Out-Of-The Box
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Table of contents

Alphabetic author index

Foreword by the Department of Science and Technology

The primary goal of the Out-Of-The Box Conference was to underscore the importance of technology and innovation in achieving sustainable human settlements. The conference provided a platform for greater interaction amongst key stakeholders championing innovation and technology, particularly in the research community.

The conference also provided space to engage and reflect on enablers and barriers for innovation uptake in the human settlements sector.

The event generated views and opinions informing the sector transition process towards smart communities and green settlements.

It is our firm belief that science, technology and innovation has an immense role and contribution in helping communities to become sustainable, carbon neutral, resilient and energy efficient.

However, this requires a partnership approach, dedicate innovation programmes and interventions in the sector.

Mr Tshepang Mosiea

Director for Science and Technology for Sustainable Human Settlements
Department of Science and Technology

The STI 4 SHS Roadmap

Human habitats continuously evolve. Our understanding and approach to shaping them shifts over time. Since the birth of its democracy, South Africa has, on the one hand allowed free markets to satisfy a portion of the needs for housing and neighbourhoods whilst establishing a formidable range of institutions and instruments – a veritable machine - to provide access to housing for [previously] marginalised households. However, a good look at the status quo reveals that business-as-usual is not producing satisfactory results to the extent needed.

The Property Sector Charter Council measured the size of the property market in South Africa at R5, 8 trillion in 2016. The formal residential property accounts for nearly three-quarters of property owned in South Africa, and grew from an estimated R3trn at the end of 2010 to R3.9trn. The total economic contribution to GDP of the residential property sector was R103, 7 billion, while it contributed R20, 1 billion to the fiscus through various forms of tax in 2012. A telling part of this research, is that, whilst informal residential property is quantified by the number of households provided by the Department of Human Settlements, it has been assigned no value.

With a Gini coefficient of 0.63 in 2015, South Africa is one of the most unequal societies in the world. A World Bank report in 2018 indicated that the top 1% of South Africans own 70.9% of the country's wealth while the bottom 60% controls 7% of the country's assets. Africa Check estimated that 30 million people, or 55% of the population of South Africa in 2015, lived on less than R1000 per month.

Indications are that housing backlogs in South Africa are increasing. In 1994, backlogs were estimated to be 1.5 million, in 2011, 1.9 million and by 2017, 2.3million. The cost of addressing housing backlogs by 2020 is estimated to be R800 billion, while the annual budget for 2018/19 for human settlements, including electrification and water programmes, was R56.5billion. Scaling up programmes to construct housing within budgeted timeframes can also be problematic and in 2018, R600million made available for new housing went unspent because of delays.

The Department of Water and Sanitation's Water Reconciliation All Town Study indicates that water resources in 30% of South Africa's towns are already in deficit. It suggests that water shortages are expected in at least another 15% of South Africa's towns in the next 5 years, with an addition 12% of towns also suffering shortages in the 5 years following this.

Existing spatial patterns and poor housing reinforce poverty levels by requiring poorer households to spend a large proportion of their household incomes on travel and basic services. Low-income households spend, on average, 20% of their incomes on transport and 34% on food. Occupants of low-cost housing can also spend as much as 20% of their income on heating in winter and inappropriate heating methods can lead to suspended particulates being well over World Health Organisation guidelines leading to a significant health problems.

In South Africa, human settlements are associated with significant carbon emissions and residential buildings consume 13% of South Africa's energy and generate 25 million tons of carbon dioxide emissions per year. The manufacture of building materials and components, much of it used in new housing, consumes another 5% of South Africa's energy.

Against the backdrop of the current status quo described above, is a trajectory which is likely to see continuing rapid urbanisation, locally as globally, with growing city populations, infrastructure strain, hollowing rural areas and deepening vulnerabilities. Climate change and resource scarcity render our goals and commitments (NDPs, SDGs and others) an imperative to build resilience in face of emerging threats to water and food security.

Science, technology and innovation may have a crucial contribution to make in transforming and shaping our future human habitats, to avert and cope with the challenges which lay ahead, and to realise the potential of South Africa's human settlements to provide for a decent standard of living; safe, resilient and sustainable households and neighbourhoods. Yet, that science, technology and innovation plays such a role is not inevitable, nor is it immediately evident, what the best contribution would look like or how such a course would be chartered.

At the 2017 National Department of Human Settlements Development Summit, the opportunity was identified to respond to these challenges by means of upscaling the use of innovation and transformative technologies as a means to support new human settlements required by accelerated urbanisation, as well as for the upkeep and renewal of existing settlements. The assigned summit commission resolved to adopt a defined agenda and plan - that is the STI 4 SHS Roadmap - for the up-scaling of innovation and implementation of alternative

technology solutions for smart cities with a community approach. In 2018 the Department of Science and Technology initiated a two year roadmap definition process to define a flexible, yet robust framework, to respond to and support emerging innovative technologies, in a systematic and evidence-based manner, so that appropriate technologies can be identified and mainstreamed.

This STI 4 SHS Roadmap for the adoption of science, innovation and technology for sustainable human settlements will be crafted between April 2018 and September 2019, and implemented over the following ten years. An extensive consultation process with role-players and key stakeholders, as well as intensive research is to be employed in the development of the STI 4 SHS roadmap.

The 2018 Out-of-the-Box Human Settlement Conference was conceived as a platform for academic thought leaders to make a first contribution to the conversation from the academic community's perspective. These proceedings, flowing from the constructive two day conference and parallel engagements, cover a broad range of themes and communicate some very important key lessons to be taken forward in the Roadmap.

Ms Peta de Jager and Dr Jeremy Gibberd.

This text is substantially based on the *STI 4 SHS Draft Status Quo Report*.

Academic Session

Introduction

As part of the Out-of-the-Box Human Settlements Conference, an Academic Panel was scheduled to enable selected academics to provide their insights on the conference themes. Proceedings of the panel session were recorded and have been distilled in this short report.

