



**THE STUDY OF SENSES AND THE IMPACT ON THE BUILT
ENVIRONMENT**

A Proposed Rehabilitation Centre for the Visually Impaired

By

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DECLARATION

I declare that this dissertation is my own unaided work under the supervision of Mr. Juan Ignacio Solis-Arias. All citations, quotes and references have been acknowledged. It is being submitted for the partial fulfilment for the Master's degree in Architecture at the University of KwaZulu-Natal. This dissertation has not been submitted before for any other degree in any other University.

.....

Erica van den Berg

.....day of.....year.....

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DEDICATION

I would like to dedicate this dissertation to my late Gran, Ouma Danie.

You were there right at the very beginning of this journey, and I wish you could have been here to see it completed. I know you would have been extremely proud.

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ABSTRACT

To an adult who has lost their sense of sight, finding one's way in the built environment is stressful as the surroundings are filled with many uncertainties. It is due to the sensory detachment of modern architecture that the process of perception is mainly focused on the sense of sight. This dissertation will analyse the theoretical works of Sven Hesselgren, Forrest Wilson and Juhani Pallasmaa to understand the theories of Phenomenology, Gestalt and Ocularcentrism respectively. These theories investigate the relationship between architecture, perception and the human senses. The understanding of these relationships will reveal how architecture can play a meaningful and supportive role in the rehabilitation of the newly blind.

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PART ONE: BACKGROUND RESEARCH ON ISSUES

CHAPTER 1 : INTRODUCTION

1.1INTRODUCTION

1.1.1. Background

For many people, buildings are big grey blocks that they walk/drive past every day. One tends to not take notice of any seemingly unimportant details of surrounding areas in order to prevent ones brain from brimming over with information. What if a person had to suddenly lose their sense of sight? The world would be a completely different place without this crucial inlet of information to rely on. There have been intense studies on how the human mind perceives its surroundings, ultimately associating it with either a good or bad emotion. The challenge in this task is that each mind translates the information from the senses differently, so no two minds would feel exactly the same about a space. One would have to understand the in-depth workings of the human mind with its sensorial and emotional link to the built environment through its remaining senses to propose a design for a rehabilitation centre for those who find themselves in the new found darkness of visual impairment.

1.1.2 Motivation/Justification of the Study

The process of adaption to the loss of a sense is a challenging obstacle to overcome. The rehabilitation of a person who has lost a sense (in particular, the sense of sight), is more than often underestimated. Most of the focus lies on the physical health of the person after such trauma while the emotional and mental adaption of this person to their surroundings is often overlooked. The understanding of the linkage between the human perception of their surroundings and the emotional and mental experience of such a space is vital. If one could understand this relationship, one can effectively design a space/building best suited for the needs of a person with such a disability.

A person's emotional and mental wellbeing is negatively affected after such a trauma. Suicides, depression and stress related disorders are often linked to a long term physical injury. If a person can be cautiously introduced into this seemingly "new" world within controlled environments, such a person would be better equipped to come to terms with this disability and its acceptance. A centre designed with the understanding of these elements would be of great benefit to the newly visually impaired.

1.2 DEFINITION OF THE PROBLEM, AIMS AND OBJECTIVES

1.2.1 Definition of the Problem

Since the beginning of time, architecture has been a response to the need for shelter and security for those who require it. It is a reaction of humans to create a space that they feel comfortable and safe in, whether it be a cave as for our primitive ancestors or a luxury building as for today's rich and wealthy. Unfortunately, through the advances of time, architecture has morphed into a showcase of status and iconic importance, thus overlooking the basic elements for which architecture was intended.

These omissions of the basic needs of architecture can leave inhabitants feeling vulnerable, insecure and out of place. This effect would multiply if a person was suddenly without sight. The understanding of the reaction and relationship between the user and architecture in terms of how one perceives such a space is vital in the design of a comfortable and secure environment. A newly blind person would be able to adapt with greater ease to their disability if the architecture of their surroundings is carefully designed to stimulate their remaining senses. Such a person would be able to maintain focus on the mental and physical healing process rather than trying to find security and comfort within the environment.

1.2.2 Aims

- The main aim of this research was to understand the relationship between the human senses and architecture. The understanding of the process of translation of information from the senses into a perception of surroundings is the key to the project.
- Understanding the adaptation of the senses when one is destitute without the sense of sight.
- Combining the information and research gathered into an architectural design solution that satisfies the need for a secure built environment for the visually impaired, stimulating the senses and helping the user feel comfortable, safe and less vulnerable.

1.2.3 Objectives

- Look into the actual effects that architectural form, space and the built environment have on people who have all their senses intact and also how they perceive various micro and macro spaces.
- Understand the psychology of a person who just lost the sense of sight and consider how such a person would adapt to this new lifestyle. One would also have to examine the differences in the social backgrounds and the perception of spaces between adults and children so that their needs can be accommodated for. For this research, the focus is on rehabilitating adults.
- Gain a greater knowledge of the properties of architectural materials that would aid in designing a space that would best stimulate the senses to process the information of the environment by the visually impaired user.

1.3 SETTING OUT THE SCOPE

1.3.1 Delimitation of Research Problem

This research focused on the understanding of the perception of space in terms of the sensory qualities that such a space has to offer, the psychology of the newly visually impaired and the adaptation of this person in the realistic surroundings of everyday life. One needs to distinguish the needs of adults in order to best design a space that would create a sense of security for a variety of age groups and social backgrounds.

The study investigated the aspects of how to design a built environment that would best serve the visually impaired in their journey of adapting to their new found disability.

1.3.2 Definition of Terms

- **Newly visually impaired** – Recent onset of greatly reduced or no vision.
- **Built environment** – Human-made surroundings that provide the setting for human interaction.
- **Sensory stimulation** – The stimulation of the senses of human beings, those being; sight, touch, smell, hearing or taste.
- **Perception** – The ability to see, hear or become aware of one's surrounding through the senses.
- **Psychology** – The scientific study of the human mind and its functions, and the behaviour of such within a certain context.

1.3.3 Stating the Assumptions

The research for this dissertation is based on the following assumptions:

- A fissure exists for the rehabilitation of the visually impaired in the society of today.
- The loss of a sense is traumatic and the need for rehabilitation into the routines of everyday life is essential.
- Existing rehabilitation centres have not been properly designed with the raw psychological mindset of the visually impaired in mind.

1.3.4 Key Questions

Primary question

- How can architectural design aid the visually impaired to introducing them back into the routines of everyday life?

Secondary questions

- What is the relationship between the perception of space for the newly visually impaired and the built environment?
- How do adults perceive architectural elements such as scale, texture, colour, form, smell and sound?
- What is the relationship between perception and human emotion?

1.3.5 Hypothesis

The built environment plays a significant role in the perception of space and the comfort level experienced in that surrounding. This experience can translate into a positive or negative emotion which can either nurture or cause stress on an already vulnerable person. When one is faced with the disadvantages of newly visual impairment, one relies on the remaining senses to re-establish and reinterpret one's surroundings. This is a vital step in adjusting to the reality of this new life. The built environment can help to restore confidence and security after

such a traumatic experience. Rehabilitation centres should be carefully designed for the needs of the newly blind, and should also be versatile to adapt to the specific needs of each patient within the centre.

