eskom's decisions – the parastatal itself or the state. This ambiguity opens up the possibility for corruption, ad hoc interference, and most importantly, a lack of accountability amongst all players (ibid.). A commitment to the provision of localised, affordable, renewable energy in energy-poor areas offers an outcome that will decentralise decision-making and production thereby potentially avoiding corruption and mismanagement of energy supply.

Since 2003, the government has provided Free Basic Electricity to energy-poor households in previously disadvantaged and impoverished South African settlements. Currently, this free service is 50 kilowatt hours per household per month and is intended to supply enough electricity for basic lighting, media access, water heating and ironing (Department of Energy, 2015). The state's programme of providing free basic water and electricity services for all poor households is a response to the many years of discrimination and inequality under apartheid administration and policy as experienced by generations of previously disadvantaged individuals.

However, according to the latest census figures published in the Statistics South Africa (2011) official Census report for 2011, about a third of South African households qualify for state-funded electricity but do have access to an electricity supply facility. Furthermore, when using the energy-expenditure approach used by the Department of Energy (2013), results show that two-fifths (43%) of all South African households can still be classified as energy-poor. Although an estimated four million households have been connected to electricity since 1994, many of these connections are characterised as inadequate with an under-supply of less than 100 kilowatt hours per month (Greenpeace, 2012). The Department of Energy (2013) estimates that 26% of all households do not receive sufficient energy to meet their needs. Service-related protests in informal settlements, where the large majority of these households are located, are therefore commonplace and often related to electricity (ibid.).

In addition, the well-being of energy-poor consumers and those without access to state-funded electricity is negatively affected by the alternate use of harmful and polluting fuels. Energy-poor households are forced to spend a significant amount of their income on these costly and inefficient alternative fuels such as paraffin, kerosene and firewood (Winiecki et al., 2014). Fuel-based lighting is a significant cause of fires and produces over 150 million tons of carbon dioxide each year (Johnson, 2013). Likewise, informal settlements in South Africa are vulnerable to the spread of fires due to organic settlement form, lack of safety standards and the use of flammable building materials (Goven, 2010).

A further concern involves the buying and selling of electricity through illegal connections. According to a South African electricity expert (cited in Vermeulen, 2015), about 32% of all electricity delivered by City Power to Johannesburg is lost to theft and non-payment. Similarly, in 2014 Eskom revealed that as much as 7% of the country's electricity is stolen via illegal connections, something the state power utility could not and cannot afford (Etzinger, 2014). The issue therefore has wider repercussions as suppliers and those that acquire electricity

legally are negatively affected. Although many poor, informal communities receive electricity through illegal connections, this does not come for free. The majority of these residents pay a high price for illegal electricity as they are often forced to pay a premium for black market power. An article appearing in the Cape Times suggested that residents who benefit from illegal electricity connections are willing to pay for illegal electricity (Phaliso, 2015). Because of this, connecting electricity illegally is a big business in some townships and informal settlements. For example, one resident of informal settlement charged R300 to R500 (US$ 35) per month for electricity diverted from municipal street light poles to informal dwellings (ibid.).

The illegal accessing of electricity represents a need and demand for affordable electricity in impoverished communities, and more importantly, that these communities are willing to pay for this service as opposed to relying on alternative sources of energy such as firewood or paraffin illustrates an opportunity to be addressed. Pay-As-You-Go solar, home-lighting systems therefore could respond well to the myriad of urban dynamics concerning energy generation, supply and demand experienced in South African cities.

Case Studies: M-KOPA and iShack

The Kenyan business model of M-KOPA Solar and the research-driven model of the iShack Project in South Africa are two examples of the 'Distributed City' approach in practice. This section discusses the origin, intention, functionality (Figure 11.2 below), motivation and financing models of the case studies.

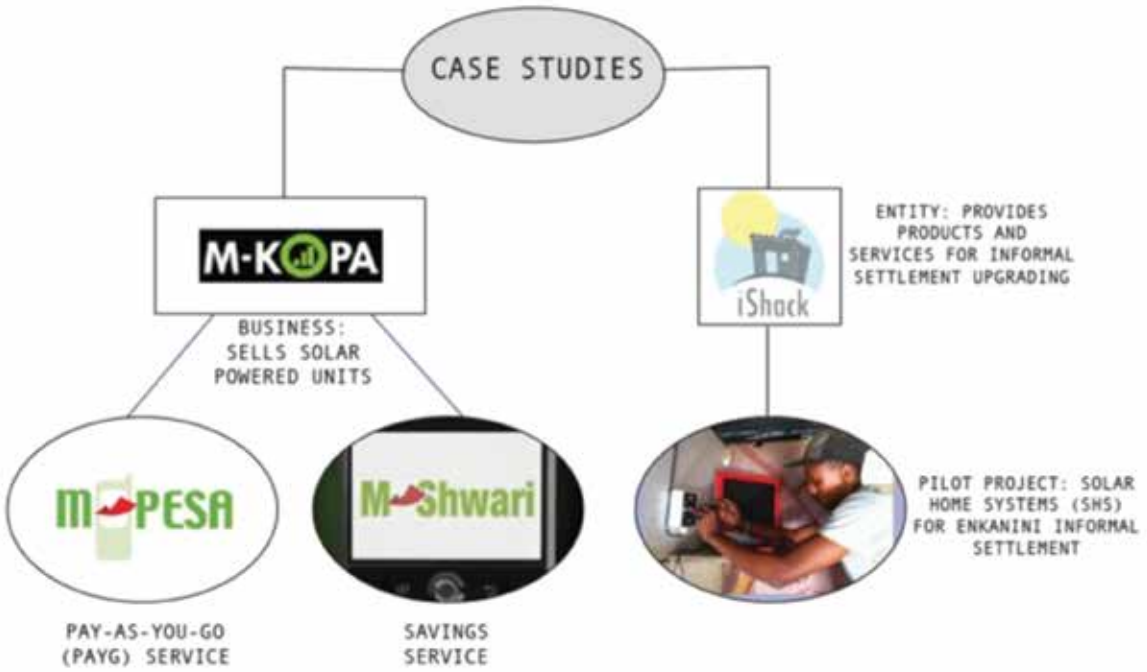
Origin and intention of M-KOPA and iShack

In response to the widespread energy challenge, dozens of companies have developed high quality, solar-powered solutions targeting the needs of the energy-poor. New distribution models developed by these companies are bringing these products to off-grid areas around the world. One of these companies is M-KOPA and it manages to respond by providing access to electricity through an emphasis on digital finance. M-KOPA Solar's website proudly advertises that their organisation has become the world's leading Pay-As-You-Go energy provider to off-grid homes. With an effective business model and Safaricom, a mobile phone network operator with a user base of 18 million people, as a partner, M-KOPA have provided over 200 000 households with solar home systems in East Africa as of May 2015; this lights up a projected 500 new homes every day (Ward, 2015).

The iShack Project in South Africa with its non-profit, bottom-up, participatory approach, on the other hand, experienced a range of political and social challenges as a result of the complex informal settlement context it was based in. Despite the risks and challenges involved in the roll-out process, however, to-date the service of making solar-home lighting units affordable and accessible to informal dwellings has been delivered to over 1 000 households and was currently in a consolidation phase till the end of 2015.