Members of the Academic Panel

Dr Jeffery Mahachi, University of Johannesburg

Dr Sithembiso Myeni, University of Kwa Zulu Natal

Prof Sijekula Mbanga, Nelson Mandela University

Prof Soyez, University of Potsdam (Germany)

Dr Philip Stott, Central University of Technology Bloemfontein

Dr Darlington Onojaefe, Cape Peninsula University of Technology

Prof Amira Osman, Tshwane University of technology

Prof Mark Napier, CSIR

Dr Jeremy Gibberd, CSIR

Panel Session Format

The panel session was designed to provide an opportunity for Academics to present and discuss key issues at the conference. Questions (outlined below) were emailed to Academics in advance of the conference and were used to structure presentations and discussion during the event. Proceedings were recorded and the session lasted about 2 hours.

Key Questions

A. **Needs:** What are the 2-3 key/pressing needs in South African human settlements that could be addressed through science, technology and innovation?

B. **Science, technology and innovation:** What 2-3 science, technology and innovation interventions do you think could make the most significant difference to people living in South African human settlements, particular in underserviced areas?

C. **Implementation:** How can the interventions you have identified be implemented? Who should do this? How should implementation be funded? Are there particular prerequisites, models and partnerships required? If so, what do these look like?

Distilled Themes from Panel Presentations and Discussion

The themes outlined below were drafted by the Facilitator of the Panel, Jeremy Gibberd. Views within the panel were diverse and sometimes divergent so the themes below do not represent a shared, consensus view but rather a distillation by the Facilitator of some of the concepts and ideas that were shared.

1. **Partnerships:** There was a view that better working partnerships were required to improve housing delivery and the integration of valuable technologies into existing and new human settlements. Current delivery of low-cost housing is isolated to 1 or 2 government departments and this arrangement limits the potential for innovation and scaling up delivery. It was therefore recommended that opportunities for collaboration and the co-production of human settlements and technologies should be taken.

2. **The poor:** There was a view that many housing and technology solutions claimed to address 'the poor'. This is problematic for a number of reasons. Firstly, the people who developed the solutions often did not understand the issues and sometimes inappropriate solutions were developed. Secondly, this model does not empower users who are regarded as passive recipients. Thirdly, as there are problems with all types of human settlements, shouldn't approaches and technologies be developed which could be applied to all settlements? Thus, for instance, in a very water-scarce area, the same water-saving sanitation could be used in wealthy suburbs as well as in poorer areas. This may help avoid the perception that 'second-class' technologies were being provided to poor people.

3. **Neighbourhood:** The concept of the neighbourhood was considered to be undervalued and it was thought that human settlement development in South Africa should promote this idea more strongly. It was argued that beneficial aspects of neighbourhoods such as local schools, parks and recycling schemes, local economies and social interaction and organisations, such as neighbourhood groups, should be promoted. These aspects, it was argued, could greatly enhance the quality of life of inhabitants as well as having a range of sustainability benefits.

4. **Codes and Competencies:** The quality of low-cost housing in many new developments in South Africa was considered problematic. Problems include inadequate foundations, inferior materials, poor workmanship and non-standard construction techniques. This has led to the requirement for rectification programmes which are a waste of resources and disrupt the lives of occupants. Defining quality standards and processes may help address this situation. This could include ensuring that quality standards are defined and properly adhered to. This can be supported by effective contracting and appointment documentation, explicit quality assurance procedures and enhanced technical capacity within the client, contractors and professional teams.

1. **Specialisation:** Levels of technical expertise to address current and emerging issues in human settlements were considered insufficient. Climate change, the upgrading of informal settlements and renewable energy systems, for instance, need to be addressed and are not catered for in current professional team capabilities and training. Specialist courses and focussed modules in built environment professional curricula to address these emerging issues are recommended.

2. **Innovation:** It was argued that innovation in South African human settlements should be made more exciting and be mainstreamed by marketing this better. Lessons could be learnt from France where innovation is regarded as desirable and is promoted very effectively.

3. **Community Practices:** There was a view that we do not learn enough from current practices. For instance, communities and households have processes of developing dwellings and settlements that can be used and refined to create more responsive human settlements. An example of this is the 'flat-pack' timber and corrugated iron house that can be bought, transported in a pick-up truck and erected in about an hour.

1. **Vision:** There was a view that we need to develop and test ideas about what sustainable human settlements are. In particular, researchers and academics needed to work with local government to pilot new approaches that showed potential for improving the sustainability of new settlements and learn from this process.

2. **Criteria:** Improving the efficiency, effectiveness and sustainability of human settlement construction and products requires explicit and quantifiable objectives, criteria, targets and measurement protocols. It was therefore argued that these should be developed and rigorously applied to benchmark existing processes and test alternatives that could lead to better performance.

Dr Jeremy Gibberd

The peer review process

A full double blind peer-review process was followed for the conference. This included a double-blind peer review process for all abstracts. A double-blind peer review of all full papers was also undertaken.

Reviews were undertaken by the Scientific Committee and facilitated by the Organising Committee who communicated reviews to paper authors. The Scientific Committee was established through peer recommendation and consists of highly experienced senior academics and built environment professionals.

A full list of members of the Scientific and Organising Committees as well as Reviewers is below.

Full papers also received final editing and quality checks before being included in the proceedings.

Scientific committee

Dr Jeremy Gibberd, CSIR, South Africa

Dr Dirk Conradie, CSIR, South Africa

Mr Llewellyn van Wyk, CSIR, South Africa

Ms Peta de Jager, CSIR, South Africa

Ms Lorato Motsatsi, CSIR, South Africa

Dr Jefferey Mahachi,University of Johannesburg, South Africa

Dr Sithembiso Myeni,University of Kwa Zulu Natal, South Africa

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Reviewers

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Prof Gerhard Bosman, University of Free State, South Africa

Prof Amira Osman, Tshwane University of technology, South Africa

Prof Fidelis Emuze, Central University of Technology, South Africa

Dr Darlington Onojaefe, Cape Peninsula University of Technology, South Africa

Prof Brian Wasserman, South Africa,State University of Minnesota, USA

Prof Miklas Scholz, Lund University, Sweden

Prof Silke Flassnoecker, HS-Wismar University of Applied Sciences, Germany

Un-learning ‘community’: Reflections on socio-technical spatial design support with Slovo Park

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ABSTRACT

The South African city we experience today did not simply manifest in a vacuum outside of the social injustice of the last 400+ years of colonial and Apartheid ‘development’. The four-hour commute that the average Johannesburg city user experiences, the sense of fractured locality across the metropolitans of Durban and Pretoria and the intact socio-economic segregation of townships to suburbs seen in Cape Town are all the tangible legacies of the Apartheid city design that we complicity accept as our South African city on a daily basis.