1.4 THEORIES AND CONCEPTS / LITERATURE REVIEW

1.4.1 Phenomenology

Phenomenology from an architectural prospective is the way the senses perceive a structure. A structure cannot be 'beautiful' unless a person states that it is 'beautiful'. It is up to the mind of the person who perceives the structure to judge it. However this structure may be termed 'ugly' to the mind of another person. This can be better explained in the quote below:

The artistic dimension of a work of art does not lie in the actual physical thing; it exists only in the consciousness of the person experiencing it. Thus analysis of a work of art is at its most genuine introspection by the consciousness subjected to it. Its meaning lies not in the forms, but in the images transmitted by the forms and the emotional force that they carry. Form only affects through what it represents. (Pallasmaa, 1996: 449)

Finding a common emotion of pleasantness among a variety of people is necessary in order to accommodate all of the patients who will be staying at the centre. The rehabilitation centre will house patients who have been without sight from birth and those who have recently lost this sense. Those that come in with a recent disability such as this have a difficult time adapting to life without sight. Every single patient will have to be treated with such care as not to alarm them after their horrific ordeal. Their senses will be raw and they will need trained professionals to assist them until they are physically and psychologically capable to deal with this sudden change in their lives.

Martin Heidegger's (1975) writings on living spaces explain how a place is intimately related and directly influenced by the people that live there. He states

that the way people engage with the senses creates different experiences and thus emotions connected to a certain place. Christian Norberg-Schultz studied Heidegger's works closely and often incorporated his ideas into his own. He became well known for his theories in phenomenology associated with architecture and his works are still of great influence to modern architects. He refers to phenomenology as a person's ability to connect emotions to a structure from other people that inhabit the space and the experiences they have there, thus the saying 'making a house into a home'. Kate Nesbitt used this theory to explain that phenomenology in architecture makes people connect the feeling of safety with the structure they inhabit, "a method that urges a return to things as opposed to abstractions and mental construction" (Nesbitt, 1996: 412)

A very simple way to understand this concept is when one drives past the house that one grew up in but no longer lives in. The senses become immersed by all the memories one had in the house and this brings on emotions. One may even remember the smell of a mother's perfume as she tucked a child into bed or the sound of her voice singing. One may start to hum the tune without a conscious thought. These are all emotions connected to the structure thus supporting the theory of phenomenology.

1.4.2.1 Sensory Architecture

Sensory architecture refers to an approach which one would consider and accommodate for the stimulation of all the human senses through architecture. This approach closely relates to architectural psychology as the senses transmit the information and the human mind receives and reciprocates the appropriate response. Psychology in terms of the architectural context refers to the process of analysing the implications that the built environment has on the users of such a space by understanding the various components of architecture: texture, form, light, colour, materials, scale and patterns (Canter, 1970).

Humans analyse the components of architecture through their five basic senses: touch, sight, smell, hearing and taste. According to Canter, the experience and the process of the information given by the senses can be understood in three terms: hapticity, kinaesthesia and synaesthesia. Hapticity is the process where the sense of touch is translated into a three dimensional understanding of an object in a space. This information is mediated through the skin and sent to the brain. The brain will analyse the information it receives and react with an emotion. Kinaesthesia refers to the process of experiencing a space through movement. This process utilises the sense of sight combined with movement to create a more dynamic view of the space. Synaesthesia is the process of transferring information between sensors. For example, people associate the colour red as something that would be hot, thus connecting the sense of sight with the sense of touch (Hesselgren, 1975).

A building designed specifically for the visually impaired poses a challenge for the architect. For most people, sight is the sense that most people use to perceive a building. However, a rehabilitation centre for people without the sense of sight must be looked at from a new perspective of design; it must ignite the remaining senses and make the occupants feel welcome as soon as they set foot through the door.

Studies by Ando show architectural space as being heterogeneous, possessing directionality and corporeal density. The human body becomes a point of departure to experience the world through its surroundings: “the world articulated by the body is a vivid, lived-in space.”(Ando, 1995:253)

Therefore the patients at this rehabilitation centre will be creating an image of the space in their minds. Every detail will contribute to how their minds interpret and react to the information their senses are receiving. It is crucial to their well-being that the patients feel secure and comfortable while they adjust to this life-altering new perception of the world around them.

When one cannot experience a building by visual means, one would have to resort to expressing the built form through different mediums. One can translate the fundamental principles of architecture, space and environment through a path extension other than sight.

Anxiety in patients will hinder their ability to recover, therefore the rehabilitation centre must be a haven for them and able to calm them down in subtle ways. Designing this structure will be a delicate task with architects and psychologists working closely together to make this project a success.

The sense of hearing will be enticed by the echoes and lack thereof in each room according to its purpose. Places for social gatherings can be open with sounds rising and mingling. Bedrooms will have to be acoustically designed to eliminate echoes to give the patient the feeling that they are secure.

The sense of touch would be stimulated by the different materials used in the making of the facility. Smooth cold stone, warm wood, rough cement – these are all interesting to the touch. All can be used to guide the user where to go so they can regain some independence. Pathways outside can have gravel to ensure that the patients do not stray from the path. Walking without assistance in the gardens can help regain a patient's confidence and help them learn to do things on their own.

Very few people are completely blind; most can still differentiate between light and dark. Therefore the rehabilitation centre must be well lit as a directional aid. It is also important to note that the building must still be beautiful as friends and relatives with sight will be visiting their loved ones in the facility.

Food served to the patients must have different textures and flavours to stimulate their sense of taste.

Smells can be used as an effective tool to provoke emotion amongst the patients. Subtle room odours such as lavender can soothe patients during recovery sessions while lemon grass can be used to invigorate patients during active tasks.

1.4.2 Theory of Gestalt

Gestalt (German: *gestalt*– “essence or shape of an entity's complete form”) psychology was established in the 1970s and is the operational principle that the brain's perceptions of surroundings are holistic. It analyses an object as a whole first before giving attention to the smaller components by combining all the information gathered from the senses, creating a singular idea or perception. Therefore gestalt psychologists were firm believers that human beings perceived their micro and macro environments with the entity of the human body (Wilson, 1984: 84,15).

The gestalt principles were later replaced by Jean Piaget's theories of schemata which are similar but a more in-depth study of how one's senses pick up on every detail in the surrounding environment while one's brain interprets this vast amount of information and only processes that which is useful. Schemata have a more psychological interest and can loosely be described as the reaction people have to situations that occur around them.

I do not explicitly learn the propositions that stand fast for me. I can discover them subsequently like the axis around which a body rotates. This axis is not fixed in the sense that anything holds it fast, but the movement around it determines its immobility. (Wittgenstein, 1969: 22e)

Emotions are developed according to the situation and become the link between experiences and objects (Norberg-Shultz, 1971: 11). A structure is but a structure until a person inhabits it and gives it a purpose, such as a home. A home is classified by the emotions that occur in that structure.