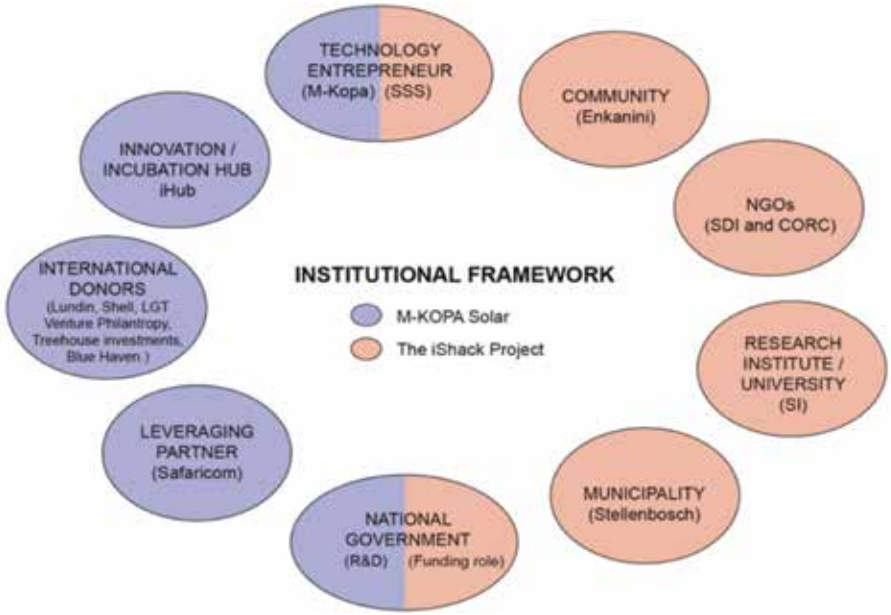
There were, and continue to be, a range of stakeholders involved in the development and product delivery of these initiatives. Both cases show a fair amount of strategic thinking in establishing a network of actors (Figure 11.2 below), all of whom understood and contributed to the respective implementation models. A discussion of the actors, their roles, as well as the linkages between each other follows.

Figure 11.2: Illustration of different services offered by M-KOPA and iShack



Source: Author's formulation with images from, clockwise from top, iShack (2016), Sustainability Institute (2015), CBA Group (2016), Payments Industry Intelligence (2013) and M-KOPA (2016)

Figure 11.3: Stakeholders involved in M-KOPA and iShack



Source: Author's formulation

Actors and agents: networks for success

The success of delivery and distribution of the Kenyan example was made possible by a range of actors beyond M-KOPA. Nick Hughes, Co-Founder and Executive Chairman of M-KOPA, explained that the whole initiative started in 2003 when, at Vodafone, he began to explore the mobile payment concept that became M-PESA, which allows money transactions to be made via mobile phones (Yizhen, 2015). Hughes became aware of two basic needs: the ability to make small transactions quickly and safely; and the gap in access to reliable grid electricity for close to 1.5 billion people (ibid.). He then took this analysis and developed the M-KOPA business model, which responds to both needs simultaneously. He explains that at a fundamental level M-PESA's and M-KOPA's business models work because they provide a solution that addresses a massive problem. In addition, the success of the model, he states, is that the company is focused on making delivery replicable and scalable across many markets and products (ibid.).

The close relationship between Pay-As-You-Go solar companies, like M-KOPA and well-established mobile money agents such as Safaricom and Vodafone, allow emerging companies like M-KOPA to leverage off partner brands in terms of market status, user access, retail outlets, authorised dealers and other product distribution channels (Winiecki et al., 2014). M-KOPA announced its partnership with Safaricom in October 2012 and partnered on the distribution of the M-KOPA units through Safaricom's agent network. With both companies having an aligned ambition of bringing new services to customers, especially around digital inclusion and green power, it was a simple process for each partner to benefit. M-KOPA products and services are sold at all Safaricom retail outlets across East Africa. "The big opportunity with Safaricom", said a media representative for M-KOPA, "is that they have 50,000 outlets, 18 million customers, and they like our product" (cited in Wills, 2012). The fact that the solar units are small in size and sold out of a single product container, typically the size of a shoebox, added to the success in numbers sold through consumer electronics retail and fast-moving consumer goods distribution channels (Winiecki et al., 2014).

In contrast, the iShack Project began as a research activity, part of a post-graduate course offered at the Sustainability Institute - an affiliate institution of Stellenbosch University. A lecturer, Mark Swilling, academic head of the Institute, asked his students, "What can be done in the interim while residents in informal settlements wait for houses and services to be provided for them?" (Swilling, 2015b). His students attempted an answer to the question which resulted in the birth of the iShack Project – a retrofitted, ecologically designed dwelling unit. The students together with supervisors applied a lens of informal settlement upgrading to provide affordable access to basic services for poor residents.

Further research and development of the concept led to the development of an affordable and sustainable way of providing solar-powered electricity units to shack dwellers in Enkanini with a similar payment system of prepaid instalments to that of M-KOPA's. Damian Conway, director and manager of the Sustainability Institute Innovation Lab, a special purpose vehicle initiated to implement the iShack Project, stated the idea behind the project was not to provide a house or product, or even just an energy service, but "it is an attempt to develop a sustainable social enterprise model for delivering affordable, incremental services to residents of informal settlements" (Wild, 2015:1). The iShack Project's intentions are therefore social as opposed to profit-driven

Unlike M-KOPA, the institutional structure of the iShack initially consisted of a formal working group involving Stellenbosch Municipality, Stellenbosch University, the Sustainability Institute, Shack Dwellers International (SDI) and elected community leaders, which was established to implement the project (Swilling, 2014). The technology entrepreneur associated with the enterprise is an outsourced business, called Specialized Solar Systems and provides lighting units to the iShack Project at a negotiated fee (Sustainability Institute, 2014). The purchase of these units and other operational costs of the project are made possible through government and international donor funding (Swilling, 2014).

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Research and development support in both case studies was provided partly by state funding. The iShack Project, for instance, was awarded a grant from the Green Fund, which was established by the South African government and managed by the Development Bank of Southern Africa. The iShack Project was specifically awarded support by the fund as the objectives of the project were in line with the states vision on transitioning to a green economy (Swilling, 2013). R17-million has since been granted to the iShack Project as a result of the award (Mahlaba, 2015) and has been used for the installation and maintenance of new solar units. Additionally, the Stellenbosch Municipality supported capacity building, planning and community participation efforts.

Partnerships with international funding agencies and well-established donors, such as the Shell and Lundin Foundations provided additional and vital funding in the case of M-KOPA, and also came with a wealth of expertise regarding business monitoring and evaluation, market awareness and the ability to respond to structural barriers. Valuable lessons can be drawn from this institutional arrangement.

The iShack Project, which started off as a rather narrow technical intervention spiralled out into a wider community mobilisation process and a push for further settlement upgrading for Enkanini. The core group of community members, working with Doctoral and Masters' students of programmes at the Sustainability Institute, accumulated skills and knowledge through training modules paid for by the project. The delivery process of the project also incorporated the local knowledge of residents to assess community needs. In addition, the project trained and supported a small team of local residents employed as 'iShack field agents' to install and maintain solar-powered units, as well as to manage users of the solar energy supply system – all of which was possible with a localised off-grid system as oppose to a centralised power station.

The many challenges to note experienced by the initiative included political interference, technical difficulties and a lack of capacity. Disconcerting was the fact that the Enkanini community mistrusted the involvement of the Stellenbosch Municipality. However, this resulted in a more autonomous process driven by clusters of households who continue to cooperate with the iShack initiative to improve their lives. Therefore, a process ensued that was not driven by any formal community leadership or political party. Academics from Stellenbosch University and the Sustainability Institute promote the iShack Project as a community-run social enterprise, whose model could be replicated in other informal settlements.

The latest effort to scale the project up, involved the Sustainability Institute Innovation Lab carrying out a series of extensive consultations with the community to promote the design of a social enterprise model. With official training from Specialised Solar Systems, a number of residents were democratically selected to play a role as Hub Operator (Wessels, 2015). These operators were proposed to work in cooperative groups of three to five and are responsible for the initial installation of the solar system and monthly servicing of 250 shacks each. Hub Operators are expected to be residents of the community and earn an income (ibid.)

Technical specifications and use

In line with the 'Distributed City' approach, a key factor of the M-KOPA model is to innovatively use available technology to help customers save money and provide them access to previously unaffordable and clean energy products (Wills, 2012). The M-KOPA system offers the opportunity to light up two to six rooms in a home or a business venue simultaneously. Each battery-powered, eight-watt system includes three lights, a phone-charging facility and a chargeable radio. It is backed by a two-year warranty and a customer-care telephone line offers 24-hour technical support. The unit can charge several mobile phones at the same time and can also power small Direct Current (DC) appliances, such as a fan (Winiecki et al., 2014).

