SLUMIFY

Qualifying Informal Urban Densification

theory

qualifying informal
urban densification

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I chose explore lab as it allowed me to frame my own topic. A graduation project in my opinion is a very personal endeavor, which is why I chose to deal with the pressing issue of informal urban densification in my home town, Johannesburg.

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A slum is a valuable *"proto-city"* that forms a vital part of the impoverished person's journey into urban affluence

James Fischelis (Fischelis, 2015)

INTRODUCTION

Problem Background

The square stands vast and empty, a few people move through it, inhabiting the exaggeratedly scaled square. The space functions as a huge thoroughfare, acting as a space of transition rather than a space of destination as intended by the architect. The square is called the Walter Sisulu Square of Dedication, formerly known as the Freedom Square, and stands as an example of an architect working within conditions of poverty, awkwardly trying to reference the plight of the people but resorting to an architecture which elaborates the author more than the inhabitants.

Walter Sisulu Square of Dedication stands within the limits of Kliptown Informal Settlement. Kliptown is an area divided, historically and presently. The main boundary, the railway line, once guarded by a concrete fence now appropriated as building material in the settlement, forms a geographical suture, linking the formal and informal urban realities. On one side, the rich history of Kliptown is memorialised in the excessively large Walter Sisulu Square of Dedication, previously Freedom Square, the site famous for hosting the Congress of the People in 1955 and the signing of the famous Freedom Charter, which brought about the end of Apartheid. The Walter Sisulu Square of Dedication is described as the landmark of Kliptown, and yet in no way represents the struggle and victories that Kliptown represents.

The report on the "Johannesburg Insanitary Area Scheme" of 1903 documented insanitary areas within Johannesburg, including Brickfields, Burghersdorp, Fordsburg and Coolie Location. The inquiry was sparked by the fears of bubonic plague breaking out in the "overcrowded" and "unsanitary" settlements. The settlements were viewed as contagious lesions on the otherwise world class city. The report concluded that these places could only be dealt with by tearing the neighbourhoods down. The people were to be moved to the area next to Klipspruit River, which is now occupied by Kliptown, Nancefield, Eldorado Park and surrounds. The land was mostly occupied by unkempt farmlands, well outside the municipal borders of Johannesburg. This was the official beginning of the area to be known as Kliptown which was officially proclaimed in 1903. The camp was supposed to be temporary, but 112 years later the settlement still stands as a testament to the relevance of informal settlements to the developing city of Johannesburg.

The first site visit, in November 2016, was initiated at the Walter Sisulu Square of Dedication. My contact at Kliptown Youth Program instructed me to meet him at the Soweto Hotel, a four star hotel on the extents of the square. The initiation of the tour illustrated the problem explicitly. The fate of this rather momentous architectural error lies in its conception, rather than in its execution. It is clear through the brief, and the winning architectural entry that neither the architect nor the local government truly understood the needs of the inhabitants of the surrounding area, resulting in a total disregard for the local heritage and a disregard for what it is that the local population wish to protect.

Supitcha Tovivich, pointed out that conventional architectural practice and education has long been limited to serving a minority of the world's elite population. Situations, whether rural or urban, which desperately require professional intervention are often neglected or forgotten due to lack of resources, empathy and understanding. Furthermore, with Kliptown as an example, we realize that the lack of education about these contexts results in interventions which display little to no sensitivity to the community and its context. Without the knowledge of how to conduct their research within a community, often regarded as dangerous, architects are likely to jump to conclusions, thereby designing "white elephant" architecture, clearly illustrated by the architecture of Walter Sisulu Square of Dedication.

Geoffrey Payne, an international housing expert, points out that, "The common claim by architects that they are the leaders of the built environment professions encourages them to see themselves as more influential in creating and managing the built environment. This in turn encourages an arrogance which, for instance, led to a senior World Bank staff member once refusing on principle to employ an architect on international development projects involving housing and local development." (Payne, 2008) The implication of this quote, is that architects lack the education, and empathy to work in local development projects.

Charles Correa explained that only 10 percent of the world's population has the means to commission the type of building that an academically trained architect has learned to produce. One out of ten would think of engaging the architect in the process. The result is that only one percent of society interface with architects, as depicted by figure 1 (Serageldin, 1997).

Walter Segal lamented over the role of the architect pointing out that "There is a future for architects, but they must learn very different skills; they can no longer hide behind the same so-called architectural values. None of my self-builders is interested in the design of façades nor the skilful proportioning of solids and voids. On the other hand, a reasonably trained person can assist a layman builder who only has a very rudimentary idea of space. It is a skill that can be taught." (Hamdi 1986).

The discourse of architecture has evolved substantially since Modern times, where buildings and urban plans were seen as a tool of social development. Post-Modern ideas suppressed the social role of the architect and architectural authorship dominated social concerns resulting in a formalistic and stylistic outcome. Amongst the angst surrounding the contemporary "Starchitects", one can identify a marked return to social and environmental concerns, with organizations such as Architecture for Humanity propagating ideas about "what we build" rather than "how we build". Never-the-less architects still have little to no involvement within institutionalized slum improvement practices. Planning and development discourses have developed and advanced largely without their participation (Nickerson, 2010).

The great paradox of our time is that we live in a world of excess characterized by incredible scientific advances and technological breakthroughs, and yet many people live in tragic poverty (Tovivich, 2010). This is exemplified by the resultant lack of contact with people and their surroundings, computer screens and televisions allow one to grasp ideas about cultures and societies without having to physically interact with the people. This essentially removes the architect from the issue at hand.

The role of the architect in the 21st century is under dispute. The lack of professional involvement in crucial situations places a burden on the architectural profession as well as the architectural education system. Tovivich surmises that the architect's initial role within a community was to provide, exemplified by the top-down social housing strategies which typified the modern movement (Chatterjee, 2014). The great failures of these developments depicts the need for radical change. It is necessary to explore new values, knowledge and skills in order to sustain architecture's general relevance.

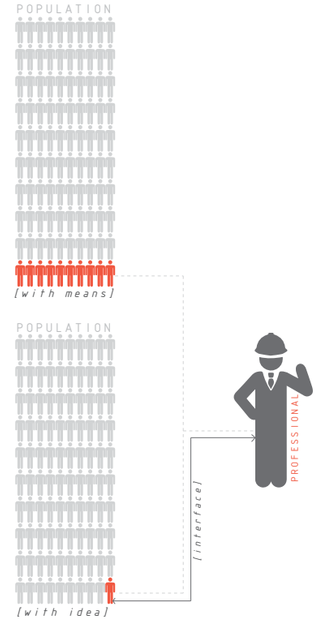


Figure 1: Diagram of Charles Correa's problem definition (Author, 2015)

Problem Clarification

Almost a quarter of the world's population lives in informal settlements, with an estimated 863 million people living in the settlements of developing countries. In Africa, approximately 61.7% of the urban population is currently residing in slums. A staggering ninety five percent of the projected population growth of humanity will occur in the urban areas of developing countries. The populations of these areas are projected to double to almost 4 billion over the next generation (Davis, 2006). It can therefore be said that the global population is literally being shaped by the Third World (Chatterjee, 2014). Ismail Serageldin pointed out that "billions of human beings, especially in the developing, world are living in conditions beneath human decency by any definition." (Serageldin, 1997).

It is clear that the global condition, if projections are correct, will be shaped by the urbanization patterns in the third world, where a myriad of contradictory urban phenomenon form a dynamic collage of exploitation in many senses. All large developing cities entice informality as an output of migratory patterns. Informality is a natural and necessary part of the urbanization process.

Poverty is in no way a new phenomenon. It has been the dominant social class throughout history (Amadei, 2014). Poverty is a hard phenomenon to define. The word itself is loaded with meaning and negative historical baggage. The World Bank defines poverty as the"pronounced deprivation in well-being" The United Nations expands this definition stating that poverty "means a lack of basic capacity to participate effectively in society".

Most of the major cities were built using the poor populations. Throughout history one notices that informal settlements, or slums, attract cheap labor in order to contribute to the construction and economy of the new urban cores. The phenomenon manifests itself when the migration of people from rural places to the new urban core exceeds the possibility of the city to ensure housing and the poor peripheral areas become overcrowded. These people are poor, they often struggle to find work, and therefore are forced to live in slum environments.

Defining a slum is complex and is perhaps best defined by its major sources of deprivation. The main deprivations are the quality of housing, insufficient space, insufficient access to safe water, poor access to safe sanitation and no security of property. Informal settlements can also be defined as the invasion of public or private land with self build shelters developed by poor groups. The areas often lack infrastructure and planning. The primary reason for the existence and continued functionality of the settlements is that they provide cheap housing and a means to earn a minimal living.

Charles Abrams documents the extent of the worldwide urban explosion and the inadequacy of the industrializing nations to deal with the subsequent housing problems. He points out that in the early years of industrialization slum development will be an inevitable by-product (Abrams, 1964). The process of Industrialization in Johannesburg is largely linked to the discovery of Gold in the Witwatersrand, the change from an agricultural society to an Industrial society brought about the urban migration that gave rise to Kliptown, and other informal settlements.

Many contemporary viewpoints regarding informal settlements idealize them as a resource for the global future due to the dense structure of people within the urban environment. Settlements are considered as a necessary and sometimes even helpful places within the development and urbanization of a city (Baldea, 2015).

Cities Alliance (2008) found that with successful slum development three process occur simultaneously. The slum dweller becomes the citizen, the shack becomes the house and the slum becomes the suburb. A change of perception is achieved through the simple alteration of semantics highlighting the problem with preconceptions withing developing environments.

Governments in these contexts have traditionally concentrated on the provision of housing as a solution to prevalent social problems. The flaw in this method of upgrade is that the individual homesteads fail to satisfy community based aspirations. A study conducted in India concluded that slum dwellers prioritize access to infrastructural services, due to the immediate enablement they receive. Slum dwellers can then strive to improve health, education and employment opportunities themselves (4).

Frederick Hertzberg's theory of motivation explains the idea of having two different types of needs, those which avoid pain, and those which aid in psychological growth. The theory is dissected by Parikh et al in order to understand the implications of motivational theory within the setting of an informal settlement (Parikh, et al., 2012).

The factors which avoid pain are termed hygiene factors, which include considerations such as access to drinking water, sanitation, waste management, affordable energy among others. These were described as lower order aspirations. According to Hertzberg's theory access to hygiene factors does not inspire motivation. Individuals are generally dissatisfied when they are absent, but not motivated when they are present.

The motivational factors or higher order aspirations which aid in psychological growth include considerations which bring about recognition and personal growth. These include healthcare, land tenure, ownership and education,.Access to these facilities provides an enhanced sense of status within the community, thereby enabling members of the community to focus on improving rather than just surviving (Parikh, et al., 2012).

Parikh et al concluded that once lower order aspirations are achieved, serviced slums switch their aspirations to higher order aspirations. Therefor it is clear that if people don't have access to infrastructural services, they are less likely to appreciate or be motivated by an architectural intervention, even in the form of housing.

This finding implies a shift in strategy and policy for governments, developers and architects. Providing access to basic services such as energy, water, sanitation and flood management can be an important catalyst in shifting the aspirations of communities; thereby inspiring community investment in housing stock.

These findings are substantiated by an approach called "*The basic needs approach*", which can be described as an approach to development which attempts to provide the "*opportunities for the full physical, mental, and social development of the human personality and then derives the ways of achieving this objective*" (Streeten, 1981). The basic needs approach pulls the focus away from the generalised quantitative means conventionally utilised to measure development and focuses on the individual.

In order to empower a community it is important to formulate a strategy for productivity and economic inclusion for the inhabitants. Ela Bhatt describes the home within a settlement as a productive asset. This description will be expanded to assume that a building in any sense is a productive asset within a developing community.

A building provides shelter in order to work. It is a storehouse for goods and potentially a source of inputs such as water and electricity (World Bank, 1996). The implication is that resilient architecture can in a sense empower the inhabitants.

The process of construction in such environments is often slow due to the participatory nature of accepted practice. With this in mind it is necessary to consider the implications of time on the process. When considering a period of 50 years with current population growth estimates and following current urban growth trends, one can estimate that the population of Kliptown informal settlement will double resulting in an extremely dense urban environment.

The industrial revolution introduced us to the debate surrounding density. The inherent impact of industrialization and concurrent technological innovation on the housing developments within developing countries has been to the detriment of billions of people. The same processes have helped in uprooting the ancient social systems of organizations and have caused mass urban migration throughout the developing world.

In a society where concrete commodity is rare/unusual, money becomes the dominant factor. Economic growth

of any form essentially frees societies from the natural pressure which required their direct struggle for survival. In the primitive economy commodity implies a surplus of survival. Having something to exchange meant having produced more than is necessary to live.

The development of the modern economy and governing systems has in some ways left a certain margin of human society behind. The poor is marginalized by a system which values economy over survival. Marginalized society struggles to break into the economy due to barriers such as tax, energy tariffs, water tariffs, land prices, labor prices and general costs of living.

The overall spectrum of community development projects within this spectrum of marginalization follows the "ready-fire-aim", whereby projects are initiated with little design, preparation and planning (Amadei, 2014). These projects are expected to be executed quickly, with minimum costs, and high quality. Many of these projects set themselves up for failure.

The Independent Evaluation Group reviewed almost 10 000 World Bank projects and reported an overall project success rate of only 57% (McKenzie, 2014). This statistic does not reflect well on the project delivery of various development agencies throughout the world. The abominable success rate can be attributed to poor processes and frameworks, denoting a poor understanding of the context.

Typically growth has been judged by the gross national product (GNP) since World War II and has been a success in many senses, but at the same time there was an increasing dualism. Despite high rates of growth, of industrial production and economic growth, not enough employment was created for the rapidly growing urban population. The common practice of measuring deciles of income recipients in order to understand the poor is seriously flawed. Poverty has many dimensions, and trying to quantify it often hides its true cause (Streeten, 1981).

According to Hedergaard (2012), by 2030 our need for resources will alter dramatically. Overall, we will need 50 % more food, 45% more energy and 30% more water.

The marginalized populations, such as slums, which lack access to these basic services are likely to be the most adversely affected and their overall quality of life will be affected in a much more tangible way than the more affluent counterparts.

The quality of density is perhaps the most significant feature of the contemporary urban built environment. Without sufficient quality density will not work. It may even become dangerous. Dense environments are positive due to their inherent sustainable use of resources and intense community links that they generate.

Qualitatitive site analysis, as suggested by this thesis, is a manner in which researchers are able to study things such as slums, in their natural settings, in an attempt to make sense of phenomena in terms of the meanings that people bring to them rather than the quantifiable data supplied by government. The holistic nature of the approach allows one to gain an overview of the entire context under deliberation in order to truly understand the settlement.

The majority of South African citizens are not going to be able to earn their way into owning a house anytime soon. The aim of this investigation is to find a way to increase the quality of the environment of informal settlements in order to make them livable for the foreseeable future by first understanding how to measure a settlement from a qualitative standpoint, rather than a quantitative one.

Stewart Brand stated that "*On a more basic level, these places can teach us about where, for better or worse, urban life appears to be headed. Squatters are the world's dominant builders...If you want to understand what's going on in cities, look at squatters.*"

Figure 2 Kliptown security (Author, 2015)

Problem Statement

Based on the problem background and clarification, the following problem statement was formulated:

Contemporary ideas about slums accept them as a normal phenomenon within the growth of cities. Considering the projected population doubling by 2065 it is necessary to intervene in order to maintain autonomy whilst improving the quality of the environment in order to make it liveable.

The key to positive urban densification is delivering and maintaining a positive quality of environment. Contemporary methodologies regarding slum upgrade emphasize quantifiable aspects, such as GDP, when analysing the context. The architect or practitioner is bombarded with worrying statistics and numbers which clearly illuminate the scope of the problem but fail to understand the intricacies of the specificity of the site.

The architect acting on quantitative data alone often reacts with inappropriate interventions such as the Walter Sisulu Square of Dedication. More emphasis needs to be placed on qualifying informal settlements, in order to clarify and really understand the objectives of upgrade initiatives.

Research Questions

The thesis as a whole is composed of one main research question and several sub questions.

1. How can one qualify a slum?

- What is the definition of the word “slum”?
- What is “quality of life” and how can it be measured?
- What is development and how has it evolved?
- Which frameworks are relevant and how do they relate to quality indexes?
- Which tools are useful in the process of qualification and how are they utilized?

APPENDIX - Explain density, autonomy and time as central concepts.

Figure 3 Child fetching water (Author, 2015)

Delimitations

Whilst the process of research for this thesis is based within the context of Kliptown Informal Settlement, and is backed up by widely accepted theory, the findings are applicable in multiple contexts.

This thesis focuses explicitly on spatial and community based issues, and not psychological or health indicators as the author does not have relevant expertise.

Research Goal

The conclusion of the research will take the form of a set of guidelines which can aid in the digestion of the intricacies of a specific site in relation to certain predetermined parameters. The guidelines set out in the framework are produced as products of the theoretical research process. The research looks into the various existing frameworks and tools in order to formulate a better understanding of a feasible course of action in order to enact community appraisal. The framework should inform the improvement of the spatial and environmental quality of Kliptown Informal Settlement.