1.4.2.1 Perception of Spaces

Each person has their own perception of a space. Adults and children without sight will have very different perceptions as children do not have as much time to experience the world before this sense was taken from them. The senses help children to develop not just physically but psychologically as well (Bower, 1977). There is a risk that this may hinder their developmental progress and other disabilities may occur later on in life. To ensure that this does not happen, special thought must be used in the design process. A child's mind grows while they play which is mainly active experience. For this reason, kinaesthesia is of vital importance when designing a rehabilitation space for children. All their senses need to be engaged to aid the developmental process. The environment must be able to gradually change, thus the child is able to explore and experience new things as time progresses and keep their minds fascinated by what they may discover next. This will also help the child to adapt to different situations in life and not be scared of change, rather learning to see it as an adventure.

Adults often lose this sense of adventure during childhood and feel secure in more familiar environments. Familiar food or people may help them in their rehabilitation. They must slowly regain their confidence and learn to adapt to this new turn in life. The architecture of their surrounding environment must help them on this difficult task by stimulating the senses. For this study, the focus shall be on the rehabilitation of adults rather than children.

The functions of a building are carefully designed for under controlled circumstances or according to a brief; however, the experience and perception of that very same space will be different depending on the individual. The aim of this project was to create a building that would perform set given functions, whilst still offering some personal and emotional experiences to the individual user.

1.4.3 Ocularcentrism Theory

This theory orders the human senses on a basis of hierarchy. The sense of sight being the “most noble” (Levin, 1993). Throughout time, architecture has been prioritised accommodating the sense of sight above all other senses. The Greeks associated the sense of sight with perfection; this is evident both in their philosophical writings and their architecture. During the Renaissance, the human senses were related to the hierarchy of the cosmic body: vision was related to fire, hearing to air, smell to vapour, taste to water, and touch to earth (Pallasmaa, 2012). This further reinforced the notion that philosophy and architecture was dictated by the sense of sight.

Pallasmaa argues that architecture is continuously confronted with questions of human existence within time and space, it materialises and symbolises the human existence. Architecture captures all sociological, emotional, religious and cultural components within the realms of time and space. It is this capture of self that the Ocularcentrism theory argues can best and ultimately only be experienced by the highest of senses, the sense of sight.

... Architecture is our primary instrument in relating us with space and time, and giving these dimensions a human measure. It domesticates limitless space and time to be tolerated, inhabited and understood by humankind... (Pallasmaa, 2012: 19)

The anti-Ocularcentrism movement is a reaction to the over exaltation of the sense of sight. The ocularcentrism critic's point of view is that it is the combination of all senses that creates and manifests a perception of space within the realm of space and time.

Pallasmaa argues that the impersonal and inhumane characteristics of contemporary architecture is closely related to the neglect of understanding of the human body and senses as a whole. As stated by Rorty (1980: 239), “...If the body had been easier to understand, nobody would have thought that we had a mind...”

One can now understand the link between the emotions of alienation, estrangement and detachment and the human psychology and the environment such users find themselves in.

1.4.3.1 Multi-Sensory Experience

According to Pallasmaa (2012: 21), “vision is regarded as the most noble of the senses, and the loss of eyesight as the ultimate physical loss...”

Pallasmaa argues that architecture enhances the sense of being through facilitating the interaction of space and the human senses. It is this notion that would assist the user without the sense of sight to emotionally accept their fate with their new found life style.

In the design of a rehabilitation centre the characteristics of sound can be used to create a perception of interiority. This will inform the user of the scale of their surroundings along with the privacy to public rating of that space.

Pallasmaa confirms that the sense of smell is the most closely related to memory. Memories forgotten by eye can be evoked by a single smell of a familiar odour. This process can be used to evoke emotion of nostalgia and happiness within the psychology of a distressed and traumatised user.

The visual perception of taste can be closely linked to colour. For instance a hot meal would be related to the colour red, which in turn would evoke the emotion of passion.

In these ways, the newly visually impaired user can establish a new ‘route’ or ‘process’ to experience forgotten emotions previously linked to eyesight.

The sense of touch, according to Pallasmaa, can be the introduction to a certain space and room;“... The door pull is the handshake of a building, which can be inviting and courteous, or forbidding and aggressive...” (Pallasmaa, 2012:67). This introduction can determine whether a user feels welcomed or isolated. In the context of a rehabilitation centre, each room could be entered via the threshold of a door, which would translate the use and privacy rating of that space. The user is now informed of their surroundings and re-acquiring a sense of control.

Architecture can teach the newly visually impaired user to experience and perceive their environment through different path extensions other than sight. The user can learn to trust their remaining senses to guide them through a safe environment, while they are being rehabilitated into everyday life. A multi-sensory experience will empower the user by promoting confidence and willpower.

1.5 RESEARCH METHODS AND MATERIALS

1.5.1 Qualitative Research Methods

The purpose of the qualitative research method is to organise a working system of collecting and analysing relevant information that will aid the resolution of the problem that has been presented. This research process involved the collection of data, analysis of case studies, selection of the site and resolution of the desired design.

Primary research (case studies and interviews) contributed to the understanding of the existing conditions of rehabilitation centres for the newly blind. This established current factors that work and those that do not work within these environments. The needs of the users within these centres were documented providing valuable information regarding the most suitable rehabilitation centre for this impairment.

These aspects were approached as follows:

- Empirical data – This defines the analysis of the case studies in all aspects of the building.
- Research data – This included the historical context within which this case study occurs.
- Surveys and interviews – These included documentation of the existing buildings and the uses of their spaces. Interviews were conducted with the relevant users of the building, whether they be the blind or the care takers of the blind. This provided a greater understanding of the needs of both perspectives to finally create the desired centre.

1.5.2 Research Materials

Secondary information was gathered from libraries, internet and computers. The materials included published materials such as; journals, books, electronic data and images and unpublished materials such as papers, articles, precedent studies and information collected from the primary research methods.

1.6 CONCLUSION

Sensory architectural design is of utmost importance when newly blind persons are involved, as they rely on their senses to adapt and navigate their way through the built environment. Their adaption to this new lifestyle should be as convenient as possible as they are already burdened with visual sensory impairment. This phase of their adjustment to their surroundings can either negatively or positively affect their psychology in the long term. Thus the rehabilitation centre should be a sanctuary for those who need assistance from the built environment to adapt to this uncalled for lifestyle. This centre should be versatile to provide the best care and rehabilitation for persons of varied age groups and social backgrounds.

CHAPTER 2 : LITERATURE REVIEW

2.1 INTRODUCTION

This chapter will explore the relationship between the study and the selected theories and concepts. Their relevance and direction of this research will be informed by the key questions set out in Chapter 1. The primary question is: how can architectural design aid the visually impaired by introducing them back into the routines of everyday life? This question will be supported by the secondary questions: what is the relationship between the perception of space for the newly visually impaired and the built environment? How do adults perceive architectural elements such as scale, texture, colour, form, smell and sound? What is the relationship between perception and human emotion?