The knee-jerk reaction by built environment practitioners to this observation is typically a technocratic response to suggest an addition of infrastructure and implementation and not a reform of the practice of city-making. The fact remains that among the large-scale projects our democratic government has implemented we sit with infrastructure deficits larger today than 1994.

The practice of ‘making city’ in South Africa requires some form of radical change, one that calls on all city makers to re-conceptualise how we see, make and manage our spaces. While technical skills and competencies are vital to this approach, the immediate challenge for built environment practitioners can be seen in the lack of skills or willingness of individuals and institutions to engage with the socio-political complexity of our cities. The misnomer that we are dealing with a homogenous technical challenge for a homogenous social demographic of people (or the ‘community’) that can be solved through a ‘better house/shack/dwelling’, a more efficient toilet system or solar panel array, is damaging and criminally myopic in its lack of imagination, creativity or recognition of the situation.

The paper offers a structured reflection on an eight-year case study conducted by the author and his colleagues. The argument of the paper is centred around a critique on the often-misused terms of ‘informality’, community’, ‘participation’ and ‘development’ in the built environment sector of spatial development. The case study unpacks the approach and methods used within the Socio-Technical Spatial Design practice of ‘Neighbourhood Making’ and offers a reflection on critical skills and lessons gathered from the experience. The intent of this reflexive study is to offer a working reference for private-sector practitioners, government officials and grassroots practitioners who are looking to engage informal neighbourhood upgrading in South Africa.

Keywords: Informality, community, grassroots, neighbourhood, city-making, Socio-technical, development, participation

1 INTRODUCTION

Since the end of the Apartheid, South African cities have seen a large growth in urbanisation and spatial development. This condition, combined with over 400 years of colonial and apartheid socio-spatial inequality has resulted in over 2700 recognized informal settlements across South Africa of which, according to the Housing Development Agency (HDA, 2018), around 2 million households are living in ‘informal circumstances’, while other statistics state that over 700 000 households of this number live in backyard dwellings. In total, 1 in 5 South Africans lives in inadequate conditions (Isandla, 2013).

Latest statistics suggest that while government efforts have built over 3 million housing opportunities since 1994 (HDA, 2018), the country’s current backlog of housing is still over 2.1 million (Isandla, 2016). This figure is larger today than since it was at the beginning of South Africa’s democracy in April of 1994 - in other words by building houses we haven't solved the 'housing' challenge nor the issue of

'informality'. These numbers indicate that these patterns of city-making[5] will be with us for the foreseeable future and that as a city we should accept 'informality' as part of urban growth (Pieterse & Simone, 2013).

Contemporary urban scholars guide us to rather work with these conditions to address issues of safety, health, livelihoods and access to economic and civic opportunities at what the Isandla (2013) suggests at a '*Neighbourhood level'* - rather than trying to *'eradicate'* it with formal houses or *'formality'* - a turn or phrase that is heavily critiqued and avoided in contemporary practice (Huchzermeyer, 2011).

While '*informality'* is a broad and often unhelpful term in regards to place-making for people it is unfortunately a lens that users, makers and managers of the city understand their operational landscape through (AlSayyad, 2004; Roy, 2005) and is used in this paper as a means of articulating the content. The hesitation to use 'informal' stems from the author's work in the spatial development sector. The term alludes to a negative stigma being attached to people and systems that exist in 'informal' neighbourhoods and is often euphemism for other bigoted perceptions of people. In this respect, residents of informal neighbourhoods face the systemic effects of unequal spatial development (South African Cities Network, 2016) in terms of their physical access (in the form of four-hour commutes to work, education and civic amenities, service access (in the form of bad service delivery of electricity, water and sanitation from government) and social access (in the form of job opportunities and important social networks).

On the average, those living in informal neighbourhoods pay more for basic services, transport and education than those living in more affluent areas owing to this lack of access to the well located city-based amenities (Pieterse, 2008; United Nations, 2016;Cirolia *et al*., 2017b).

Despite these immense challenges, informal neighbourhoods are some of the most dynamic and entrepreneurial spaces in cities (Roy, 2005); with grassroots businesses, social groups and advocacy groups demonstrating ground-breaking processes to address livelihood creation, building practice and social cohesion that if supported and scaled up have the potential to change our South African city-making processes to be more equitable, grassroots and representative of a South African city. This observation is tempered with caution from Pieterse (2008), who warns of the danger within the binary perspectives on informal neighbourhoods as 'apocalyptic' or *'irresponsibly optimistic'*. These perspectives and stigmas around informal neighbourhoods are powerful forces that in the author's experience often remain unchallenged and not addressed in the built environment practice space.

Figure 1 Socio-Spatial Mapping of 'informal Urbanism' conducted by the author demonstrating the dynamic of 'informality' (1to1, 2018)

These uncritical views on informal neighbourhoods are a key part of the challenge that government officials, NGO's and other grassroots practitioners in city making face when in working with this sector (Isandla, 2013). These city-making practitioners have very few best-case examples of successful neighbourhood making processes to draw from (NUSP, 2013; Cirolia *et a*l., 2017b) which is

5 City-making is a term drawn from Isandla's 2011 Right to the City document that outlines the principles of city making through a rights-based approach developed with a range of local stakeholder on 11 core principles of inclusive city making (Isandla, 2011)

compounded by a lack of skilled practitioners (both grassroots and 'professional') or as what Van Donk refers to as *'Design Activists'* (Marjam Van Donk & Edgar Pieterse, 2014) and builders - who the author believes are a missing sector of practice in South African city-making.