Community appraisal is a methodology which defines what the community baseline is in terms of assets, resources, skills, knowledge, structures, strengths, finances and policy in order to ascertain the scope of development and capacity building which is possible within the settlement. The guidelines provided as a conclusion to the theoretical research utilise this concept in order to enable the appraisal of spatial quality within the settlement.

If one can understand the baseline quality of a settlement one may be able to strategise development in a manner that enhances the resultant spatial quality of the settlement. The guidelines will inform the active qualification of Kliptown Informal Settlement in Soweto, Johannesburg.

The intention of the research is to undertake a measured means of slum qualification in order to gain a holistic overview of the context under study through prolonged contact with the field in an open ended manner. Due to the lack of standardized measures the researcher becomes the “measurement device”.

The context studied in this thesis is Kliptown Informal Settlement in Soweto, Johannesburg. The guidelines will aid in highlighting the pertinent problems within the community by presenting a methodological approach along with key deliverables which aid in the formulation of a well considered and feasible course of action.

The intention is to produce a thesis which deals with global problems surrounding marginalization, in a context specific manner, in order to formulate a methodology of interaction in these environments.

The scalability of the research must allow for the future implementation of the guidelines in many situations worldwide.

Figure 4 was generated in order to understand the workflow and research goals in relation to the design. The research was designed in order to inform and involve the design process. The figure was created in order to distinguish between the research and design components.

Figure 4 Work flow diagram (Author, 2015)

Methodology

Through the use of cross sectional research design the author seeks to triangulate the outcome through mixing various research methods in order to reach an objective outcome (Groat & Wang, 2002). The process will be described as conceptualization. To conceptualize, as explained by Ipsita Chatterjee, is the act of digestion, observing, reading, interviewing, understanding and recording the reality in which one is immersed (Chatterjee, 2014). The result is a synthesized version of the scattered perceptions, allowing people to easily understand an unfamiliar urban condition, or means of working. Conceptualization is therefore an entirely "democratic" act, allowing one to be empathetic towards other people's realities without alienation of the protagonists.

The inductive approach rests on premises put forth by qualitative research methodologies. The research is therefore multi-method in focus, with a naturalistic approach to its subject matter. The approach taken is that of grounded theory. The researcher therefore does not begin with a preconceived theory in mind, but with an area of interest; allowing the theory to emerge from the data (Groat & Wang, 2002). The tactics undertaken are descriptive (noting patterns and themes), analytical and explanatory.

The research process includes three distinct phases. The first phase is that of theoretical familiarisation. In order to conduct thorough research it is important to familiarize oneself with the theoretical construct that supports the goal. Nabeel Hamdi suggests that those who design tools and guidelines must work with the basic principles widely proposed in contemporary literature. Frameworks need to be grounded on sound theory (Hamdi, 1986).

The first step of phase one was conducted through the use of a broad scale literature review, making sense of various issues. The definition of a slum formed the starting point of the investigation. The etymological and operational definition of a slum introduced the topic, and introduced

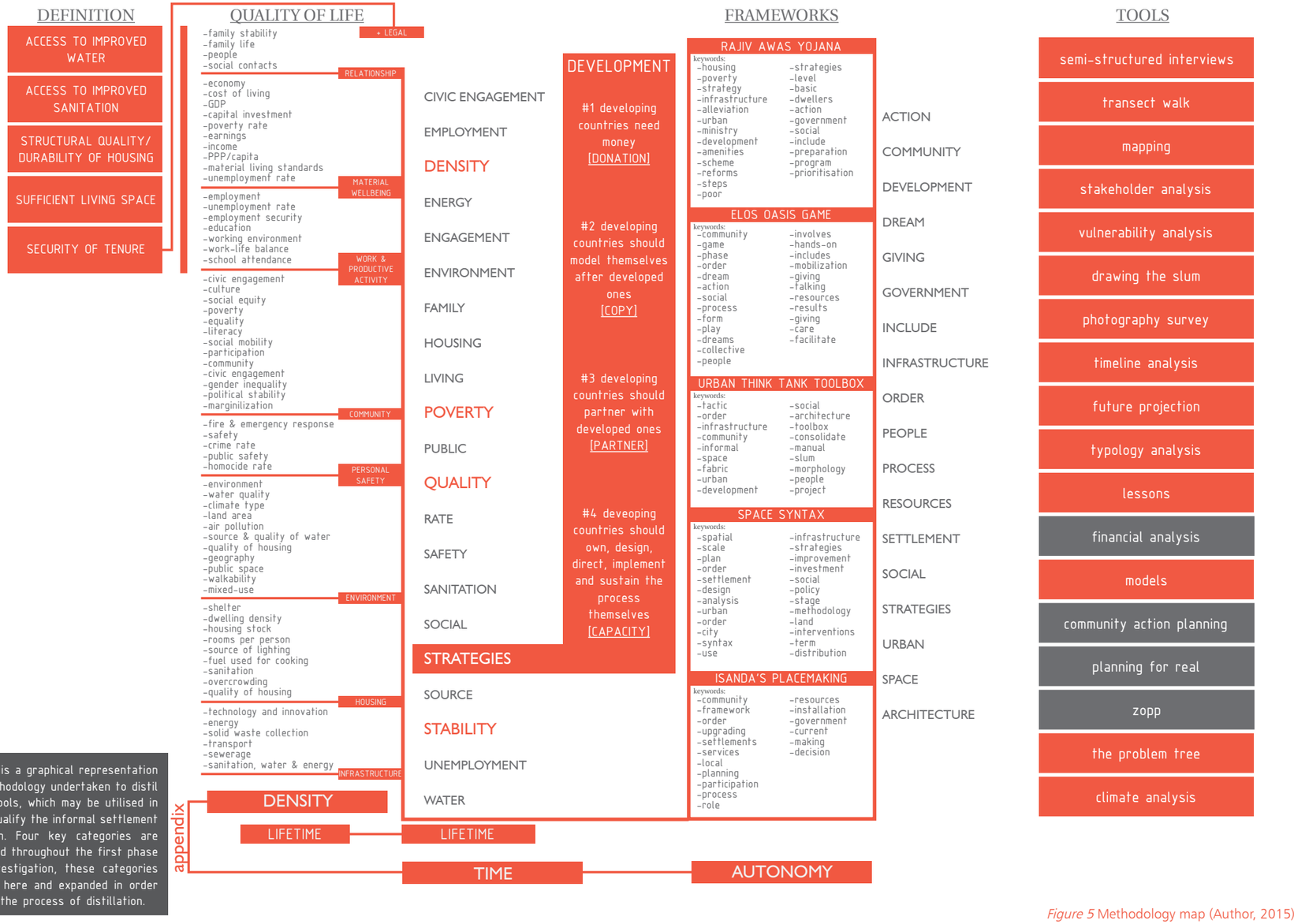


Figure 5 is a graphical representation of the methodology undertaken to distil relevant tools, which may be utilised in order to qualify the informal settlement in question. Four key categories are investigated throughout the first phase of the investigation, these categories are shown here and expanded in order to explain the process of distillation.

Figure 5 Methodology map (Author, 2015)

the first means to categorically define and understand a slum. This investigation led to the realisation that there is a distinct lack of qualifiable factors involved in the definition of a slum.

The next step was analysing and understanding the various quality of life indexes, by categorizing them into relevant headings. In order to understand the quality of life aspects and expand on them further key global development strategies were considered as a means of understanding the global development scene, and filling in gaps from the first step.

The following step was to understand contemporary frameworks and tools in order to formulate an understanding surrounding participatory qualification practices. The frameworks and tools considered were chosen due to their alignment with qualitative research norms, ensuring that they do not start with a preconceived outcome but rather a course of action, or area of interest. The frameworks were broken down into key themes and consolidated with the parameters from previous analyses in order to inform which tools need to be inspected.

The outcome of the theoretical phase of research is a list of parameters necessary to conduct a conclusive qualitative analysis of a site, with corresponding tools which may be useful in the execution of the information gathering.

The second phase is context specific site investigation utilizing contemporary participatory research tools extracted from the theoretical research. The literature research informs various methods such as transect walks, informal surveys, model building amongst others in order to formulate an inventory of tools for on site community appraisal. The necessity of this site visit is bi-fold; the tools suggested by the literature study must be tested and investigated in order to ascertain a large amount of site specific data, whilst resulting in a clear understanding of the practicalities of utilizing the various tools in practice.

The third phase was the development of the guidelines. This phase entailed detailed investigation and on-site experimentation. Tools and methodologies needed to be quantified in practice, in order to test their effectiveness in local conditions, and then iterated in order to improve the effectiveness of the tools (Hamdi, 1986). This phase linked research and on-site participation in order to formulate tools and ways of working which are proven to be successful through on-site work.

The output of the research process is a set of guidelines, designed in an easy-to-understand manner, in order to facilitate the education of architects, students or other professionals with little to no experience when working in an informal settlement or slum. The guidelines include tips from the literature study as well as advice and examples from working on-site in Kliptown Informal settlement.

The research consisted of two on-site investigations. One conducted in November 2015, and one in March 2016. The first site investigation is conducted in order to make sense of various tools and parameters extrapolated from the variety of indexes, definitions, frameworks and tools studied in the first phase, as well as to familiarize myself with the site in order to inform design decisions.

The research method is both global and specific. The global part of the research relates to the design of the guidelines, and the extrapolation of global parameters within the research process. In conjunction with the global parameters, local indicators have been researched in order to inform the design process. The second site visit was undertaken in order to test design ideas on site with the community whilst at the same time testing the implementation of the suggested guidelines.

In order to get a clear and accurate reading of the site, the on-site work was conducted through a cross-section of age groups and community organizations. The on-site work was conducted in liaison with Kliptown Youth Program. The collaboration with the well-esteemed youth organisation on-site ensured that the information gathered is accurate.

Figure 6 illustrates the interaction on-site, which is phase two of the research. The tools were tested in practice on-site in Kliptown Informal Settlement in Johannesburg, South Africa. The photographs were taken as a means to document the process of investigation.

Figure 6 Community Participation in Kliptown (Author, 2015)

“What is a slum? ... It is something that mostly exists in the imaginations of middle-class do-gooders and bureaucrats: people who do not have to live in them in the first place and do not have to live in what they put up afterwards once they have pulled them all down. One person’s slum is another person’s community.”

May Hobbs (Hobbs, 1973)

THEORY

In order to understand and intervene in the implied context it is important to develop an understanding of the definition of the word “slum”. Alfredo Brillembourg challenged the typical definition of slums in his lecture in his Public Talk in Rotterdam in September 2015. In a case that considered the favelas(slums) of Sao Paulo in Brazil, he realized that slums can no longer be purely defined by the typical constraints. Due to de facto tenure, slums in many parts of the world can no longer be defined by illegality. Furthermore their independent endeavour to provide services mean that they cannot be characterized by a lack of services either.

In order to develop an understanding of the implication of the word slum, two methods of understanding will be utilized. Initially the etymology of the word slum will be considered, in order to formulate a global and historical understanding of the environment. In keeping with Brillembourg’s ideas, the operational definition of a slum will be examined as a second methodto understand the practical, contemporary definition of a slum environment.

ETYMOLOGY OF “SLUM”

The term “slum” first appeared around the 1820’s as part of London slang (United Nations Human Settlements Programme, 2003). The vernacular was utilized in order to describe the worst quality of housing with the most unsanitary of conditions. A “slum” was a refuge for the marginalized criminal element. The terminology was spread in various publications and literary work and popularised by the subsequent quotation of these works in the national press (United Nations Human Settlements Programme, 2003).

In *Life in London*, Pierce Egan used the word “*back slums*”. In a footnote, the word is described as the “*low, infrequent parts of the town*” (Egan, 1821). The word was repeated in 1840 by the popular author, Charles Dicken, describing a foul back street of a city. One filled with a poor, degraded and somewhat vicious population as depicted by the engraving in figure 7 (UNHSP, 2003).

Figure 7 Seven Dials slum in London

Figure 7 depicts the Seven Dials slum in London. Seven Dials was one of the largest and potentially worst slums in London. Charles Dickens used the word slum to describe the foul back streets of London, of which Seven Dials was one of the most prominent.

In 1850 Catholic Cardinal Wiseman described Devil's Acre in Westminster in graphic detail. The abundantly quoted passage crafts the origin of the astigmatisms which are apparent in contemporary understandings of a slum. The Cardinal refers to slums as "*nests of ignorance, vice, depravity, and crime, as well as of squalor, wretchedness, and disease; whose atmosphere is typhus, whose ventilation is cholera…*" Slums are further described as "*haunts of filth, which no sewage committee can reach-dark corners which no lighting board can brighten*" (Ward, 1912).

The Housing Reform Movement in England in the 1880's changed the awkward vernacular term into a widely accepted operational concept. The word was understood as a house which was not fit for human habitation. (Wohl, 2002). This general acceptance of the term, and the urban conditions that it represented allowed for the urban scale delimitation of slum areas for planning and development purposes. The word "slum" became a common Anglo-phone umbrella for all cultures. Allowing for Indian Bustees, African Shack, Brazilian Favelas amongst others, to be widely generalised under a similar construct. (United Nations Human Settlements Programme, 2003).

Social movements generated many new, more socially acceptable and gentle, terms such as "neighbourhoods" and "communities" (Davis, 2006). The words were utilized as a manner of releasing the stigmatism that was attached to the word "slum". Ironically the new euphemisms served to maintain and in some ways enhance the negative connotations rather than to eradicate them (Merrifield & Swyngedouw, 1997).

In contemporary times the word "slum" is often viewed as deprecatory and is banned from many politically correct organisations. The idea of the "slum" and the attached negative connotations is a uniquely Western linguistic phenomenon (Davis, 2006). Most western definitions are loaded with derogatory connotations remembering the wretchedness and squalor of the conditions surrounding the Industrial Revolution, whilst many third world countries are not plagued by this view (Hay, 1977).

The people of the slums hold a totally contradictory view. They see the slum, under whichever linguistic appropriation, as home; providing a unified, intimate and comfortable community (United Nations Human Settlements Programme, 2003).

The word "informal" entered the public vocabulary in the early 1970's hugely due to the economist Keith Hart (Fabricus, 2011). He derived the concept whilst conducting fieldwork in Ghana, creating a term which widely became used in order to describe the unregulated activity of the global poor. After 1970 the informal economy was embraced as a solution to the developing world.

The scale of the slum population world-wide calls for an understanding of the interchangeability of the terminology used to describe such situations. Words such as shanty, squatter settlement, informal housing, low-income community and many other terms within different languages and contexts are accepted as equivocal to the word slum (Davis, 2006).

The United Nations describes a slum as " *… a building, group of buildings, or area characterized by overcrowding, deterioration, unsanitary conditions or absence of facilities or amenities which, because of these conditions or any of them, endanger the health, safety or morals of its inhabitants or the community.*" UN- Habitat expanded upon this definition, adding that "*A slum is often not recognized and addressed by the public authorities as an integral or equal part of the city.*" (Govindaraju, 2012)

The use of the word "slum" is somewhat controversial. The word has many negative connotations. The Cities Alliance has made a statement by using the word "slum" in order to bring a common vocabulary to the international issue and furthermore to highlight the need to address the problem.

As pointed out by Brillembourg in his 2015 lectures, typical constraints are no longer broad enough to define a slim. It is no longer acceptable to characterise a slum due to its illegality, criminal nature or poor conditions. Through the consideration of the different terms, and roots of the word slum it is clear that it may be simpler to try and define slums in terms of operation in order to understand the various physical indicators which may be utilised in order to define a slum environment.

OPERATIONAL DEFINITION OF A "SLUM"

The connotation of "slum" differs from country to country. The word "slum" refers, in essence, to the conditions typified by low quality or informal housing. In order to understand the dynamics of a typical slum it is essential to formulate an operational definition of a slum.

The operational definition must combine various pragmatic elements of a slum and exclude the more difficult social dimensions in order to remove subjective connotations. There are various indicators denoting a slum condition which can be formulated in order to describe the operational activity of a slum (Chatterjee, 2014).

Slums are essentially too complex to analyse or describe using any singular parameter. The concept in itself is relative, any one parameter which is deemed inadequate in one context may well prove adequate or indeed above adequate in another (Hay, 1977). An example of this is the necessity for space. In first world countries the regulated minimum spatial requirements are far above the spatial allowance supplied by the governments of many third world countries.

In October 2002, the UN-HABITAT held an Expert Group Meeting as a consensus building exercise which sought to develop operational definitions and indicators of slums (Arimah, n.d.). The definition proposed at the meeting states that "*A slum is a contiguous settlement where the inhabitants are characterized as having inadequate housing and basic services. A slum is often not recognized and addressed by the public authorities as an integral or equal part of the city*" (UN-HABITAT, 2002).

The United Nations Human Settlement Programme [UN-HABITAT] set the objective of collecting certain urban indicators in order to capture information on cities and to evaluate the performance of said cities in relation to certain policies and related goals. These indicators are listed by UN-Habitat in The Challenge of Slums (United Nations Human Settlements Programme, 2003).