The first section of this chapter will explore the physical and emotional issues faced by an adult person who suddenly loses their sight. To understand the relevancy of the theories and concepts, one has to understand the psyche of the intended user of the rehabilitation centre, which would be the visually impaired patient.

The first theory is phenomenology. Phenomenology is how an individual perceives a space or object. This phenomenon merges the physical aspects of the space with the emotional influence from the observer, which ultimately creates a perception. This perception is unique to the observer and will differ from person to person. Phenomenology will be expressed in terms of sensory architecture. Architecture can be designed to stimulate the remaining senses of a visually impaired patient. The patient would be able to perceive a space in terms of their own individuality. The key questions will focus the study area of phenomenology to only the architectural frame of view with regards to perception and space and how human beings can be influenced by architecture in a positive manner. Phenomenology clarifies the instance of human perception.

The gestalt theory will explore the holistic approach of perception. The perception of a space cannot be of the individual parts that makes up a space, but rather as a complete whole. The gestalt theory explores perception of spaces and how humans relate architecture to the human figure. This will reinforce the position of this study in terms of perception.

Ocularcentrism is the theory that argues that the eye has been glorified to the point that all the other senses have been neglected in the experience of architectural design. This greatly affects the ability of the visually impaired person to perceive a space in a secure and honest environment. The theory will be explored through an alternative way of thinking and designing, namely, a multi-sensory design approach that incorporates the various perception modalities in order to aid the visually impaired patient.

The three theories are presented so as to increase understanding of perception of space and how architecture can aid positively contribute to the rehabilitation of the visually impaired adult. The structure of this chapter will start with the understanding of the principle of perception through to the approach of perception and finally the implementation of perception into the design thinking of a rehabilitation centre.

2.2 LOSS OF SIGHT

2.2.1 Loss of Sight

The loss of sight is very traumatic both emotionally and physically. According to Thurston (2010) there are many aspects of visual impairment that impact the rehabilitation of such persons, such as whether the process of losing one's sight was gradual due to an illness or the sudden due to an accident. These factors are directly related to the rehabilitation period and method of rehabilitation of the visually impaired user. Murray, McKay and Nieuwoudt (2011: 1) explain that there are three degrees of blindness: "Total blindness – complete absence of any

visual experience; functional blindness – light perception and the ability to vaguely see objects that contrast with the surroundings; low vision – reduced levels of visual functioning used to accomplish tasks such as reading normal print with assistive devices.”However, regardless of the visual impairment degree of such a person, it is evident in Mhairi’s research that proper and carefully thought out counselling and support is lacking in this regard.

Hesselgren (1975) explains that one should distinguish between the meaning of feelings and emotion in the context of visual impairment. Feelings are related to the physical perception of an object or space. One can feel pain, temperature and texture. However, emotion is related to the psychological perception of an object or space. Emotions are expressed in the form of love, fear, anger and joy. This should be kept in mind for the duration of this chapter to avoid confusion. This section will consider both the physical and emotional stresses of a newly visually impaired person.

2.2.2 Physical Strain

The physical strain of sight loss is somewhat minor to the emotional complexities that comes part and parcel with this loss. Hesselgren (1975) explains that once an individual loses a sense, the remaining senses are heightened to aid the individual to better understand and perceive their surroundings. This, undoubtedly, aids the patient with the physical sense of recovering. The proposed facility / rehabilitation centre should accommodate to maintain the patient’s previous activity levels; this is closely linked to the emotional strain of the patient.

2.2.3 Emotional Strain

Dodds (1993) suggests that the emotional strain from losing one’s sense of sight by far outweighs the physical strain of adapting to the loss of this sense. For this reason the rehabilitation of the visually impaired person can be a long term

treatment due to the unpredictability of the human being. Every person reacts differently to a situation.

Thurston (2010) explains that her research findings have established that the loss of sight is strongly linked to depression. She identified the major emotions throughout different phases of rehabilitation. The initial emotions as a result of being diagnosed with sight loss are denial / disbelief, fear, shock and panic. After this phase the patient will experience emotions such as loneliness, sense of helplessness, vulnerability, loss of independence and a sense of nuisance to others. These emotions are different for each patient and they should be treated and counselled accordingly. If any of these emotions are overlooked, the patient might fall into a state of deep depression and might feel that the only way 'out' would be to take their own lives. Dodds further explains that a sense of belonging in the world or society is closely related to identity. Identity in turn is closely related to the visual connection between one's surrounding and oneself. When this connection is broken, one can lose a sense of identity; this may cause such individuals to question fundamental aspects of themselves. "...I have personally come across men who have chosen to adopt a female role once they have lost their sight, and who wish to be recognised as women when they present for rehabilitation..." (Dodds. 1993:3). Counselling and therapy offer the secure and safe environment that is needed when a patient discusses these deep emotional and personal issues.

Dodds explains that a visually impaired person needs some basis of independence. Therefore, a rehabilitation centre should not be too accommodating for the blind. The purpose of a rehabilitation centre is to prepare a person who has recently lost their sight for the outside 'normal' world of discriminatory design and society. He argues that the built-environment often excludes people with disabilities, however unreasonable that may seem. The visually impaired person needs to be ready for this. They need to be able to navigate their way through everyday obstacles as they might not always be in a safe and secure environment. The rehabilitation

should introduce these everyday obstacles in order for the blind person to get accustomed to this. Yet, the centre must provide the patient with a secure and safe environment in order to lessen the emotional stress and vulnerability the patient is experiencing with the loss of sight (Dodds: 1993).

The needs of the visually impaired patient will evolve as they adapt to this new found lifestyle. The initial phase of rehabilitation should be orientated to support and council the patient through the initial shock of diagnosis and also the immediate physical assistance and adaption. However, a patient who has been through this phase will require assistance with being reintroduced into everyday society. A rehabilitation centre must be able to provide this assistance in order to ensure that the patient can gain back their independence.

The lack of emotional and psychological support has been documented in Thurston's interviews with people who have lost their sight in their life time. Some have stated that the time period between diagnoses to support is too great, as they felt panic and shock without knowing how to deal with this new found loss. They have suggested that psychological therapy and support should be available straight after diagnosis. According to her findings; most of the interviewees suggested that they felt left out in society as there was no one to assist them in the initial stages after diagnosis. However, the interviewees also stated that they do not feel comfortable with the term counselling. They argue that counselling suggests therapy for mentally ill or unstable patients, which they are not. This makes them feel belittled and breaks down their self-esteem. One should consider terms or labelling carefully as this too can affect the emotional state of the patient (Thurston, 2010). Emotional support group would be a much better suited term.

An architectural design of a rehabilitation centre can accommodate for all the necessary support functions. both emotional and physical; a visually impaired person would needs to adjust on all levels to their new found lifestyle. The

relationship between human emotion, perception and space should be carefully considered in the design of such a facility.

