Planes of progression:

an exploration of architecture's role in supporting the positive development of youth from disadvantaged backgrounds.

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Abstract

Youth from disadvantaged backgrounds develop at a slower rate than youth from well-to-do neighborhoods. They do not reach the same levels of development and are often kept within the unforgiving grip of poverty. The problem is compounded by the rising rate of urbanisation and informal settlements with slum conditions.

Youth in these areas bear the consequences of such backgrounds; their development is hindered due to the absence of resources and spaces of youth development. In cases where those spaces are present, the quality of design, construction and maintenance makes them unappealing and less effective. A key concern is the lack of awareness and ease of access to these spaces by youth at risk in the area.

This design dissertation explores how architecture and good design can be utilised to improve presence, access and utilisation of youth development spaces at three different scales, the urban, the street and the building edge. Using the Gugulethu Township in Cape Town, the design dissertation examines and develops a network of youth development distributed over five sites. This increases institutional presence and youth access.

These sites use carefully articulated planes, strategically arranged to achieve a positive and appealing presence in the area. The planes allow permeability of youth off the street into the development space, separation of different levels of development and enable the buildings to utilise a cost effective approach to achieving thermal comfort.

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1. Preface

Interest and roots of the dissertation

During the Fees Must Fall (FMF) movement I was reminded of the plight many young people from under-resourced areas face on a daily basis and the effect this has on their future. I grew up in Zimbabwe and I have personally witnessed the discrepancy in the rate of development of youth from high-density suburbs surrounding the cities of Harare and Bulawayo (friends and cousins) and youth from more affluent and well-to-do neighborhoods in the same cities. The thought of less privileged youth's dwindling rate of development and inability to attain necessary levels of 'growth' inevitably binding them to conditions of poverty is saddening and real. The same can be said for youth in the slums of Kibera or youth from the favelas in Brazil. It is unmistakably evident here with youth from townships and informal settlements in South Africa failing to realise their gifts and potential.

Fig 1. Youth in the rough Metro-Mangueira favela of Rio de Janeiro, Brazil

The interest in the exploration of architecture's role in the development of youth from disadvantaged backgrounds also comes from the apparent lack of understanding and appreciation of an architect's contribution by the general public. I am shocked by the rise in 'second' guessing, questioning and the exclusion of architects on design projects. The inclusion of architects brings great value to buildings, good design pays off (Royal Institute of British Architects (RIBA), 2012). In this case, good design has a great impact on the success of development space and in turn the potential to drastically improve the well-being of youth in the area. Exhibiting our skills and abilities to achieve well thought out, efficient and pleasant spaces could convince and eradicate skepticism amongst the general public.

Fig 2. Youths in Kibera slums in Kenya carry crude weapons ready to fight youths from the rival side [Julius Mwelu]

Fig 3. Street children in a disused building in Harare, Zimbabwe [Robin Hammond]

Fig 4. Young man survives a targeted drive in the streets of the Cape Flats in Cape Town, South Africa [Shaun Swingler]

2. Introduction

A summative look at the design dissertation, its various sections and what they contain

This design dissertation concentrates on the effect architecture has on youth development. It focus is on uncovering and progressing architectures role in the development of youth from disadvantaged backgrounds.

My site is therefore located in Gugulethu township, an under resourced area within the Western Cape province of South Africa. Both formal and informal areas of the township are exposed to poor conditions associated with slums that have a heavy bearing on the day-to-day life and overall development of young people in the area.

The design dissertation is supported by theory and technology studies undertaken in the first semester of 2017. These studies focused on aspects that need to be carefully considered when designing spaces of youth development in under-resourced neighborhoods, specifically three aspects, space, structure and cost.

The design dissertation builds off a series of conclusions that stem from the research studies. The main findings include the following

- The lack of knowledge and access that youth have to current spaces of development;
- The unappealing and often intimidating image of some of the spaces of youth development;
- Poor buy-in and appreciation of the building by the community, increasing chances of vandalism and theft of parts of the building and;
- High operation costs and the negative impact they have on buildings in contexts where there is very little and at times no money set aside for operation and maintenance of buildings.

My project addresses these by making use of the above primary findings and other secondary findings as design informants. These design informants are contextualised to a series of sites in Gugulethu while contesting existing constraints including historical apartheid city planning and small housing plots with insufficient outdoor living space. By doing so, potential spatial opportunities arise.

To achieve accessibility the project makes use of the existing residential and public transport infrastructure as well as trade systems to establish a network of youth development with decentralised sites strategically placed at points along a route. To achieve powerful, meaningful, contextually relevant architecture the design builds upon the positive day-to-day practice of the community, by implementing a program that directly relates and supports the particular activities occurring at each site. The design work is based on the lived experience of the inhabitants of the area and their movement.

The program goes further and offers the opportunity to progress up Maslow's Hierarchy of needs (Maslow, 1968) as youth transcend through a series of thresholds. Thresholds in the form of physical boundaries and planes used to define space and its edge, the in-between space flanked by the planes. In achieving this visual and physical permeability the design also explores how to make use of these planes to implement passive design strategies in the form of solar shading, natural day lighting and cross ventilation, all of which reduce the buildings dependence on mechanical equipment with high electrical loads. It also seeks to develop the materiality, form and structure of these articulated planes to create attractive and inviting facades that the community can work on using their skill-set and knowledge, providing opportunity for up skilling where possible.

The strength of this design dissertation is that it addresses the provision, access and quality of youth development sites at three crucial and distinct scales,

- The Urban: ensuring the spaces are easily located along the daily routine;

- The Street: clearly visible spaces that respond to the needs of the site and community;

- The Edge: breaking the barrier between the youth on street and space of development within the building giving youth a greater sense of entrée.

It is also significant in that the series of thresholds become the tool to achieve both the permeable movement of youth off the street into spaces of development, the desired aesthetic of the building, the environmental strategy, achieving the requirements of the program that stimulates progressive youth development.

3. Background

Theory literature and references combined with findings and design informants that influence the design dissertation

Globally there is a continued increase in the rise of informal settlements and slums in developing economies, as people are increasingly moving towards cities in search of employment and opportunities. However, there is often a lack of adequate formal housing resulting in the emergence of informal settlement and shantytowns. Townships, informal settlements and slums have similar characteristics to the city. They are complex and made up of more than housing, they are a series of intrinsically linked networks, with public and private spaces serviced by various means of infrastructure.

The slum conditions and effects associated in informal settlements, townships and shantytowns are negative and pose a series of challenges to the development of youth in these local settings. These conditions as mentioned in my theory and technology studies paper range from social, to physical and even economic challenges, all of which ultimately rob the youth from these areas of the opportunities to realise their full potential and develop into well-rounded adults that contribute positively to society.

A quarterly labour force survey indicated that the unemployment rate of young people in South Africa (youth aged between 15 to 34 years) was approximately 45% (Statistics South Africa, 2015). When the survey focused on young people aged between 15 and 24 who would generally be finding their first job or continuing studies, the survey revealed that a third were not employed or enrolled in education or training courses. (Statistics South Africa, 2015)

With 55% of South Arica's population living in poverty between 2015 and 2016, 18.8 million people were under the poverty line. (Less than R441per person per month) (Statistics South Africa, 2017). 54 % of South Africa's 7-million population live in underdeveloped, under resourced areas. They are categorized by hazardous environments, poor access to services, health hazards, social turmoil and vulnerability (Watson, 2009; Huchzermeyer, 2004).

Statistician General Pali Lehohla points out that the burden of unemployment and poverty is most felt by the youth . The economy and society is missing almost half the picture. We may not be able to change their locations and exposure to slum conditions but we can improve their access to youth development and improve their overall development meaning more potential for a stronger economy, better social wellbeing of towns, cities and countries.

Gugulethu consists of both formal and informal housing that is a result of apartheid planning and the relocation of people of colour, families and individuals evicted from parts of the Cape Town city. This township, also referred to as Gugs, is comprised of densely populated urban blocks designed by apartheid city planners. The poor spatial planning and lack of adequate formal housing has over the years led to the rise of informal settlements in the area. From my observation these are clusters of temporary, makeshift housing that mushroom on vacant pockets of land within the area but at times also burgeon on the fringe between the outer boundary of the township and the limit of formal

Fig 5. The migration of people from rural to urban centres in search of economic opportunies

Fig 6. Sign post of gugulethu and the main street of the township, the area where this design dissertation is explored

Fig 7. Image showing one of the conditions of informality. In this case the formal and informal, permanent and temporary within the same space

Fig 8. Another condition of informality shown here with the informal settlements boadering the edge of formal housing in Gugulethu, the N2 and Airport industria on the left

housing, their layouts determined by desire paths of people walking into the townships from railway lines and highways that surround the suburb.

In response to the above, this design dissertation focuses on tackling the issue of availability, quality and access to spaces of youth development at three distinct scales, the scale of the urban, the scale of the street and the scale of the building edge. The three crucial aspects of space structure and cost were also addressed at the three different scales.

There is a tendency to react to the need for youth development spaces with a large all in one mutil-programmed, multi-purposed youth centre on one site. However, a different approach of decentralising the program is explored here. This is because the criticism of centralised programs is that they generally only cater and serve their local sphere of influence. In the context of these under resourced neighborhoods, this is a barrier as many youth often do not have access to private vehicular transport or enough to spare for transport fares to get to that one specific site from home or school. They are not as easily accessible by youth who reside beyond that sphere of influence and at times even secluded and hidden from the main route of movement in the area.

This design dissertation therefore seeks to provide a program of youth development across five different sites within the same precinct. By doing so a stronger network of youth development can formulate in conjunction with the township's existing networks and infrastructure.

Vukani NEWS Thursday May 11 2017 3

■ **Left:** Captain Nkandazo Mncanca of Khayelitsha police station held a counselling session with the boys with the aim of stopping them from being involved in gang related fights.

■ **Right:** School principal, Patrick Barnes, said he called the police because he feared that the fight might escalate and be out of control.

Usasazo pupil brutally stabbed over a girl

'Once you have committed a crime, you will have a criminal record for the rest of your life.'

SIHAVUKA KHAYA

A 17-year-old from Usasazo High School, in Khayelitsha, is on the road to recovery after surviving a knife attack on Saturday April 29.

Asobenga Posi was stabbed in the neck while walking in Yaction, in Site B, where he lives, in what

bleeding profusely.

He was then rushed to Site B community health clinic where he spent the night and was discharged the following day.

He said the pupil who stabbed him was his former friend who wanted his girlfriend.

Asobenga said when he confronted him about the matter, a

This, he said happened in March. Since then, he said things had been frosty between the two groups of boys.

In a bid to calm the tensions between the boys, on Thursday May 4, Khayelitsha police visited the school for a counselling session with them.

Captain Nkandazo Mncanca condemned the fight, saying that is how gangsterism started in Khayelitsha.

He added that many had lost their lives as a result and warned the boys about the dangers of

sions were brewing among the boys so they decided to intervene. He promised to have a meeting with the other boys from Masiyile High School, who are also believed to be involved in similar activities and advised the boys to create a spirit of brotherhood, pleading with them

> There is a juvenile offenders place for young people

crime, you will have a criminal record for the rest of your life.

"There is a juvenile offenders place for young people and we will keep you there until you reach the age for sentencing," he said.