Concerning the iShack Project, the technology partner, Specialized Solar Systems, based in George, worked with the Sustainability Institute to develop a modular system that could be upgraded as more funds became available to the households involved. The starter pack comes with a 25-watt panel including three lights, a cell-phone charger and an outdoor security light. This could be upgraded at a low cost to a starter pack plus a television and/or radio that runs on 12 volts. The entire system is rented, not sold, to the energy consumer, which is at a lower cost than the total paid for energy services plus cell-phone charging (in 2013). The costs concerning the solar system include a once-off installation fee of R350 and a monthly electricity service access fee of R150 per month thereafter (at 2015 prices, with R1.00 equivalent to $0.08) (Sustainability Institute, 2015). Additional possible upgrades at further costs are possible and can include a satellite television system, a fridge, extra lights and a solar hot water system (Sustainability Institute, 2013).

Payment models

The affordability of energy and its ability to be managed remains a significant factor to mass adoption of clean energy technologies in poorer South African communities. Solar energy solutions are far out of reach for most people living off-grid without state support due to a lack of access to private financing options such as loans or instalment payment mechanisms. Many in need of these alternative technologies generally cannot afford to buy energy products on a cash basis. Energy product and distribution companies are often unable to finance customers directly, and formal finance providers have shown limited interest in designing products that meet the financing needs of the energy-poor sector (Winiecki et al., 2014).

M-KOPA and the iShack Project address issues of affordability and access by emphasising digital finance. M-KOPA's innovative Pay-As-You-Go service, called M-PESA, offers the advantage of no large initial cash outlay for consumers. Its payment system is similar to a cell-phone contract that is monitored with a SIM card.

Customers pay an initial deposit of $35 (2014) (about R450), followed by 365 daily payments of $0.43 (R6) (at 2014 prices). Electricity credit is loaded on to a cell-phone like airtime, and then payment is transferred to Safaricom (the mobile network operator involved) for access to solar powered electricity as requested. After completing this payment package, customers own the solar powered home-lighting system outright.

In further detail, M-PESA is a mobile banking service launched by leading Kenyan mobile operator, Safaricom, in 2007. It is a Pay-As-You-Go system that allows customers to open a simple electronic account, transfer money to each other by pressing a few buttons on their mobile phones, deposit funds (like loading airtime) or withdrawing money at a large number of local shops near where they live or work. Users can simply send a text message to transfer money to another cell-phone user. "Three and a half years after M-PESA's commercial launch" says Ignacio Mas, a technology researcher at the University of Oxford, "half of Kenya's adult population is using it, and collectively they make more money transfers than Western Union handles globally. That's real scale" (Mas, 2012). M-PESA partners with M-KOPA and they manage to combine Pay-As-You-Go pricing and innovative end-user financing to solar-powered home-lighting units as well.

Relevant to the South African informal settlement context, the M-KOPA system coupled with M-PESA, allows customers' payments to be easily monitored and administered in a manner that leaves little room for debt accumulation and illegal connections. M-KOPA has made this possible as each product system is embedded with a SIM card. Energy services are denied to customers when their prepaid balance has been used or has expired. Access is enabled again when the customer adds prepaid credit to the appropriate account (Winiecki et al., 2014). M-KOPA sends proof of payment data directly to the solar devices through the cell-phone network to unlock the service. It also receives product performance information and customer usage data from each unit (Winiecki et al., 2014), similar to a Pay-As-You-Go cell-phone account.

Concerning the iShack Project, payments for the service have been transferred through Automated Teller Machines. However, the intention is for a system similar to M-PESA to eventually be used, making it possible to buy pre-paid energy units from local shops. The iShack Project is currently similar to M-KOPA/M-PESA in that it centrally controls each solar unit via a cell-phone network, where defaulting clients are automatically switched off from accessing solar power. Flexibility measures are however built into the service offering alternative fee structures to clients who struggle to keep up with set monthly fees (Sustainability Institute, 2015). The option to pay for electricity access in affordable instalments is the first of its kind in South Africa.

Lastly, Pay-As-You-Go solar businesses often service customers who do not have access to other forms of formal finance, which is the case experienced by many shack dwellers in South Africa. For many off-grid consumers, paying off a Pay-As-You-Go solar product might be the first formal credit experience they have ever had in their life – a historical moment for them. In the future, this data could be used as a credit reference to meet prescribed conditions required for these consumers to obtain other services or facilities that require a formal credit history. In the South African context, this situation could apply to retail purchases, accessing affordable rental accommodation or applying for social housing.

Impacts of innovations of case studies

A range of benefits has accrued to communities that use M-KOPA and iShack services and these go far beyond simply lighting up a shack. As stated, many residents using M-KOPA have invested the money saved, in micro-savings accounts and/or on other sustainable technologies. Some users have used the available funds to invest

in crop fertiliser or trading stock, which in turn has resulted in additional income being generated (Blowfield and Johnson, 2013) or even paying for critical daily expenses.

There are consumers who are now able to access micro-insurance and make micro-payments for productive equipment that falls within the same technological market as M-KOPA, a market that assists disadvantaged households to sustain themselves. Such technologies and the cycle of financial accumulation they offer are clearly an approach residents can adopt, as it would lead to self-sufficiency that can break certain poverty traps or alleviate problem areas. Moreover, it would create further opportunities for new markets in locations where there is currently little economic activity, hence giving space for them to emerge.

Furthermore, 92% of households in one community using M-KOPA reported that children are now able to study or do homework for longer hours with improved lighting availability; this has resulted in the examination pass rate of schoolchildren in that community going up from 68% to 82% (Blowfield, 2014). In addition, 92% of all M-KOPA users felt safer at night as the solar lighting removed the risk of fire or burns from equipment using kerosene or paraffin (Ward, 2015). In addition, the lighting provided allowed for increased surveillance allowing for purposeful crime prevention (ibid.). Such benefits can be seen in Kenyan informal settlements where home and street traders remain open for longer hours, into the night, now that their goods are securely displayed in light (Blowfield and Johnson, 2013). Such information is easily accessed through impact assessments done via M-PESA's text message monitoring and evaluation system.

M-KOPA's growth has also had significant impact on the local economy. As of March 2016, M-KOPA employs 757 full time staff and 1 251 field agents across East Africa in rural and urban settings (M-KOPA, 2016). The sales network throughout the country, with agents in rural communities, is an important income-earner. Their high performers can earn an estimated $850 per month, putting them at the top 25% of all earners in their own age group and socio-economic bracket (Lundin Foundation, 2014). Over the next three years it aims to employ over 500 extra staff and 2 000 new agents in East Africa to reach their target of providing over one million homes with lighting by 2018. Since the launch of M-PESA, banks have incorporated various financial products that utilise the M-PESA platform. Individuals without formal bank accounts can accumulate micro-savings if products on offer have integrated accounts with M-PESA. Examples of such accounts include M-Kesho (from Equity Bank), M-Shwari (from Commercial Bank of Africa) and M-Benki (Kenya Commercial Bank). M-Shwari ('shwari' means 'calm' in Swahili) mobile-based credit and savings initiative through M-PESA has proved to be the most successful of the products. It follows a similar cyclic principle as M-KOPA and M-PESA. The advantage of this is that the more you manage to save as a user of the product, the higher the loan amount the bank is willing to approve. In addition, with M-Shwari, you are not required to visit any branch to transact business. A cost is not incurred when withdrawing money from M-Shwari to M-PESA but getting a loan from M-Shwari means paying a loan processing fee of 7.5% of the loan amount. These spin-off financial services are important to note as they illustrate the varying degrees of opportunity, impact and benefit experienced by mobile consumers.