2 SETTING THE CHALLENGE

2.1 CHALLENGING DEVELOPMENT

Interwoven in the fundamental views on South Africa's version of urbanisation lie deep (unanswered) questions of resource re-distribution or spatial justice as outlined by De Souza (2011). Spatial Justice is an often difficult concept to articulate in South African cities, and even De Souza writes about the difficulty in identifying what a spatially just city-making practice is, with the provocation: "*What does spatial justice look like?"* The National Planning Commission (NPC) (2010) offers the people of South Africa a vision for our future *'just'* or '*developed'* city:

> *By 2050, South Africa will no longer have: poverty traps in … townships; workers isolated on the periphery of cities; inner cities controlled by slumlords and crime; sterile suburbs with homes surrounded by high walls and electric fences; households spending 30 percent or more of their time, energy and money on daily commuting; decaying infrastructure with power blackouts, undrinkable water, potholes and blocked sewers; violent protests; gridlocked roads and unreliable public transport; new public housing in barren urban landscapes; new private investment creating exclusive enclaves for the rich; fearful immigrant communities living in confined spaces .... (National Planning Commission, 2010)*

While this offering from the NPC sums up the ills of what many city users experience on a daily basis, there are many urban voices who would argue that these are not what makes South African cities difficult to thrive in (Charlton, 2009; Matsipa, 2014), but rather are symptoms of the larger injustices of our city's historically unequal development. These hidden interpersonal intricacies around what is meant by development [6] or upgrading (Abbott, 2002) in South Africa lies at the heart of many disagreements' between practitioners, government and the academy on the topic of city-making.

Figure 2 Explorations of 'development practice' as suggestion of De Souza's provocation - by the author (1to1, 2018)

Development itself is a heavily challenged term, as Hamdi (2004) anecdotally critiques in his description of an exercise that he employs with Development Studies students at Oxford Brookes. In the exercise he allows students to use the Robertson Lexicon to create a list of development terms. From this list he makes students re-organise the terms in to different sentences in different columns to randomly

6 Or 're-development' a term employed by the author to recognise the uneven development of South African cities since the geo-political formation of South Africa in 1652.

generate statements for development – that all make sense as statements of intent. The point of Hamdi's 'jargon generator' demonstrates his argument: *"…Development is whatever you want it to be depending on your politics and ideology: economic growth, rights, freedom, livelihoods, good governance, knowledge, power…"* (Hamdi, 2004: xv).

This preludes an important observation that the concepts around development are so interchangeable in the minds of those it affects that to agree on what a *'re-developed'* city, just city-making or 'spatially equal' process is, becomes an impossible and sometimes quite violent task. This observation belies the point that if the understanding of development is contested and abstract, what does the practice of technical or social support towards *'development'* look like?

Hand in hand with contestation around 'development' comes an established history in the use and practice of *'participation'*, a term employed in contemporary development practice since the 1970's (Cooke & Kothari, 2001) that has seen volumes of critique and exploration amongst scholars and practitioners. The use of participatory practice in South Africa around spatial development and the built environment efforts remains difficult to articulate (Ballard, 2008) as what encompasses the practice seems to conflate consultation, discussion, capacitation, empowerment and other nuances of engagement that the term conflates. Arnstein's ladder of participation (Arnstein, 1969) offers a global perspective on a structuring of this term, but in the practice of city-making in South Africa the author has more often witnessed the only rungs 1-5 of Arnstein's ladder (Osman & Bennett, 2013).

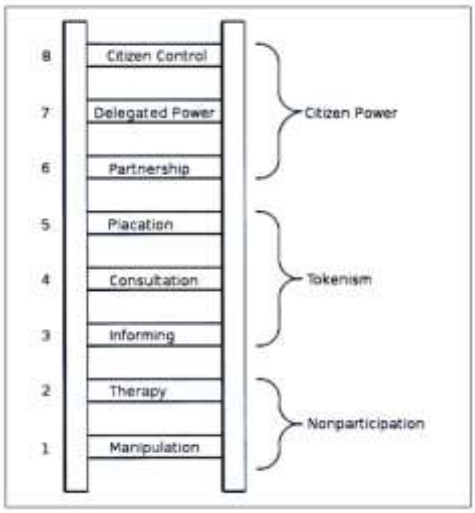

Figure 3 Eight Rungs on the Ladder of Citizen Participation (Arnstein, 1969)

The absence of the citizen power elements of the ladder is an observation is echoed by practice bodies such as DAG and Planact (Isandla, 2013) in their annual roundtables and scholars such as Ballard (2008) who describes how; even though government tenders call for participation in the project structuring of the upgrading of informal neighbourhoods, and even under the UISP has a fiscal allocation of 3% (NUSP, 2013) of project budget to this role, this role in the sector still remains fundamentally missing from built environment projects as a whole.

> *"Participation does not necessarily imply self-help home building by undernourished and over-worked people without credit, with inadequate tools and poor materials . . . The central issue is that of control and power to decide"* (Turner & Ward, 1991).

Turner offers a critical observation on the underlying reasons for participation, but locally these practices of participation in the built environment and upgrading space require nuanced local critique in the South African context. Isandla (2013) offers 3 important framing questions on the various forms of citizen participation:

- Who participates?
- How do they communicate and make decisions?
- What is the connection between their conclusions and opinions, on one hand, and public policy and action, on the other?

In other words, participation does not mean much if there is not a space for the actions be implemented or if there is no meaningful feedback structures to those in power or the actions are understood.

2.2 CHALLENGING COMMUNITY

The following critique of the term 'community' does not exclude the valid existence of organised groups of people who share vision and the author offers Nick Wates's definition of the term ' community' from *The Community Planning Handbook* as *'…a group of people sharing common interests and living within a geographically defined area'* (Wates, 2000: 184).

While it often supports a personal (or naïve) optimistic view on dire circumstance, the romantic notions of 'community' only being a well organised, self-propelled cohesive social entity, are not 'fair' to the groups of people who make up the social and spatial networks of informal neighbourhoods. This unbalanced view is clearly seen when projects 'fail' or are halted these groups of people who are held to blame – often against this idealistic view (Winkler, 2013). Again, Hamdi offers a counter perspective and in his written work often describes how 'communities' are not necessarily always organized and cohesive and sometimes lack the 'sense of community' and 'social identity' (Hamdi & Goethert, 1997: 67). He qualifies this by explaining that for participatory processes to work, it is not a requirement to have an already well-organized community from the start of a project. But that a sense of community can be achieved during the course of the work - which he states *"…can also be one of the objectives of including community participation in development projects…"* (Hamdi & Goethert, 1997).