School principal, Patrick Barnes, said because he feared that the situation would escalate, he called the police.

He said when pupils get involved in fights, it damaged the school's reputation.

Fig 9. Headline in Vukani (a Gugulethu based news-paper) pointing out violence as one of the social problems being faced by youth in Gugulethu

4. Theory

The following three ideas succinctly summarise the theory underlying the dissertation.

On the aspect of space

a) Theory of Candilis, Josic and Woods on movement stems and tracking the movement of the body through space, (Avermaete, 2005)

The movement stem is based on a principle used in the 1961 Caen Herouville development in France, where the 'the man in the street' is made the real town-builder, how he moves around the street and where he stops to be interpreted and translated into the location of buildings, public function and the rhythm of further developments. (Avermaete, 2005)

The stem theory is critical to the design dissertation because it is the base on which the network of youth activities is arranged, determining the location of each node in the system by emphasising the need to place buildings at points of activity and interest along key movement routes. The design utilises the footfall along the main artery of the neighbourhood to feed spaces of development with people and activity.

b) Theory of Maslow's hierarchy of needs, and Richard Lerner's approach to youth development. (Maslow, 1968) (Lerner & Silbereisen, 2007)

Maslow's hierarchy of needs is a sequential list of physical, environmental, sociocultural, emotional and intellectual aspects of a human that need to be addressed in order for people to develop fully. These needs form the basis for Lerner's 5c youth development approach. The 5 c's being:

1. **Competence**-The ability to act effectively in school, in social situations, and at work.

2. **Character**-Taking responsibility; a sense of independence and individuality; connection to principles and values.

3. **Confidence**-A sense of self-worth and mastery; having a belief in one's capacity to succeed.

4. **Caring**-Sympathy and empathy for others; commitment to social justice.

5. **Connection**-A feeling of safety, structure, and belonging; positive bonds with people and social institutions.

Maslow hierarchy of needs and Learner's approach to youth development form the basis for the programmatic arrangement of the space in each of the proposed buildings. Jurgen Joedicke defines space as an idea of 'between-ness' (Boettger, 2014). This design dissertation aims to provide youth with a transitional experience through an organised layering of program in spaces of 'between-ness' flanked by thresholds.

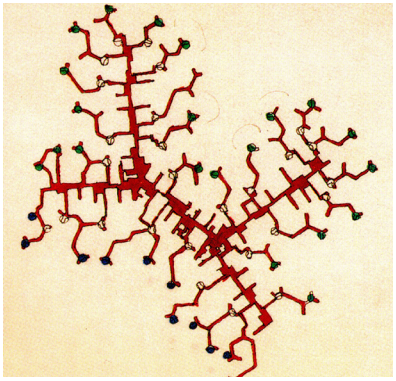


Fig 10. The movemnet and activity of people within the street: Candilis Josic Woods Movement stem principle

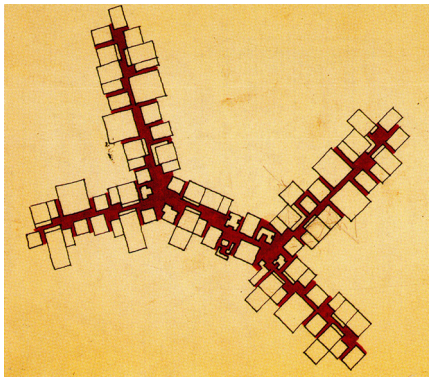


Fig 11. The development of buildings and spaces based on the people's movement and activity pattern

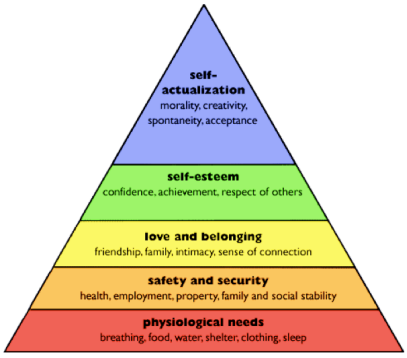


Fig 12. Image showing Abraham Maslow's Hierarchy of needs

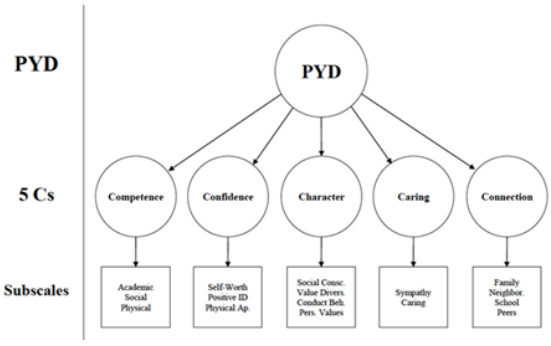


Fig 13. Image showingRichard Lerner's 5Cs of youth development

c) Wolff Architect's approach to linking program with surrounding activity.

In the design of the Watershed Building Wolff architects create an educating and stimulating relationship between traders operating on the ground level of the building and small start-up business and incubators on the second level overlooking the ground level. A reciprocal link between the activities and programs on the two levels is achieved.

This is vital to this design dissertation as it informs the choice in selecting the program and activities of each development node. It motivates for programs that relate to the existing activities on site, programs that achieve a reciprocal relationship with site happenings and uplift the events of that space further whilst allowing them to positively influence the youth development. Therefore, by emulating Wolff architects approach to linking site activity, the programs of the sites were refined.

Spatial transitions have been used to achieve different goals, as Arnold van Gennep states in his book The Rites of passage. Rites of passage can be separated into three phases, rites of separation, rites of transition, and rites of incorporation (Boettger, 2014).

Many South African cultural traditions practiced by people residing in the township of Gugulethu utilise the threshold in their customs. The experience of crossing a threshold is a crucial part of the development of a cultural ceremony. Different traditions use the threshold in different ways, but this design dissertation aims to see how a general experience of progressing through the threshold can be enjoyed young people in the area as they achieve personal development.

On the aspect of Structure, materiality and form

The approach to this section is based on the findings on structure, materiality and form from the studies in theory and technology. The aim is to avoid the corporate, institutional aesthetic that the community find intimidating, and achieve an eye-catching yet contextually sensitive look that would appeal to the youth. In order to do this, lessons from Wolff architect's Watershed project were implemented here,

Low priority= low cost/less of budget

High priority =high cost/more of budget

The optimisation of structure in order to release funds for the fabrication of the thresholds and facades on the perimeter of the buildings, especially those visible on approach and relating to the street.

Attractive elegant forms structured optimally to direct as much of the budget as possible to the most striking materials used to enclose the space. The key aspect of the building-in this case being the planes and thresholds that the youth see-are drawn to and pass through.

On the aspect of cost

a) Sustainable design strategy

Initially the value engineering approach to structure was thought to be sufficient, but upon checking generic bill of quantity breakdowns, I realised that structure is typically only 30% of a projects cost. There were other ways to lower the price such as finishes and services, which the designs do in relation to the programmatic requirements of the space. However, research in the theory and technology studies

section of this project revealed 80% of a buildings cost are post construction. Finding from that research also revealed the dependency and cost of utilising Heating, ventilation, and Air Conditioning (HVAC) systems to achieve thermal comfort.

The design dissertation aims to reduce the operational costs of youth development spaces by lowering the electrical load demand of the buildings. This would reduce the amount of money needed to run the space. By utilising passive design strategies such as passive ventilation of spaces, natural day lighting of rooms, solar shading of facades, the building can rely on mechanically equipment less, only being used when unavoidable.

b) Participatory development

The cost of securing and maintaining the building after its construction could be reduced if the community had buy in and a vested interest in the project resulting in them taking care of it themselves. Both of these approaches contribute to the sustainability strategy and will be covered in the design and detail development sections of this report.

The three aspects of space, structure (materiality and form) and cost come together and are addressed by one key component. The spatial requirements called for a façade that is both visual and physically permeable, the structure required planes of an attractive and intriguing nature whilst the cost requested a strategic articulation and operation of planes to ensure thermal comfort. All three aspects were intersect at the Plane element, this component then becomes the main element of focus and will be explored in the detail development section of this report.

Residents' anger boils over to school

PHIRI CAWE

Gugulethu's Section 4 residents are up in arms over a housing development planned for Tambo Square informal settlement.

Tensions have been running high in the community since Thursday May 4 as Section 4 residents say the site should instead be used for recreational facilities such as a play ground, hall and library as well as for a mobile police station.

Protesting community members barricaded roads and have prevented teachers and pupils from accessing Vukukhanye Primary School for the past four days.

An irate area committee chairperson Joyce Ngcikwe told Vukani that the land where the informal settlement is based belonged to them. She accused the City of Cape Town of playing mind games with them.

She said they had numerous meetings with City officials, including Siyabulela Mamkeli, mayoral committee member for area west.

"It amazed us to see the area being developed after we agreed that it should be suspended until we reached an agreement with all the stakeholders. We have identified the land for our own facilities," she said.

"With this protest we are saying enough is enough. We will not be fooled this way. But it must be clear that we are not fighting people of Tambo, but the government."

The protesters have vowed to keep Vukukhanye Primary School closed until their concerns are addressed.

Ms Ngcikwe said the community would try to meet national Human Settlements Minister Lindiwe Sisulu and ask her to intervene.

She said they have exhausted all the avenues in the province but have not resolved the issue.

Another area committee member Siyabulela Diba called on Tambo residents not to fight against them.

He accused the City of trying to instigate violence between the two communities. "We decided on the protest because of frustration. We will fight for what we believe is ours," he said.

Senior citizen Abigail Nthoza called on people not to politicise the land issue.

"That has to stop. This is not politics, this is about people fighting for what is right for them. We are tired of people trying to politicise this," she said.

The Gugulethu Development Forum has also intervened in support of the community of Section 4.

In a statement, the forum said it has resolved that the development by the City of Cape Town should be suspended with immediate effect until the situation is calm and resolved.

Jessica Sheher, spokesperson for Education MEC Debbie Schäfer, said they strongly condemn the violent protest action and disruption of schooling at Vukukhanye Primary School. "Over 700 learners have been affected," she said.

She said communities are free to engage in protest action but cannot intimidate and prevent pupils from going to school. "The MEC is very concerned that communities target schools in their disputes with government. This is grossly unfair and is a practice that needs to stop," she said.

She said the department's priority at this stage is to ensure the safety of all pupils and teachers. She appealed to any influential community leaders to work with the City of Cape Town. She added that catch up programmes will be instituted for the valuable teaching and learning time that has been lost.

Mayoral committee member for informal settlements, water and waste services; and energy, Xanthea Limberg said the City is embarking on a project to improve the living conditions of the residents of the Tambo informal settlement.

She said the project has been characterised by intricate community dynamics since inception and engagement with all stakeholders has been in-depth, solution-oriented and constant.

"Among others, residents from formal houses in the area are challenging the use of the property that is earmarked for the Tambo informal settlement residents. Although the City supports the right of residents to air their grievances, it should be done in a peaceful and constructive manner.

"The protesters are fully aware of the channels that they should follow considering the length and level of engagement regarding this project," she said.

She said the City is disappointed with the turn of events and the efforts be some to halt this project. She said the City's doors, however, remain open for engagement.

■ Angry Section 4 residents barricaded the streets with burning tyres and other objects in protest against the development of Tambo Square.