The first slum indicator and perhaps the most important in terms of health is the inadequate or lack of access to safe drinking water. The indicator is termed "access to potable water". The indicator measures specifically whether there is sufficient water for family use, at an affordable and reasonable price and without extreme effort. The settlement has inadequate drinking water supply if less than 50 % of the households have access to at least 20 litres/person/day available within "*an acceptable collection distance*".

The inadequacy of a sanitation system and other infrastructural services are also considered an indicator. This indicator pertains specifically to the availability of an excreta disposal system. The excreta disposal system is considered adequate if it is private or shared by a maximum of two households.

Infrastructural services, as mentioned above, include waste collection, electricity supply, surfaced roads, street lighting and storm water management (Ibid.).

Poor structural quality of housing is considered as a physical indicator of slum conditions. The location of the housing is the first sub-indicator. Many slums are located on geologically hazardous land or around unprotected high risk zones such as railways, airports or energy transmission lines(Ibid.). The second sub-indicator is the durability of housing, or the permanence of structure. Cities have standards which set the minimum legal requirement for residential buildings. The majority of slum building violate the by-laws spatially(Ibid.).

Overcrowding is another indicator of slums. This refers to the proportion of households with more than two persons per room. This can also be measured by the availability of sufficient living area. The minimum acceptable floor area per person is set at 5 square metres.

The final indicator is of a legal nature - security of tenure. This implies that the slum dwellers lack documentation entitling them to occupy the land. Slum dwellers exist outside of the law in the majority of cases. They do not have access to formal institutions within society. Without legal addresses they are unable to access social services.

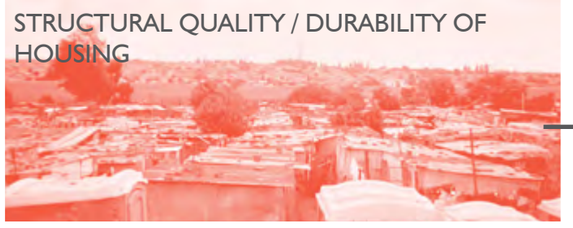
Slums are most often the products of failed policies, bad governance, corruption, inappropriate regulation, poor financial systems, unsympathetic financial systems, and most importantly a fundamental lack of political will by the governement concerned (Wohl, 2002)

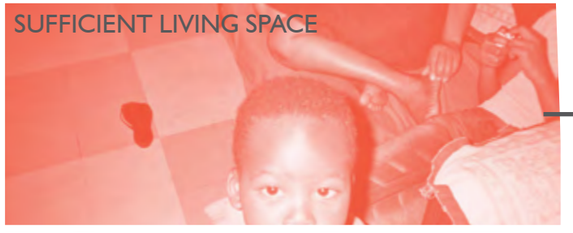
ANALYSIS & OPPORTUNITIES

This thesis aims to resurrect the understanding of the word “slum”. Instead of accepting the entirely undesirable connotation of the word this thesis understands that a slum is a valuable “proto-city” that forms a vital part of the impoverished person’s journey into urban affluence. The word “slum” is utilized in order to instigate a broader implication of the term. When formulating a thesis, aimed at igniting a broader understanding of the value and quality of slums to an international audience it is necessary to make a clear delimitation concerning the intention of the vocabulary utilized.

One can explain certain occurrences within slums in terms of operation. From the digestion and analysis of the operational indicators one realises the vast differences between the acceptable conditions in slums within different contexts in the world as illustrated by table 1.

The features of conditions which are deemed to be globally insufficient in order to facilitate an adequate to good quality of life cannot be adequately defined without first understanding what constitutes good quality of life on a global level. In order to facilitate a qualified definition of a slum environment different indices describing quality of life will be considered as a starting point in order to formulate a strategy which will be utilized in order to qualify Kliptown Informal Settlement and other slums around the globe.





FEATURES OF ACCEPTABLE CONDITIONS

	FIRST WORLD	THIRD WORLD (URBAN)	THIRD WORLD (RURAL)
ACCESS TO IMPROVED WATER	Piped connection to house or plot. Rainwater collection and purification. Municipal servicing.	Public stand pipe, servicing a certain number of households	Access to bore-hole. Access to dug well. Protected spring water.
ACCESS TO IMPROVED SANITATION	Direct connection to public sewer. Municipal servicing. Pour flush latrine. Direct connection to septic tank.	Ventilated improved pit latrine. Bucket system. Chemical toilets.	Pit latrine. Private outdoor area.
STRUCTURAL QUALITY / DURABILITY OF HOUSING	Permanent building materials used for walls, floor and roof. Full compliance with building codes. Material maintenance. Dwelling not in need of major repairs.	Dwelling not located in a dangerous right of way. Dwelling not on or near toxic waste. Dwelling shelters inhabitants from the elements adequately.	Dwelling shelters inhabitants from the elements adequately. Use of local materials.
SUFFICIENT LIVING SPACE	One bedroom per person, kitchen, dining lounge and bathroom facilities.	Comparative amounts of people allowed per room. Minimum floor area per person.	Dwelling grows to allow for the expansion of the family.
SECURITY OF TENURE	Households with formal title deeds to both land and residence. Households with formal title deeds to either land or residence	Households with enforceable agreements or any document as proof of a tenure arrangement. De facto or perceived protection from forced evictions.	De facto or perceived protection from forced evictions

Table 1 Table showing features of acceptable conditions within different contexts, as applied to the operational indicators of a slum. The image was formulated in order to illuminate the issues surrounding the widely accepted operational definition of a slum. The comparison of acceptable conditions in different contexts proves that the definition is not universal.

Quality of Life

Turley et al. state that due to the complexity associated with the delivery of slum upgrading evaluation of the outcomes should consider process factors and qualitative information alongside the readily available quantitative effectiveness data in order to determine which interventions work, which don't work and who is involved (Turley, et al., 2013).

Much has been written and hypothesized over the possible measurement of the quality of life of slum dwellers in urban situations.

In "*Measuring urban quality of life - can we do better?* ", a blog post written by Judy Baker(2014), she discusses the debates around the topic of measuring poverty, which currently rests upon a money-metric system despite the multi-dimensional nature of poverty, as discussed int the appendix.

She puts forward a number of guiding principles when considering development and particularly when considering the measurement of quality of life. The first guiding principle is standardization. By agreeing on a set of metrics for measuring urban quality of life clear guidance can be provided for cities interested in improving the quality of life of its inhabitants. The call is for a comprehensive approach which includes data surrounding income, employment, assets, access to social and infrastructural services, mobility, risk and tenure in order to capture the multi-dimensionality of urban quality of life.

Gora Mboup (2014) states that quality of life incorporates all aspects of existence, spanning a variety of disciplines. Quality of life means different things to different people, a slum dweller in Johannesburg strives for a different standard of quality to a shop manager in Amsterdam. Quality of life typically encompasses a sense of socioeconomic security coupled with the fulfilment of lower aspirational needs.

Generally health and education are the most widely included quality-of-life indicators. This is due to widely available internationally comparable household surveys. Elements such as environment and infrastructure are often overlooked due to the lack of available comparative information.

In 2004 UN-Habitat introduced the Urban Inequities Survey in order to collect and analyse crucial information on the urban quality of cities. Supported by Geographical Information Systems, the profiles collected by the UIS, it provides crucial information regarding the urban form of built environments. The result is a holistic measure of the quality of life.

Judy Baker suggests that the Global Cities Indicator Facility has made good progress on including a broad range of city indicators (Baker, 2014). The tool breaks the factors into two categories, city services and quality of life. City services include education, energy, finance, recreation, fire& emergency response, governance, health, safety, solid waste, transportation, urban planning, wastewater and water. The quality of life indicators include civic engagement, culture, economy, environment, shelter, social equity, technology and innovation (Global City Indicators Facility, 2011). The tool measures quality of life at a city level. One wonders if it is possible to measure the quality of life of a community or individuals?

On an individual level Slum Dwellers International, a global network linking urban poor federations, points out the impact of government evictions and climatic destruction of habitat on the livelihood quality of the inhabitants, advocating the fact that action has impact (Patel, 2014). The current debate surrounding the post Millennium Development Goal development agenda includes the important focus on measuring progress, but the reality of local contexts is increasingly getting lost to increasingly globalised approach to development. Patel (2014) points out that "*as long as informality renders urban populations invisible, data will be skewed and investment delayed*"

The implication of Patels statement is that in order to shed light on the plight of the urban poor one needs to consider factors and indicators which apply on a contextual level. The attempt to measure the quality of housing is one way to do this. Attempting to try and measure what constitutes poor quality of shelter across the globe is very complex (Gilbert, 2014). It is possible to establish a minimum housing standards - such as a tap in every house, access to waste removal, walls and roofs which are safe and manage to keep out the elements, some degree of security of tenure and of person and some-kind of neighbourhood authority, but one still needs to consider the priorities of families in order to understand the importance of shelter at all.

Jha and Tripathi utilized quality of life indicators in their comparative study of slums in Varanasi City, India. They state that quality of life studies are becoming increasingly relevant for the inclusive development of society as well as country (Jha & Tripathi, 2014). Ten indicators where considered in terms of quality of life. The first is the source of lighting; electricity or kerosene, each weighted differently. Fuel used for cooking is another important factor, weighting ranges from cow-dung-cakes, to LPG, including other options such as coal, kerosene and electricity in-between. The source of drinking water is also an important factor, whether from municipal tap or otherwise.

The fourth factor refers to the quality of housing, rated as "*pucca*" which means permanent, "*semi-pucca"*, or "*kaccha*" which refers to temporary housing. Sewerage disposal is rated as being average or poor. The place of waste dumping is also a measurable indicator, whether it is in an area fixed by the municipality, or on the roads or near water bodies. The access to medical facilities is also viewed as an indicator of quality of life, rated as to whether it is government, private or traditional. The literacy percentage of the population, as well as the literacy percentage of the female population are further indicators. The final indicator refers to the amount of governmental ration provision(Ibid.).

The indicators put forward by Jha and Tripathi utilise both quantitative and qualitative aspects in order to formulate a basic understanding of the quality of life within different slums. Utilizing this outcome, the authors were able to recognise potentialities in the slum up-gradation process, and concluded their research with certain suggestions on manners in which to improve the quality of life in slums in Varanasi.

Various other indexes exist, which systematically measure the quality of life of people at various levels as shown in table 2. The quality of life parameters can be easily broken down into umbrella categories, which describe the thread that links the various parameters. In order to find relevance within the architectural field some categories are highlighted whilst others are discarded due to irrelevance. Architectural education and professionalism does not equip one to deal with issues such as emotional well-being and health. It it therefore important to understand the boundaries of architectural relevance within the qualification of a site.

In order to qualify an informal settlement, or any settlement for that matter, it is necessary to understand the various indexes and parameters utilized to quantify and compare the quality of life throughout the world. The analysis and comparison of nine contemporary indexes as depicted by table 2 led to the formulation of the following categories.

RELATIONSHIPS

People form the centre point of any architectural intervention. Dense environments, such as slums, are typified by the relationships and networks of its inhabitants. Various indexes cite relationships as an important indicator of good life quality. It is therefore necessary to focus on the implications of architecture on people and relationships in order to create architecture which may increase the quality of life of the people.

MATERIAL WELL-BEING

Material well-being is at the heart of the majority of the indexes, the age old saying; “money does not buy you happiness” is tested by the assumption that the acquisition of material items may increase the material standard of living. Material well-being can, in essence, be enhanced by asset acquisition, thereby including architecture in the process.

WORK & PRODUCTIVE ACTIVITY

Increased productivity has a large effect on one’s quality of life, whether the productivity be education or employment. Job security brings about a security of income which encourages investment in the upgrade of one’s living environment. Work and productive activity may be enhanced through the innovative use of architecture as a means of production. By including architecture which creates and enhances existing networks, one may be able to increase occupational security and employment.

COMMUNITY

Community is closely related to relationships, but on a larger scale. Social equity is listed as an index which can be enhanced in order to increase the quality of life. Social equity can be equated to meaningful civil engagement, in order to enhance the voice of the impoverished. Civic engagement rests on the provision of valuable public space, which is an architectural concern. Through the provision of meaningful and well-considered public space, one may be able to enhance the community feeling within the settlement, thereby increasing the individual quality of life.

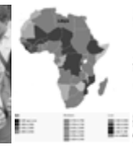
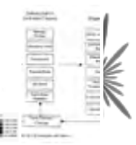
ENVIRONMENT

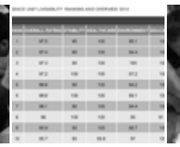
The environment is often overlooked in reference to quality of life measurement. Aspects such as availability of water, public space, and climate have a large impact on well-being and subsequently life quality of the inhabitants. The environmental quality relates directly to the lower order aspirations which need to be met in order to facilitate the enablement of the community.

HOUSING

Shelter in its various forms, is a fundamental human need. Housing therefore constitutes a large part of the quality of life of the inhabitants. Housing as a category, includes elements such as density, overcrowding, sources of lighting, sources of energy, sanitation, water supply and finally the quality of housing. These considerations form a comprehensive idea of how to utilize architecture in order to increase the quality of life within the housing category. The design and upgrade of the dwelling directly influences the life of the individual within the community.






	Global Cities Indicator Facility	Index of Economic wellbeing	Johnston's QOL Index	U.N Human Development Index	Swedish Ulf	OECD Better Life Index	Jha and Tripathi Comparitive QOL assessment	The Economist Intelligence Units Quality of Life Index	Vulnerability Analysis
RELATIONSHIPS	People		Family stability		Social contacts			Family life,	
EMOTIONAL WELLBEING	Subjective WellBeing				leisure	Life satisfaction, time devoted to leisure and personal care			
MATERIAL WELLBEING	Economy, cost of living, GDP,	GDP, capital investment, poverty rate,income distribution	Earnings, Income,	PPP/capita	Material living standards,	Income, unemployment rate	Governmental grants	GDP per person	
HEALTH		Illness	Health	Longevity	Health	Health, life expectancy	Access to medical facilities	Life expectancy at birth	Nutritional vulnerability
WORK & PRODUCTIVE ACTIVITY	Employement, unemployment rate	Employment security	Employment, education		Employment, working environment	Jobs, education, work-life balance	Literacy percentage	Job security	Occupational security, school attendance
COMMUNITY	Civic engagement, culture, social equity,	Poverty	Poverty, equality	Literacy	Social Mobility, participation	Community, civic engagement, gender inequality		Political stability, community life, political freedom, gender equality	Marginilization, degree of poverty
PERSONAL SAFETY	Fire & emergency response, safety.	Crime rate	Public Safety			Safety, homicide rate			
ENVIRONMENT	Environment, Water, Climate type, Land area					environment, water quality, air pollution	Source & quality of drinking water, Quality of housing	Climate, geography	Public space, walkability, mixed-use
HOUSING	Shelter, dwelling density	housing stock	housing		housing,	Housing, rooms per person	Source of lighting, Fuel used for cooking,		Sanitation, water supply, overcrowding, quality of housing
INFRASTRUCTURE	Technology & Innovation, energy,solid waste connection, transportation,				transport,		Sewerage disposal, place of waste dumping,		Sanitation, water supply, energy supply

The delimitations of this thesis rule out health and psychological factors, implying that indicators relating to these topics should be disregarded

Table 2 Analysis of parameters measuring quality of life in various indexes , highlighting important architectural concerns and disregarding issues surrounding health and emotional well being, adapted from Hagerty, et al., 2001 (Author, 2015)

INFRASTRUCTURE

Infrastructure is a term which denotes engineering expertise rather than architectural, but can be challenged when applied to informal environments. It can be assumed that architectural interventions within slum environments must make allocations for the provision of the future infrastructural enhancements needed to improve the life quality of people within the slum.

ANALYSIS & OPPORTUNITIES

Quality of life measurement incorporates all aspects of existence, over a variety of disciplines making the approach applicable to many different contexts throughout the world.

Quality may mean different things to different people, making the measurement of quality an entirely contextual exercise. The complexity behind measuring quality of life means that certain principles need to be followed in order to attain accurate data.

A comprehensive approach is called for, aligning to the premise put forward by adopting a qualitative research methodology. A certain level of standardisation must be allowed in order to facilitate the qualification process, but flexibility must be built in to accommodate context specific issues which may affect the results.

The implication is that quality of life factors may be quantified and qualified in order to formulate a basic understanding of the quality of life within various slums in order to recognise potentialities of the site. The implication is that various different methodologies and tools are utilised in order to qualify the slum. This approach is incredible useful in formulating a course of action for the qualifying a slum environment.

The seven categories form umbrellas which describe a much wider net of themes and parameters. The distillation of these categories aids in the systematic standardisation of the various categories and parameters associated to quality of life measurement, thereby aiding in the formulation of comprehensive, "qualitative" approach.

In order to move forward with the research, the operational definition of a slum must be integrated with the indicators affecting the quality of life of the people within slums. The factors influencing quality of life include all of the operational factors surrounding the definition of the slum, except for security of tenure, a legal concern which no doubt affects the quality of life of the inhabitants. It is therefore suggested that a legal category be included with the seven categories distilled from the evaluation of quality of life indexes.