Guijt and Shah(1999) challenge the term *'community'*, arguing that the simplistic understanding of 'community' as a homogenous static and harmonious entity where all involved share the same interests and value are short sighted and often hide important power relations and biases of practitioners and residents. These hidden biases are very dangerous when the line between life and death around development is determined by these understandings. Challenging the use of the term *'community'* is echoed by leading scholars in the field (Cooke & Kothari, 2001; Hamdi, 2010; Chambers, 2017) and remains an unchallenged point in this sector of spatial development in South Africa.

The term 'community' is particularly unhelpful to practitioners in the spatial development sector around housing delivery and urban upgrading as it is often code for 'poor non-white South Africans' and limits the scope of what development projects allow for. The use of the term often implicitly excludes non-qualifiers for support and ignores cultural, gender, nationality and religious dynamics of South African informal neighbourhoods as described in the images below.

Figure 4 An example of complex 'community'[7] engagement in Killarney Neighbourhood, Johannesburg (1to1, 2018)

The use of the term by built environment practitioners often results in myopic perspectives on the needs of complex groups of people who share space into simplistic interventions such as ' community centres' or 'skills centres' that offer generic and often reductive support as pointed out by Hamdi (2010) in his reflection to site visits of similar centres *"We have learnt that belonging is not just about location but*

7 1to1 students who have worked and working on a process of socio-spatial mapping

about meaning and association – the kinds that offer a multiplicity of opportunity for social exchange…" (Hamdi, 2010) and witnessed by the author his in own teaching and praxis in this sector.

These reductive views on people and place have the unaccounted cost of limiting creativity and innovation for strategies of development and reducing the inherent agency that often exists at grassroots level in South African informal neighbourhoods (Bidwell *et al.,* 2010; Marjam Van Donk & Edgar Pieterse, 2014). The critique offered here does not deny that communities exist in South African neighbourhoods, but rather that the use of the term is often not questioned or challenged – more often than not there are many 'communities' that make up neighbourhood structures.

Hidden in the immensity of the challenge faced by built environment practitioners in the housing delivery sector, but mentioned often in the rhetoric around South African Development processes, is the description of people and place as *Neighbourhood.* The Western Cape Human Settlement's *Living Cape* framework for Human Settlements makes specific mention of developing 'resilient neighbourhoods' and 'neighbourhood typologies' and has already begun working with groups of people through this scale of engagement as was demonstrated in earlier work by the author in the figure below.

Figure 5 Alternative means of Digital Tools for Neighborhood level Socio-Technical Support (1to1, 2018)

The right to the city is the right to be *'messy'* as stated by Simone (Simone, 2013), and the author's offered term of 'Neighbourhood' as a scale of engagement is not intended to be a clinical definition, but rather a more nuanced and flexible understanding of place and the relationship the people who see, manage and make such place have to it.

A *'neighbourhood view'* on the larger issues of 're-development' removes the specialisation of informal settlement development which should be seen as city development and has the potential to normalise the processes of in-situ development for any form of marginalised area in South Africa. The technocratic approach to these challenges in both the physical and digital space has already shifted away from the sciences (Sambuli, 2016; Berridge, 2017) and is looking to incorporate the humanities and embody the principles of social sciences and development studies in the technical approach. The missing piece remains models, examples and a skilled individuals who can take up the call.

> *"A proactive approach to community involvement is not common amongst local councils, yet the reforms to the planning system and to local government generally increasingly require necessitate, both proactivity and systematisation of involvement as well as an implied need to build and sustain a widened network of stakeholder interests in local governance"* (Masiko-Kambala, Görgens & van Donk, 2012).

The term '*Neighbourhood'* in South Africa has the potential to realistically humanise the complexity of the challenges and offers a spatial delineation to describe a set shareable values and markers for at least a nationally agreed set of 'development' standards and ethos in practice.

The following case study unpacks a narrative of what such a role would look like. The case study has been structured to describe lessons, skill sets discovered along the way. The case study reflects on eight years of socio-technical spatial design support for the Slovo Park Development Forum (SPCDF) and offers a reflective case study for practitioners, students and government officials to learn from and critique.

3 RESEARCH METHODOLOGY

3.1 SLOVO PARK: SOCIO-TECHNICAL SPATIAL DESIGN SUPPORT, ADVISORY AND BUILDING

3.1.1 Student Phase: 2010 - 2011

In July 2010 the FIFA 2010 World Cup took place in South Africa. The global event brought with it hundreds of thousands of visitors to South Africa and generated a public space through the fan-parks that have never been seen in South Africa since. Charged with this spirit of connectivity and a recent university field trip to Maputo, a small group of students from the University of Pretoria's Masters programme accepted the third quarter elective of working in Slovo Park [8] (Slovo Park Support Team, 2010). The project was structured under Carin Combrinck who at the time had begun her own doctoral inquiry into informal settlement upgrading in South Africa and after establishing a connection with Max Rambau at a departmental conference had arranged for a small student group to conduct an architectural research project with the Slovo Park Development Forum (SPCDF).

The students arrived in Slovo and were introduced to the SPCDF through the Chairman at the time, Mohau Melani, who over the eight-week period of research and design the university offered, worked with the students and the various groups who made up the Slovo Park 'community'. These included the Policing Forum, the Water Forum, the Electricity Forum, the Business Forum, the Church groups, Stokvel's, block committees and sports teams who made up the 4000 people neighbourhood of Slovo Park as indicated below.