2.2.4 Current Rehabilitation Methods

Current rehabilitation programs should be explored and critically analysed in order to best accommodate for the visually impaired. It is imperative in a modern world society that no person is discriminated against or excluded from the community.

Two models of rehabilitation exist today; the rehabilitative approach and the humanistic approach. The rehabilitative approach identifies the individual's physical, emotional, cultural, vocational and environmental capacities. This allows the patient to become aware of their strengths and weaknesses in order to adapt to their society / community accordingly and realistically. This approach will ultimately re-acustom a better suited lifestyle for the visually impaired person. The humanistic approach explores the individual's experiences with regards to their environment and to what level they feel in control of it. This approach is in close relation to the patient's self-awareness and their attitude / personality. This approach will rehabilitate a newly blind person to adapt to their lifestyle prior to their impairment (Dodds, 1993). One common ideology exists between the two approaches; one has to consider the individual and rehabilitate accordingly. This is due to the individuality and uniqueness of human psychology. This notion of individuality has a great impact on human's perception of space and will be explored more carefully later in this chapter.

Thurston interviewed visually impaired persons and found that ultimately they relied on the philosophy of living a meaningful life. This warranted them some kind of independence and self-worth. Two perspectives emerged as coping mechanisms. The first perspective is religion and spiritual values as the core of their new found lifestyle and as a mechanism to give meaning to their lives.

Patients explained that they had a religious / spiritual epiphany after their loss of sight, which clarified the doubts and trauma that changed their lives eternally. The second perspective is living a meaningful existence. Some patients feel that they can contribute to the emotional support group for other persons going through the same trauma. This gives them some sense of accomplishment that would be previously achieved in their professional careers. Architecture can aid by creating spaces where likeminded people can meet and discuss current issues. Other patients explain that being visually impaired gives them a challenge on a daily basis. Overcoming this challenge also gives them a sense of accomplishment (Thurston, 2010). A rehabilitation centre should provide these everyday 'challenges' in a secure environment.

Regardless of the perspective of the individual, it has become clear that visually impaired adults need a sense of independence in order to regain confidence. Confidence in turn heals the emotional trauma of losing one's sight.

Losing one sight is a life changing event. These persons can become excluded from society. The emotional aspects of the visually impaired persons are diverse, unique and complex. However, architecture should only speak one language for newly visually impaired persons, and that is the language of perception. Architecture can provide a secure shelter, ultimately aiding such persons in the process of being introduced into their everyday life. Architecture forms a fundamental relationship to the human senses, and these senses can aid the adult visually impaired patient to adapt to their new found lifestyle and regain their sense of independence.

2.3 PHENOMENOLOGY – SENSORY ARCHITECTURE

2.3.1 Phenomenology in Architecture

The theory of Phenomenology is broad and applicable to various disciplines. However, this research will explore phenomenology from a perceptual point of view.

Sven Hesselgren is a Swedish architect well known for his literature on architectural theory and phenomenology in particular. He has been the master of combining the understanding of psychology, perception and architecture in his books *The Language of Architecture* and *Man's perception of Man-Made Environment* (1969 & 1975).

Hesselgren (1969) explains that phenomenology is the occurrence that connects human emotion to the physical properties of an object. One has to understand the difference between observation and perception. Observation is based purely on the physical properties of an object or space. Perception is how the individual interprets the object and space. The individual will subconsciously associate the object with an emotion, thus creating a perception. This perception is unique to the observer as human emotion is spontaneous.

2.3.2 The phenomenology of perception

Von Bertalanffy (1968) states: "We each cut our own slice from the cake of reality...". Rudd (1985) explains the cake analogy used by Ludwig von Bertalanffy in the following way: the cake as a whole consists of a common mixture of ingredients, however a single slice is unique and distinctive. In the same manner, the built-environment consists of a common mixture of cultural and natural influences; nevertheless their total combination in a single building is unique. This analogy proposes that a building combines both common and distinguishable

characteristics of architecture which leads to the ‘being’ of each space, object or building.

More so, Hesselgren (1975) explains that the ‘being’ of an object is purely related to the factual attributes of that object. The sense of ‘being’ is only contributed by the physical characteristics and surroundings of the observer and the objects. The sense of “meaning” on the other hand includes the emotion of the observer. This is illustrated in Fig. 2.1, a drawing by Hill. At first observation one notices the face of a lady, but closer observation reveals an older less attractive woman. The meaning of this picture changes at that very instant. After realising the manipulating properties of this illustration, the observer might appreciate the double meaning within this illustration. This clarifies the process of perception. Hesselgren (1975) explains that the process of perception is initiated by colour then form, meaning, emotion and lastly reaction.



Fig. 2.1 "*My wife and my mother-in-law*" by Hill.
(Source: Hesselgren, 1975:7)

This is explained in Fig 2.2: the eye observes the colour of an object first (in this case an apple), thereafter the object is identified and related back to the colour. When the brain is notified about the physical properties of the object, it automatically associates an emotion to the object which is either a positive or negative emotion. Thus the human brain is first and foremost informed by the senses of the colour of an object, followed by the physical form. After this initial analysis, the brain derives a meaning which evokes an emotion and then creates a reaction. The outcome of this process (the reaction) will be different for every observer due to the emotional aspect of perception. From this one can understand or appreciate that the sense of 'being' is significant in the process of perception. However, when the observer does not have the physical capacities to make the initial observation, it creates a disruption in the process of perception. This in turn causes an emotional reaction of uncertainty and panic. The observer can overcome this emotional distress by replacing the initial observation with either the sense of touch, smell or sound. These alternative perception processes are called: perception modalities (Hesselgren, 1969). The different types of perception modalities will be discussed later on in this chapter.

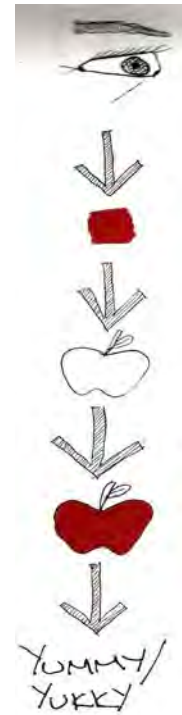


Fig. 2.2 Illustration showing the process of perception (Source: van den Berg, 2014)

2.3.3 Sensory Architecture

According to Pallasmaa (2012), modern contemporary architecture aims to create a visual statement of iconism, rather than an experience that stimulates the human senses in entirety. This notion can alienate a visually impaired user as the initial step of the perception process cannot take place due to their impairment. If the built environment were designed with other perception modalities in mind, the

visually impaired user would be able to experience and perceive the environment despite their impairment. The user would then be able to connect their own unique emotion to this space and not feel alienated or disconnected from society. This will reinforce a positive link between perception and space.

Keeping the process of perception in mind, architecture can aid the visually impaired by establishing a new 'path' of perception. Usually, the primary 'path' of perception is initiated by a visual component such as colour; this perception is in turn informed by the remaining senses to provide more data for the brain to connect emotion to the environment. Due to the user's impairment, other modalities of perception would have to be accommodated for.