The result is a methodology which qualifies the slum in terms of its inherent operational definition, as well as the factors which are published as defining the quality of life of the inhabitants thereby informing the process of development.

Development is a key proponent of the quality of life approach. It is key to understand what development entails and how the theories have evolved into present day thinking in order to understand the various strategies involved in slum upgrade throughout the years. In the following section the implication and evolution of development will be discussed in order to understand the strategic evolution of intervention within informal urban environments.

Figure 8 Different quality of life categories as depicted by photogaphs of Kliptown Informal Settlement(Author, 2015)

Figure 8 is an attempt to contextualise the categories distilled from the evaluation of quality of life indexes in terms of Kliptown Informal Settlement in order to formulate an understanding of the on-site implications of the quality factors.

Development

After World War II the world emerged as consisting of three major groups of countries. Western countries, further in the industrialization process, were classified as first world countries. Centrally planned Soviet block countries made up the second world counties. Agriculturally focused countries with low per capita incomes were classified as third world or developing countries. Western concepts for development, technology, economy and management were viewed as superior and became the "magic" quick fix applied to growth and development worldwide.

Development can mean different things to different people. In general development is described as the transformation of society through betterment, thereby creating a better life for all people (Amadei, 2014). The 1990 UNDP/HDR report describes development as " *creating an environment in which people can develop their full potential and lead productive, creative lives, and accord with their needs and interests*" (UNDP, 1990).

Peet and Hartwick explain what development is by equating development to growth, but point out some limitations to this equation. If growth effects the environment negatively, it is not development. If growth produces an excess of waste, it is not development. If growth concentrates the cumulative wealth into the hands of few, it is not development. If growth is controlled by the minority of powerful people it is not development. If growth is based around consumerism, it is not development.

Through these limitations it is possible to formulate a definitive idea of what development entails. Developments is a form of growth which does not adversely effect the environment. Development is not produced with excess waste, and fairly distributes wealth and power amongst all citizens, in a non-consumerist manner.

Development as a concept can be broken down into various sub-categories. Community development is an alternative to top-down development proposed by the UN and USAID in the 1950s and 1960s. The concept is inspired by the humanistic concepts of the village self-rule movement in India in 1962, and the Liberation Theology in South America. Community development as an ideal was

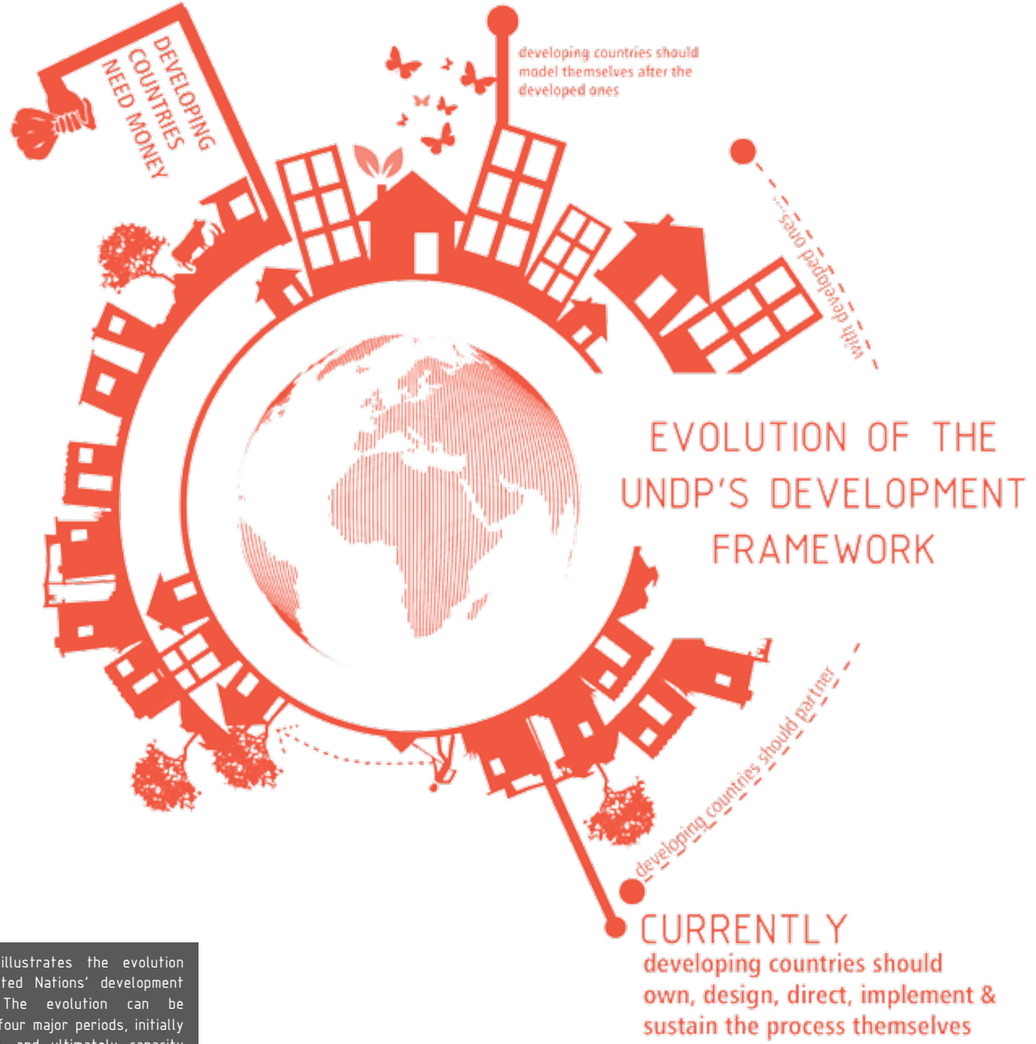


Figure 9 illustrates the evolution of the United Nations' development framework. The evolution can be surmised as four major periods, initially money based, and ultimately capacity

Figure 9 Evolution of the UNDP's development framework (Author, 2015)

abandoned in the late 1960s in lieu of the large modernist blocks. In the late 1990s community development was revitalized through the idea of development as the tool for transformation and freedom within society.

Ewing and colleagues call for the need of "constructing new development pathways that place much less strain on the global environment" (Ewing, et al., 2009). The resultant concept is sustainable development. Sustainable development does not equate directly to the idea of sustainability. The Bruntland Commission describes sustainable development as "development that meets the needs of the present without compromising the ability of the future generations to meet their own needs." (United Nations Commission on Sustainable Development, 2007).

By definition, sustainable development projects are anthropocentric. The ASCE defines sustainable development as "the challenge of meeting human needs for natural resources, industrial products, food, transportation, shelter and waste management whilst conserving and protecting environmental quality and the natural resource base essential for future development" (ASCE, 2013).

Frameworks for sustainable development have progressed rapidly over the last 20 years. The UNDP development framework evolved in four stages; largely echoing the worldly practice of development as illustrated by figure 8. First development aid was the major practice- the assumption was that "*developing countries need money*". The focus was on investment, and developing countries became dependent on the first world.

The practice then evolved to include technical assistance. Foreign experts operate and deliver their own projects, expecting similar results as in their own countries. The assumption at this point was that "*developing countries should just model themselves after the developed ones".* The resulting projects are disconnected from local goals, ignoring local realities and therefore inevitably fail or do not deliver the anticipated outcomes.

The premise of development projects then matured to technical cooperation. A greater emphasis was placed on training and transforming knowledge based on national policies and priorities. The assumption being that *"developing countries should partner with developed ones".* Local expertise is enhanced in line with local priorities and goals but the process is overly expensive.

The contemporary development practice centres around empowerment and strengthening of endogenous capabilities. The assumption is that "*developing countries should own, design, direct, implement and sustain the process themselves*". This approach makes the most of local resources emphasizing lasting transformation through policy & institutional reforms. This approach values best fit over best practice, understanding that one size does not fit all (United Nations Human Settlements Programme, 2003).

Capacity development is defined by the UNDP as "*a process through which individuals, organizations and societies obtain, strengthen and maintain the capabilities to set and achieve their own development objectives over time.*" The Canada International Development Agency defines it as "*the approaches, strategies and methodologies used by developing countries, and/or external stakeholders, to improve performance at the individual, organisational, network/sector or broader system level.*" (Walters, 2008).

The GTZ (2007) explains capacity development as a process which leads to sustainable development. Capacity development is " *a holistic process through which people organizations, and societies mobilize, maintain, adapt and expand their ability to manage their own sustainable development*"

Acquiring capacity in small scale developments, requires participatory locally generated processes, at the end of which, communities which are acted upon should posses the necessary resources and knowledge to address their own problems, be self-sustaining, cope with various stressors and satisfy their own basic needs whilst demonstrating livelihood security.

ANALYSIS & OPPORTUNITIES

The evolution of the development guidelines, largely denote the strategies undertaken in various projects throughout the history of development architecture. The analysis of the UN's evolution provides four manners in which to deal with development; donation, copy paste, partner and do-it-yourself.

The contemporary view on development requires one to understand the context in which they are working, in order to formulate a course of action which allows community members and local business people to carry out the project almost independently.

If developing countries should own, design, direct, implement and sustain the process themselves then architects and NGOs need to develop means of working and designing in conjunction with local people in order to facilitate the process of capacity building in order to enable the people to take ownership of the project.

This requires an approach which places the local community at the centre point of the discourse. Allowing one to consider context specific projects and ideas which allow for the development of people, rather than the development of buildings.

Many frameworks and methodologies have been proposed to deal with slum upgrades in contemporary situations and will be discussed in the following section. In order to formulate a means for state organizations to act within their own context, as required by the UN's development protocol, different frameworks are analysed in order to understand if a common framework can be implemented for ease of intervention.

‘If there is no monolithic subject or unilateral trend in the global slum, there are nonetheless myriad acts of resistance. Indeed, the future of human solidarity depends upon the militant refusal of the new urban poor to accept their terminal marginality within global capitalism.’

Mike Davis (Davis, 2006)

FRAMEWORKS

From the perspective of poor people, governments and institutions are in total crisis. Administrative and public service capabilities of governments have deteriorated. Social institutions which shape civic and economic life have broken down completely. The poor and marginalized are left vulnerable to shocks and impacts as a result.

Changing poor people's lives for the better is an extremely complex process. This is because poverty is multi-dimensional. It involves many interrelated elements. A strategy for change must be reached which starts with poor people's realities, invests in the organizational capacity of the poor, changes social norms and supports development entrepreneurs.

Throughout the world, many frameworks and approaches have been utilized in order to understand and address the problems of slums. Approaches to improvement of slums typically follow in-situ upgrading, or forced eviction and subsequent redevelopment. These approaches tend to focus mainly on short-term solutions which do not address the core spatial issues associated with these areas. The frameworks discussed below focus on long term courses of action involving slum upgrade and development.

SPACE SYNTAX

Space Syntax is a framework which concentrates on vital spatial interventions in key areas in order to insure long term benefits. The framework relies on a set of cutting edge spatial design tools in order to maximize the improvement of self-planned areas (Space Syntax, 2010).

The core of Space Syntax's approach is a methodology which measures the impact that spatial configuration has on urban sustainability, movement patterns, land use distribution, density distribution, land value and crime. The technique measures space, with supporting elements added as required. The additional elements include land use, building quality, utility provision, public realm condition and access to social infrastructure.

The benefits of this approach include long term sustainability and optimization of public investment by categorizing settlements. Tailor made solutions reduce resident displacement, disruption to social networks and political pressure. A spatial plan allows large scale private investment to be accommodated within the larger plan. The proposals have an inherent flexibility which allow them to adapt more easily to changes and shocks.

The framework consists of various scales of investigation. The first scale is at a city level, analysing the spatiality of various settlements city wide. This analysis generally happens at scale 1:50 000, or scale 1:25 000. The analysis provides a spatial overview of the city. It can be used to contribute to large-scale planning policy such as growth strategies.

The next scale is at 1:25 000 and 1:10 000, where spatial profiling becomes important. This scale utilizes settlement specific analysis in order to benchmark current conditions and compare areas within the city. This level includes analysis of spatial accessibility, spatial structure, urban morphology, transform-ability, public realm, utilities, social infrastructure, population density, and land- use mix. The key deliverables of this phase includes spatial profiles of each settlement and intervention strategies for each settlement. Spatial profiling helps to optimize investment and minimize disruption.

Each settlement has a strategic level of intervention defined in response to its existing conditions. The benchmarking allows for the prioritization of those in the most need. Spatial profiling provides a strategic decision making framework to be utilized as a design tool in the subsequent stages of the improvement processes.

The next level is at scale 1:10 000 to scale 1:5 000. This level results in a spatial improvement plan, which proposes large-scale spatial interventions which are to be implemented through longer term planning policy. Through the spatial analysis they identify the specific elements that under perform at local or city wide scales. By realigning the streets in the settlements they develop large-scale strategies to reconnect these areas. Each settlement is provided with a unique spatial plan, which can be utilized as a first step master-plan.

The following stage is the urban development framework. This scale is at 1:5 000 or 1:2 500. This stage builds upon the outputs of the spatial improvement plan in order to refine a design to the point where individual projects can be defined and private delivery options can be initiated. This stage provides a set of compatible design scenarios for settlement specific upgrading processes.

The final scale is the area action plan at scale 1:1000 which develops a detailed spatial plan in order to co-ordinate and inform short term strategies. The area action plan delivers a full set of design scenarios in order to implement public and private development at the urban scale. Phasing projects, in order to implement the interventions with the most positive impacts first, results in the increase of land value to contribute to the natural process of urban regeneration (Space Syntax, 2010). Consultation with community members provides the opportunity for valuable participatory design.

Whilst the Space Syntax methodology accounts for spatial outputs of informality and systematically puts forth a strategic manner in which to deal with the spatiality of the output, the lack of community involvement is undoubtedly a major flaw in the conception of the methodology.

ELOS OASIS METHODOLOGY

ELOS' purpose is "*to give impulse to a movement that makes the world we all dream of come true right now*" (ELOS, n.d.). ELOS' philosophy of transformation is that the seed of transformation emerges through relationships and through shared dreams. The Oasis game is a social game that is used to promote the social technology for civil mobilization.

The Oasis Game was conceived as a community mobilization tool in order to materialize collective professional and community dreams. The game comprises of players and communities in order to bring

together people from different backgrounds, such as NGOs, government, businesses and the community. It was designed to be applied at no extra cost in a participatory manner, so that all participants can achieve a common goal (ELOS, n.d.).

The aim of the game is to stimulate and enable groups and communities for cooperation and entrepreneurship. The game has seven phases plus the initial preparation phase. The first being the gaze, then the dream, the affection, the care, the miracle, the celebration and finally the re-evolution. Cooperative games such as Oasis, emphasize participation through the importance of play.

The first step of the game "The Gaze" can be equated to Nabeel Hamdi's idea of transept walks. The idea is to walk through the community with a positive mindset in order to find five signs of beauty and five possible resources. The following phase; "Affection" involves talking with people in order to discover their stories and talent. The output of this stage, for each subgroup is one inspiring story and five talents.

The "Dream" phase includes talking to people about their collective dreams. Three dreams must be collected and a collaborative communal dream must be reached. This dream will be given form in the "Care" phase. The community is involved in giving form to the collective dream in order to mobilize community resources for the next phase. The "Miracle" phase includes the hands-on action. Action groups are created in order to facilitate the action of the collective dream, in whichever form it may be.

The subsequent phases are self-explanatory. The "Celebration" phase involves the planning of a community gathering in order to celebrate the action, and the results of that action. The "Re-evolution" phase is the forward projection of the process and the organization of a team meeting in the future (ELOS, n.d.).

The game utilizes cards in order to facilitate the process, giving tips and actions at each phase. The organisation also creates valuable interaction through social media platforms such as Pinterest.

The game has only been roughly translated into English from Dutch, and therefore lacks accessibility to many international professionals. The way that the game has been formulated, using confusing terms, and verbose descriptions can potentially lose the majority of acting professionals in these situations, not to mention the largely uneducated community members.

The game implements a social action process, which results in a hands-on intervention, showing the value of play in community developments. The game touches briefly on spatial implications of social, and community goals, but does not deliver any larger scale actionable master plan.

URBAN THINK TANK TOOL BOX

The Urban Think Tank(UTT) is an "*interdisciplinary design practice dedicated to projects that focus on social architecture and informal development, and through ETH teaching, exhibitions, film & publications we research, make and communicate strategies to improve cities around the world.*" (Urban Think Tank, 2015).

The toolbox proposed by UTT documents part of a conversation between SLUM Lab researchers at Columbia University, GSAPP, governmental organizations, human rights activists, and other partners sharing the common belief that architecture has the potential to influence and improve the life of people within critical urban areas. The publication presents a catalogue of projects in order to formulate a toolbox of ideas.

The toolbox makes use of various tactics. The first is to diagnose topography, as understanding the slope is crucial to designing in informal settlements.

Tactic #2 is to visualize social factors. Visualizing the data makes it accessible to all people.

Tactic #3 is the diagnosis of morphology. Urban morphology in informal settlements is a bottom up process. The morphology is therefore an emergent phenomenon. Informal morphologies are generally complex but consistent making the diagnosis quite simple.