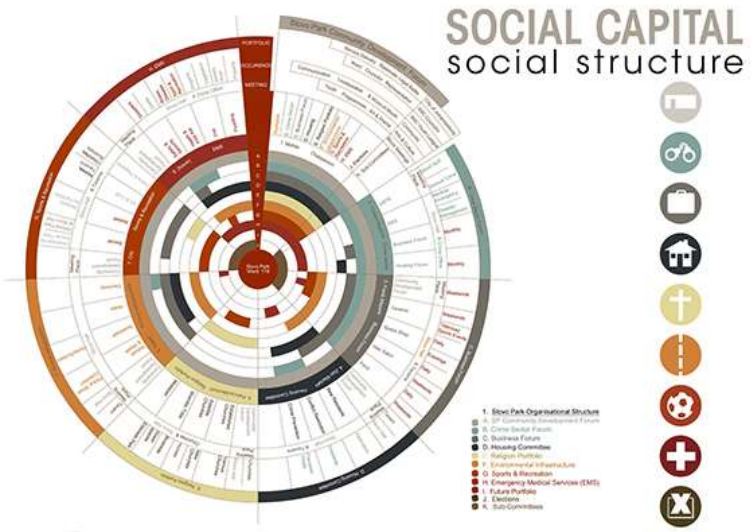

Figure 6 Slovo Park Social Structures that explain the complexity of the term 'community' (Omar Horzook, 2012)

The students realised quickly that the issues at hand were not around the technical design of a house or a shack, but rather the issues were tied into much more complex political, socioeconomic and cultural issues that were halting the development of Slovo Park. The SPCDF had been working towards this goal since 1986 (Tissington, 2012) when the original founders of Slovo Park, Baba Mthembu worked with various elders to block out the settlement (based on the grid of El Derado Park adjacent to Slovo Park) and was now being managed by the SPCDF established in the 1990's (Zondo & Royston, 2016.). The SPCDF had at this point been working with various institutes and universities including the Socio-

8 Slovo Park is an informal settlement comprising about 5000 households, totaling about 25,000 people. Slovo Park is situated in a politically and socially sensitive stretch of land south of Soweto. The community has been known by national government as Nancefield, by local council as Olifantsvlei and in the last five years as Slovo Park – named in honour of South Africa's first minister of housing and former Umkhonto we Sizwe General, Joe Slovo. The forced changing of identity reflects an on-going struggle faced by the leadership of Slovo Park to gain recognition as a legitimate settlement to access governmental support. This battle has been fought through constant shifts in governmental policy, power and promises for the community of Slovo Park. Their only tactics comprising of service delivery protest, painstaking formal requests for upgrade and currently a lawsuit against the City of Johannesburg. (Yolande Hendler, 2012)

Economic Rights Institute (SERI) (Tissington, 2012). The proposal by the students, based on this understanding, sought to break away from traditional architectural responses and incorporated ideas of incrementalism, livelihoods and cultural infrastructure as a means of working off the inherent energies in Slovo Park (Bennett *et al.*, 2010). These included a housing clinic, a funeral pathway and infrastructure, a public park and a rental housing scheme that employed open-building principles.

Upon presenting this work to the leadership and the community after the academic portion, the students attempted to share the ideas through the drawings in architectural form. This presentation took place in the intersection of the streets in Slovo Park and was later revealed to be a tactical move by the SPCDF to bring on board the local ward councillors and various grassroots groups. The event was an important moment for the students because they dismally failed in communicating their ideas (due to language and visual format) but after the work was discussed intimately with residents in a 1-on-1, or 1to1, manner did the ideas proposed by the students find traction and the students were able to get useful critique on their proposals (Combrinck & Carin, 2015).

Figure 7 Slovo Park Students speaking with Slovo Park residents in a 1to1 manner (Slovo Park Support Team, 2010)

At this moment, the lecturer (Carin Combrinck) in charge offered the students an opportunity to build part of their design idea as part of the final quarter's technical submission. At this point, the students undertook the building of a portion of the design idea as the output for a technical module in their course. The students spoke with the SPCDF who agreed to the idea and after several discussions agreed that a meeting hall (adjacent to the original meeting at the intersection) would be a valuable resource for the leadership. The students then worked with the Business Forum and designed an incremental, multi-use space (Bennett *et al.*, 2010) that could be built in eight weeks with minimal resources and become a larger project later on.

This period of co-design, co-build and co-manage was a challenging period as there was no budget for the project and the team worked with locally sourced recycled bricks, reeds, tyres, steel donated from nearby factories, lunches sponsored by residents and local businesses and eventually a small donation of bricks from an NGO in the final week of the project. The project exceeded the initial proposal and merged into phase 2 as residents gathered resources from employers to propel the build.

Upon the completion of the initial hall, the students realised they had stumbled upon another way of practising architecture (1to1, 2018) and sought to take these lessons further in their studies and practice. The university responded by dissuading the students from this work as they were *'emotionally compromised'* and did not feel the social aspects of this work were vital for architectural training.

3.1.2 Key Lessons from being students:

The student phase of the Slovo Park project revealed a key set of lessons:

- The disciplinary boundaries set by the Universities and Institutional bodies are one of the many hindrances holding back the holistic training of practitioners in training and implementation spaces.
- Residents and stakeholders should always be placed at the center of development processes, with practitioners and supporters trusting and following the decisions of local leadership.

- There are many ways to support from a technical space, and many ways to negotiate and barter what that support means and how it is remunerated. It is vital to be upfront and open to be 'turned away' from projects if these are not accepted.
- Expectation management is an important part of this work, but not a factor to stop projects – these expectations must just be negotiated and managed.

3.1.3 Skill sets for students:

The skill sets identified in the Student Phase of the Slovo Park Project were:

- Co-productive means of conceptualising, understanding and developing ideas and strategies for spatial development
- Collaborative or Participatory means of practice, work sharing and resource procurement
- Visual Translation and Spatial Literacy towards tactical spatial development.

3.2 TEACHING AND TRAINING PHASE: 2012 – 2015

The student group stepped away from the Slovo Park Project in 2012 in order to complete their post-graduate studies. They each engaged with the same topic of architectural response to 'informality' but chose to explore it elsewhere while the lecturer in charge continued an engagement with the SPCDF alongside her doctoral research (Combrinck,2015). During this stepping-back period the students gathered their perspectives and decided to form a student group named 1to1. This name emerged in response to the moment the drawings made sense to residents in Slovo Park in 2010 (1to1, 2018) . The group intended to carry the questions and actions of making socially engaged architectural work accessible to more students and lobbying the academy to allow this work to be considered part of the training.