The Sustainability Institute mapped out a business plan for the iShack initiative to become a fully-fledged renewable energy utility franchise in the future. A Project Implementation Plan (PIP) was drawn up internally (Sustainability Institute, 2013). The business model includes detailed operating systems and procedures that enable and encourage the agents to continue delivering a high quality, sustainable energy service to their users. This includes such elements as installation targets and schedule, training and capacity building programmes, project operating expenses and capital expenditure, on-going maintenance and potential risks. It offers a comprehensive outline for willing investors and shareholder to replicate and scale up (Swilling, 2015a).

According to the Sustainability Institute Innovation Lab (2015), the intention of the Sustainability Institute is to establish a functional and income-generating community enterprise. Therefore, much time and funding focuses on capacity building and the creation of a catalytic platform that encourages community participation with the aim of upgrading communities through mobilisation, job creation and socio-economic opportunities. Furthermore, the Innovation Lab argues that, without a well-designed set of operating systems; good training of locals to provide a quality maintenance and user management service; and without a robust revenue collection platform, the iShack system will effectively become a government handout. Should this happen, the project has a high-risk potential of becoming a malfunctioning white elephant (ibid.). For this reason, the custodians of the project dedicate their energy to refining the implementation process until it reaches optimal capability. This will go on until an appropriate investor comes forward and presents a valid and feasible opportunity to upscale the existing initiative (ibid.).

There have, however, been clear impacts of the project in Enkanini in the Western Cape, South Africa. The results of an initial assessment show that households get four to six hours of extra thermal comfort each day, a reduced risk of fire and improved lighting (Swilling, 2013). In addition, solar power helps protect poor households from the consequences of increased energy prices. Thus many poor South African residents, who currently pay a large portion of their salary for an illegal electricity service, will save on energy costs while simultaneously contributing to incremental improvement of their homes. In turn, residents become more energy-independent as they move away from relying on Eskom's centralised grid system.

The Sustainability Institute (2013:5) claims that there are other progressive advances that have been achieved through the iShack Project:

Hub Operators get trained as 'barefoot engineers' and become skilled solar technicians thus creating the human capital base for a new local economy; technical and financial systems get designed, tested and perfected over time that can then be transported to many other communities where systems are needed to maintain and operate community-based infrastructures; a new kind of leadership is created that does not need to compete with Councillors for 'constituency support' but rather emerges as a 'service leadership' to cooperative groups who have entered into a contract with him/her to improve their lives (including accessing state resources).

Lastly, once informal communities realise the benefits of cooperative action, states the Sustainability Institute (2013:6), they will have social and institutional structures in place that will make it possible to continue to struggle for further improvements, such as secure land rights and access to subsidies for housing, jobs and other services

Analysis for Replication of Case Studies

This section analyses the delivery frameworks for M-KOPA and the iShack Project to determine how such initiatives can be replicated in the South African urban context.

Analysis of institutional framework

The network of actors in each case is discussed in this chapter. Their responsibilities and the relationships between them make up a critical delivery structure that ensures shared success amongst all stakeholders. A lesson to learn from these institutional networks, and a reason these cases were selected to represent the 'Distributed City' concept, is the business logic that underpins and lends itself to the long-term sustainability of each project. Ignacio Mas, a world-renowned expert on inclusive technology, suggests that most development projects fail because they do not adequately address core business concerns, such as intelligent marketing, distribution and branding (Mas, 2012).

Reflecting on M-KOPA's business logic, for instance, the value of partnering with a Mobile Network Operator like Safaricom is evident, as they continuously and effectively focus on the development of their distribution channels and this action motivates growth. If a company offers an unknown product that consumers have never heard of, and is rarely stocked in local shops, it cannot be expected to achieve market success. However, integration between a product and an established Mobile Network Operator like Vodafone would more than likely lead to greater opportunities. In the case of M-KOPA, the partnership with Safaricom offered tremendous exposure to large market shares, a wide network of retail outlets and well-established business infrastructure across Africa. It should be noted that, in the event of M-KOPA introducing a service into the South African market, a good working relationship, supported by a tight commercial agreement, with a well-known national mobile network operator (like MTN, Vodacom or Cell C) has to be firmly in place (Alliy, 2014). This process should be relatively easier to initiate in South Africa than in other African countries as Vodacom has already launched M-PESA in the country.

The notion of treating Information and Communication Technology for Development (ICT4D) projects as businesses is gaining acceptance, as Swilling (2014) suggests. He draws attention to the research on community-based energy alternatives and community-based infrastructure upgrading (Swilling, 2014). The conclusion is that, unless there is an on-going flow of funds for on-going maintenance and operations, the infrastructure created will end up deteriorating and eventually collapsing (ibid.).

Informal settlement dwellers already pay for the services they need in the form of candles and paraffin for lighting, paraffin or gas for cooking, expensive generators to run their television sets or payment agreements for setting up illegal electricity connections. It is essential to redirect some of these financial flows into a business entity that provides safer and more affordable forms of energy. This approach would also make any form of a community-based project more sustainable especially if it were to focus on infrastructural upgrading (Swilling, 2013).

Lastly, the wide range of actors, each utilising their own field of specialisation, contributes to the success of each project by allowing for the collective effort of a diverse set of capabilities. Networks such as these create healthy partnerships between the public sector, the private sector and civil society. This type of collaboration allows for accountability between actors, as each contributor is required to fulfil a predetermined and specific objective. They are obliged to do this to realise the success of the project.

Analysis of funding arrangements

The funding arrangements that support each project are closely linked to the institutional arrangements. This is especially the case in the M-KOPA delivery model as many funders contributed to the delivery of the product. The state's involvement in the establishment of the iShack Project through the Green Fund demonstrates that state funding in informal settlements can provide a foundation for financially sustainable local economies; the expansion of upgrading of informal settlements programmes; and greater emphasis on the state's role as an active participant in income-generation. This marks a fundamental break from the traditional state welfare approach or the traditional donor-funded approach (Swilling et al., 2013).

The proposed iShack enterprise model is designed by the Sustainability Institute to self-fund the long-term running costs from a combination of user fees and the municipal Free Basic Electricity subsidy (Sustainability Institute, 2014). Securing this subsidy from the municipality (via the provisions of the Municipal Finance Manage Act) as a monthly contribution to the iShack running costs is also a first in South Africa (Sustainability Institute, 2014). It therefore provides a valuable lesson in the creative utilisation of state resources.

It can be concluded that, when replicating these two case studies in the South African urban context, there should be a balance between state funding, international donor funding, private sector funding, also referred to as venture capital, and capital generated from the project itself. Donor or state funding in the form of research and development grants is of particular importance to allow for and support a culture of innovation. Technology developers should feel free to be flexible with their outcomes. The Shell Foundation, an international donor funder of M-KOPA, states that there is an absence of viable pipeline funding (Desjardins et al., 2014). This illustrates the need for more organisations, especially foundations, to deploy unrestricted, risk-tolerant grant capital to help early-stage social enterprises adapt to market needs (ibid.). Although this type of funding does exist, state departments can easily replicate donors' business models to support innovative outcomes.

The Lundin Foundation, Blue Haven Initiative and Treehouse Investments are all examples that can be explored for social investment organisation and approaches, as they were involved in the financing of M-KOPA. In addition, international donors can bring market status to projects and offer business expertise that gives the project implementers confidence.

Other critical success factors

There are other factors to consider when replicating existing projects of a similar kind. M-KOPA, in particular, achieved success in several ways. It supported new customers by stressing that their service had a human face (Aker, 2012). It achieved this through a promotion campaign conducted at a chain of retail stores and independent local shops. This initiative was well supervised and organised (ibid.). It stressed that mobile phones are simple to use, do not require a significant level of literacy and can be learned quickly (ibid.). M-PESA offered a range of payment options for solar units and mobile phones. Moreover, care was taken to adapt M-KOPA services to local situations to ensure that they were culturally appropriate. Importantly, the distribution system of M-KOPA extends into rural and urban areas and includes both payment and mobile phone facilities (ibid.). M-KOPA and M-PESA manage to stand out as being more successful than other Information and Communication Technology (ICT) initiatives. This is evident in their significant spill over effects with benefits that go beyond the specific objectives of the intervention: the Kenyans who now use these services will be eligible to 'graduate' into full banking relationships and take up other mobile data services (Mas, 2012).