Tactic #4 is to reverse engineer aggregation. In order to build a working model of slum development one must reverse engineer the growth of the slum in order to understand the pattern of growth and the limitations. Algorithms are utilized to predict future growth based on the information gained from reverse engineering.

Tactic #5 is to capture resources. Architects must think of self-sufficient solutions designed in response to the natural environment, thereby becoming part of the larger ecosystem.

Tactic #6 is to add infrastructure. One of the defining characteristics of informal areas is the need for more infrastructure such as easy access and emergency assistance.

Tactic #7 is to plug into the infrastructure. Increasing roadways is often the first step in the upgrade process as it ensures access for construction vehicles.

Tactic #8 is to consolidate infrastructure, allowing any infrastructural interventions to multi-task. Services can share a central access point, allowing for the development of a community resource centre.

Tactic #9 is to go with the grain. The premise is that the existing fabric of the slum is wisdom in itself. The grain of the informal buildings tend to follow the slope.

Tactic #10 is a direct contradiction asking one to go against the grain. The logic is that in order to change the existing fabric, in a meaningful way, you have to break some rules.

Tactic #11 is to capture unused space. Valuable public space is often hidden in the passageways , façades and alley ways.

Tactics #12 is to make a kit of parts. Construction should be modular, comprising of small, cheap and easily assembled parts.

Tactic #13 is to grow local. This is the idea of urban agriculture being dense and social. Urban farming can be integrated into the settlement itself.

Tactic #14 is to consolidate the public. Public space is necessary to gather people in order to consolidate individuals into the politics. The consolidation itself can be informal, it is the joining of functions, creating a community.

Tactic #15 is to go vertical. High density urbanism involves going vertical, building layer upon layer. The challenge is producing rich space and accessible space whilst maintaining verticality.

Tactic #16 is to think topological. Topology is the science of connections. Architecture that is highly connective is highly topological.

Tactic #17 is to make networks. Networks are crucial to overcome fragmentation. Networks, both physical as well as social can reinforce positive community aspects whilst magnifying the voice of the residents.

Tactic #18 is to think formally. Rather than deriving patterns from the existing fabric, formal devices can be utilized in order to re-imagine slum fabric.

Tactic #19 is to make centres. These places should be for everyone, young, old, rich and poor. Sport is a great program for these functions. These should start as public areas in need of improvement.

Tactic #20 is to prefabricate. Prefabrication allows for small scale iterative development whilst maintaining building quality.

Tactic #21 is to distribute freely. Knowledge must be open source, thereby allowing for architecture to be a collaborative act. This tactic is intrinsically included in the make-up of the manual. Any researcher may add tactics to the manual on an Online portal (SLUM Lab, 2008).

The manual is not overly prescriptive and reads as an inspirational guide to community development. By focusing on efforts within Paraisopolis, the manual provides projects where the ideas where applied in order to contextualize the arguments. The result is a framework which is essentially adaptable to other contexts worldwide, which face similar problems. Some tactics apply loosely, whilst others may be more relevant. The approach tacitly implies a participatory approach, without stringently stating the necessity of community interaction.

ISANDLA'S PLACEMAKING

Isandla's placemaking is tailor made for the South African context. The framework first explains the nature of the problem within South Africa. Stating that "*the majority of South Africans are not going to be able to earn their way into owning a house any time soon. We need to find a way to make informal settlements liveable for the foreseeable future.*" (Isandla Institute, n.d.)

The framework therefore discusses the programme for the upgrading of informal settlements. With the premise that people will continue to migrate to South African cities, and knowing that the current housing model cannot keep up with the demand, it is essential that upgrading of current settlements becomes the norm. When settlements are upgraded, communities are able to combine their creativity and personal resources with state provided services in order to ensure that the upgrade meets their needs.

The framework starts with a question and answer flow chart. The first question is whether it is possible to upgrade the settlement. If the answer is no, the assumption is that people will be relocated. If the answer is yes, it takes you through various steps, the first being land and planning. This step includes the organization of the community, determining the status of tenure, planning the community and collecting socio-economic information.

The following step is the installation of basic interim services including the provision of communal water, sanitation, electricity, roads, walkways and lighting. Following the temporal provision of services is the installation of permanent services, which support livelihoods and local economic development. The next step is the allocation of funds for the development of individual houses.

The role of the government is defined as a partnership with social actors and community members in order to produce viable solutions. The role of the government changes to facilitator and resourcer. Various state policies supporting the upgrading effort are introduced.

The role of the community is also suggested. It is said that the community should be active in every stage of planning, decision making and implementation. This is achieved through a participatory approach. This includes the mobilization of the community, getting to know the community by surveying the settlement and mapping the assets and facilities.

A discussion should be held in order to identify what you know and what you do not know. A plan for upgrade should be reached within the community in order to identify the strengths, weaknesses and threats to the community. The role of the government should be understood in order to understand the decision making process (Isandla Institute, n.d.).

The framework puts forward a methodology for the state and communities to work together with one another. The framework, which relies heavily on participatory methodologies, requires intensive on-site work, meaning that the facilitator or designer needs to be local in order to achieve the upgrading process. The framework however does not emphasize the spatiality of the settlement, taking into account the value of local resources and environmental factors.

RAJIV AWAS YOJANA

The Rajiv Awas Yojana (RAY) program envisages a slum free India in which each citizen has equal access to basic civic infrastructure, social amenities and shelter. The program is developed and utilized by the Ministry of Housing and Urban Poverty Alleviation (Ministry of Housing & Urban Poverty Alleviation, 2013).

The strategy is implemented at a governmental level and thereby includes a large scope of actionable outcomes. Under the scheme central government provides 50 to 75% of the project costs. The assistance will be contingent upon certain reforms which include giving longer term leasehold rights to slum dwellers, reserving 15% of the floor area ratio (FAR) or floor space index (FSi) or 35% of the dwelling units for the economically weaker section. 25% of the municipal budget must be used to provide basic services to the urban poor and a municipal cadre must be established to deal with the issues of slums.

The RAY implementation strategy has two distinct steps. The first step is the preparation of Slum-free City Plans of Action. This step is on a whole city basis. The next step is to provide Detailed Project Reports, on a "whole slum basis". The second step includes the provision of housing, basic civil infrastructure and social amenities in each selected slum.

The objectives of the program are as follow:
1. Improving and provisioning of housing and basic infrastructure within intervened slums.
2. Enabling reforms to address some of the causes of slums.
3. Facilitating institutional credit linkages to the urban poor.
4. Institutionalizing mechanism for the prevention of slum formation.
5. Strengthening human capacities at municipal, city and state level through comprehensive capacity building.
6. Empowering the communities through ensuring active participation at every stage of decision making.

Certain guidelines are set out for each step of the scheme. The preparation of the Slum-free City Plans of Action (SFCPoA) will be an overall action plan including investments required. The strategy must be formulated in two parts, first the curative strategy for existing slums, and secondly the preventative strategy for potential slum formation (Ministry of Housing & Urban Poverty Alleviation, 2013).

The curative strategy must include the identification of all slums, slum mapping, profiling, analysis of tenability, prioritisation of housing and infrastructure deficiency, and the formulation of development options for each slum. The preventative strategy involves the assessment of housing shortages and the enablement of policy reforms for the supply of housing for the urban poor.

The preparation of Detailed Project Reports (DPRs) is based on the prioritization of slums in the SFCPoA. The strategy must be an integrated approach with the provision of housing, infrastructure and social amenities. Infrastructure components include water supply, sewerage, drainage, solid waste management, approach and internal roads, street lighting. Social amenities include community facilities such as pre-schools, child care centres, health centres , etc. (Ministry of Housing & Urban Poverty Alleviation, 2013).

In-situ strategies are preferred to ensure that development does not lead to the loss of livelihood. Interventions can either be redeveloping the slum, by demolishing the old and providing new, or upgrading the existing fabric, by filling gaps without complete demolition.

Different housing strategies are allowed. New housing should be provided to dwellers without "Pucca" or permanent housing. The minimum floor space is 21-27 sqm with two rooms, kitchen, bathroom , water sealed toilet and individual water connection. Incremental housing may be provided if dwelling units provided by the slum dwellers are in need of improvement. The up-gradation of these houses must meet the minimum requirements as set out above (Ministry of Housing & Urban Poverty Alleviation, 2013).

The RAY scheme is facilitated through a signed agreement, binding both parties, in order to ensure that deliverables are executed to the standard that they are promised (Ministry of Housing & Urban Poverty Alleviation, 2013).

The scheme is revolutionary in its policy of incentivising reform at local government and development agency level. The implication is that through the systematic distribution of central governmental wealth in a transparent manner, real change can be ensured. The vaporisation of the urban poor, through prescriptive participatory techniques ensures the viability of slum renewal schemes.

ANALYSIS & OPPORTUNITIES

It is clear through the analysis of the foregoing five contemporary frameworks, using the categories formulated in the quality of life index analysis in table 3, that there are blind spots which exist in each of the frameworks. Analysis of the different frameworks reveals important aspects of operation, which occur in multiple approaches. The frameworks undertake different methodologies, but advocate an ordered course of action. This is in order to achieve an extent of standardization which make the framework systematic easy to utilize and replicate.

If one was to rank the frameworks considered in order to formulate an understanding of which methodology one would utilise in order to qualify a slum situation, one would describe them in terms of how many quality factors that they deal with. All the frameworks have at least three blind spots in terms of the quality of life categories.

Space Syntax, Urban Think Tank Toolbox and Rajiv Awas Yojana are the most complete out of the frameworks, with three blind spots respectively. Space Syntax does not take head of material well-being, legal matters and does not introduce any extra considerations.

Urban Think Tank Toolbox does not look at matters of material well-being, personal safety or legal matters. Rajiv Awas Yojana does not take heed of relationships within a community, it doesn't consider personal safety, or issues relating to lifetime implications.

Isandla's Placemaking has four "blind spots". The framework does not account for relationships, personal safety or environment. Furthermore it does not add any new ideas.

Elos Oasis Methodology is the worst, with six "blinds-pots" evident in its conception. The framework does not account for material well-being, personal safety, housing, infrastructure, lifetime or legalization and thereby fails to be useful when conducting site research that considers qualification of an environment.
The most commonly missed category is personal safety. Four out of five frameworks do not take this into account when considering a settlement. Following this is the legal implications of settlements, and material well-being, both having three out of five frameworks ignoring these issues. Community and Work & Productive activity are the only two ideas which are dealt with in all five frameworks.

The fact that Community and Work & Productive activity are dealt with in all the frameworks emphasizes the categories' importance in qualifying an informal settlement. Community and work must form the central themes of any framework that deals with the qualification of slums.

A framework which endeavours to qualify a slum must make up form the blind spots which are evident in existing frameworks. Therefore it is important to conceptualize means of understanding themes such as material well-being, personal safety and legality in order to propose a course of action that could be utilized in order to understand and thereby act upon these themes.

In order to move forward, it is important to consider the various key themes and theoretically understand the tools and means by which these themes may be understood when working on-site in an informal settlement. In order to do this a multitude of existing tools will be analysed to formulate a broad based understanding of their methodologies and means of implementation in order to assist in the formulation of a booklet of guidelines.

Table 3 provides an analysis of the five main frameworks in terms of the categories distilled from the investigation of the quality of life indexes in the previous section. The analysis provides a means to visualise the obvious gaps in the contemporary frameworks and illustrates the necessity to expand upon these frameworks in order to fully qualify a slum




	SPACE SYNTAX	ELOS OASIS METHODOLOGY	URBAN THINK TANK TOOLBOX	ISANDLA'S PLACEMAKING	RAJIV AWAS YOJANA
Relationships	Social infrastructure	Social game, social action process	Visualise social factors, think topologically, make networks		
Material Wellbeing				Socio-economic wellbeing	Central government provides 50 to 75% of the project costs, credit linkages
Work & Productive Activity	Strategic	Entrepreneurship	Prefabricate	Local economic development	Capacity building
Community	Public realm condition, community members consultation, participatory design	Civil mobilization, community dreams, participatory manner, talent, stories, community resources, celebration	Distribute freely	Creativity, personal resources, organiszation of the community, participatory approach, strengths weaknesses and threats to the community	Human capacities, active participation, social amenities
Personal Safety	Crime				
Environment	Land use mix, density distribution, land value, public realm condition, spatial profiling, urban scale	Beauty, resources,	Diagnose typography, capture resources, go with the grain, capture unused space, consolidate the public, make centres		Profiling
Housing	Building quality		Urban morphology, plug into the infrastructure, think formally	Development of individual houses	Improving and provisioning of housing, prioritisation of housing
Infrastructure	Utility provision		Urban morphology, add infrastructure, consolidate infrastructure	Communal water, sanitation, electricity, roads, walkways and lighting, permanent services	Basic infrastructure, infrastructure deficiency
Life Time	Urban regeneration		Reverse engineer aggregation	Upgrading	
Legal				Status of tenure	Analysis of tenability
Extra		Action, intervention	Go vertical, high density		Address some of the causes of slums, prevention of slum formation, In-situ strategies

Table 3 Analysis of different frameworks in terms of the quality factors (Author, 2015)

“If you want to know how the shoe fits, ask the person who is wearing it, not the one who made it”

Nick Wates (Wates, 2000)

TOOLS

Tools

Tools provide a resource for understanding how to carry out and perform certain actions within the community. Participatory appraisal is an approach to gaining a rapid in-depth understanding of the community, or certain aspects of the community based on the involvement and participation of that community.

The term Participatory Appraisal describes a family of approaches set to enable local people of certain settlements to identify their priorities, allowing them to make their own decisions about the future of their settlement thereby relating directly to the contemporary development discourse.

Participatory tools are both flexible and innovative. They are forms of investigation which are highly visual that can be used by both individuals and groups. On principle an interactive rather than extractive process must be followed by researchers. Community participation must be on a voluntary basis. Many tools are involved in the process of appraisal. The tools may be used individually or used together to receive similar types of information.

The tools rest on the qualitative notion of research. The researcher should not begin with a preconceived theory in mind but with an area of interest, and allow the theory to emerge from the data that is gathered. The tools are related to various themes deemed necessary, through a period of theoretical investigation, to qualify a slum. The tools are ordered in terms of relevance to the process of qualification.

SEMI -STRUCTURED INTERVIEWS

METHOD
Semi-structured interviewing is a form of guided survey whereby a number of questions are prepared but serve as an outline to the conversation, rather than prescriptive course of action. The resultant interviews therefore tend to take the form of discussions (FAO, 2015).

DELIVERABLES
The answers to the questions will form a broad-scale understanding of the construct of the community. A summarized report can be written based on the answers to the questions in order to understand the information more clearly. If necessary or relevant info-graphics can convey the outcomes found in the investigation in a more understandable manner.

TRANSECT WALK

METHOD
The transect walk is an information gathering exercise. It is a tool for describing and showing the location and distribution of resources, features, landscape, main land uses along the transect. The simple tool is easily adopted and replicated at the community level. The method involves outdoor activities, on-field observation, discussions and diagramming. The tool takes into account the current “observable” situation, serving as an entry point for more in-depth research.

DELIVERABLES
The deliverables include transect diagrams drawn on large sheets of paper and on the floor. The value of the transect diagram is in the analysis. Key questions which may be answered are:
- What resources are abundant, and which are scarce?
- Where do people obtain water and firewood?
- What constraints or problems are in the different areas?
- Is the community segregated or mixed?

MAPPING

METHOD
Mapping is an effective way to understand how people perceive the settlement. It is a great way to gather vast amounts of data, and to understand the differences in perspective held by the stakeholders. The mapping exercise acts as a basis for joint planning (Wates, 2000). Individuals or groups create physical maps of their neighbourhood. Different layers of evaluation will be provided in order to structure people’s thoughts;
- Landmarks
- Frequently visited places
- Boundaries
- Dangerous places
- Places for children
- Community elders
- Recycling centres

It is important to decide the purpose of the exercise in order to ascertain the best display method.

DELIVERABLES
The outcome will be a cumulative layered map created in order to provide a definitive understanding of the area.

STAKEHOLDER ANALYSIS

METHOD
In order to understand the community it is important to understand who the key role-players are and how they contribute to the running of the community. The stakeholder analysis will happen throughout the process, by mapping new people and asking what they do.

A stakeholder is every person who has an interest, legitimate or otherwise, in the project and its outcomes.

DELIVERABLES
The outcome will be an info-graphic describing the various relationships between stakeholders within the community in order to understand the impact and feasibility of various interventions.

VULNERABILITY ANALYSIS

METHOD
The vulnerability analysis is a qualitative means to understand the vulnerability of the community. Through the analysis of 9 possible vulnerabilities, one can map a picture of individuals vulnerabilities and family vulnerabilities.
The factors are:
- Nutritional vulnerability
- Marginalization
- School attendance
- Sanitation services
- Water supply
- Overcrowding
- Quality of Housing

The factors are measured from 1-5 (one being high vulnerability and 5 being low)

DELIVERABLES
The outcome will be a series of radar diagrams per family, which will describe their vulnerability. A generalized community vulnerability diagram will also be produced in order to map the community standing. These diagrams will inform the process of design.