■ Khayelitsha Health

Multi-million

Fig 14. Gugulethu residents protest against a new housing development on land they would rather see recreation space such as parks

Fig 15. Particpatory devlopment in the form of utilising the skills of local artisans such as Madzibaba Fanwell to fabricate the facade screens and planes of the buildings

5. Fieldwork methods

Research Methods utilised for the design dissertation

In addition to the research carried out in the theory and technology studies of the project, the following was done to assess the conditions on the ground and get an grounded perspective of what it is like to move around the area as a typical youth from Gugulethu.

The term youth as defined by United Nations Education Scientific and Cultural Organization(UNESCO) is those aged 14 to 24 (United Nations Educational, Scientific and Cultural Organization, 2017). This design dissertation is specifically concerned with young adults who are in their later stages of high school and early stage of tertiary education or employment. These are young adults 18 years and older who are facing the challenging transition from learning to providing and becoming independent amongst many other changes.

Permission from the University of Cape Town (UCT) Engineering and Built Environment faculty Ethics in Research Committee was obtained prior to this research fieldwork. Care was taken to ensure the interviewees clearly understood that the research is for educational purposes and would not benefit them in a personal way. The interviews were with persons above 18 years and informed signed consent given. The interviewees were also given the option of anonymity and to decline the recording of the conversation or taking or pictures.

Observations

- In an effort to familiarise myself with parts of the lived experience of young people from the area, I decided to move and get around the same way they do. I decided to commute from Mowbray into Gugulethu and from Gugulethu to Claremont via Nyanga using a taxi. This was necessary and gave me a first-hand perspective how youth, adults, community members who work and study outside of boundaries of the neighbourhood enter and exit.

- I put myself in the shoes of the youth by walking in the area. These walks included a 5.4km stretch of street within Gugulethu, along Steve Biko where I witnessed the character and events at different sites along that particular route of interest. These walks took place at midday and late afternoon.

- Informal conversations with young adults from Gugulethu. This provided useful insight and information on the youths lived experience, feelings and thoughts on spaces of development and access to them.

Interviews

A major element in the implementation of the design strategies is the use of a bottom up approach to resolving certain aspects of the design. One of these key aspects is the fabrication of the planes or thresholds that layered the building and give youth outside the spaces visual and physical permeability into the space.

To ensure the buildings image is accepted and appreciated by the user I decided conduct interviews with young people in the area, asking them about their preference of different types of materials and finishes, all whilst referring to drawings and models of the building.

Fig 16. Observation of the activity on different sites along Steve Biko raod

Fig 17. Using scale models to get input and feedback on the design of youth development spaces from young people who will use the buildings.

The same process was done with the metalworkers and other artisans in the area, except the intention here was to find out how their skills could be utilised to achieve the attractiveness and aesthetic favoured by the youth and the response to the interviews.

This allows us to more accurately realise the make-up of the thresholds and also investigate the most appropriate and conventional methods of assembly and construction.

Fig 18. Design and detail resolution of facade components of the building with local pavement artisans

6. Representational Methods

Representation techniques and methods of design thinking utilised in this project

The resolution of the technical detailing is linked to the design development of the spaces. By walking the street, I placed myself in the shoes of a youth within the neighborhood. I designed the spaces from a point of view of the perspective of youth in the streets, what I thought and discovered to be attractive, appealing and interesting, what would draw me off the street and into the space of development. The transition through the planes containing different levels of development is stimulating. The different planes aim to achieve the crucial quality of visual and physical permeability from one stage of development to the other in order to limit the barriers and obstacles against progression towards self-actualization.

Vignettes

The journey through the different sites from the street, into the building and up through spaces of development is narrated through a series of four to six vignettes for each site. The exploratory drawings are a combination of Revit massing as a base drawing, overlaid with hand sketches depicting the planes and thresholds, edited in Photoshop to render an idea of the texture of the surfaces. All the views were taken at the average head height of a young person to truly give a point of view perspective of what the thresholds, planes and spaces could be and feel like. Figure 21 is an example of the view through planes and thresholds that youth will permeate through as they spend time in the buildings spaces.

Conceptual models

Concept models displaying and exploring different ideas or findings from site and their relevance to the design of the youth network.

Scale models of the site

Models of the site are to be constructed to view and assess the scale and response to context of the building. They will also be used to examine the impression, appropriateness and effectiveness of the material finishes of the buildings, particularly the facades relating to the street. These are under construction and will be displayed in the final review.

Scale models of the threshold and planes models

A major part of the design and fabrication of the facade, thresholds and planes required for exploration and testing of different materials and their manipulation by the pavement artisan. This process required frequent visits to site. Communication between the artisan and myself was key. Madzibaba Fanwell (the street artisan) chose to use recycled materials in the form of offcuts from other jobs he was working on to keep the cost of making the component low. The initial detailed section and elevation drawings were too complex and difficult to explain to the Fanwell, so I decided to draw and print out exploded axonometric images of each part of the facade. These 3D drawings in conjunction with the flat detailed sections and elevations were used to explain the building facade clearly. Upon seeing that the first model was missing certain layers, Fanwell and I sat down and added these missing planes stage by stage until the desired effect was reached. The design of the swirling curved mesh was at the discretion of Fanwell who used different jigs and his hand to bend the metal rod to the desired organic and creative shape/curvature. This gives the facade its identity, the artisans' skill and talent expressed on the building. It was essential to see how else the community could be brought in and engaged in the project.

Fig 19. Picture of my conceptual model of depicting Gugulehu as a system of intrinsically linked networks

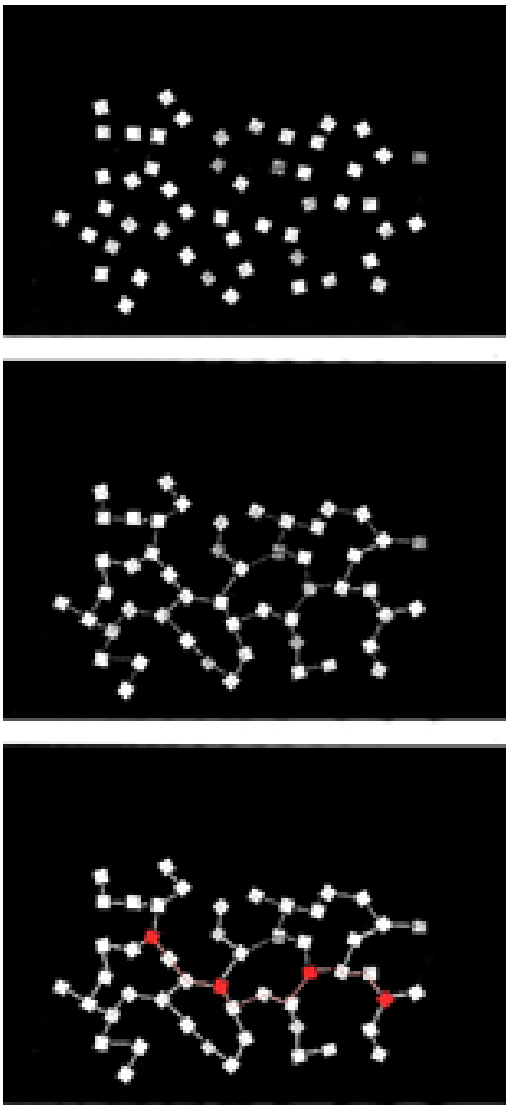


Fig 20. Images of my Conceptual model that explores a clear network of youth development based or supported by other networks such as trade and infrastructure

Fig 21. Vignette from Site 5

7. Design strategies

Working across scale to improve presence, access and utilisation

During my site visits and walks around the area there were five sites that stood out. Three of the sites were open spaces with various activities, two were existing community centres accommodating youth development programs. The existing buildings on the two sites had various problems ranging from access, comfort, management and their poor relation to the street. The open sites were opportunities for new buildings.

Due to the time constraints of the year and the amount of work necessary to address the different scales of accessibility on each site, the scope of this design dissertation only addresses new buildings on sites one, four and five. (Assuming that the existing buildings on sites two and three could be optimised to improve performance of street boundaries).

Fig 22. Site map showing the different sites of the youth development network along Steve Biko Road

Scale 1: Scale of the Urban

Strategies implemented to address youth development at this scale are:

- Siting of youth development buildings

  Placing all the sites along the Steve Biko main road to ensure easy accessibility

- Establishing the placement of sites with regard to general movement patterns of youth and public within the precinct

  Based on observation and information from conversations with the members of the community, the sites were chosen based on their popularity within the community and interest by the youth.

- Physical and visual access to the sites of youth development

  Positioning of the building at points along the stem that have good vantage points from the street. This enables the buildings to be seen easily by pedestrians, cyclist and motorists using the main artery as they leave, enter or move around the precinct.

- Easy access to all sites of the network within a short period of time

  A sustainability approach that prioritises pedestrian movement for short-distance travel and reduces (to the point of eliminating) the need for vehicles or money spent on those journeys. The ideal comfortable walking distance is 400m or five minutes on foot (Walker, 2017). The distance between any two sites in the youth network varies from 800m to 2500m. This, rather than being a constraint, provided an opportunity for the network to implement a bicycle transport system with storage and security facilities at each site, all sites being linked by a bicycle lane. This then also begins the catalytic nature of the buildings and the influence of each site on the spaces between the nodes of the network.

Fig 23. Drawing of my part of this design dissertaion's site at the scale of the urban

Scale 2: Scale of the Street

Strategies implemented to address youth development at this scale are:

- Conforming to existing rules of the Street boundaries wide walkways

  Structures that obey these rules, specifically the wide set back from the street create a public space in front of the building. In the context of South African townships, private front or backyards are small, public space such as the wide walkway in front of a house is well utilised during various events. For example a tent being spread over the front wall and into the street to give guests at a party, wedding or funeral shelter from the sun. Providing pleasant public spaces at the sites of the youth development network permits people to relax operate business or trade them. This encourages activity and presence to the site and also promotes a sense of appreciation from the community and those who make use of the amenity of public space.