Concerning the special case of Information and Communication Technology for Development (ICT4D) studies, as found in Toyama (2010), an evaluation of such social-issue projects identifies the reasons why certain of its initiatives fail. Its enthusiasts do not design context-appropriate technology; or account for a poor supply of electricity; or build relationships with local governments and communities; or develop an appropriate viable financial model; or provide incentives for all stakeholders (ibid.). Toyama, a development researcher, suggests that if issues are context-dependent, then so are solutions (ibid.). The aim should be to have practical expectations and strategies that are appropriate for individual contexts (Toyama, 2010). Non-technologists from communities with local knowledge, such as a concerned teacher or an experienced businessman, should therefore be consulted. They could possibly be more successful in identifying the shortcomings of technologies in given contexts, and be better equipped to foresee how proposed technological solutions complement or compete with other available non-technological solutions (Morozov, 2012). They also anticipate the political and institutional backlash that can result from choices of Information Communication Technology such as the M-KOPA system (ibid.)

In line with this thinking, M-KOPA applied a user-centric approach to the built-in monitoring system so that the customer dictates what key decisions should emerge from the business model. From an early point in its development, M-KOPA knew it was possible to collect micro-payments from customers, but before making a decision on this, they surveyed potential customers as to whether they wanted to own the solar product, or just pay for the electricity that they used. Their final decision was based on the user feedback to this question; "The answer, overwhelmingly" says Hughes (cited in Wills, 2012), "was that customers wanted to own the product, so we designed the rest of the business model for that demand" (ibid). Understanding the true needs, wants and decision-making processes of the target customer is crucial to the success of any product (Desjardins et al., 2014) and this maxim should be applied to the theme of this chapter.

In assessing the concept of Information and Communication Technology for Development, Toyama (2010:5) concludes that technology, no matter how well it is designed, is only a "magnifier of human intent and capacity." It is not a substitute for it. With a foundation of competent, well-intentioned people, appropriate technology can amplify their capacity to achieve specific goals (ibid). The major message to understand when replicating Information and Communication Technology for Development in the South African context is that technology has positive effects only if people are already willing and able to use it positively

Enacting new technical strategies, therefore, requires a strong, overarching, philosophical foundation to guide outcomes rather than viewing technology as a single simple solution to global problems.

The concept of the 'Distributed City' is a good example of the merit of this idea. Government institutions and businesses should instead see technology as one tool alongside other tools for solving local, small-scale, specific problems that contribute to an overall vision of equitable and sustainable development (Morozov, 2012). In conclusion, it is therefore crucial to have all these facets, as outlined in this discussion, realised in the delivery of an innovative technological tool. Toyama's (2010) term for it is the 'magnifier' that encompasses a sustainable overarching guiding philosophy that confirms a purpose; input from community members; a context-driven research design research; and a practical and effective business model with committed and competent planners, implementers and financers.

Conclusion

As defined (on page 367) the concept of the 'Distributed City' offers a practical method for government, the private sector, NGOs and individual citizens to empower impoverished communities by improving access to and distribution of resources and opportunities (Blowfield and Johnson, 2013). It is an approach that is relevant for the challenging circumstances that South African cities currently experience concerning inequality, poverty, a lack of access for residents to basic services, environmental degradation and the mismanagement of energy generation and supply.

From the discussion presented in this chapter, it emerges that it is critical for South African tiers of government to take on innovative approaches to urban pressures. It advocates accelerating the transition to new, environmentally friendly, general-purpose technologies and approaches that will construct an economy that is equitable and supportive of productive growth. It has provided an approach that aims to move away from disconnected welfare systems to government's comprehensive engagement with market-related opportunities for social justice and an inclusive economy. As Johnson (2013) states, the 'Distributed City' approach offers a particular way of thinking about markets and, in this case, it is simple, "the poorest of the poor spend $36 billion a year on kerosene alone. The market for M-KOPA is believed to be $1 billion a year in Kenya. It is a market that is the opposite of the sub-prime. It is big, growing and, when you serve it, by raising user productivity and income, you expand it."

Two case studies that support the principles of the 'Distributed City' approach, namely M-KOPA and the iShack Project, have been explored. These cases introduce innovation as a response to state service delivery. The idea involves incremental upgrading of informal settlements and the livelihoods of the poor. The projects discussed offer approaches that can empower South African institutions and communities to accelerate tangible, environmentally conscious and socio-economic responses. M-KOPA's profit-driven model demonstrates the value of a viable business model supported by strategic institutional and funding frameworks that deliver on a context-specific technology.

The iShack Project, on the other hand, seeks to develop and demonstrate a viable, large-scale alternative community-based enterprise model for incremental informal settlement upgrading, using environmentally sound technology and building local skills and meaningful jobs. While the drivers of this initiative state that the primary objective has already been largely achieved, there is still work to be done concerning the creation of a collaborative and enabling institutional framework. Should the state decide to adopt such a model as a standard form for basic service delivery at a national level, it should be characterised by political acceptance, advocacy, policy-changes and budget allocations.

In combination, these two case studies illustrate how the provision of Pay-As-You-Go solar power in poor communities can contribute to government objectives that focus on: the localisation of energy production; the equitable distribution of resources; increased opportunities for the poor; environmental conservation; community empowerment; and inclusive economic growth, while limiting opportunities for corruption and increased poverty.

The case studies were assessed to draw out the critical success factors for the replication and up-scaling of effective, affordable Pay-As-You-Go solar home-lighting systems in South African informal settlements. The strategic integration of mobile telephony infrastructure, money transfer capabilities and energy-generating products enable rural and urban households to access affordable, decentralised, renewable energy products and services. Such intervention offers a clean energy alternative for the millions of poor South Africans who either are using toxic fuels as a source of energy, or are paying for risky illegal connections. Many in this population sector are underserviced with regards to state-funded electricity. The business innovation model presented enables greater affordability and choice for energy-poor households through frequent, incremental and flexible payment options that mirror the income patterns of indigent households.

Furthermore, unbanked populations are reached and offered an alternative form of micro-financing that includes savings and further investment opportunities. This could significantly contribute to the up-scaling of modern energy access in the country. In this way, a response to a range of issues is offered, such as poverty, local economic development, climate change, electricity shortages, health and safety in informal settlements, environmental conservation and opportunity generation. It should, however, go without saying that such approaches are only possible with a thorough understanding regarding the complexities of financial sustainability, the coordination of multifaceted institutional processes and the inclusion of alternate approaches in broader, often rigid, government programmes.

In conclusion, sustainable technologies such as Pay-As-You-Go solar-powered home-lighting systems are not a solution in and of themselves. They are not a singular alternative to sound community-based settlement planning and development. Instead, acquiring any form of sustainable technology can be an effective aspect of a broader empowering social process. The benefit is immediate and a sound step towards improving the lives of informal settlement dwellers alongside the formal government processes of incremental upgrading and other poverty alleviation measures.

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conclusion

noun

a judgment or decision
reached by reasoning

12. CONCLUSION: A PIPELINE OF INNOVATION?

Margot Rubin and Philip Harrison

Introduction

Urban innovation is a fairly new field of study and recognised practice. The first references to urban innovation appeared in the wake of the economic turbulence of the 1970s. The chief advance followed the global financial crisis of 2008 with the launch of the largest initiatives in support of urban innovation occurring in 2015. In post-apartheid South Africa, the National Innovation Plan, adopted in 2008, and pervasive references to innovation in the National Development Plan of 2012, have firmly entrenched interest in innovation in current state thinking. The National Department of Planning, Monitoring and Evaluation and the Gauteng Provincial Government have taken up the concept in a collaborative initiative (detailed in Chapter 1).