DRAWING THE SLUM

METHOD
In order to study a site it is important to first understand the morphology and topography of the site. The study of the surroundings and the rough study of the distribution of housing can lead to an in depth understanding of how people organise their own space. The act of putting marginalised communities on the map is in essence an act of empowering the people. Map Kibera, a project in Nairobi Kenya, endeavours to put Kibera on the map. By giving form to the settlement, its problems are highlighted and opportunities are exposed.

Various methodologies are utilized to map slums. The most accessible being the use of extremely high resolution satellite imagery (Sliuzas, n.d.). Other techniques such as GPS mapping, earth observation, traditional aerial mapping, modern digital cameras, Aibotix Hexacopter Micro Aerial vehicle and community mapping require some extent of cartographic expertise, and are more costly.

DELIVERABLES
The key deliverable of this tool is a map of the site, in which ever format deemed appropriate to the project and the community. The map should include information on the various landmarks of the community, acquired from the community mapping of the settlement.

PHOTOGRAPHY SURVEY

METHOD
In order to understand the settlement from a different perspective disposable cameras can be distributed to a group of participants. The participants should be asked to form groups. The groups will be given themes such as:
- Memorable places and images;
- Beautiful places, ugly places;
- Places to be alone, to socialize, to play;
- Private places, public places;
- Ugly buildings, beautiful buildings;
- Threats

The photographs will be developed and discussed with the teams the following day in order to understand the relevance of each photograph.

DELIVERABLES
Ning Tan, a facilitator in a Philippines workshop pointed out that she was surprised as to how the photographs added a new dimension to everyone's perception of the community (Wates, 2000). The photographs themselves are valuable deliverables as they allow the researcher to gain access to the private perceptions of the participants.

TIME LINE ANALYSIS

METHOD
Time line and trend analysis can be utilized to reveal changes over the years, including historical and important events. Change includes the local economy, resources, population and issues of health and education. The impact of change or trends revealed formulate a base off which to work towards solutions. The changes in the local environment over time may be related to the formation of the site itself.

DELIVERABLES
The deliverable will be a timeline either in the form of a written document or a graphic representing the layering of the site, in relation to the various events which may have occurred in the vicinity of the site or within the political and social construct surrounding the site.

FUTURE PROJECTION

METHOD
In order to design for the future of a settlement it is crucial to utilize information gathered from time line analysis, as well as population projections, to formulate an assumptive guess as to the future population and conditions of the slum if it were to be left as it is. The method is assumptive in nature. Judging from certain projections one can assume the future density and condition of the settlement in order to design for the settlement as it will be. This method takes into account data that is commonly available from country based census data, which may be published Online or in municipal archives.

DELIVERABLES
The deliverables of this tool are essentially quantities; numbers of people and houses expected on the site, judging from trends in population projection and urban rural migration.

TYPOLOGY ANALYSIS

METHOD
Typological analysis is an important aspect in the study of informal settlements especially in the urban areas of developing countries where there are varied types of house structures and basic amenities (Ishtiyaq & Kumar, 2011). The means to identify different typologies and building technologies is based on analytical observation by a trained professional.

DELIVERABLES
The outcome of this tool is a series of drawings and photographs documenting the different typologies within the informal environment. It is possible to comparatively analyse the different outcomes in order to qualify the various typologies in terms of factors as decided by the professional. A qualitative comparative analysis of the typologies is a valuable outcome to the process.

LESSONS

METHOD
Much can be drawn from analysing existing activities and practices within a slum. The slum itself acts as an autonomous settlement and people provide what they need for themselves. It can therefore be said that by analysing what people have done you can understand what they need. The lessons may be drawn from any of the tools and presented in a manner which makes sense to the project.

DELIVERABLES
The lessons can be presented in multiple manners. The formation of a small catalogue or poster, showing the lessons learnt from the slum, which can be easily accessed and shared, provides a valuable means of accrediting the slum and their practices.

FINANCIAL ANALYSIS

METHOD
In order to understand the scale of what people earn, and the consistency of their work hours, a flyer will be produced where people are able to fill in how many days they work, how many hours they work in a day, and how much they earn per hour. This breakdown of information will allow one to get an understanding of the financial standpoint of the community.

DELIVERABLES
The survey will allow one to formulate a general understanding of the level of income of the family and of the settlement. This will be collaborated in an info-graphic which will allow one to understand the financial capacity of the people in the settlement.

MODELS

METHOD
Models are very effective tools for getting people involved in the process of planning and design of the settlement. They are useful for generating interest, presenting ideas and helping people. The construction of models is highly educational and enjoyable as a group activity. Models should be adaptable in order to allow for interaction between stakeholders. Models can be utilized in order to ascertain the priorities of community members (Wates, 2000).

DELIVERABLES
The outcome will a video of the proceedings as well as the various models produced on-site in order to qualify the priorities of the community. The photos and videos will act as a way to document the proceedings for further analysis. Through this exercise, it will be possible to identify and rank the problems perceived in the community.

COMMUNITY ACTION PLANNING

METHOD
Simple handmade charts provide frames for documenting and understanding community issues within small interactive workshop groups. The time-frame is 2-4 days in order to make basic logistic arrangements. Simple materials such as large sheets of paper for documentation and markers are utilized. The method can be inexpensive and is best used for quick entry into relatively defined communities to identify issues and develop actions. The fundamentals of the programme is a rapid, intense field based workshop, community participation, and documentation (Goethert & Hamdi, 1988).

DELIVERABLES
The output of the workshops is a development plan which includes a list of prioritized problems, strategies and options for dealing with the problems and a preliminary work program, describing what has to be done. The approach produces a Micro-planning idea that can be utilized to facilitate the initiation of the upgrading process (Ibid.).

PLANNING FOR REAL

METHOD
Planning for real relies on a community built model as a base for public inputs and to initiate workshop sessions. Card and chart documentation techniques are utilized. The preparation for the process is rather long and mobilizing the community takes very long. It utilizes simple, commonly available materials. It is a longer term approach used to strengthen and mobilize community interest (Planning for Real, 2012).

DELIVERABLES
The outcome is a community made model which can be utilized as a base for further planning and design considerations within said proceedings. The proceedings are documented by utilizing cards and charts to keep track of the process.

ZOPP - GOAL ORIENTED PROJECT PLANNING

METHOD
The ZOPP approach utilizes card inputs to document issues leading to a 'logical project framework' which summarises the entire project. The preparation is simple, requiring only the identification of participants. The material needed is an elaborate custom box of varied materials , which can be rather expensive. It is used for relatively sophisticated participants during the average structuring of projects (GTZ, 1988).

DELIVERABLES
ZOPP has two phases, analysis and project planning. The outcome of the Project Planning phase is a Project Planning Matrix, which is a one page summary of why the project is carried out, what the project is expected to achieve and how the project is going to achieve the results. The outcomes of the analysis phase is typed information.

THE PROBLEM TREE

METHOD
This tool assists in analysing the existing situation within a slum environment in order to identify major problems and their main causal relationship. The techniques aid in the digestion of the context and the interrelationship of various problems, and their potential impacts. The problem tree may be followed by the objectives tree where problems are converted into simple objectives.

DELIVERABLES
The output of the problem tree tool is a graphical representation of the problems, differentiated according to their specific "causes" and effects", joined at the core by a common problem. The specific representation may take various forms, in terms of what is important on site, for example, the problems may be made into cards to encourage participatory interaction.

CLIMATE ANALYSIS

METHOD
In order to fully understand the environment surrounding the site one must analyse the climate of the area. Climate is the first thing that architects and designers should consider when designing a building as it dictates which design strategies are most suitable for the site. Issues that need to be analysed and presented are; temperature, humidity, relative solar position, average precipitation, and wind. These elements provide a comprehensive view on the climate and resultant strategies. Furthermore it is important to map how the climate affects the people living in the settlement, and what can be done differently in order to mitigate these effects.

DELIVERABLES
The climate information may be presented in a number of ways. The way to show temperature is in a chart, mapping monthly averages and extremes, and average daily sun hours. Humidity will be shown in a similar way. The solar position is mapped as a sun path diagram, in order to ascertain the implications of the suns daily and seasonal changes. Precipitation is shown by means of a chart. The chart will include monthly averages and extremes. Wind is displayed by means of a wind rose diagram.

ANALYSIS & OPPORTUNITIES

On-site work proved that the semi-structured interviews, if executed through conversation, were relatively simple to execute; provided that they remain easy to understand. Third party involvement of a local ensures a more accurate result and should be suggested in the guideline document.

Transect walks are simple to execute and extremely efficient in providing results related to the quality of the environment. Once again, it is useful to include a local in the route preparation.

Mapping is an extremely worthwhile and simple exercise. It is crucial to map important aspects of the slum with the community in order to understand the spatial quality of the site from the perspective of the local community.

Understanding the involvement of stake holders is slightly more difficult on-site. Analysing the people involved in the project withdraws the interest of the various people involved and may illuminate possible conflicts. This tool is thereby critical to the success of the qualification of the slum and the trajectory of the resultant project.

Vulnerability analysis is simple to do, and can be done through interviews or observation. The result is an understanding of the most vulnerable within the community thereby illuminating the most critical course of action within a community.

Drawing the slum is a crucial activity before trying to understand or qualify the environment. It is recommended to draw the slum before starting the on-site appraisal, in order to formulate a base map on which to layer information. The understanding of the rough organisation of the site aids in the digestion of on-site work and information.

The value of the photography survey rests on the thorough explanation of the process to the people involved. The purpose is to see the slum from the perspective of the community. It is crutial that photographs are developed and explained in order to understand the intention of the picture.

The analysis of historical events and their corresponding implications on site, forms a layer of understanding about the historical relevance of the site. It is important to consult written and oral histories in order to understand why and how the slum was developed.

In order to design in a meaningful manner, it is important to decide on a timeline and implement relevant projections. Designs should accommodate future community members. To accomplish this, it is important to understand the expected growth within the community. This can be executed off site, through access to relevant governmental census data.

The analysis of different typologies on-site provides a thorough understanding of the problems and opportunities on site on the most intimate and accurate level. This can be achieved on-site through drawing, photographing and measuring the houses and buildings.

Drawing lessons from the slum, allows one to understand the modus operandi of the slum dweller, and formulate meaningful strategies of upliftment, taking into account the normal practices of the people.

The ethical implications of financial analysis outweighs the value of the information gathered on site. It is not polite, or morally correct to judge a community based on monetary value.

Models provide an interesting discussion starter, but are difficult to explain in terms of scale to a person with little or no spatial awareness. Models should be used to increase the legibility of a problem or solution.

Community action planning is complex. The tool is in essence a full framework, providing a micro-planning idea to facilitate the start of the process but is difficult to action on-site

The use of a model, as suggested by the Planning for Real tool, is difficult to explain to the community. The model is difficult to travel with and expensive to make and remake through out the process.

The problem tree is a simple graphical means of representing the root causes of issues, and presents ways to deal with these issues effectively.

Climate analysis is a very simple process which is critical to the understanding of the environment in which the project takes place.

“If you want to know how the shoe fits, ask the person who is wearing it, not the one who made it”

Nick Wates (Wates, 2000)

GUIDELINE DEVELOPMENT

Conclusion

In order to formulate a conclusion to this theoretical investigation, it was important to consolidate all the information gained in order to fully understand the implications and results of the research which was done by means of a diagram.

Figure 11 relates the tools to the parameter and themes put forward by the investigation of the operational definition of a slum, the various quality of life indexes and the five frameworks (as depicted by figure 10). They are weighted according to the number of categories that the tool can be utilised in order to gain relevant information. The number is therefore synonymous to relevance. Furthermore, the tools are rated on their level of on-site difficulty.

The analysis confirms that some of the tools may not be relevant enough, or simple enough to be included in the guidelines document. These tools are financial analysis, community action planning, planning for real and ZOPP.

The use of the tools in practise revealed intricacies of execution which were unpublished in the myriad of sources that were consulted. The practicalities of carrying out the tools are often context and even person specific, and a certain amount of flexibility needs to be built into the tools.

It is not enough to simply state which tools are relevant, it is important to understand how the tools have been implemented in relation to a specific context in order to fully explain the dynamics of the tool.

It is henceforth relevant to develop a set of guidelines, including examples from practice, which may aid in the education of architects, students and practitioners who are immersed in a similar position to the author of this thesis.

A framework which endeavours to qualify a slum must make up form the blind spots which are evident in existing frameworks. Therefore it is important to conceptualize means of understanding themes such as material well-being, personal safety and legality in order to propose a course of action that could be utilized in order to understand and thereby act upon these themes. This is achieved by proposing a number of tools which may be utilised in order to understand the parameters extracted from the research.

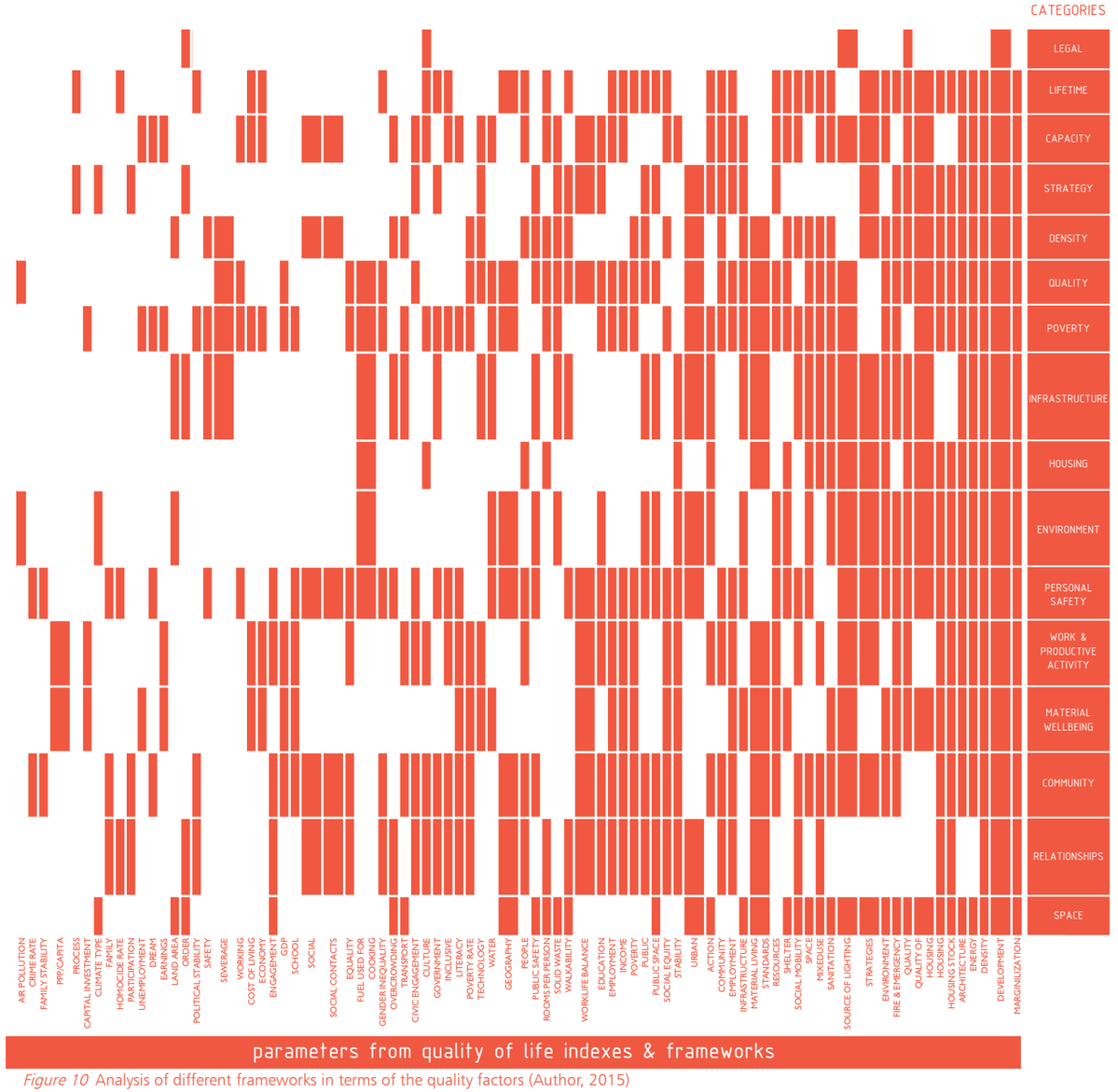


Figure 10 Analysis of different frameworks in terms of the quality factors (Author, 2015)

If developing countries should own, design, direct, implement and sustain the process themselves then architects and NGOs need to develop means of working and designing in conjunction with local people in order to facilitate the process of capacity building in order to enable the people to take ownership of the project.

This requires an approach which places the local community at the centre point of the course of action. Allowing one to consider context specific projects and ideas which allow for the development of people, rather than the development of buildings. The guidelines must initiate a participatory course of action, thereby placing the community at the centre point of the discourse.

A comprehensive approach is called for, aligning to the premise put forward by adopting a qualitative research methodology. A certain level of standardisation must be allowed in order to facilitate the qualification process, but flexibility must be built in to accommodate context specific issues which may affect the results.