- Activity of fellow youth visible from the street

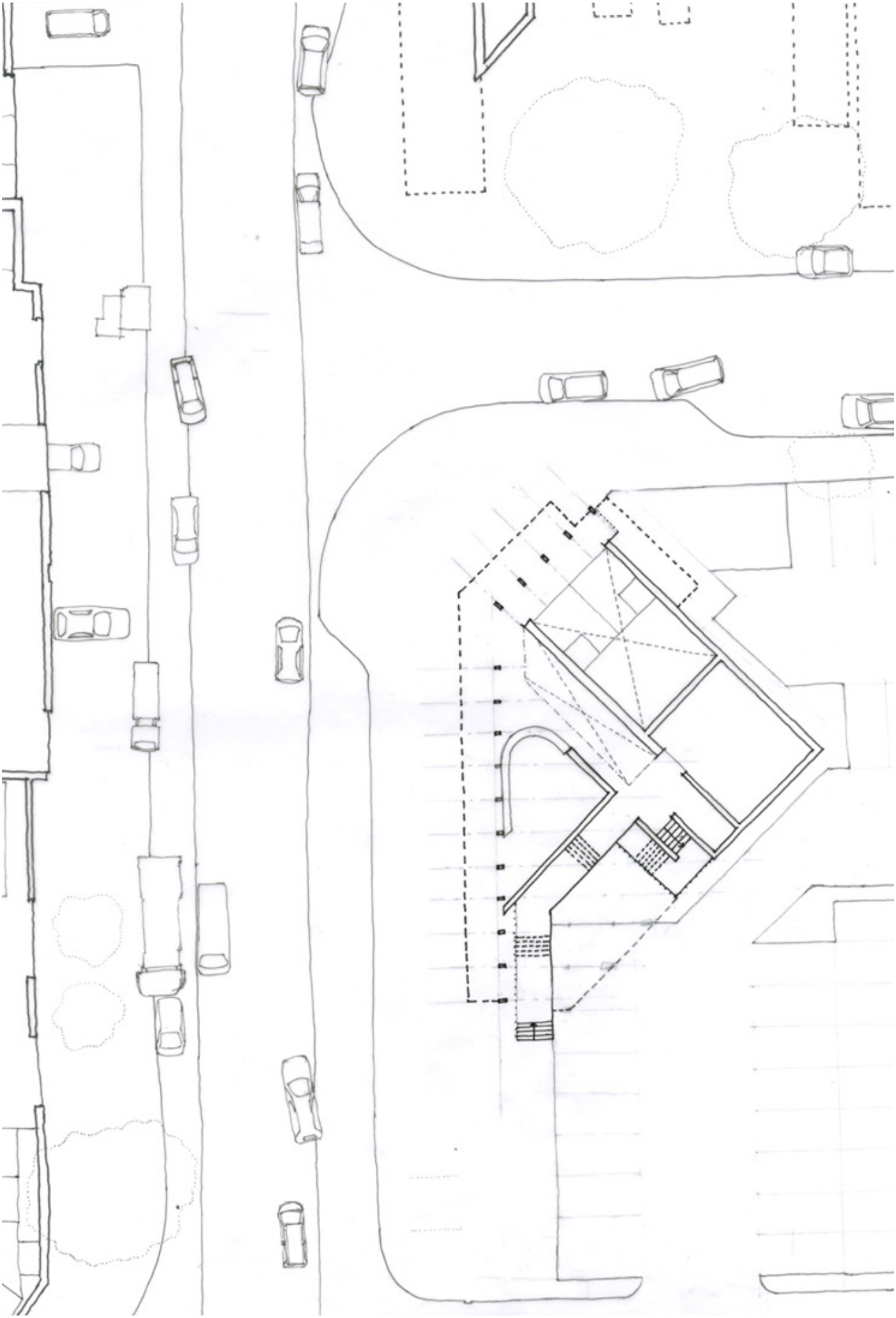
  In an effort to capture the attention of young people passing the site, movement routes and staircases between levels within the buildings of youth development have been placed on the outer street facing edge of the building.

  An active event in the form of sport, dance, recreation or any intriguing happening that causes hype and the movement (movement of the body through space) is used to capture the attention of youth passing the site.

- Layering of Maslow's hierarchy of needs and Lerner's approach to youth development within these thresholds and sequenced planes of the building

  Initially the five levels were going to be addressed separately across the network but that would mean youth had to visit each space to progress through the program. The strategy was changed with each site addressing all the needs within itself, from physiological all the way up to self-actualisation/all 5c's

Fig 24. Drawing of my part of this design dissertaion's site at the scale of the Street



Scale 3: Scale of the edge

Strategies implemented to address youth development at this scale are:

- Establishing a program that has a strong link to site activity of each node

  The design strategy in terms of assigning program on each site was to observe the already present activity in those spaces. Additionally, speaking to and discussing options with community members and youth from the area, giving them a say, involvement and buy in.

  The programs were also a result of a search for productive development activities that can be implemented on the different sites but continued by the youth once they leave, with minimal resources, a task they can carry out alone away from the site (personal development)

- Ensuring an attractive Image and identity of youth development buildings

  Selection of the most effective materials, texture and colour of planes to give the sites and structures of youth development the best, identity, appeal and presence.

- Sustainability of youth development spaces

  Use of the plane element as a device to control ventilation and shading of the space behind it.

All three scales, scale of the urban, scale of the street and scale of the edge are applied to the different sites of the network in the following chapter of this design dissertation report.

Fig 25. Drawing of my part of this design dissertaion's site at the scale of the Street

Fig 26. Site 1 Ground Floor Plan

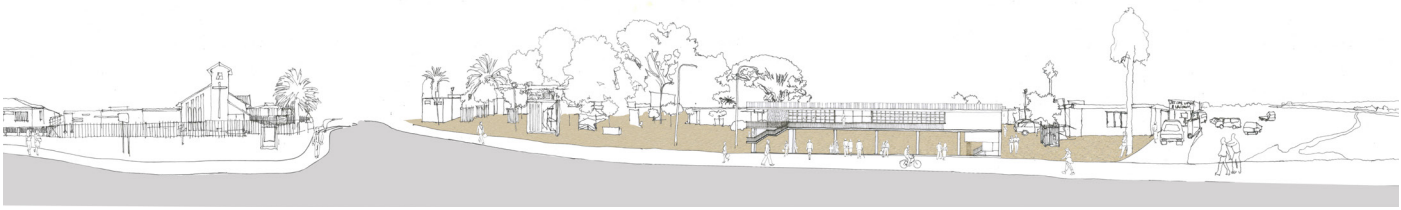


Fig 27. Site 1 East Elevation

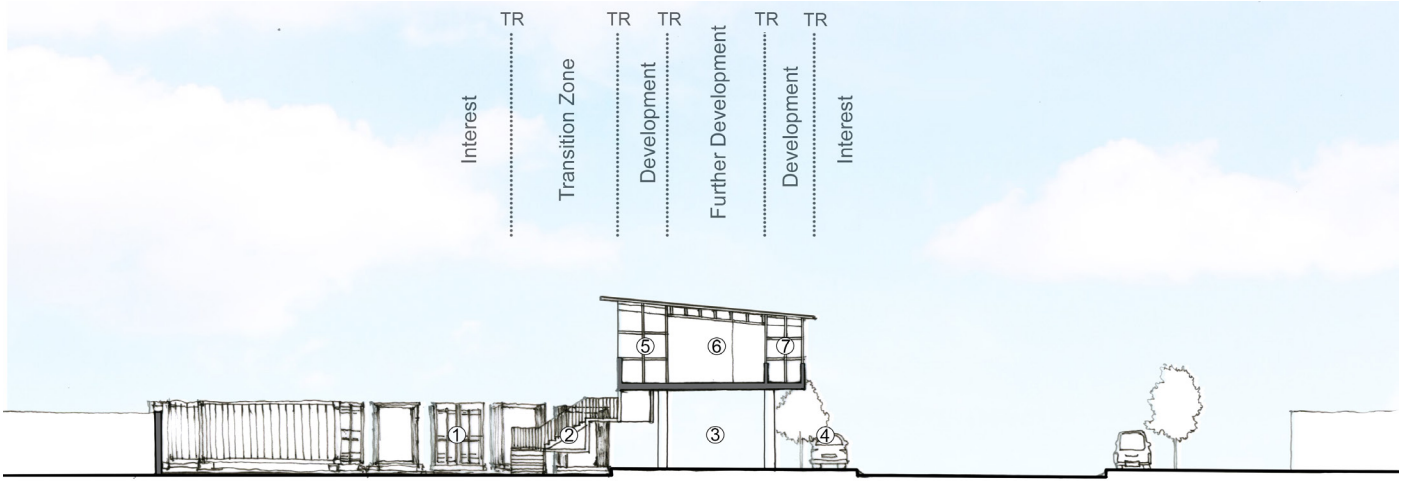


Fig 28. Section A-A

8. Design Development

This section of the design dissertation report covers the architectural development of sites 1, 4 and 5 of the youth development network.

Site 1_Empowerment Hub

Site 1 is located at the north end of my precinct plan on the corner of Steve Biko and Klipfontein road.

Existing conditions

The presence of small business at Site 1 is clear with an open court surrounded by a series of trades operating out of shipping containers. These range from car battery sales, hair salons and barbershop, furniture sales and repair stores, and even fast food take away. The space is a small business hub on the edge of the township. Open space is also used for other business ventures such as auto-electricians and mechanics fixing cars, a minor pick-up and drop off point for taxis (see figure 29, tshisa nyama(braai) area providing meals for those working in the area or waiting for a taxi out of Gugulethu.

Fig 29. Taxi's drop off and pick up customers on the edge of Site 1

Program

When conducting interviews in the area there was a clear cry for spaces of youth development that assists youth in providing a living for themselves. A space to equip youth with skills that enable them to make money or find employment. Currently many pass matric or have some qualification but do not possess skills required in today's working world such as how to operate a computer. The building consists of a creative zone, Hub training area, shared office space and small meeting/conference room and kitchenette.

Fig 30. Urban context surrounding the entrepreneurship hub

In order to give youth in the entrepreneurship hub and office spaces an uninterrupted view of the surrounding business activity the whole floor plane is raised off the ground leaving an opportune moment below the slab for a covered market open on four sides.

The active event here is the market beneath the entrepreneurship and business skills hub and the business activity surrounding the hub building.

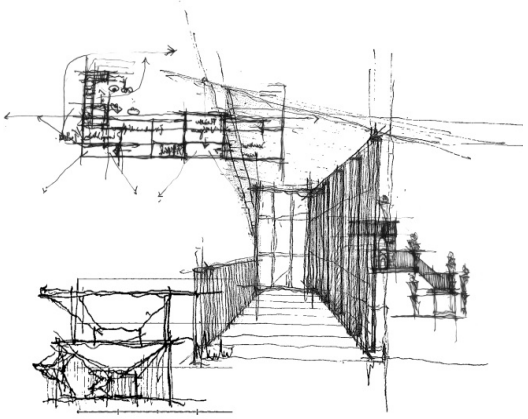


Fig 31. Conceptual sketches of the entrepreneurship hub and raising the plane off the ground to create

Active event

A major challenge is getting the attention of the youth walking, riding or driving past the site. (Often caused by lack of visibility, unawareness of the program offered, unattractiveness, aesthetic of the space etc.) The solution is to use an active event to capture the attention of the young person on the street. Pulling them toward the space where they have access to physiological needs such as water and shelter.

By raising the whole building 3.5m off the ground, the space below provides the perfect opportunity for an active event in the form of a trade market. The bustling outdoor covered market creates an opening to deliver economic empowerment to the young people and be an opportunity to display or promote entrepreneurship skills by providing the framework for a small business. A small business in the form of, for example, a fresh produce market that sources fresh organic fruit and vegetables from the nearby (5.6km away) Phillipi Horticultural area, transports them to the market space and sells it to the inhabitants of Gugulethu at a decent but fair mark up.