This book is a product of this collaboration. It is, specifically, the result of a call from the Department of Planning, Monitoring and Evaluation for research contributions from young post-graduates and emerging researchers, under the age of 35. Selected authors were required to document "innovative responses to urban pressures in localities internationally or within South Africa that could potentially be replicated in, or adapted for, a South African context" (RSA, 2015). The innovations that were highlighted had to have a purpose. The selected case studies had to contribute to the goals set out in the National Development Plan, in particular, "to eliminate income poverty and reduce inequality by 2030" (RSA, 2011).

As an edited collection, the work of these young researchers brings together a variety of urban innovations that have the potential to be replicated for the benefit of urban residents in South Africa. The researchers subjected these cases to careful analysis, avoiding naïve assumptions about their translation into a new context. In this final chapter, we assemble some of the insights gathered from the various case studies presented, acknowledging that we cannot do justice to the richness and detail of the individual contributions. We have structured their insights according to the 'pipeline of urban innovation', which is a coined expression that represents how an idea can become an effective reality in urban development, if it is implemented in a systematic way (Urban Innovation Partnership, 2016). All elements and influencing factors need to be recognised and enabled so as to function as an entity. A few thoughts on taking the collaboration further, rounds off the documentation of this research endeavour, concluding this chapter, and the book.

The Pipeline of Urban Innovation

Chapters 1 and 2 of this book reveal the complexity of the field, with its many strands and sub-strands of thought and practice, locally and internationally. The urban innovations outlined in this book relate in various ways to these different strands, and offer multiple insights into the way innovation is practised across different contexts. What connects the very different innovations described in the book is the importance of governance, which reinforces the emphasis given by the Partnership for Urban Innovation. There are many creative ideas, for example, in relation to new technology, new forms of social organisation and new regulations. Essentially, though, the translation of these ideas into meaningful practice depends on the willingness and capacity of the various agents of governance to take-up and to scale up these ideas.

The concept underlying urban innovation can be summarised by the following formula:

Urban innovation = creative idea + initial implementation + initial impact + replication + extended impact

Creative idea

It is clear that there is significant inventiveness in cities with creative ideas bubbling up from within government agencies, the private sector, communities and non-governmental agencies. That this is so, is revealed in the case studies presented in this book. Important though, is to be aware that those recorded here reflect but a fraction of what abounds across the globe. There are many ideas that have been entirely lost to practice, or have never been implemented at an observable scale.

The ideas represented in the case studies are diverse. A number of them respond to very specific material challenges in cities: the shortage of affordable housing (Kaplan); service provision in informal settlements, such as power supplies (Rajab); managing urban waste in dense urban precincts (Novak and Glanville); mobility constraints of the urban poor (Zondi); and the burial of the dead (Leuta). Some of them respond to non-physical, but nevertheless critically important, matters. Kitching and Muzondo discuss innovations that respond to a concern that poorer people lack platforms for real engagement with the state. They claim that the processes of public participation that do exist "are often poorly connected to the exercise of real power and decision-making". The eKhaya precinct, described by Mkhize, is a response not only to the challenges of urban decay that deter investment in the inner city, but also to a critique that interventions have ignored the needs of the poorer people in the inner city.

Some of the case studies reflect ideas that are intended to proactively shape urban futures. Kotzen and Suttner investigate the extent to which the South African urban initiative, Cosmo City, has contributed to reshaping the city towards greater social equity and integration. Finally, Letang explores a technical regulatory instrument, the San Francisco Commuter Ordinance Benefit, which could serve the broader purpose of restructuring a city around public transportation.

The chapters offer pointers that enable the identification of the source of creative ideas. To some extent, the contributions challenge the perceptions that new ideas are either mainly the result of personal inspiration or that they emerge in some straightforward way from a rationally-designed research process. This knowledge gap about the origin of ideas requires more research. The case studies generally support the notion that new ideas emerge through processes of collaboration and co-creation, and then, as some scholars (Mulder, 2012; Sørensen, 2014) aver, gradually evolve through experimentation and incremental adaptation.

The creative design process involved in the recently built Diepsloot cemetery is the case study Leuta examines. In it the role of the individual designer and the engagements between the designer for Johannesburg City Parks and Zoo, and the users of the cemetery and various stakeholders, tend to get entangled. In the case of academe and civics, Kitching and Muzondo elaborate on the evolution of the concept of innovation with its adaptations and variations. The creativity comes through incremental application to different areas of concern, via collaborative processes involving government and civil society, and result in spatial transformation.

There is a similar story around the evolution of ideas around employer-based transportation management programmes. Parikh (2000) points out that it is a case of early ideas, some of which apparently go back to the 1920s when the Readers' Digest, a privatised bus system for relocated workers evolved incrementally, with moments or periods, of creativity along the way. The oil crisis of the 1970s, for example, provoked a new round of creative experimentation (Environmental Protection Agency, n.d.) with the progressive approaches of the Obama administration. Federal legislation allowed pre-tax benefits for employers of their transportation management programmes, a federal initiative limited to voluntary participation. Creative local initiatives, such as the San Francisco Commuter Benefits Ordinance, gave the idea a powerful boost.

Kaplan's story of the Mayor's Housing Covenant in Greater London reveals the interactive nature of creativity. Although it is not entirely clear how the creative idea of a housing covenant emerged, a long history of covenants culminated in the Greater London Authority experiencing a high moment of innovation in 2012. Importantly, in turn, it provoked creative responses from actors in the private sector, illustrating how creativity feeds off creativity.

Mkhize offers the interesting case of the eKhaya Residential Improvement District. South Africa's concept of a City Improvement District (CID) is an adaptation of the North American City Improvement District model. The story of the transfer of this idea has been told elsewhere (Peyroux 2006; 2007; Peyroux et al., 2012) but Mkhize's account takes it further and shows how creative evolution happened in the South African context as a CID, typically commercially-focused, was translated into a Residential CID, with its own specific character. In this particular process, the interests of the property developers are thought to have coincided with the residential neighbourhood community's concerns for security and orderliness.

Zondi's account of the matatus (privately owned minibus taxis) in Nairobi is especially helpful in showing how a web of interactions between actors – the innovation system – produced an idea. The company that developed M-KOPA did not, of course, invent the technology. What it did was to find a creative way of making solar installations affordable to the poor through a financial arrangement. Similarly, in creating the M-PESA network, the mobile network Safaricom adapted an existing technology. It organised that service payments could be made using a cell-phone. The story of the iShack Project, told by Rajab, is similar. A creative idea evolved incrementally within a network of actors, building on the opportunity provided by a technology.

Some of the case studies point to the role of individuals, *the idea entrepreneurs*. The clearest lesson is that the production of creative ideas is generally an adaptive, incremental, social process. The case studies also show that ideas come from different sources: the private sector and community entrepreneurs in the case of M-PESA, M-KOPA; the digital matatus and mapping for the iShack Project; and government, in the case of the Greater London Mayor's Covenant and the San Francisco Benefits Ordinance. A closer look, however, shows that, in almost all instances, the creativity emergence lies at the interface between agencies. The real creativity in the case of the Greater London Mayor's Covenant is to be found in the way in which private sector players responded to the opportunities the Covenant provided. In the case of the iShack Project, the creativity emerges from engagement across the academic, community and private sectors.

Initial implementation

Creativity becomes innovation when institutional support ensures the implementation of the idea. One of the key concerns of the Partnership for Urban Innovation is to identify the enablers and inhibitors of implementation. The case studies give us significant pointers in this direction that still remains elusive in the South African context. Kitching and Muzondo offer numerous examples of how the idea of a civic academy has been taken up in part or wholly by either a non-governmental agency or a partnership involving a government agency. Key to implementation is the openness of authorities to co-produce. The San Francisco Commuter Benefit Ordinance was partly enabled by a supportive federal government programme. However, it was the creative vigour experienced locally that led to its success within the San Francisco Bay Area. Specifically, the strength of environmental management department within city government and the growing sense of environmental

consciousness amongst the public that made this possible. Political acceptability was a key. Kaplan shows clearly how the problems of gap market housing delivery in Greater London produced a context that strongly encouraged implementation of creative responses from both the public and the private sectors in engagement with each other.