Parameters gained from the research may be quantified and qualified, in order to qualify the slum. This allows one to recognise potentialities of the site. The implication is that various different methodologies and tools will be utilised in order to qualify the slum. This approach is incredible useful in formulating a course of action for qualifying a slum environment as it allows one to consolidate a number of existing tools in a manner which allows one to fully understand the constructs of the site.

The result is a base on which to build a set of guidelines. The understanding of which tools are important and which parameter they relate to, allows one to formulate a means of qualifying a slum through the description of the methodology behind the relevant tools.

The guidelines which will be a separate document, are aimed at educating and enlightening architects, students and practitioners who have little or no experience or education within slum environments. The aim of the document is to provide a means of initiating a project, through qualitative research methodology which remedies the daunting nature of working in an unfamiliar context.

number of applicable categories	TOOLS	on-site difficulty
8	semi-structured interviews	2
8	transect walk	2
8	mapping	1
6	stakeholder analysis	5
6	vulnerability analysis	4
6	drawing the slum	3
5	photography survey	2
4	timeline analysis	4
4	future projection	6
4	typology analysis	4
4	lessons	3
3	financial analysis	10
3	models	6
1	community action planning	8
1	planning for real	10
1	zopp	10
1	the problem tree	1
1	climate analysis	1

Figure 11 Analysis of tools in terms of relevance and difficulty (Author, 2016)

In order to formulate a means of working, it is important to formulate a methodology on which to base the facilitation of the project. The intention is to formulate lessons from the aforementioned theory in order to formulate guidelines for on site qualitative research in informal urban slums.

In order to formulate a framework one may borrow from Hamdi's (1986) teachings on "*Inventing a Programme and getting it to work*", which claims that any framework must be based on sound theory. The frameworks considered in the previous section, highlight a number of important factors which need to be investigated. Many of the frameworks utilize tools that are beyond the grasp of untrained professionals, whilst others maintain a level of simplicity that is sympathetic to their intended environment.

In order to formulate a means of working within slum environments, one must organize and plan the formulation of the research work. The analysis of the operational definition of a slum, the quality of life indexes, the frameworks as well as the tools mentioned in previous sections aims to formulate a feasible course of action, which may be easily utilized and added to by both professionals and community members.

Through the analysis of all the parameters within the different analyses, fifteen key categories were distilled as crucial umbrellas containing the parameters needed in order to fully qualify a slum. The categories were useful in the process of assigning tools to their relevant categories as illustrated in figure 12.

The tools described in figure 12 will be elaborated in the guidelines document. Which is conceptualised as a document which educates architects and students about the process of qualitative slum appraisal. The document forms the first step in the process of slum upgrade.

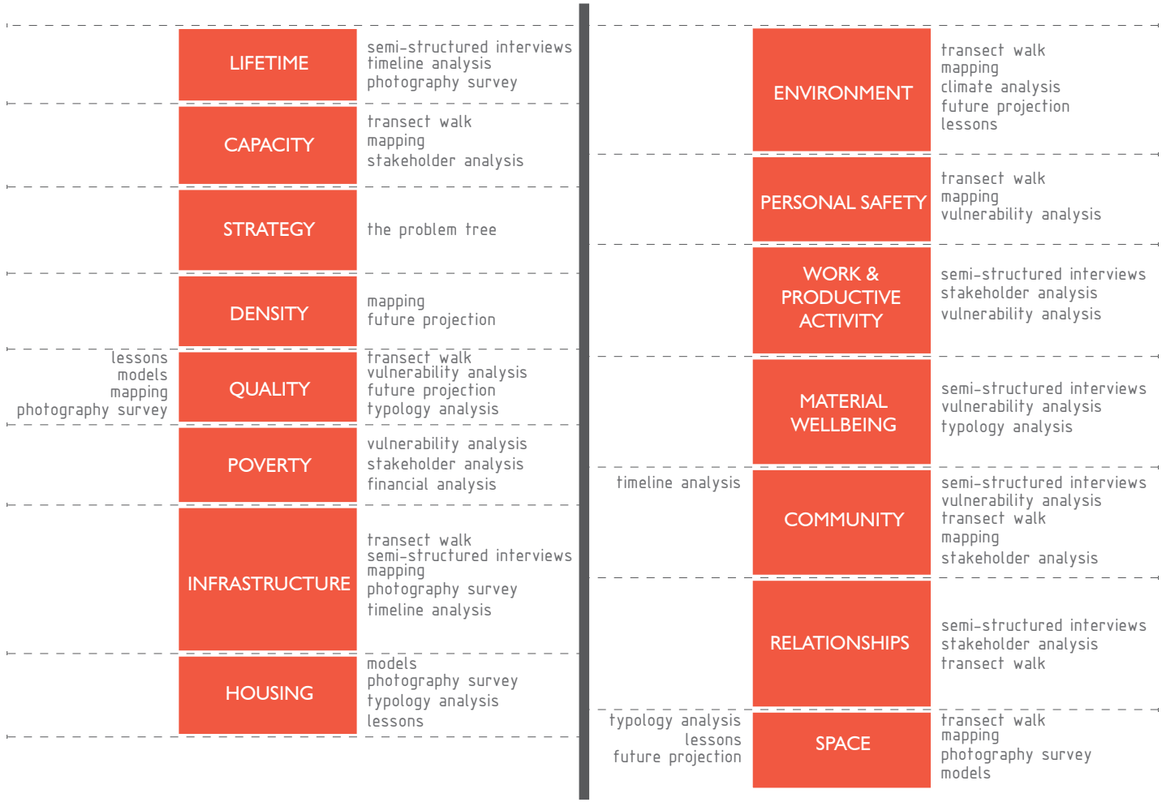


Figure 12 Analysis of tools in terms of which categories they are relevant to (Author, 2016)

Hamdi and Goethert describe three major dilemmas within development theory. The first is the disparity between policies and strategies and what is actually feasible. Good programmes do not substitute good design, they support it. The second dilemma is the process versus product debate, asking whether the transfer of ideas or complete products such as housing is most important. Thirdly is the discrepancy between values and attitudes. The value of "best", "most" or "fastest", linked to the debate over "product" versus "process" create a formidable crisis in development theory development.

One must make a choice when designing a framework, and when designing an intervention within developing situations. Borrowing guidelines and concepts from existing fields of development, technology, engineering and project management allows one to formulate a framework which integrates different ways of thinking and working into one comprehensive approach.

The fundamental bottom line is that, in order to affect meaningful change within slums, it is crucial to accept and acknowledge slums and their importance. The legitimization of the slum inspires a change in political will and leadership towards the slum environment. Slums must be included in the city plans as they are a fundamental part of the growth of the city. Any architectural framework or guideline must endeavour to plan "with" and not "for" slum communities in order to ensure the continuity of these schemes. In order to achieve this objective, it is crucial that the guidelines adovocate an approach which allows one to fully understand the slum in question, thereby enacting meaningful change.

Throughout history approaches to slums can be categorized according to four main categories. The first being "pejorative"; whereby the goal is to eradicate slums as they are seen as contentious. The second is "problem-based" denoting a simple solution, allowing for upgrading and furthermore discussing policy reforms. The "pragmatic" category does not view the slum as a problem and accepts the slum as part of the city. The slum is viewed as a transitional space and is treated as such. The "radical" viewpoint understands that slums are part of the city, but challenges the norm through a re-organisation of society. This is an entirely romantic view of slum upgrade.

In order to formulate a framework which changes the way that slums are understood and therefore dealt with, it is important to devise a manner of working which accepts slums as part of the city, yet implies a radical approach in intervention.

The research is conceptualised as part of the entire design process, thereby allowing the design to be formulated through the qualitative appraisal process within the slum. This thesis as a whole will consist of 8 documents, which all aid in the development of a comprehensive approach to upgrading slums.

The research deliverables consist of two documents, the Theory booklet and the Guidelines booklet. The remaining six books form part of the design outcome. The booklets include a map of the settlement as it is, and also how it is planned to be once the intervention is enacted. There will be a book describing the appraisal process in Kliptown Informal Settlement. The appraisal process leads to the formulation of a design which will be documented in three separate books, one describing the concept and the design decisions, one documenting the resulting interventions and one providin a kit of parts for expansion.

The books are graphically represented in figure 13 in order to explain the extents of the project as a comprehensive whole.

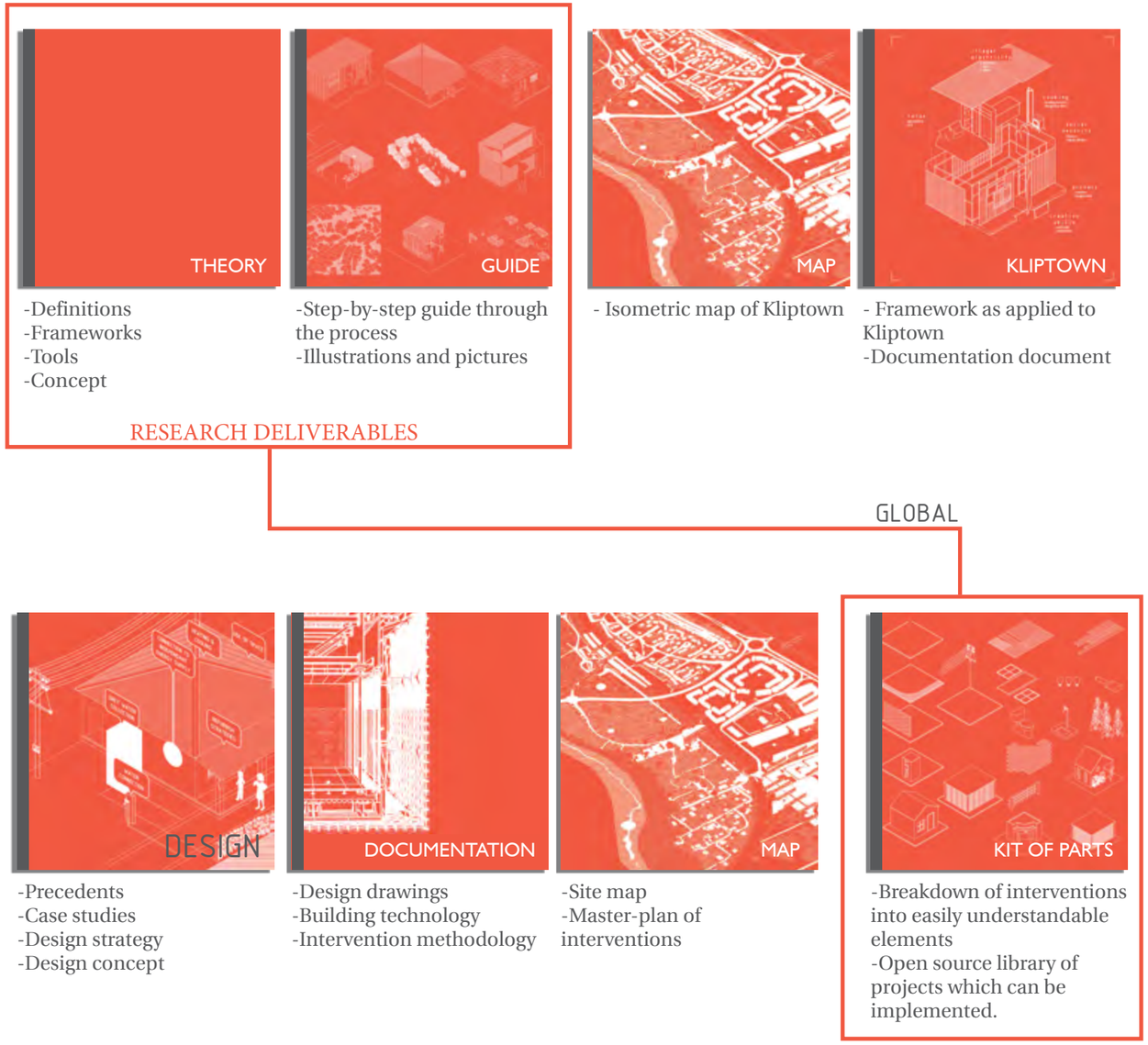


Figure 13 Explanation of the different books involved in the project. (Author, 2016)

Three important concepts are evident when analysing the myriad of available literature, and become even more evident when one conducts any type of site investigation. These are density, autonomy and time; three fundamental building blocks behind the development of slums. Density refers to the current high density situation of slums. Autonomy refers to the condition of many contemporary slums, acting as proto-cities, largely independent of governmental services. Time refers to the events and policies which formulate the grounding on which the slum grows.

DENSITY, AUTONOMY, TIME

Informal densification

Usually, in architecture and urban planning, two categories of measurement are used to describe density; population density and building density. Population density is the number of individuals or households per given area, whilst building density refers to the relationship between the building footprint and the plot size.

The first United Nations Conference on Human Settlements was held in 1976 at which time the world's population amounted to just over 3,5 billion people. Two decades later, the population had grown to an estimated 6 billion people. This explosive growth has and will continue to happen predominantly in the urban cores of developed and developing countries. By 2030 the developing world is estimated at being 56% urban, meaning that for the first time, the majority of people will inhabit the urban cores of cities.

Whilst there is little evidence to suggest that a threshold population exists within cities, the unprecedented population boom has overwhelmed and will continue to exceed the capacity of municipal authorities to respond with adequate housing and infrastructure. (UNCHS (Habitat), 1996). In addition to the challenge in terms of population growth, there is a notable growth in poverty within urban situations. It can therefore be hypothesized that, since the current urban planning cannot keep up with the scale of the problem and the scope of the solution, the massive increase in urban population will result in the possible growth of existing slums, and the proliferation of more informal living environments (Olthuis, et al., 2015).

Rapid urbanization is likely one of the greatest socio-economic changes of our time. The change has caused an increased number if squatter and informal settlements around the rapidly expanding cities of the developing world. The trend is set to continue over the next decades, as the number of people born in cities continues to increase, and people continue to migrate from rural situations in search of a better life. The rate of job creation, and municipal support, in these cities does not match the rate of influx. This means that the likelihood is that these people will be forced to eke out an informal living in the slums of the developing world.

The urban population of developing countries is being shaped by the rapid migration of rural populations and the subsequent densification of the urban poor. The continuous rise in population, due to family growth, rural migration linked to the proliferation of familial and cultural dwelling norms, requires physical and spatial support and thereby attracts the demand for housing and infrastructure (Baldea & Dumitrescu, 2013).

In a paper titled "An ontology of slums for image-based classification", Kohli et al. (2012) refer to building density as a key variable for identifying slums. Density differs locally, depending on the type and age of the settlement. Generally slums are characterized by a high roof density, with no open spaces or notable vegetation (Kohli, et al., 2012). This observations alludes to the fact that there is little to no available space within many urban slums, meaning that continued growth will lead to overpopulation, expansion or redevelopment of these settlements.

The industrial revolution is largely attributed with the introduction of the debate surrounding density, especially between the existing crowded urban environments and the proposed development of new, healthier, equally dense environments. High density architecture and urbanism has dual connotations. High density living conserves important land resources, and eases the need for transport, with a backdrop of rich social exchange which essentially advocates architecture which is environmentally responsive. On the other hand the increase in noise and the lack of intimacy, provides more subtle sociological and behavioural outputs which typify the negative connotations surrounding extremely dense environments such as slums (Baldea & Dumitrescu, 2013).

Raymond Unwin (1909), stated that nothing was to be gained from overcrowding in cities, proposing a standard density of 12 houses per acre maximum. Half a decade later, Jane Jacobs (1961) warned that American slums were not the only issues facing inner cities, but that low-density forms and sprawl were equating to dull urbanism. She suggested a minimum of 100 dwellings per acre (Jacobs 1961). Contemporary views on density state that high densities and compact city centres are the fundamentals behind sustainable urbanization and economic growth. The implication of this growth within developing countries is somewhat different as previously discussed. It is possible that very different physical layouts can have similar measured densities. Previous analyses conclude that measured densities and other physical factors are rather independent of one another (Alexander, 1993). Systematic development of work which deals with both quantitative and qualitative aspects of space consumption may lead to a link between measured density and physical form (Haupt & Pont, 2009).

The quality of density is one of the most significant factors within the urban built environment. Uytenhaak comprehensively studied density from the perspective of architecture and urbanism. He concluded that built density, is essentially a loss of natural quality. The role of architecture is therefore to neutralize this effect by generating diversity and concentrating on the quality of dense environments. Uytenhaak states that "*without sufficient quality, density does not work- it even becomes dangerous*" (Uytenhaak, 2008).

If the majority of population growth will happen within the urban areas of developing countries, as previously stated, it is clear that slums will account for the accommodation of a large number of new city dwellers and need to be investigated in terms of their densification potential. If one learns from the formation of present day slums, in order to formulate an incremental form of upgrade and expansion, which could sustain current inhabitants, whilst providing opportunity for future growth, in a manner that increases the quality of the dense environment, one may be able to suggest ways in which the architecture of informality may lead to the qualification of density.

Poverty

Don't ask me what poverty is because you have met it outside my house. Look at the house and count the number of holes. Look at my utensils and the clothes that I am wearing. Look at everything and write what you see. What you see is poverty. - A poor man, Kenya 1997

This quote was part of an inductive study conducted by The World Bank in order to understand the poor people's definition of poverty.