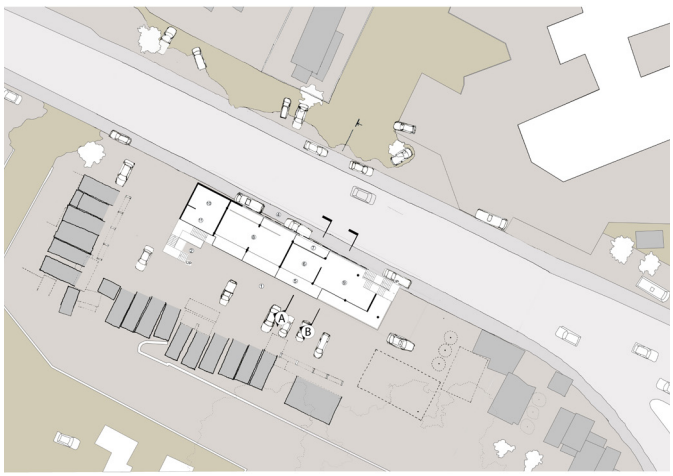


Fig 32. Shared working space, meeting/seminar rooms etc housed on 1st floor above covered openmarket on ground floor

The hype and activity at the market and the presence of other young people working could intrigue and interest the youth passing the site on their way home or to the city.

Institutional arrangement

A group such as Dignified Spaces, the group that initially formalised the small business area and provided the platform for the containers would construct the building in conjunction with the Western Cape Government (who own that parcel of land)

An NGO such as YLED would be responsible for the operation of the program, establishing the business and entrepreneurial training. They would also be responsible for providing youth with examples, role models in the form of guest speakers, successful entrepreneurs and industry leaders who come from similar tough backgrounds.

Entrepreneurial and Co-working space manager such as Open, the same company managing Workshop 17 office space in the Watershed building, would supervise the office space and lease it out to appropriate businesses and start-ups from the area. An option of the youth engaging in an exchange program where groups rotate offices and get exposure to Open other business environments every few months would also be established to broaden the youths experience.

Rules of the site/inclusion of current activity

In line with the property lines on adjacent sites the market is easily accessible off the street, can face outwards with temporary storage and stock placed on the inside, away from the edge. The market and entrepreneurial hub cater well to this site, as this particular site is either the first point of entry into Gugulethu or last point of departure. Purchasing commodities on the way home as opposed to traveling with them all the way from city may be more convenient for a lot of the township's inhabitants

Fig 33. Spaza shop operating out of a shipping container


Fig 34. Nazeer Sonday on his farm in the Philippi Horticultural Area


Fig 35. Site 1 Approach View along Klipfontein road

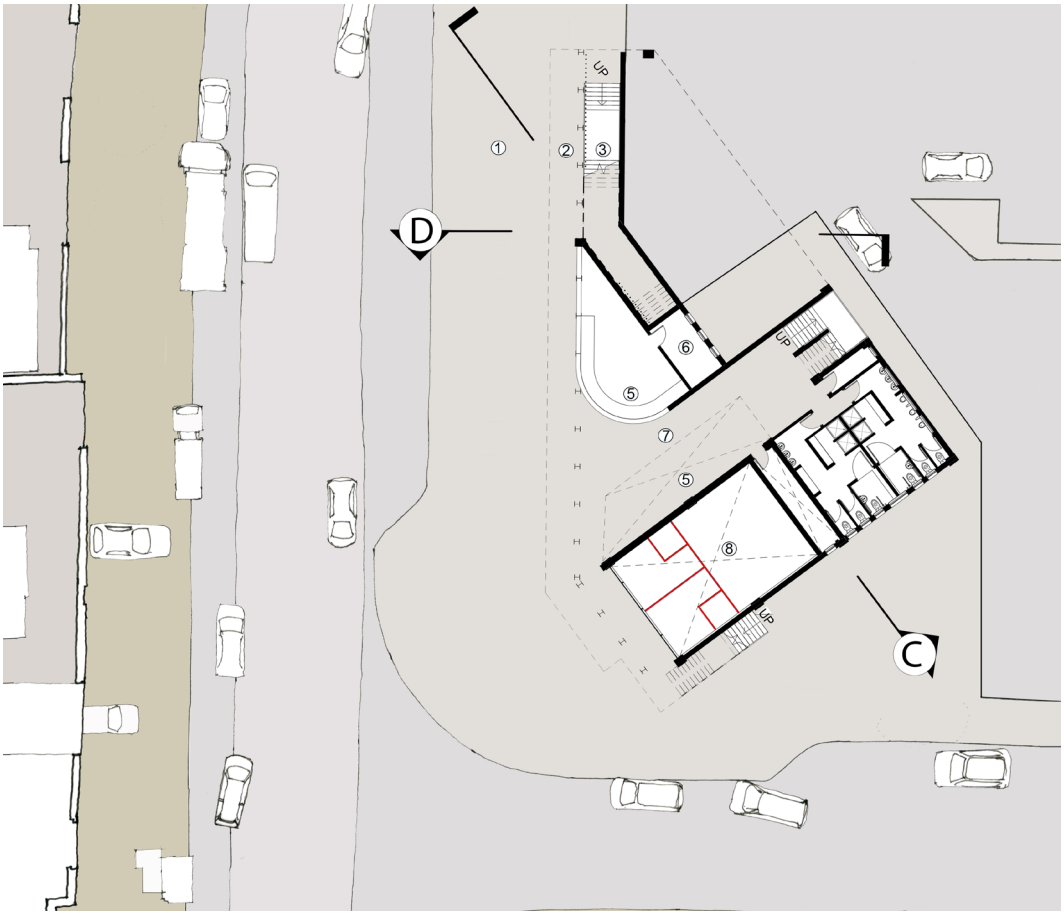


Fig 36. Site 4 Ground Floor Plan

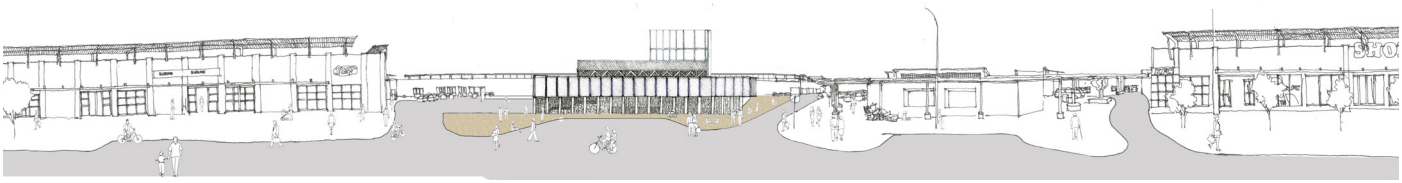


Fig 37. Site 4 West Elevation

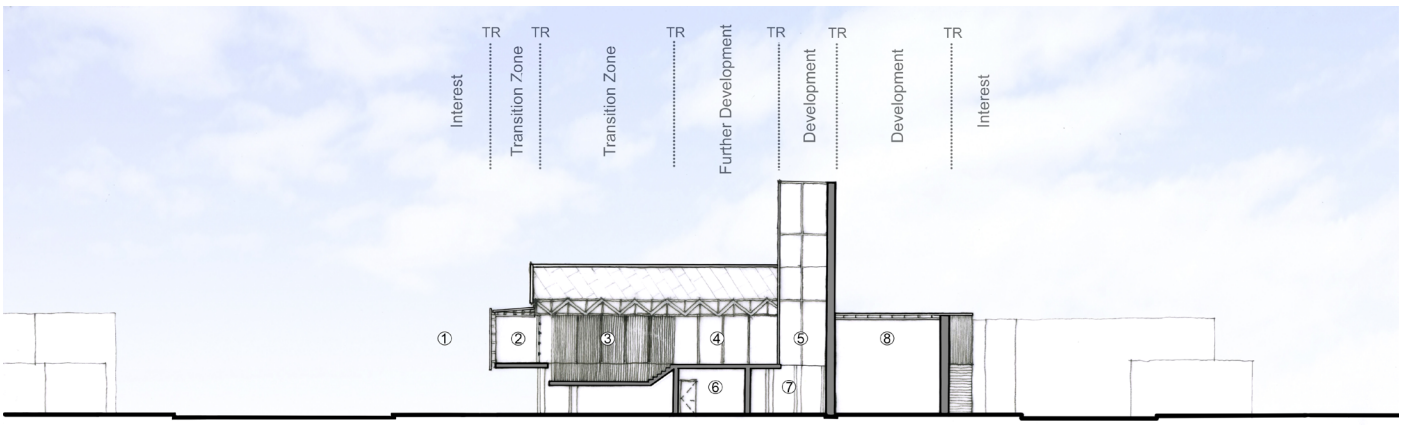


Fig 38. Section D-D

Site 4_Recreation Hub
Site 4 is located roughly in the middle of my precinct plan along Steve Biko road.

Existing Conditions

At site 4 a medium sized taxi rank is flanked by two large buildings constituting the Gugulethu Mall. The heightened levels of activity and gathering of people at the mall and taxi rank is evident, outside along the street recording artists launch albums, traders sell fruit, vegetables and other goods, a lot small groups and cliques of young people gather in the car park and outside the entrances of the mall before making their way in the shopping centre.


Fig 39. Site 4 Approach along Steve Biko

Program

The program builds off the already present hype and bustle of the site. The excitement of sport and recreation provides a good environment of a space of meeting and recreation for the youth. The power of love and belonging, strong relationships and bonds. A safe space to meet young people and practice good social and interaction skills. The Recreation hub in the form of sport, games room, TV room and a small barrista training centre catering to the commuters leaving and entering the site throughout the day, early mornings and late evenings.


Fig 40. Urban context surrounding the recreation hub

Active event

The active event here is sports visible from the street. When approaching the site from the south a squash court/dance studio with a sprung floor is visible. When approaching the site from the north a climbing wall.

This was informed by the presence of several dance groups in the area who only had access to hard floor surfaces in halls or classrooms. These conditions limited the dancers' ability to progress to master the movements and expression only possible on a sprung surface. The integration of a squash court introduced a new sport that is active, quick and easy to play. It provided the base or infrastructure necessary for other activities that require a large open space with a sprung timber floor such as dance, aerobics and yoga.

The make-up of the above activities and sport involves participants darting across the court, whilst dancing (classical, ballet, contemporary) is a continuous and flowing action also drawing the attention of the pedestrian's eye.

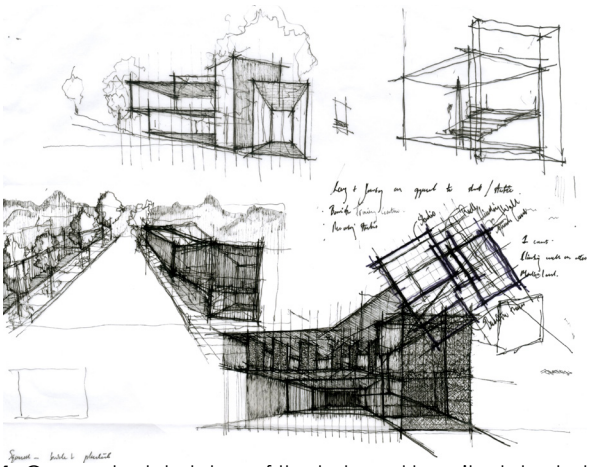


Fig 41. Conceptual sketches of the hub and how it relates to the street opening up it spaces to the pedestrian passing

However, the movement of people in front of the spaces of development, their movement through space as they transition between levels and into different intervals of the hierarchy is visible from the street giving the youth on the street an opportunity to view the place of development and approach it.