Each story involves not only an identifiable creative idea but also the participation of an institution that has the power and resources to make the idea a reality. In most cases, ideas were embraced because they offered the potential for solving a problem that had become increasingly pressing. The story is, however, not only of a well-resourced agency taking up and implementing an idea. It is also one of the brokering roles of institutions that might not have the required resources, but are able to bring various agents together to promote a process of innovation. In South Africa, for example, the Isandla Institute in Cape Town plays a brokerage role in relation to the idea of civic academies. The iShack Project was supported by a university agency facilitating the relationship between technical entrepreneurs, communities and government in the uptake of an innovation. Universities play a similar role in Nairobi, Kenya.

Rajab explains a case in the adaptation of new technologies for broad public use, noting that these brokers are most successful when they allow the different agents in a process to satisfy their own motivation, and apply their own logic when participating. In the case of the iShack Project, a university facilitated a relationship between the technical entrepreneurs and the governance aspects of the project. Non-Government Organisations (NGOs) played their role in ensuring that there was community engagement. This means that the business sector was able to guarantee it would turn profit from its initial investment; and the mobile phone network was able to increase its reach and market. Institutions and organisations were thus able to satisfy their needs.

The case studies also strongly suggested that implementation is generally not linear. There is a process of learning-by-doing that blurs the boundary between creative ideas and implementation. An example is the eKhaya initiative, which emerged gradually from experimentation rather than from a blueprint of what a residential improvement district could be like. The Diepsloot Memorial Park presents a special challenge, as community take-up is slow, requiring careful adaptation to local feelings and needs. Cosmo City involves the evolution of a new urban form that is between 'suburb' and 'township' and which creates possibilities of different kinds of urban experiences and urban livelihoods. Mistakes have been made, but prospects for creative adaptation exist. Both formal revisions to planning and management systems, and bottom-up responses, offer such opportunities into the future.

As case studies, the documented stories are understandably limited in the extent to which they can clearly reveal the actual processes of uptake, brokerage and implementation. This would require detailed institutional knowledge, which could come from forms of ethnographic research but this is beyond the scope of this book but should be considered for future work on urban innovation

Initial impact

While evaluating impact is a difficult and complex challenge, the case studies do point to certain elements that illustrate the effect an innovation can have on a particular locality. These are identified in three distinct areas: first, the connection between an innovation and the overall vision and strategy of the state and local governance; second, the extent to which a single innovation has multiple effects and simultaneously addresses a range of objectives; and, third, the scale at which the innovation is implemented.

Connecting to urban visions – and stretching the boundaries

Individual innovations that address immediate material problems in a city clearly do have value. Yet the real impact comes from interlocking innovations that together support a wider imaginary for a city. As initially indicated (Chapter 1), the question needing an answer is: innovation for what purpose?

Most of the cases outlined in this book make the connection between the individual problems that the innovations address, and broader and deeper visions for the city. They do link in some way to longer-term goals and strategies, and are steps towards a greater urban project of some kind. Importantly, however, these innovations are not necessarily contained within the formally stated city visions or long -range plans. They support the now broadly stated goals for cities such as 'sustainability', 'resilience', 'liveability' and 'inclusiveness' and, in some case, actually advance the visions.

The idea of co-production, for example, which is central to ideas of 'civic academies'' (Kitching and Muzondo) or of the 'distributed city' (Rajab) is currently only marginally recognised in most city strategies, which are mainly overwhelmingly focused on the role of government alone.

The case of digital mapping of the routes of matatus (Zondi) shows how the knowledge gained from daily life and lived experience can inform policy and decision-making within the echelons of power. By drawing local or tacit knowledge into a formal system of knowledge, city decision-making becomes more responsive to the needs and interests of residents, stretching the boundaries of governance vision and practice. The case of the eKhaya precinct (Mkhize) may also destabilise both bureaucratic and scholarly imaginaries as they illustrate how visions of urban orderliness can co-exist with social sensitivities and concerns through inclusiveness. Novak and Glanville demonstrate how an apparently mundane activity such as the collection of waste can serve a powerful social purpose by mobilising the energies of a community that is often represented as being transient and disconnected from urban agency. Kotzen and Suttner offer different and more inclusive methods of evaluation that incorporate the sensibilities of local residents, thereby building a more inclusionary city. Innovations such as these that constructively transgress boundaries (Fontan et al., 2008) offer more than an immediate fix to a specific problem. They expand the conceptual and political envelope, opening further spaces for creative action in the future. In some cases, the innovation may even change the nature of state-society relations as it did in the case of the Mayor's Housing Covenant in Greater London.

Multipliers

To have a significant impact, an innovation must have multiplier or leveraging effects. Ideally, it should address more than one goal, serve different interests and draw in the energies of different agencies. While innovations may attempt to address or 'solve' one issue, they have an expanded purpose if they are able to engage with the multiple challenges a city or community face. The case studies suggest different ways in which this has happened

The Diepsloot Memorial Park is an example of a design that accommodates different purposes (Leuta). The core function is for burial but the facility is also used for recreation and environmental management. The challenge in this case, however, is that potential users are hesitant to accept multiple possibilities of its use and the longer-term future of the initiative is uncertain. There are also unexpected – and possibly, unwelcome – uses such as the Park being a shortcut for minibus taxi drivers. Similarly, the proposed installation of bio-digesters in Hillbrow not only addresses issues related to waste management, but also raises concerns about health, unemployment, livelihoods and community cohesion (Novak and Glanville).

In the case of the M-PESA and the iShack Project innovations that addressed single problems created new long-term relationships between actors which, in turn, flourished as a spinoff of the original idea (Zondi, Rajab respectively). The digital matatus project was a very technical project at one level and yet drew the local state and citizens into a dialogue that had not existed before. Overall, urban governance improved as authorities listened to the narratives of the daily experience of residents to which they responded – to some degree, at least – in revised approaches to the informal transit sector (Zondi). The eKhaya initiative too has moved beyond its initial intentions of only ensuring order, safety and cleanliness. It began to also engage with more socially-orientated concerns and to access a higher degree of services and amenities from the city authorities (Mkhize).

The Greater London Authority Housing Covenant is an excellent example of the benefits of leverage (Kaplan). It includes a series of innovations in public financing that maximised that value of considerable private sector resources through innovative responses. An example is the practice of the private sector developer, Pocket Living, to use crowd-sourced funding.

The impacts of innovations are also multiplied with multi-faceted innovations. A new use of a technology could be found for either governance reform or a regulative change. The M-PESA and M-KOPA projects in Nairobi are good examples as they simultaneously include an adaptation of cell-phone technology with new financing instruments; the training of a network of community workers; and a higher level of community involvement. The iShack Project is a South African example of a similar approach, while the eKhaya precinct is also becoming increasingly complex in the way it combines different innovations.

Scaling

Small-scale experimentation is valuable as it reduces the risk of large scale implementation but ultimately, for meaningful impact, innovations need to be scaled up. The cases discussed in this book have been implemented at varying scales and some of their potential impacts have yet to be experienced fully. The eKhaya initiative, a neighbourhood development programme of the City of Johannesburg, is currently confined to only one part of Hillbrow in Johannesburg. The boundaries of the precinct are likely to expand gradually but its significance is sure to rest in the possibilities it offers for other parts of Johannesburg, and even beyond the city. The iShack Project currently remains a largely experimental project with the accompanying idea of franchising. Given the support it now too receives from South Africa's Green Fund, the possibilities for upscaling do indeed exist.

Some initiatives have done extremely well in a short period within a particular city or national context, like M-PESA, M-KOPA, and the digital matatu scheme in Kenya. Significantly, they have changed the lives of their urban residents. The next phase in their development is to reach other contexts internationally. Indeed, international interest in the models is strong. The San Francisco Commuter Benefits Ordinance is a somewhat different case. As a model it is recognised across the United States and Canada at least, but what San Francisco offers is a successful local variant, which is attracting international interest. The international examples of waste management are small-scale projects that have had mixed success and upscaling has not been attempted. However, a hybrid combination of these projects may suggest a model that could provide solutions in other contexts and at a larger scale.