As mentioned above, perception relies on more than one sense. A single sense alone cannot form a perception. Therefore it is of the utmost importance to approach design from a multi-sensory point of view. This will ensure that the remaining senses of the visually impaired user are stimulated and fully utilised to create and encourage the perception process. One has to keep in mind that this rehabilitation centre would accommodate adult patients. These patients' perception modalities have already developed; architecture can aid these patients to utilise these modalities to their fullest capacity to better establish an emotional and physical connection with space.

2.4 THEORY OF GESTALT – PERCEPTION OF SPACES

2.4.1 Holistic Approach

According to Wilson (1984), the gestalt principle describes that a person experiences an event or object as a whole instead of individual parts as shown in Fig. 2.3. For instance a table is viewed as a table and not as a combination of supports and a flat surface, or a memory of an event is not only emotion but the totality of the surroundings, sound, colour and emotion. One also associates assumptions based on past experiences of an object, these assumptions contribute to the perception of this object. “...When we see an object in a room such as a chair, it does not appear to increase in size as we approach; the size appears constant...” (Wilson, 1984:54) (Fig. 2.4) The same can be mentioned about colour; the colour of an object is perceived in the same manner regardless if it is in a shadow or bright light. Wilson (1984) argues that humans are constantly arranging information into meaningful patterns. These patterns in turn are perceived as a whole.

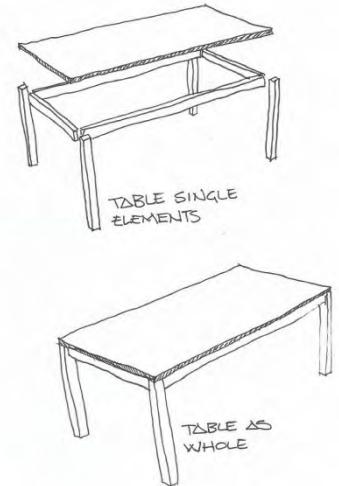


Fig. 2.3: Table perceived as a whole (Source: van den Berg, 2014)

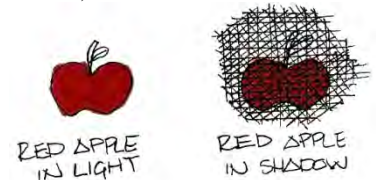


Fig. 2.4: Objects in light and shadow perceived the same (Source: van den Berg, 2014)

2.4.2 Perception of Space

Pallasma (2012), states that since the beginning of time, mankind have always perceived objects and spaces in terms of the human figure. This portrayed scale, which sequentially portrays importance and privacy. For example in Fig. 2.5 an entrance to a church would typically be a big door into a voluminous space. The human perceives this space bigger than one's self and therefore the great importance and purpose of this space is revealed within a

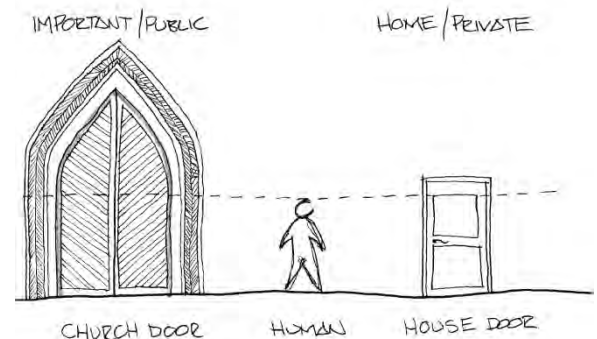


Fig. 2.5: Entrance doors indicating importance (Source: van den Berg, 2014)

single perception. However, Pallasmaa (2012) argues that modern, contemporary architecture omits this measure of scale and proportion. This often leaves the observer of a space feeling confused and uncomfortable.

...Our own body is in the world as the heart is in the organism: it keeps the visible spectacle constantly alive, it breathes life into it and sustains it inwardly, and with it form a system...sensory experience is unstable and alien to natural perception, which we achieve with our whole body all at once, and which opens on a world of interesting senses...(cited in Pallasmaa, 2012:44)

The perception a space informs the user not just about the physical and emotional properties of such a space, but also the required behaviour that is acceptable in such a space. The user will automatically adjust the loudness of their voice, their posture and general attitude within that space. These are all aspects that make a person feel accepted in that environment. This psychological and behavioural adjustment is initiated by a single perception interpreted by the human body. This process aids the user to feel emotionally secure and provide them with a sense of control. This sense of control and security will set the user on a positive emotional footing. This is even more important if the user of a space is visually impaired.

The perception of space in modern contemporary architecture has been neglected, as the modernistic notion of minimalism mostly concentrates on vision. How a space feels has become less important than how a space appeals to the eye. This shift in importance does have a monumental impact on a visually impaired person as their sense modalities are excluded from this modernistic observation of space. A user, in this case, a visually impaired patient, would not be able to perceive such a space and therefore would not be able to establish any emotional connection in such an environment because they would simply not feel comfortable.

2.5 OCULARCENTRISM THEORY – MULTI-SENSORY EXPERIENCE

2.5.1 The Eyes of the Skin

Juhani Pallasmaa is well known for his work in architectural perception. He is especially critical of the glorification of the sense of sight. He explores this critical analysis of visual perception in his book *The Eyes of the Skin: Architecture and the Senses* (2012).

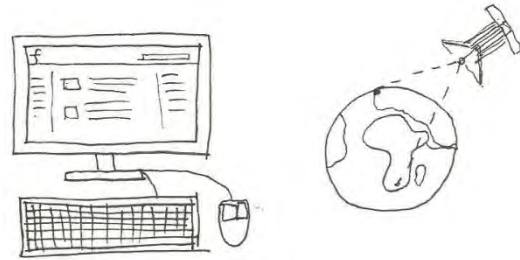


Fig. 2.6: Mass media (Source: van den Berg, 2014)

The sense of sight, according to Pallasmaa (2012), is the only sense that is fast enough to keep up to date with the increasingly fast evolution of technology. “The technologically expanded and strengthened eye today penetrates deep into matter and space, and enables man to cast a simultaneous look on the opposite sides of the globe.” (Pallasmaa, 2012: 24). It is this notion that is slowly disconnecting the remaining senses from reality. One can observe forms and colour from opposite ends of the globe from the comfort of your own home. This observation cannot be translated into an experience and thus a perception would be an ill-informed one as shown in Fig. 2.6. The mass media is flooding the society of today with visual images which are devoid of human emotion. This phenomenon only started simultaneously with the growth of mass media.

Pallasmaa (2012) suggests that alienation of emotion from vision has not always been the norm. Anthropological studies have shown that cultures used to rely on hearing as the primary form of communication. For instance group meetings or discussions were held where people met physically by the shake of a hand and matters were discussed by means of oral representation. However, in today’s society, a shift from the norm is clearly noticeable with advances in technology and media.

2.5.2 Oral vs Vision

The shift from the primordial oral culture to the written culture is argued by Ong (1982) and has caused situational thinking to be replaced by abstract thinking. Originally, words spoken orally have been captured on paper to be preserved for future generations. However, in today's age, words are written down without the spoken word. This has caused a disconnection in society from the individual.