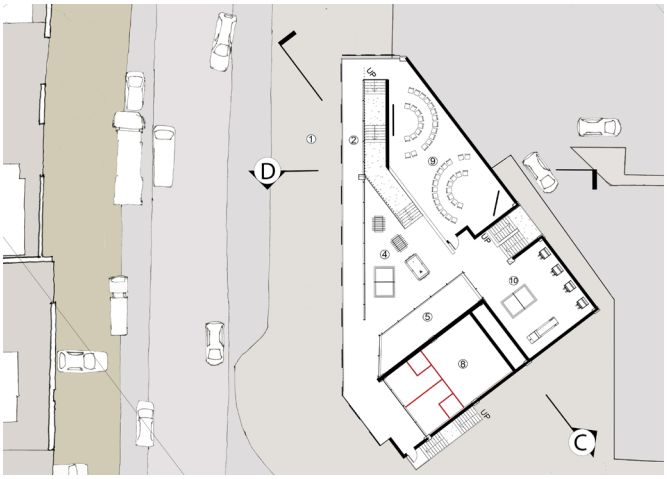


Fig 42. Site 4 1st floor Recreation room and A/V Lounge

Institutional arrangement

A section of the shopping mall parking lot would be sectioned off and entrusted to an NGO for the construction of the youth recreation hub. This could be part of the mall's social responsibility and community development engagement plan.

An NGO such the ISA (International Sports Alliance) which focuses on youth development through sport would be responsible for the recreation room, television lounge, squash court, dance studio, aerobics club and climbing wall. All task from cleaning of the rooms to allocation of time-slots to each user group to content screened in the Audio Visual lounge would be overseen by them. Barista training and operation of the café would be managed by another NGO, they would facilitate the training and qualification of baristas who can start their own café and coffee houses, like Bongani in figure 45.

Rules of the site/inclusion of current activity

The building provides a margin between itself and the wide sidewalk. Its building edge sits in-line with the taxi rank and mall structures that is positioned between. It goes further and uses the grid of structural columns supporting the first floor of the building to layout small flexible booths through which the traders (who currently sell on the pavement between the car park and street) can operate and sell goods to pedestrians passing by.

The small café opens early and closes late to cater to commuters who leave Gugulethu early in the morning and return late in the evening. It also provides hot drinks and snacks for the people such as taxi drivers working in the area.

The entire building has flexible spaces and is able to host public events within its spaces such as art exhibitions album launches or dance-battles. (See figure 44)

Fig 43. Andile (Edward) Sotiya one of the Gugulehtu Zama dance schools stars reach a point of self-actualization and now lectures at the Northern School of Contemporary Dance in Leeds

Fig 44. Art Exhibition within a squash court at the King Edward VI School in Southampton

Fig 45. Bongani a Barista and Coffee shop owner from Gugulethu

Fig 46. Site 4 Approach View along Steve Biko

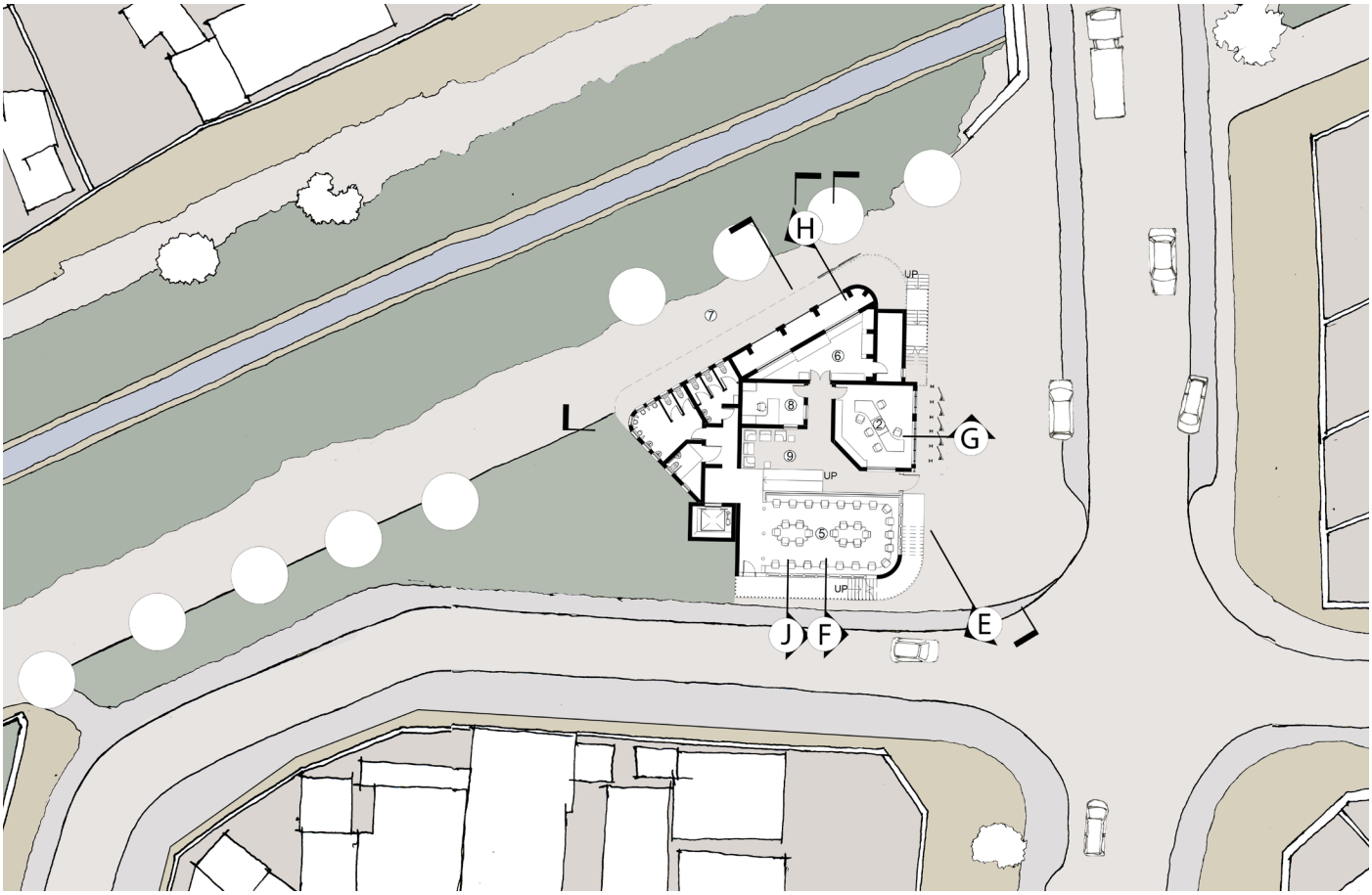


Fig 47. Site 5 Ground Floor Plan

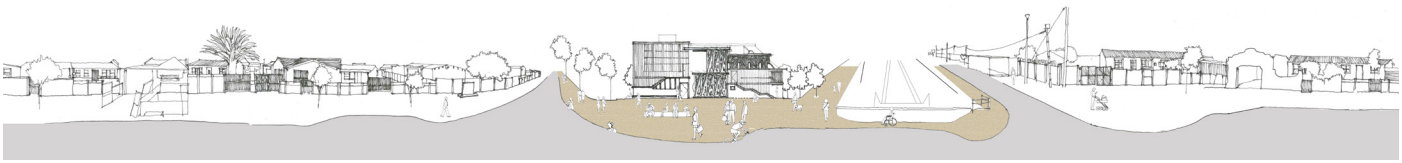


Fig 48. Site 5 East Elevation

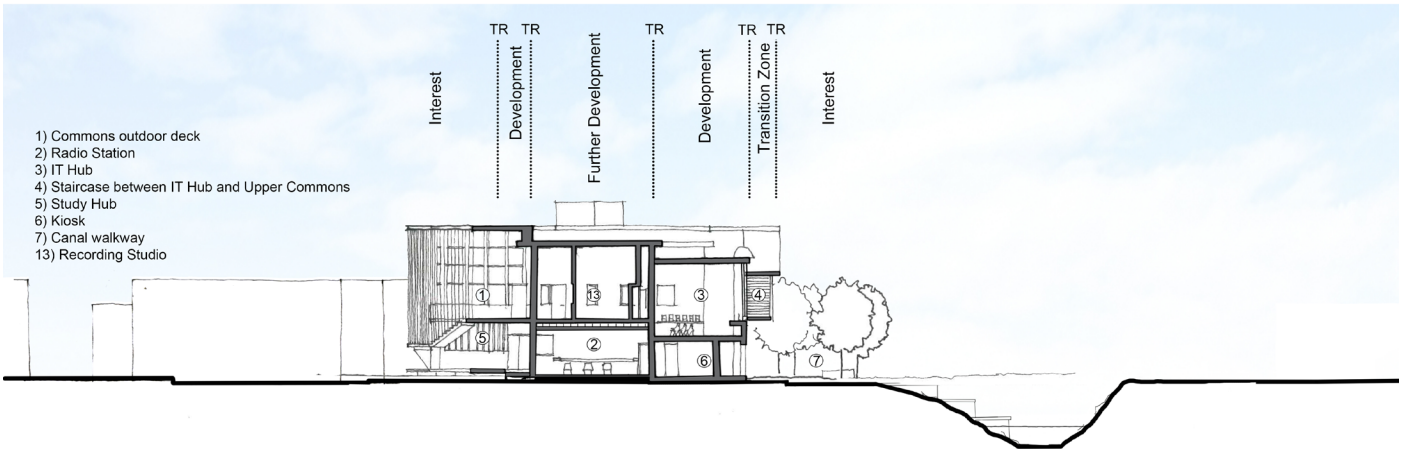


Fig 49. Section E-E

Site 5_Knowledge Commons

Site 5 is the base of my precinct plan, 1.8km from Site 1 at the corner of NY54 and Steve Biko road.

Existing Conditions

The last site along the route is definitely less active than the others but more scenic. It is currently a park with a canalised river flowing into the Zeekoevlei water body further south of the site at the False Bay Nature reserve Park. In the park on site are a few benches that provide visitors with seating under a few small trees.

Fig 50. View of the site from the corneer of Steve Biko road and NY54t

Program

From speaking to young adults from Gugulethu and Phillipi, it was clear that there is a lack of libraries servicing the area, especially with spaces dedicated to young people to study, complete assignments and scholarly tasks. In Gugulethu there is one small library. A young man studying at Cape Peninsula University of Technology (CPUT) mentioned the conditions here at home and in the area are not conducive for work and he cannot get anything done unless he is at campus in town.

The quiet site provides the perfect opportunity to end the youth development network with a Knowledge commons.

Fig 51. Urban context surrounding the Knowledge commons

Active event

Less activity gives the site the quality of low levels of noise. This quality provides suitable conditions for the siting of a library, a radio station and/or recording studio.

The choice of this event is also a result of the popularity and interest youth have with music. Feedback from an interview conducted with an established internationally recognised hip-hop and rap group from Gugulethu, point to the rise in the production of music and media by young people. They however also mentioned the lack of facilities in the area to help the youth produce quality product and the high cost of using sub-standard backroom recording studio.