On completion of their masters course the original student group returned as studio assistants and took another group of students though the same project in 2012 (Combrinck, 2015), but this time in response to a new set of challenges that a two-year period of reflection had revealed. This included the management of the hall, maintenance issues, internal conflicts between local groups and safety. The 2012 student group worked closely with the Youth Forum in Slovo and completed a new version of the hall in July of that year. This project outlined the need for a formal vehicle to carry the costs, indemnity and support structures of this work and the 1to1 - Agency of Engagement was legally registered.

The need to register the NPC came from the lack of professional opportunities for this type of work and almost no built environment definition for the role that the students had developed with the SPCDF. At the same time, there were almost no precedents in how to structure professional offering for this work and no means of articulating the scope of work or accountability.

Figure 8 2012 students working in Slovo Park on the first 1to1 project (1to1, 2018)

1to1 now managed several tactical neighbourhood interventions in Slovo Park that responded to the needs of the SPCDF and the various groups in Slovo Park (Business forum and Youth Forum in particular) while also creating a mutually beneficial learning relationship between universities and the groups. The intervention built in this period included the playgrounds, hall upgrades, Mandela Day projects, hosted school visits and other tactical interventions.

During this period 1to1 also assisted the leadership in their ongoing court case (Zondo & Royston, 2016.) against the city of Johannesburg while assisting the local NGO, Shack Dwellers International (Yolande Hendler, 2012) with the socio-technical support across Gauteng which Slovo Park leadership played a crucial role in building network of social mobilisation support around their learnings in the project .

The organisation developed several tools and methods (The Blue file, Tools of Engagement) and employed them in the projects they managed (1to1, 2018). The group also sought to build network of engaged students, the 1to1 student league, through this and grow the field of practitioners. 1to1 directors also worked in other professional disciplines (planning, engineering and other related disciplines) to embed themselves and bring in other disciplines in this work.

3.2.1 Lesson from Teaching and Training:

- The lack of definition of Socio-Technical Spatial Design allows for existing professional bodies to absorb the work and continue *'business as usual'*.
- Saleability of this type of work was difficult to conceive while developing the practice – an entrepreneurial mindset was crucial to balance research, impact and value translation.
- Sustainability of energies, expectations, resources of all stakeholders (technical and social) is a crucial and often forgotten aspect of this work.
- Maintenance of infrastructures and strategies is a vital aspect of Socio-Technical Spatial Design.

3.2.2 Skill Set for Teaching and Training:

- Due to the long-time frames of engagement and stakeholder management, the skills developed around Teaching and Training were a useful skill set to mitigate the role of the university and other outside practitioners involvement as a translation of this time into research and data gathering.
- Learning as a means of generating support from educational facilitates and grant bodies was an effective approach to securing support for indeterminate project outcomes.
- Network and Collaboration building were employed around tactical engagements between government, university and grassroots entities. This proved invaluable in the early stages of this practice.

3.3 PRACTITIONERS PHASE: 2016 - ONWARDS

The SPCDF won a landmark case in 2016 (Zondo & Royston, 2016; SERI, 2016), when the City of Johannesburg was ordered by the high court to deliver development promised to Slovo Park through the Upgrading Informal Settlement Programme (UISP). The city had a limited time to deliver this judgement and forced them to work closely with the SPCDF through the pro-bono entity SERI.

Figure 9 Johannesburg Mayor, Herman Mashaba, breaking ground in Slovo; SPCDF member after victory (SABC Digital News, 2016; The Star, 2018)

In the early stages of this process the SPCDF worked with the city processes who followed traditional processes of upgrading, which effectively ignored the requirements of participation outlined in the UISP process. 1to1 alongside representative from the University of the Witwatersrand's (Wit's) Center for Urban Built Environment (CUBES) who were asked to assist, and a technical support team was developed. This role outlined the spatial and technical translation of the city's plans into an cross-visual (Rose, 2016) understandable form. This role also was crucial to support the SPCDF in attending various stakeholder meetings and workshops with departments from the city as seen below.

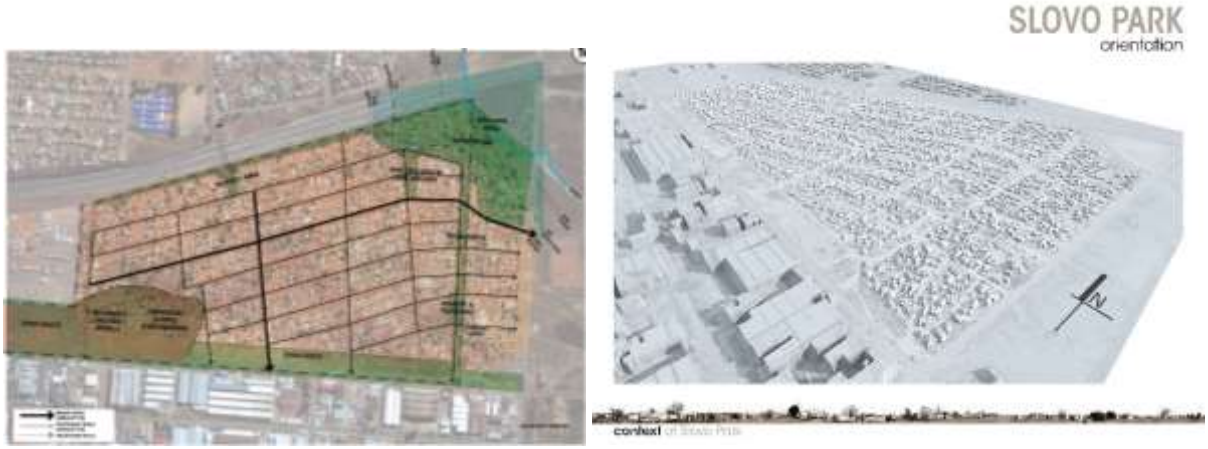

Figure 10 Translated Neighbourhood Diagrams and Models (2012 Students) used in key city departmental meetings with the SPCDF and 1to1 (1to1, 2017)

This role saw 1to1 gearing up and attempting to expand the offering outside of Slovo Park and formalise an approach to Neighbourhood Making that excoriated cross-disciplinary means of supporting development. Eventually, this process broke down and 1to1 offered a tactical workshop to pilot a mini-UISP workshop that would have tested and prototyped the UISP process to demonstrate to all involved. Tragically, the chairperson of SPCDF (and co-founder of 1to1) passed away and the project was stopped during the mourning period and December holidays.