Pallasmaa (2012) explains that when emotions are heightened and intensified, the sense of sight stifles. Thus humans are relying on the remaining senses to embrace and experience the core qualities of that emotion. He makes use of Rene Magritte's painting in Fig. 2.7 *The lovers*, to illustrate this concept. "we tend to close off the distancing sense of vision we close the eyes when dreaming, listening to music, or caressing our beloved ones." (Pallasmaa, 2012: 50).



Fig. 2.7: *The lovers* by Rene Magritte (Source: Pallasmaa, 2012: 31)

As mentioned before, various other perception modalities do exist. Hesselgren (1975) categorises them into haptic perception, kinesthetic perception, auditory perception, light perception, taste and smell perception. These are particularly important to understand how the world / surroundings / environment are perceived by a visually impaired person.

As we have established in the beginning of this chapter, once a person loses the sense of sight, the remaining senses are heightened. This phenomenon is critically important in understanding the alternative perception modalities.

The various perception modalities will be discussed, followed by a concluding section on multi-sensory architecture.

2.5.3 Haptic Perception

Haptic perception forms a close relationship with the sense of touch. In order to understand haptic perception, one has to first and foremost explore the sense of touch.

Hesselgren (1975) explains that in order to ‘feel’ a surface, it is not enough to just touch the object or surface, but one has to move one’s fingers and experience the object in totality. The finger tips will expose characteristics of this surface or object such as hard or soft, elastic or plastic and warm or cold. This will sculpt a three dimensional image for the observer. Pallasmaa (2012) explains that touch relates spatial depth. Touch experiences the object in totality (gestalt), which clarifies the distance and depth of such object. “...Vision reveals what the touch already knows...” (Pallasmaa, 2012:46)

As earlier stated by Pallasmaa (2012: 67), “The doorpull is the handshake of a building, which can be inviting and courteous, or forbidding and aggressive...” This analogy is further explored by Hesselgren (1975); the shape of an object will inform the user of the purpose of the object. A door handle can express whether it should be pushed or pulled. It can express whether the space is public or private. This is vital information for the visually impaired user.

Haptic perception combines the physical characteristics of an object or surface with the proportion of the object or surface to the hand. Thus one can say that the fingers identify the texture, temperature, smoothness and hardness of a surface or object and the hand translates the size or proportion of this object or surface.

The reader is reminded by Hesselgren (1975) that there is a difference between a person who has been born without the sense of sight and a person who has had no sense of sight throughout their adult life. A person who is born without the sense of sight will primarily rely on haptic perception to understand and experience their environment. However, a person who previously had sight will rely on a combination of visual memory and haptic perception in order to perceive their environment. This is demonstrated by two sculptures; Fig. 2.8 is a self-portrait made by a sculptor who was born blind, Fig. 2.9 is a self-portrait made by a sculptor who lost her sight in her adult life. One can clearly notice the difference in perception. The blind sculptor emphasises every element of his face; every wrinkle, every cavity and every bump, just as one would interpret it with one's fingertips. In contrast, the sculptor who has lost her sight during her adult life has sculpted a smooth face with only the eyes, nose and mouth emphasised. She combined haptic perception with visual memory. Thus it is clear to see how a blind person's perception is expressed successively and a visually minded person expresses holistically due to their visual memory.

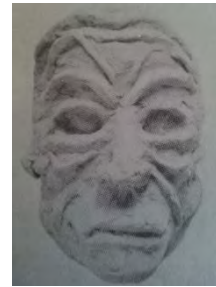


Fig. 2: 8 Self-portrait by blind sculptor (Source: Hesselgren, 1975: 61)



Fig. 2:9 Self-portrait by newly blind sculptor (Source: Sven Hesselgren, 1975: 61)

It is evident that haptic perception is critical in the design of a rehabilitation centre. Building materials can be touched by patients and to create a three dimensional image of the surface or object in their minds. The blind user can now visualise the aesthetics and properties of their environment, therefore feeling secure in their surroundings.

2.5.4 Kinesthetic Perception

This is the perception that tells us whether we are standing, lying, sitting, still or moving. The body as a whole relates this information. One can also feel one's limbs in relation to the body. This orientates one's self in the environment and surrounding.

(Hesselgren, 1975)

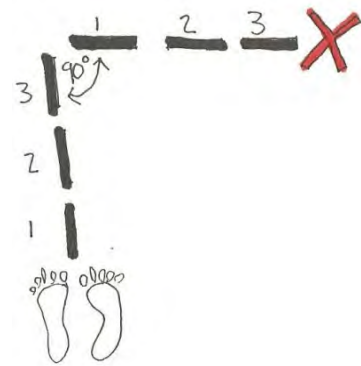


Fig. 2:10 Counting steps
(Source: van den Berg,
2014)

As illustrated in Fig. 2.10 the visually impaired user will be taught how to move about a space by counting steps, turning in right angles and how to utilise a walking stick to manoeuvre around obstacles. This is all accomplished through kinaesthetic perception. It is the perception modality that is vital with regards to way finding. Therefore it is important for a rehabilitation centre to utilise right angles, as this is easier to identify. Landmarks or special features help to mark certain spaces, thus aiding the user to identify spaces and pathways.

2.5.5 Auditory Perception

Acoustic experience compliments and reinforces the visual experience of a space. This becomes especially valuable to a newly blind person who still relies on their visual memory (Pallasmaa, 2012). Pallasmaa argues that the sense of sight works in isolation, it is one directional, it explores exteriority, whereas sound incorporates, it is omni-directional and it experiences interiority. Fig. 2.11 illustrates that a visual observation is one directional, whereas

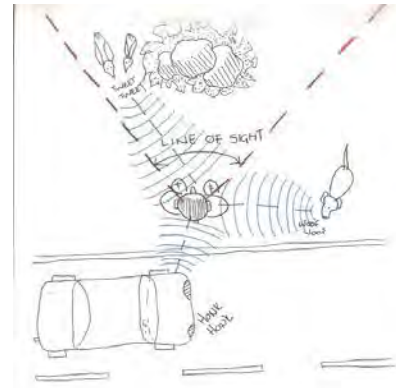


Fig. 2:11 The difference between sight and sound. (Source: van den Berg, 2014)

Due to sound waves reflecting off surfaces one can get a better understanding of space when observing the echo's of sounds. The visually impaired user are informed by their sense of sound regarding the scale and magnitude of their surroundings. Sound creates a certain ambiance, whether it be the cheers of a satisfied crowd or the soft music in a pleasant restaurant. This reveals the energy of a space. This will inform the visually impaired user of their surroundings, in turn creating a sense of certainty which is important for the newly blind. The rehabilitation centre will have to consider this aspect in order to reveal the identity of a space to the user. This will aid the user to find and locate spaces, to identify a space and also to establish the ambiance of that space.