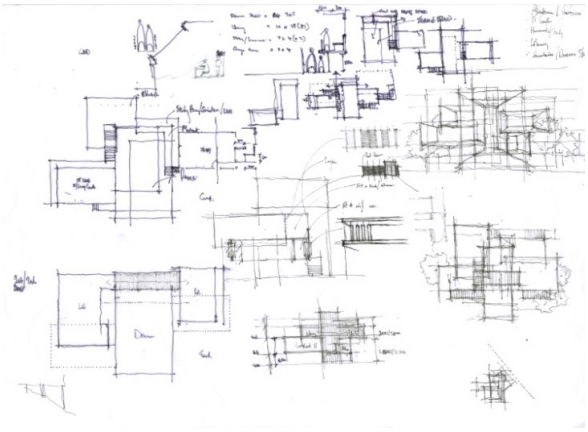


Fig 52. Conceptual sketches of Site 5 showing ideas of multileveled program surrounding a central space of activity

Institutional arrangement

The building would be constructed by the City of Cape Town. The land the park is situated on belongs to them.

The Radio station would be installed, kitted out and managed by a local broadcasting station like the Bush radio 89.5 FM. The recording studio would be fitted and serviced by a well-known recording house like Red Bull studios.

The library would be managed by an NGO but linked and supported by UCT, CPUT, Stellenbosch and other tertiary education campus's interlibrary loan system.

Fig 53. Hugh Masekela pictured inside Zomba recording studios in1984

Rules of the site/inclusion of current activity

Wide walkway obeyed, with Open space in front the building relating to street. An Urban linear park developed to reactivate the canalised river flowing past site.

Small shop or kiosk catering to the immediate community, those in the park on a study break or just visiting.

Further development

The active event here is the radio station on ground floor visible form the street, and the recording studio visible from the IT hub and library areas within the building. The aim is to allow the youth to see the professionals at work. This would inspire and encourage the young people and show them what is possible with the right attitude, hard work and discipline. Conflicts of noise are managed through adequate acoustic insulation, while maintaining visibility.

IT Hub on second level on North visible from Green Park running along river Canal

Inspires youth to record their tracks/albums, broadcast them and sell them, something that can be continued at home with a smart phone and application like sound cloud.

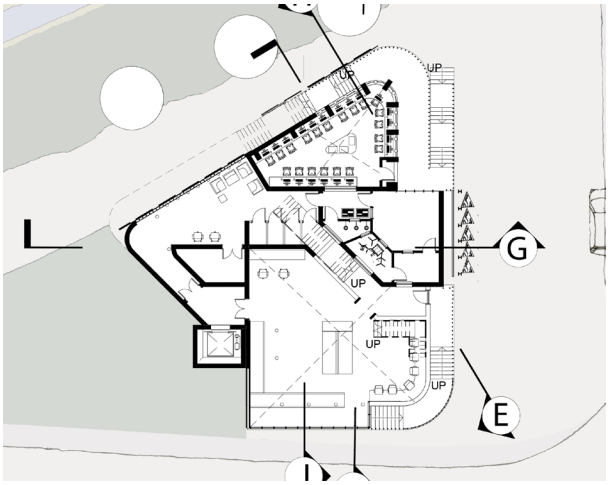


Fig 54. Site 5 1st floor plan

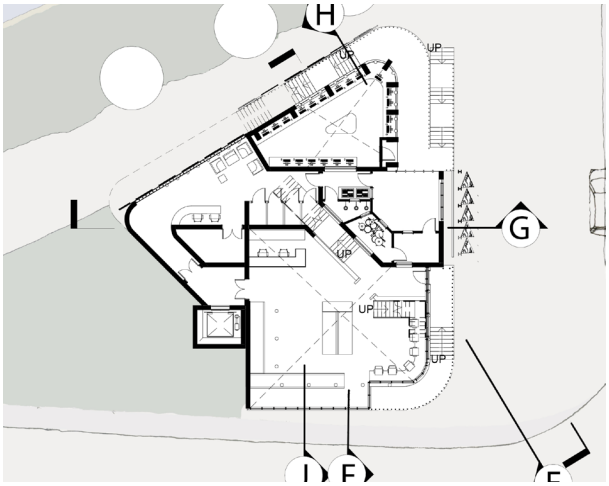


Fig 55. Site 5 2nd floor plan

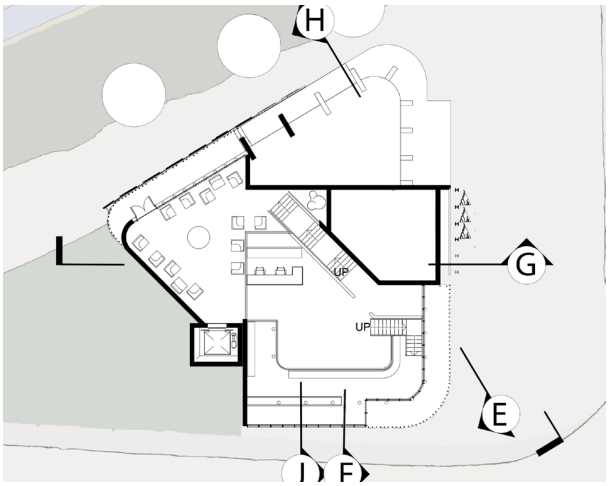


Fig 56. Site 5 3rd floor plan


Fig 57. Site 5 Approach off Steve Biko, along river bank

v

9. Detail development

Technical design and detail of the façade, plane threshold element of the buildings

In a further limiting of scope of the design dissertation, only site 5 is taken further in detail design development.

The key components of this design dissertation are the façade, the threshold and the plane. The planar elements that define spaces yet allow people to see and at time move through. This element is crucial to the youth development network as it gives the buildings much of their character and presence in the community. It is what opens up the activity within the building to youth on the street inviting them in, yet it is also the element that controls access and provides the space with security. It is the architectural device that is used to naturally heat, shade and ventilate the spaces. It is also the element that the budget is focussed on and of high priority in the building. It is an opportunity to express the talents and gifts of local artisans whilst giving the spaces of development their rich identity through texture, colour and materiality. The exploration of this component and its response to different criteria vvrequired phases of development. Its resolution in terms of being aesthetically pleasing, contextually sensitive, robust and hardwearing is exhibited by a 1:1 scale model of the facade that was fabricated from drawings and consulutions between us.

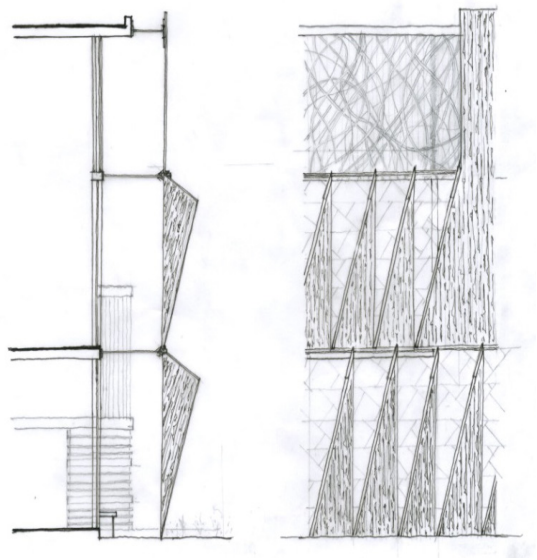


Fig 58. Sketch elevation and Section of shading device covering the facade of the radio station and recording to control heat gain