Potential for replication and expanded impact

Without doubt, replication expands impact significantly through implementation in places that might be far distant from the original site of application. Since replication stems from initial ideas and practices that are often located within specific historical, geographical, political, social and institutional contexts. Replication is not a simple matter. The timing of innovations in particular places too is rarely accidental. Thus, understanding the backdrop to both the creative idea and its implementation is an important first step in assessing the potential for replication. In Johannesburg, the creation of the eKhaya precinct can hardly be understood without the context of a thirty-year struggle to regenerate the inner city, with its heated controversies over the limited impact of municipal-led efforts, and the effects of regeneration on the urban poor (Mkhize). There was clearly a moment when property investors in the inner city were prepared to experiment with something different – arguably, something more socially inclusive than previously. Every case has its own context, with its own story in relation to location, timing and opportunity. Each must be properly understood before replication can be considered.

Specifically, what factors, in addition to the history and broader context, make specific forms of innovation a success? One significant common feature is the presence of an institutional champion, either an individual or an agency. Clearly the benefaction of the Mayor of Greater London was critical to the success of the Housing Covenant (Kaplan), but most other cases have institutional champions, even if less obvious than in this instance. In the case of the iShack Project, the Sustainability Institute at the University of Stellenbosch was key to getting the innovation off the ground, while eKhaya's success is attributable in part to key individuals who were able to weave strong networks of local support. The M-PESA, M-KOPA and Digital Matatus projects are good examples of co-production where multiple actors play a role in the evolution of particular innovations, but where particular actors are the key facilitators.

Given the context-specific enabling factors, can these innovations be applied elsewhere? If so, what would it take to make them really work? In most of the chapters there was a sense of cautious optimism. Mkhize suggests that the eKhaya model could be taken up in other inner city contexts in South Africa. The proviso attached is that dedicated project teams with strong leadership are required to sustain the effort needed to make it work in a complex environment. Kitching and Muzondo suggest a range of issues that are needed for successful replication of programmes common to civic academies: partnerships; diversity among participants; dedicated resources; context-sensitive learning methodologies; good, objective facilitation; clear rules of engagement; and an outcomes-based agreement. From attempting to replicate the San Francisco Commuter Benefits Ordinance in the context of Cape Town, Letang provides an 'analysis matrix'. It lists, in some detail, the essential elements for a successful transportation policy environment: institutional arrangements; investments in infrastructure; incentive programmes; and locational choices.

Kaplan also offers quite specific guidance around the requirements for the local replication of the Greater London Housing Covenant, arguing that at least four key shifts are required in the approach to housing in South Africa. These are identified as significant reform to the procurement framework for Public and Private Partnerships (PPPs); the supply side equity ownership options at multiple price entry points; the devolution of powers and functions to local government; and increased flexibility in Public-Private Partnership project packaging and deal structuring. If this were to happen, argues Kaplan, there is a strong possibility of replication which would improve the scale of housing delivery in South Africa.

Zondi contends that there would be real value in replicating the digital matatus mapping project for the minibus taxi industry in South Africa. However, she cautions that the nature of the taxi industry in these two African contexts differs significantly. In Nairobi, there is a higher degree of centralisation in the industry.

This could possibly make the mapping of routes easier than in the more complex, decentralised and fluid operational instances in the cities of South Africa. For Zondi, the possibilities for replication have to be explored in terms of the intricacies of networks and power relations between urban actors. Novak and Glanville have a different approach. They begin with the specificities of the South African case and construct a contextually-informed solution that draws from the lessons of a number of international cases, rather than attempting to translate a particular model from elsewhere.

There is far more detail the researchers identify in the case studies than is outlined here. However, the overall impression is that replicating the documented instances of urban innovation is desirable. In all cases, replication is considered a viable prospect. However, the researchers are not naïve about what would be required. They all acknowledge the significance of context, and the enormous challenges of effective translation. Each case is specific about what would be required for replication but there are some generic requirements that apply across a range of different cases.

It is clear that institutional championing and leadership is necessary and that these are often best structured through partnerships and collaborations, rather than through hierarchical instruction within a municipality. Through collaboration, innovation becomes far more deeply embedded in a social context than it would if it were a project of a single agency, or effected between specific individuals within an agency. Furthermore, participating agencies should offer institutional environments that are both supportive of experimentation and accept the risks associated with implementing new ideas. This requires both adaptive leadership and reforms to regulations, procedures and processes that currently inhibit innovation; public procurement and performance management are particular cases in point.

Then, there is the critical question of financing. Budgeting processes and auditing requirements are often stumbling blocks to innovation, as they are too rule-bound to accommodate the surprises that characterise new practices. Dedicated funding to support innovation would be advantageous as has been the case in the European Union's Urban Innovation Actions initiative. To avoid dependence only on government, finding diverse sources of funding is advocated. Rajab writes in her case chapter on 'the distributed city' that:

It can be concluded that when replicating these models in the South African urban context there should be a balance achieved between state funding, international donors, private sector (venture capitalists) and capital generated from the project income itself with the assistance and leveraging of digital finance.

In the case of the M-KOPA project, Rajab offers the suggestion that, before the project is mainstreamed through conventional institutional funding streams with their bureaucratic requirements, its initial phases should be piloted using donor and grant funding. This procedure gives the flexibility required to evaluate the innovation and consider its merit for financial support. The sustainability of funding is also critical if the innovation is to have a positive long-term effect. Either the innovation must be self-sustainable in financial terms – hopefully even making a profit – or adequate provision must be made in future budgets for matters such as maintenance and replacement (Swilling, 2014).

Moving Forward

We conclude this book by proposing a *Partnership for Urban Innovation in South Africa* as a platform for supporting local actions that will improve the lives of urban residents. In this book, operational innovations or clusters of innovations have been identified, some which have the potential to be adjusted for use in compatible local contexts elsewhere. Realistically, the challenges of adaptation and translation would have been addressed but, hopefully, good practices can be replicated. A Partnership could begin by taking these cases of innovation researched and documented in this publication and deciding which should be prioritised for replication within a typical South African context. Experimental action could prepare the way for envisaging and planning thoughtful and structured innovation on a far greater scale too.

As acknowledged, the cases presented are a fraction of the sum of urban innovations globally and in South Africa. A *Partnership* could assemble and evaluate many more cases of innovation, using different methods for dissemination. This book provided the opportunity for young researchers under 35, to record, analyse and explore urban innovations with an emphasis on poverty alleviation replicable for the South African context; there could be further calls for research but also beneficial would be for various actors to come forward with their own innovations that could be accessed using electronic platforms, administered surveys, special events, exhibitions and competitions or awards.

Since insights emerge through research or other processes, *Partnership* does not need to take a firm position and make recommendations for institutionalising and systematising innovation within urban governance. The focus could be in relation to organisational arrangements, funding, regulations, performance management and public procurement. Suggested questions that a Partnership might consider answering in appropriate detail could be both interdisciplinary in scope, while concomitantly focusing on the ethos of urban planning in spatial context. What is required is the depth of understanding that comes from ethnographic and other forms of detailed on-site investigation. How are ideas really generated? How are they taken up, if at all? What are the enablers and disablers of success? What is it about context that makes innovation possible? What are the real impacts of innovation on everyday life? How does translation across contexts actually happen?

Perhaps the key lesson that comes from both the literature reviews and the international scans in the first two chapters of this book, and the various case studies, is that creativity generally emerges through networks of learning and collaboration. Moreover, innovation happens within a system of interactions. The primary task of a *Partnership for Urban Innovation* may be to bring thoughtful, creative people together to stimulate new ideas, explore existing ideas and find ways to make these ideas real. This involves, inter alia, creating what Leydesdorff and Deakin (2011) calls a 'triple-helix of innovation' that interlinks "the intellectual capital of universities, the wealth creation of industries, and the democratic government of civil society"(ibid.:53).

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