The paper discusses five main findings in order to contextualize the practical definition of poverty, as understood from the other side of the conundrum. The evidence put forward by the World Bank suggests that poverty is a complex, multidimensional phenomenon. The definition of poverty and its causes varies by age, gender, culture and other social and economic contexts (Narayan, et al., 1999).

Poverty is routinely defined by a multitude of authors as the lack of necessities for material and physical well-being. Narayan et al. Describes poverty as "*material lack and want (of food, housing and shelter, livelihood, assets and money)...*". Haughton and Khandker define it as "*pronounced deprivation in well-being*". This is solidified by the finding that poor people are acutely aware of their lack of resources, leading to physical deprivation.

Poor people's definitions of poverty reveal a third characteristic crucial to the definition of the phenomenon; the psychological aspect of poverty. Poor people are aware of their lack of voice, power and independence, allowing for easy exploitation (Narayan, et al., 1999). United Nations corroborate this finding in their definition, stating that poverty "*means a lack of basic capacity to participate effectively in society*" (United Nations Environments Programme, 2011). Poor people complain that their inability to participate effectively in community relations leads to a breakdown of social relationships and thereby perpetuates the cycle of poverty.

The fourth finding points to the lack of basic infrastructure such as roads, water, transport and health facilities (Narayan, et al., 1999). UNESCO states that poverty is the "*limited access of poor people to the knowledge and resources with which to address their basic human needs, and promote sustainable development in such areas such as water supply and sanitation, food production and processing, housing and construction, energy, transportation and communication...*" (United Nations Educational, Scientific and Cultural Organization, 2003). Although literacy is viewed as important, schooling is often notably irrelevant in the lives of poor people.

The final finding is that poor people focus on assets rather than income. They link their lack of physical, human, social and environmental assets to their vulnerability and exposure to risk. The four primary classifications of assets are; physical capital, which includes land as well as material belongings, human capital, which includes health, education and labour power, social capital, which refers to the extent of social networks and environmental assets such as trees, water, and non timber products. The United Nations say that poverty *"means not having enough to feed and clothe a family, not having a school or clinic to go to, not having land on which to grow ones food or a job to earn one's living"* (United Nations Environments Programme, 2011).

The phenomenon of poverty has to be understood from two perspectives. Firstly as a painful reality experienced by an alarming number of people, and secondly as a construction of competing conceptualizations, measures and definitions put forward by a myriad of agencies and academics. The phenomenon of poverty, widely regarded as a manifestation of *"material lack",* must be expanded to include other ideas such as well-being, capability or capacity, quality of life and social quality in order to contextualize impoverished people within the wider society.

Whilst we once understood poverty as a largely rural phenomenon, today we speak of the urbanization of poverty (Kombe, 2005). Urban poverty is most conspicuously exhibited by the proliferation of slums in the urban environment.

Living under such stressful conditions requires constant adaptation in order to keep up with changing urban circumstances. Whilst governments in developing countries and Least Developing Countries have been tasked with the support of these programmes by developing National Adaptation Programmes of Action and National Adaptation Plans, there are limited scholarship available in order to support the implementation of this policy. It is increasingly common that slums manage their adaptation processes within community organisations, without governmental support.

John Collier says that " *A system is autonomous if it uses its own information to modify itself and its environment to enhance its survival, responding to both environmental and internal stimuli to modify its basic functions to increase its viability*" (Collier, n.d.). When considering the fundamental functionality of impoverished situations such as slums as a "system", Collier's definition of autonomy begins to describe the growth conditions which typify the formation of slums. Due to the aforementioned rapid urban densification, and increased poverty level, marginalized people are often left to fend for themselves.

Capacity

Capacity is a core concern when considering development. The World Health Organization describes capacity as "*the ability of individuals to perform appropriate functions effectively, efficiently and sustainably.*" (Milen, 2001). The Canadian Development Agency defines capacity as "*the abilities, skills, understandings, attitudes, values, relationships, behaviors, motivations, resources and conditions that enable individuals, organizations, networks/sectors and broader social systems to carry out functions and achieve their development objectives over time*".

Capacity, much like poverty, consists of various dimensions. It is not static but is part of a continuing dynamic process. This infers that the capacity of individuals, organizations or system can never be complete- but requires constant investment in order to ensure growth (Milen, 2001).

An important link has been drawn between capacity development and aid effectiveness, backed up by multiple publications, including the 2005 Paris Declaration of Aid Effectiveness, the 2008 Accra Agenda for Actions, the 2011 High Level Forum on Aid Effectiveness, and the 2001 New Partnership for Africa's development (Amadei, 2014). Capacity is critical to the success of human development. All communities, whether slums or otherwise, have various forms of capacity which can be built upon over time. Capacity can be assessed, qualitatively and quantitatively using performance indicators.

The UNDP, 2009, explains why capacity matters in their publication called "*Capacity Development: A UNDP Primer*". The old model of development is based on the false assumption that existing capacities, within slums and other developing environments can simply be ignored and replace with knowledge, systems and technologies which are produced elsewhere, "*a form of development as displacement, rather than development as transformation.*" Decades of experimenting with different developing models worldwide, has served to confirm the value of local ownership, and capacity. Financial resources alone cannot sustain positive human development. "*Strong capacity, locally generated ans sustained is essential to the success of any development enterprise*"

The Deutshe Gesellschaft fur Technische Zusammenarbeit (GTZ) introduces the link between capacity and sustainable development. Their definition states that capacity is "the ability of people, organizations and societies to manage their own sustainable development processes.

The UNDP claim that evidence has shown the value of investing in processes which lead to lasting social change. The idea is to invest in human capital over a long period of time, thereby enjoying sustainable progress rather than quick fix solutions. By understanding the existing capacity,

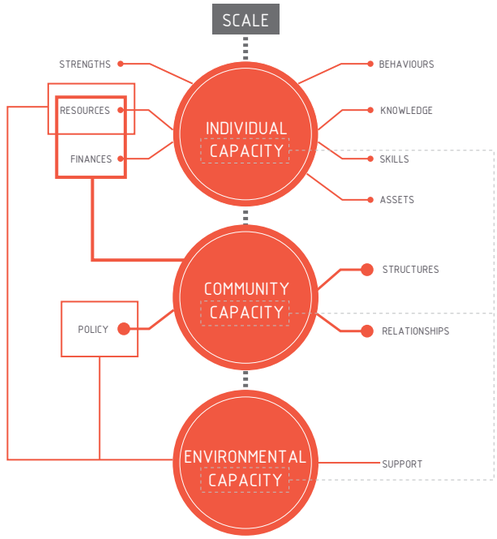


Figure 14 Capacity factors summarized (Author, 2015)

one can formulate certain trade-offs. Incremental strategies which take into account the exponential development of capacity over time, must include 'quick wins', which produce instantaneous results and encourage prolonged support in order to sustain the initiative which produce broader change, but take longer to visualize results (United Nations Development Programme, 2009). The development of capacity needs to utilize existing local knowledge, structures and processes in order to facilitate sustainable development. An approach which is sensitive to and takes into consideration local customs and resources can make a large difference in moving the development reform agenda forward.

In order to assess the capacity of a settlement, one needs to learn as much as possible about the community through the collection of data, and then the transformation of said data into useful information which can inform the development process. Bob Hansford describes five forms of capacity; individual, social, natural physical and economic (Hansford, 2011). Bouabib and Louis add to the list with various capacity factors, enriching the categories with useful definitions which indicate possible methodologies when assessing capacity as depicted in the following table (Bouabid & Louis, 2015)

Services	Quantity, quality, accessibility (distance from user)
Institutional	Policies (laws, regulations), programs (administration), processes (permits, performance)
Human Resources	Professional, Skilled labour, unskilled labour - literate & illiterate
Technical	Operations, maintenance, adaptation, supply chain: spare parts, supplies, services
Economic/Financial	Private sector %, Bonds Rating, User Fees, Budget, Asset Values
Energy	Grid Electricity Access, Other electricity access, % of budget, reliability factor
Environmental	Annual withdrawal % of stock, background quality
Social/Cultural	Community, Stability, Castes/Clan/Ethnicity/Women participation

Table 4 Capacity factors as described by Bouabib and Louis (Bouabid & Louis, 2015).

Lavergne and Saxby (2001) split the capacity indicators into three major categories. The tangible components are infrastructure, education, natural resources and health institutions. These indicators are essentially easy to measure. Less tangible indicators such as skills, social fabric, values and motivations, habits, attitudes, traditions and culture. The core capabilities are harder to measure within a community, this includes creativity, leadership, resourcefulness and capacity to learn and adapt. These are less tangible and therefore harder to define.

The aim of capacity assessment is to gain a better understanding of the community's enabling environment, what it can do, what it cannot do and how the environment needs to be strengthened.

The UNDP has evolved a framework surrounding the idea of capacity development. The assumption is that developing countries should own, design, direct, implement and eventually sustain the process of development themselves. In terms of architecture, if one can map the capacity of a settlement, one may be able to empower the inhabitants by designing in such a way that capacity development is both integrated in the design conception, and built upon through the implementation.

Policy

Slums have been an integral part of the urban landscape as far back as the Victorian Era, and over the years numerous policies were developed in order to improve the "quality of life" of slum dwellers. Policies range from public housing to city-wide slum removal programs. These programmes inform the course of action of slums interventions and furthermore served as stepping blocks to the formulation of contemporary policy. Andavarapu and Edelman (2013) describe this evolution in terms of four phases.

Phase one was typified by theories regarding the negative nature of poverty and marginality, portraying slums as incubators of violence, prostitution and general debauchery. The only acceptable solution was demolition and relocation of the residents to large public housing projects. The first phase, public housing, continued from 1950 until circa 1972 when John Turner's research in Peru emphasized the importance of self-help and tenure security. He noted that when slum dwellers were provided with security of tenure, they began to upgrade there homesteads independently. Thus the second phase of slum policy was self help, from 1972 until 1988.

The third phase of slum redevelopment evolved from the self help ideals in order to incorporate non-governmental organizations. NGOs became important in this era, reflected by the new policies calling for public input and ensuring the involvement of NGOs. The phase of enablement, from 1986 until 1992, is defined as the provision of legislative, institutional and financial framework for the collective development of the urban housing sector. Enablement is a key characteristic of the new Political Economy, which was adapted and developed from earlier neo-liberalism (Pugh,1995). Enablement allowed for the formation of partnerships and interdependence amongst state agencies and NGOs. Davis (2006) criticizes this approach stating that the true beneficiaries of enablement are the big NGOs rather than the local people.

The fourth phase is the contemporary phase of slum redevelopment strategy. The phase is typified by the Cities It is a global partnership for urban poverty reduction and the promotion of cities as a means for sustainable development. The Cities Alliance set a tangible goal in 1999, which would later be incorporated into the United Nations Millennium Declaration 200 as Target 11 of the Millennium Development Goals. The Country Programs can be described as "*longer term programmatic support to selected countries, at multiple city/national scale*" (Cities Alliance, 1999).

Perhaps the most important for the formulation of this thesis, is the future directions and methodological approaches to slum upgrade. Donor level slum redevelopment strategies involving institutions such as the World Bank, the International Development Bank and USAID, continue to shape the evolution of slum redevelopment. These institution utilize their monetary prowess to shape policy surrounding the development of slums.

Patel et al. (2011) suggests that public authorities are unable to structure and implement slum improvement projects because they lack a slum improvement specific statutory framework, that prescribes a process which they can easily follow.

Policy evolution over time, linked with the change of development ideals, as previously discussed, results in an understanding of the frameworks necessary for dealing with informal environments. In summation, one can decipher that the policy phase described by the City Alliance is integral in understanding the necessity for the upgrading and redevelopment of slum environments. The means to do this is argued by Patel to be unclear. The United Nations developed a policy whereby developing countries should own the process of upgrade, thereby relegating the role of international NGOs and institutions to that of facilitator and capacitative advisor.

Reflection

When one deals with a problem as big as the global housing shortage, and resultant proliferation of slum environments, one is morally obliged to produce work which can essentially help and potentially solve the problem.

This thesis deals with a manner of appraisal, which may help avoid costly mistakes and white elephants, such as the Walter Sisulu Square of Dedication (figure 14), within slum development, but in no way solves the problem of slums as a whole.

One needs to realise that one thesis may not be able to save the world, but may be able to enact change that affects a small percentage of the population. The importance of limitation in research is incredibly crucial. It is more valuable to solve a small problem comprehensively, than to solve a large problem badly.

This thesis forms a small start to a lifetime of work, dealing with informality in a responsible and sensitive manner. Due to time limitation, many aspects were not comprehensively analysed, leaving space for an abundance of future work on the subject.

This thesis advocated a qualitative appraisal methodology when dealing with slum upgrade projects. Whilst the research component of the thesis concludes with a set of guidelines, informing the appraisal process, the true conclusion will be the effectiveness and feasibility of the design solution.

The true measure of effectiveness of the research process will be a sensitive, people based intervention which successfully represents the community involved in the process of upgrade. Therefore the true reflection of the research process may only be reached once a feasible and completed design solution has been submitted and evaluated.

Figure 15 Walter Sisulu Square of Dedication In Kliptown Soweto. (Author, 2015)

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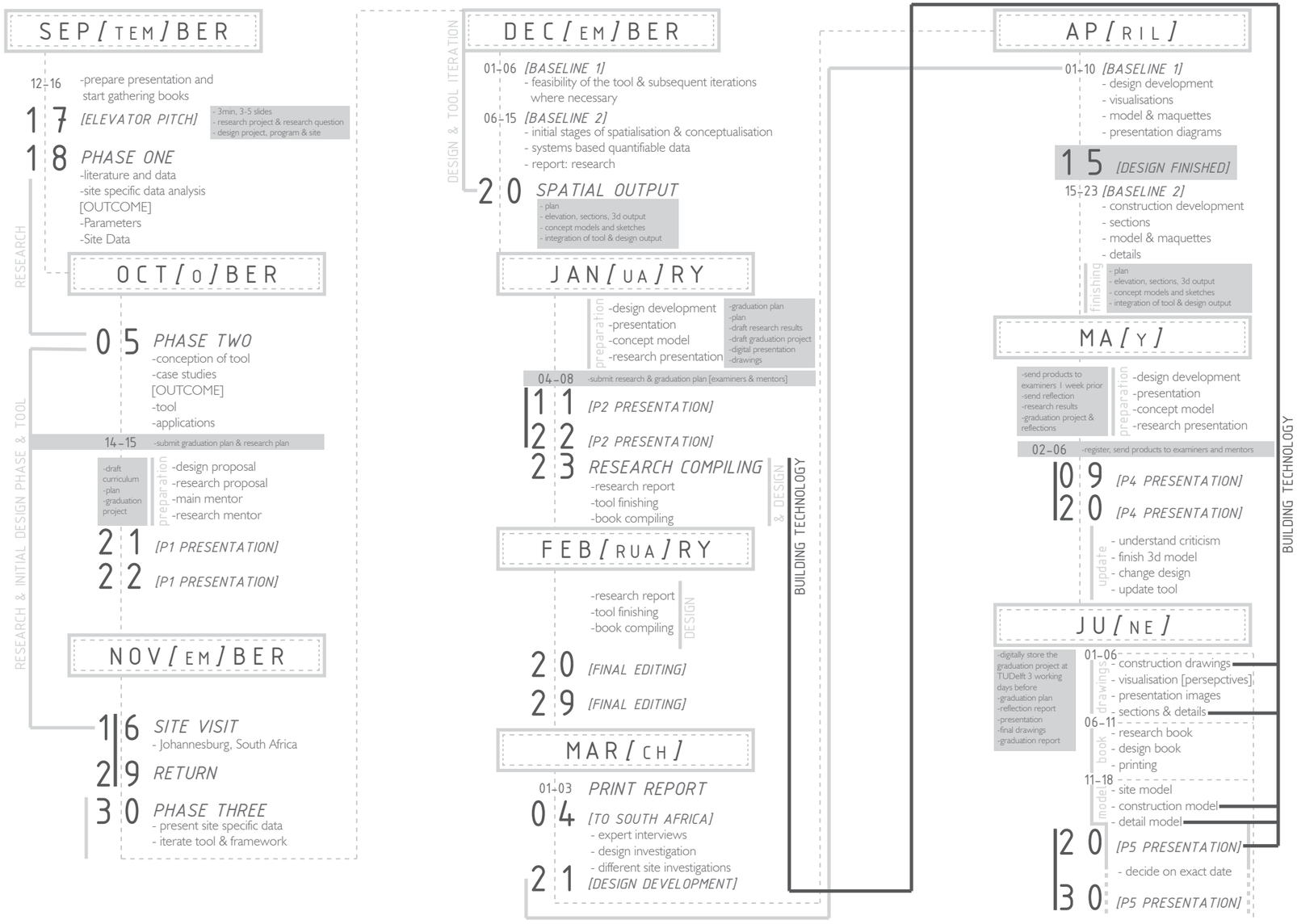

Figure 15 Project plan 2015-2016 (Author, 2015)