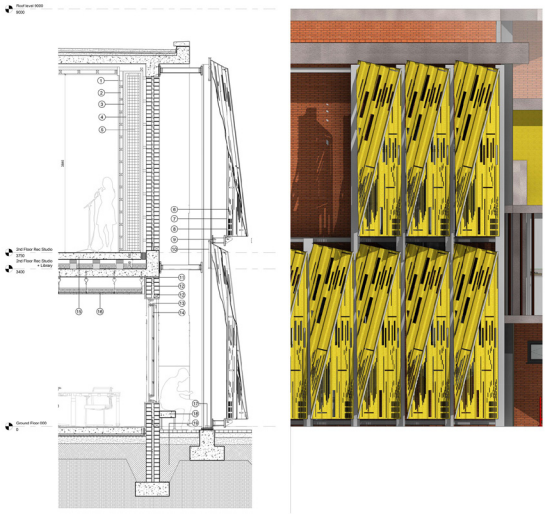


Fig 59. Detailed strip section and elevation of East facade

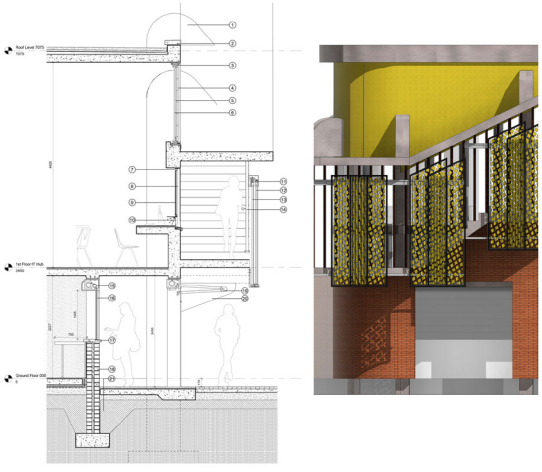


Fig 60. Detailed strip section and elevation of North facade

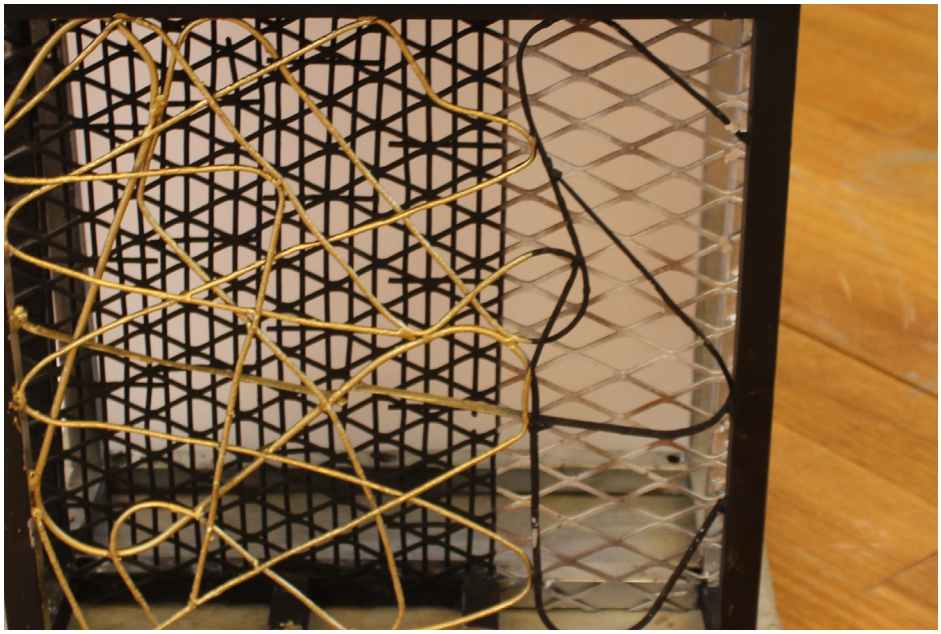


Fig 61. Close up image showing layers of composing the facade

Fig 62. Completed fabrication model of facade screen

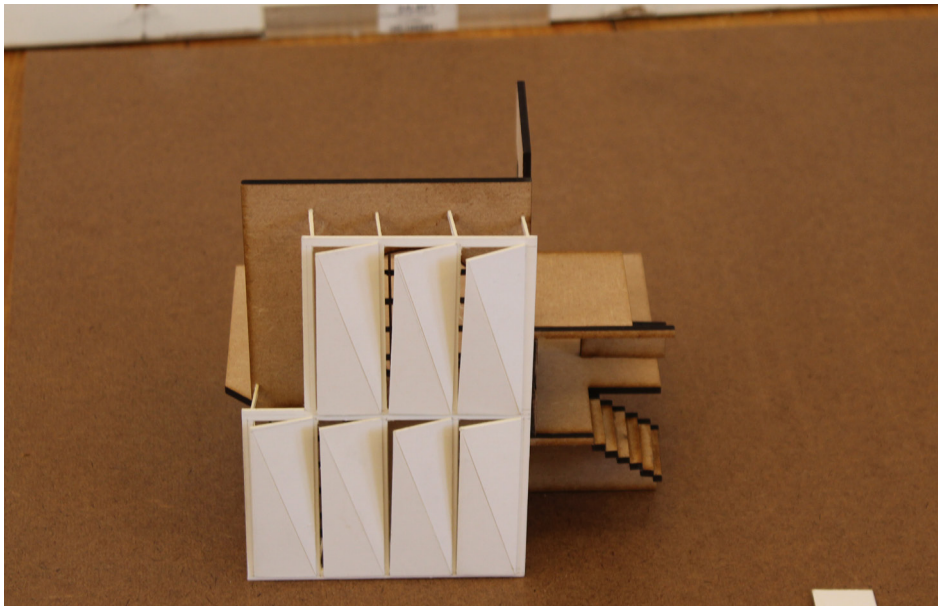


Fig 63. Process model of operable shading fines on East Elevation

10. Findings

Findings of the research, design development and detail development of project

The architecture of youth development is attractive, permeable, exciting with intriguing programs and comfortable spaces. In under-resourced rough neighbourhoods such as Gugulethu, it is also robust, cost effective and caters to the broader community.

Architectural strategy and moves

Architecture of youth development makes use of planning, contextually relevant program and spatial arrangements to realise targets. This is achieved by strategies like placing as much activity as possible on the street facing façade to attract the eye and attention of the youth on the street.

Architecturally this is achieved by placing all circulation especially that between levels on the façade of the building, with a transparent plane in front of it to ensure movement within the building is always seen from the street (see figure 52). Half landings can be long and staircases wide with a small bench (on the inner edge facing the outer edge) to allow young people to pause and mingle on their way up the façade of the building.

The buildings of youth make use of familiar and attractive materials manipulated in a certain way to achieve an evident and noticeable plane, a threshold to be passed through as the youth ascends through different levels of development. The plane was not only a vertical element but could also be a horizontal element in the form of a floor slab, overhang, stair landing or roof. For example, the raised slab of the entrepreneurship hub or the multi levelled knowledge commons building. (See figure 51)

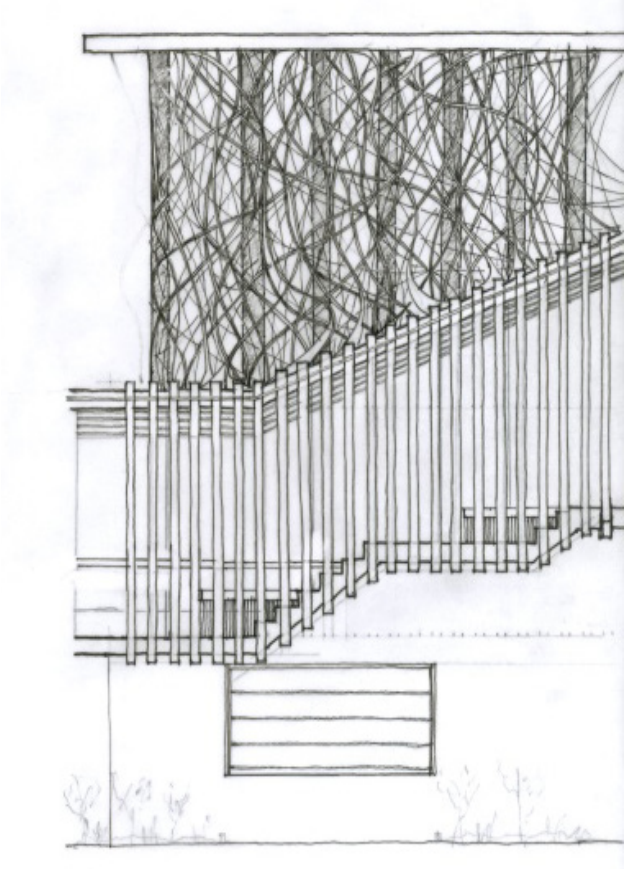


Fig 64. Sketch of North facing facade

Language and Identity of the network

The identity of the buildings in the youth network is achieved through the treatment of the façade. The process and manner in which the plane is resolved and detailed gives the network its language, identity within the community. Identity is important because it informs how the community takes ownership of these civic spaces. If people can identify with the space (part of their history, up-bringing, their story linked to the space) they will enjoy being around and in it, care for it, take it on as a space of pride.

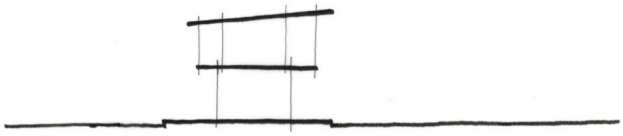


Fig 65. Horizontal planes in the form of the hub slab raised off the ground to create space below the building for the trade market

Architectural response to opportunities

Footfall past the site is key in increasing young people's exposure to development programs and activates. The architecture however has to respond and take advantage of that opportunity, just like a storefront of food outlet or clothing store in a bustling city. The manner in which this is done has a great impact on whether or not that young person in the street will stop draw close and move through that threshold into the space of development. There is a front open permeable side relating to the street and a hard more solid site on the back end of the building. (See figure 66)

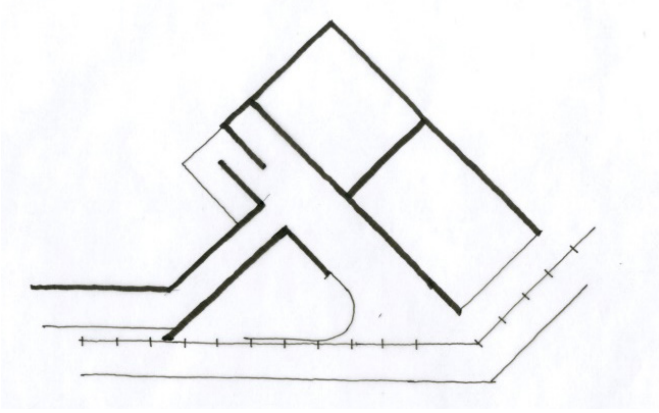


Fig 66. Front of house permeable, back of house/facades that relate to the street

Institutional arrangements

Spreading the program across five sites improves access and reach. Though this would be more expensive than consolidating the programme on one site, this investment needs to be understood in the context of the huge challenge of large numbers of youth failing to acquire education, skills and employment. Securing the right partners and institutional arrangement set-up is key to the success of the building. The right partnership goes a long way in ensuring the quality of the spaces achieved, sustainability of the building and its positive effect on the youth.

Bottom up approach

Instead of guessing and assuming what programs to place at which site or what texture and materials would be relevant and attractive, asking the people and getting their opinion was faster and would ensure greater appreciation of the building by the people.

Urban Upgrade

In achieving good architecture that caters to young people and the general community on five different sites, the project goes further and starts to address the urban upgrade project of the precinct. The sustainable strategy with pockets of pleasant public spaces and bicycle lanes utilised and enjoyed by the community.

11. Conclusion

Final thought and reflection of the work

The focus of this design dissertation was on architecture and how it could be used to improve the development of youth. It was also an exploration of the value of an architect in building and designing projects.

Research from the theory and technology studies highlighted the need to carefully consider space, structure, materiality, form and cost when designing for youth development in under resourced areas.

The design dissertation carried out research on theory studies, of design practice and post occupancy of existing buildings. It selected a site and carried out ethnographic studies of the life of the intended users of youth development spaces, in that community. The research integrated design thinking to highlight the importance of addressing youth development in this particular context at three distinct scales:

- The Urban: ensuring the spaces are easily located along the daily routine;
- The Street: clearly visible spaces with program that respond to the activity of the site and the community's spatial needs;
- The Edge: breaking the barrier between the youth on street and space of development within the building giving youth a greater sense of entrée.

The research pointed out poor location and access to existing youth spaces, Candilis, Josic and Woods movement stem theory was used to spread the youth development program across five different sites.

Research revealed that existing spaces were not attractive and appealing to young people. It also brought up the issue of poor visibility of events from the street. The design implemented the practice of getting an informed decision from the youth on their space and allowing them to participate in its design, with the façade design being a result of interviews with them and the skill some of them possessed. Permeable planes were then used to allow active events to be visible and attract attention and intrigue of the youth in the street.

Research also uncovered the rich character of different sites of interest along the active route/networks in the area, each site having a distinct activity associated with the space. The design made use of this to establish strong meaningful programs. There has to be a link between program and site, a link where one uplifts, promotes and or advises the other- design principle that learnt from Wolff architects approach to designing the Watershed building.

The program of each space is specifically ordered and composed in a manner that aims to achieve the goal of inviting youth off the street and into its spaces, a program that achieves the most exciting transition of youth through the different stages of Maslow's hierarchy of needs and Lerner's 5Cs of youth development. The design informant of a series of planes arranged in a specific order enable the lost youth to transcend from a place of vulnerability and risk on the street to a place of self-actualisation in the building. The ordering of the planes taking the youth through a transition ordered after Maslow and Lerner's levels of youth development of needs.

The point or object of all of this is to ensure youth access spaces of development. The manner in which the program is delivered is also of critical importance and much thought has gone into ensuring it is an exciting and effective experience for the young person moving through the space.

The spaces make use of thresholds and transitions to the different levels of the program necessary for development in a manner similar some of the rights of passage some of these youth may be familiar with or have experienced.

The threshold, the plane, the façade go beyond being an architectural element. Through their manipulation, sequence and arrangement on site they become objects used to effect social change in the lives of youth, They become an environmental tool to achieve comfort. They become icons of memory and pride in the community.

The value of an architect's input on a project is for her or him to see the problem, address it at different in different ways and utilise design to resolve it, finding opportunities in constraints.

As the population of informal settlements and areas that exhibit slum conditions increase there needs to be a deliberate effort to ensure youth from those areas continue to develop. This design dissertation focuses on the provision of these crucial spaces, easy access to them and their greater impact on the community. It begins to explore a strategy or design framework that can be implemented in similar areas with similar barriers to youth development within the global south in order to save youth at risk.

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List of figures

Planes of progression:

an exploration of Architecture's role in supporting the positive development of youth from disadvantaged backgrounds.

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Design Dissertation report presented as part fulfilment of the degree of Master of Architecture (Professional) in the School of Architecture Planning and Geomatics, University of Cape Town.

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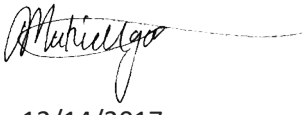

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