This shifted the nature of the prophecy as the city's mandate change with yet another round of position changes but was saved by the electrification of the settlement (The Star, 2018) but a crucial landmark of development promise for the SPCDF. Today, the role of Socio-technical Spatial Design Support and Advisory continues to be one of translation, ideation and support of visions of local people into action plans, but an additional role of 'strategic facilitator' has been introduced and attempted to fit into the offering.

3.3.1 Lesson from Practice:

- Institutional knowledge of the sector was a difficult and hard-won experience set for the organisation. To watch several versions of government support shift and appear was a tricky and process to support within.
- Trust-building and positioning the organisation to be supportive when and if the SPCDF needed socio-technical support was an important takeaway.
- Capacity Building, both internally and externally of the organisation, is an important process that should take place. 1to1 had been working for five years at this point and drawing in much support from supporters to support the work.

3.3.2 Skill Sets for Practice:

- Visual translation across different education backgrounds and technical experience
- Spatial Design as means of place-making – not technical upgrading
- Facilitation between different actors, stakeholders and supporters.

4 CHALLENGE ACCEPTED

4.1 CHALLENGING PRACTICE

The National Upgrade Support Programme (NUSP) was tasked to support in building technical capacity and provide support to local governments across south Africa to meet Outcome 8 of the former NDP (NUSP, 2013) which aimed to develop 400 000 well located informal settlement houses in South Africa by 2014. The instrument of national government has worked across the country in this regard and worked towards the 2014 goal and now the their new targets with a substantial support from National Treasury (Cirolia *et al*., 2017b).

The position of NUSP in the housing and development sector indicates the nationwide need for socio-technical capacity in the built environment sector to address the issues of housing in South Africa. This need for practitioners is highlighted by Cirolia et al (2017), who describes this capacity in his call for 'intermediaries' between government, residents of informal neighbourhoods and other stakeholders in informal neighbourhood upgrading. The role of the intermediaries should be one of *'…mediator and conflict resolver…' and need to combine technical knowledge with a sophisticated process that navigate the local context and negotiate communally acceptable options'* (Cirolia *et al.*, 2017).

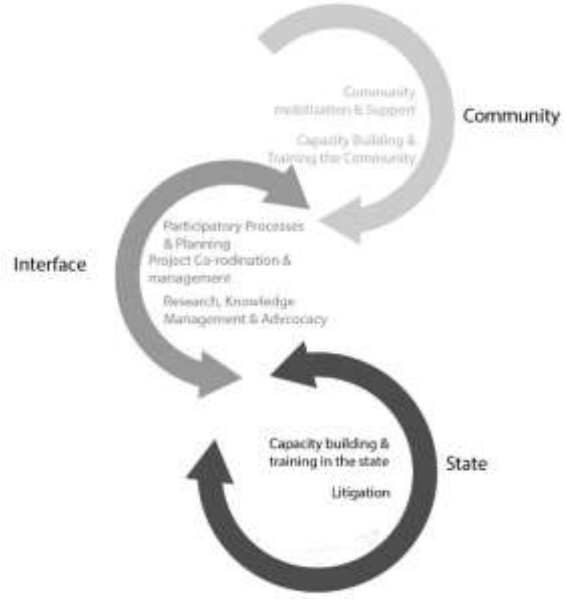

Figure 11 The role of intermediary function in establishing and maintaining state-community interface (Cirolia et al., 2017)

Isandla's work through the GGLN has focussed on framing the issues around building capacity for participative and technical supporting through their project building capacity for the development and use of meaningful collaborative planning tools in South Africa. The project was initiated from the organisation's assessment of the current development approaches and methodologies in South Africa are *'…flawed as they lack meaningful and real public participation...'* (Van Donk & Gorgens, 2012). This work has been extensively documented and the concepts of supporting a 'community of practice' and practitioners are recurring themes at conference and network events on the informal neighbourhood upgrading.

The intimate nature of this work remains largely un-developed, with Van Donk and Pieterse's (2014) call for Design Activism describing this type of practice and the real need for creative and innovative solutions to address these issues with case studies from Latin America to showcase the role that innovation plays in systemic place making. This type of work should not only be 'social', but somehow blend aspects of the technical, creative and spatial into the scope while at the same time building

capacity for those who are most affected by these conditions; the residents of these areas (Wilson, 2006). An example of such a practice is offered below.

Figure 12 A neighbourhood making exercise employing digital tools and socio-technical spatial facilitation (Backstory Collective, 2018)

The skills, approaches and embedded methods to meet the demand of practitioner capacity required to address the spatial inequality of cities, particularly in the area of informal settlement upgrading, are in need in the built environment (Cirolia *et al.*, 2017a). The author believes that a difficult part of this indivisual capacity to articulate, but vital to the practice of equal city making, is set of institutionalised ethos and morals to guide this type of work. This set of moral and ethical guides should recognise the intersectional privileges inherent in the south African post-apartheid Spatial Development built environment (Oldfield *et al.*, 2004; Watson, 2014). These skill sets are present, but currently are not seen as valuable in the discourse around addressing spatial inequality. Private practices are not willing to take the risks, government entities are trapped by their institutional arrangements, residents have too many other problems to worry about and universities do not see a reason to engage other than producing fodder for research. These two together are a vital piece missing in the 'development' sector in South Africa (Combrinck & Bennett, 2017).

While this paper reflects on the case study of Slovo Park and 1to1 – Agency of Engagement ,it aims to outline a scale of engagement: the Neighbourhood Scale and an institutional role for the built environment: Socio-Technical Spatial Design. The scale and approach should not be seen only around housing issues but address the systemic legacy of spatial inequality by being used as a means of spatial development that that co-produces equitable public and common spaces, a right articulate by Van Donk and Gorgens: '*…that is, it should be produced in such a way as to enable the "full and complete use" of urban space by inhabitants in their everyday lives. It therefore includes the "right to live in, play in, work in, represent, characterize and occupy urban space...* "(Van Donk & Gorgens, 2012).

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