2.5.6 Light Perception

One should be reminded that there are three stages of blindness: Total blindness – no visual experience, Functional blindness – have the ability to perceive light and vaguely observe objects, low vision – reduced levels of vision but can function with the aid of assistive devices (Murray, McKay & Nieuwoudt. 2011:1). Light perception is only applicable to persons with functional blindness and low vision.

Light can be perceived to be light, dim, cool or hot. This depends on the intensity of the light and also the colour. The spread of light is also important. Monotonously spread light is used as a non-stimulating way to light up a space whereas unevenly spread lighting emphasises a feature or something important. Hesselgren (1975) argues that the lighting levels of a space indirectly influence our mood. On a cloudy day one might feel sad (due to the monotonous spread of lighting), but when one receives a ray of sunshine one feels joy. Users with functional blindness would be able to better distinguish the contrast between unevenly spread lighting (perhaps a feature or landmark), thus aiding the process of way finding. These users would also be able to identify robust colours; therefore, combining light and colour could be utilised to enhance a landmark in the surroundings of the visually impaired user.

Glare is the event of a concentrated light source or reflection of a light source; this is uncomfortable and undesired. Glare obscures the view of other objects in the same direction. This phenomenon can confuse the visually impaired user, creating emotional stress.

However, the lack of light (shadows) can also relay information such as depth. Hesselgren (1975) suggests that there are four different types of shadows: large shadows, half-shadows, hand-shadows and small shadows. Large shadows are created by the space itself and large objects within this space. Half-shadows are the transitioning spaces between shadow and light. Hand-shadows are the shadows cast by one's body. Small shadows are when smaller objects such as a pen close to a paper creates a concentrated spot of shadow. A visually impaired person with functional blindness may be able to detect shadows; however they might not detect half shadows, as they might only pick up on the contrast between extremes.

2.5.7 Smell Perception

Pallasmaa(2012: 58)writes: “...the nostrils awaken a forgotten image, and we are enticed to enter a vivid daydream...”

Forrest Wilson (1984) approaches the sense of smell from an evolutionary point of view. Based on the current assumptions of the evolution of human kind,humansevolved from the ground-dwelling animal. However, due to competition, this species was forced to take to the trees. More emphasis was placed on the sense of vision and hearing due to this arboreal lifestyle and less on the sense of smell. For this reason, our sense of smell is somewhat lacking when compared to other species.

If the human sense of smell was developed to the likes of rodents, Wilson (1984) suggests that humans would be able to smell the emotion of another person. Personal emotions would be exposed as one would be able to smell another person’s anger or fear. This emotional instability would drive surrounding humans mad as emotions would transfer from person to person. Life would soon become overly intense and unbearable. Our reactions to these emotions would be on a more subconscious level and less controllable due to the fact that our ‘olfactory centres’are more primitive that the visual and auditory centres. The shift from the dependence of smell to the dependence on sight has created and developed the fabric of today’s society. Wilson argues that this evolution of the ‘distance receptors’contributed to our development of the arts. The sense of sight and hearing has brought us art, architecture, music, sculpture, painting, drama and dance. These forms of art and entertainment are developed and enjoyed through seeing and hearing.

This could mean that when one loses the sense of sight, the heightened sense of smell would activate the primal instinct of our ancestors. The sense of smell can be refined in order to ‘smell’others emotion and therefore further affecting the

person. Pallasmaa (2012) mentions that the sense of smell is most closely connected to memory. This might be the underlining reason as to why our emotional state is heightened when one loses the sense of sight. One might not remember the details of the kitchen in our childhood homes; however,

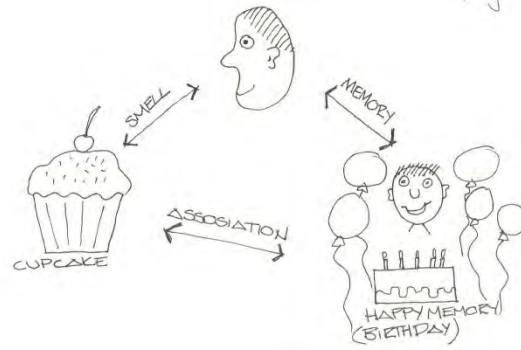


Fig. 2:12 Diagram illustrating to connection between smell and memory. (Source: van den Berg, 2014)

one would remember the smells. Once one smells something significant that reminds us of a past occurrence, the emotions connected to that event can be experienced. As illustrated in Fig. 2.12, one can smell the wonderful aroma of a cupcake, this smell might remind the observer of a past birthday party experienced with positive emotions. This method can be used to connect the visually impaired person to emotions that might have been lost along with their sense of sight. Also, the smell can spark a visual memory associated with that particular smell. On an architectural level, the sense of smell can be used to identify spaces. Each space naturally has its own smell. A kitchen would smell different from an auditorium or a bathroom. Once more, this perception modality can aid the visually impaired user in finding their way around a space. Gardens with identifiable plants such as lavender and roses will stimulate the user. Spices and herbs will also give off a distinct scent. These can be incorporated in the pathways to a certain destination or in the destination itself as stimuli to the senses. The visually impaired user can now relate a pathway or route to their memory and aid in learning the different routes within the centre.

Due to the emotional factor associated with smell, the reaction to a specific odour varies according to the individual.

2.5.8 Materiality and Time

Pallasmaa (2012) criticises modern contemporary architecture in terms of the materials used. Vast sheets of glass, enamelled steel and moulded plastic denies the process of ageing and encourages the image of perfection. These materials are used in order to please the eye, neglecting the other senses. Natural materials capture age and time, one can relate to the ‘mortality’ of these materials. A blind person will extract more information about a space by touching and experiencing natural materials than feeling the smooth mundane surfaces of modern contemporary materials. Pallasmaa argues that contemporary materials are detached from time or character, therefore posing as an unreliable source of information to the visually impaired user.

Materials are the one commonality between the various perception modalities. Any given space is surrounded by a selection of materials. This selection of materials will influence the acoustic, tactile, textural, lighting and aromatic characteristics of that space, which creates a given perception through a given perception modality. Materials are the architect’s words and how they express themselves through their work. Acoustically, materials create the surface from which a sound wave would either be reflected or absorbed. Texturally, materials create a grain or smooth surface the fingers can explore to paint a mental picture. Tactilely, materials form an object or surface that can be touched to sculpt a three dimensional image. Whichever modality perception uses, materials are the foundation of this experience.

Humans identify natural elements and materials with greater ease. Our ancestors solely relied on these as the technical advances did not exist in the past like they do today. As illustrated in Fig. 2.13, timber is associated with fire and in turn

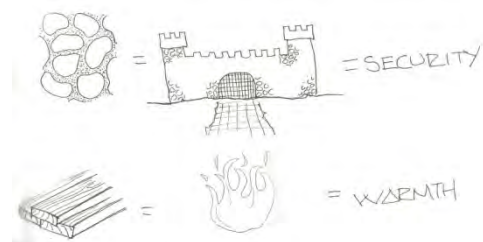


Fig. 2.13: Material associations
(Source: van den Berg, 2014)

associated with warmth. Stone is associated with strength which ultimately is associated with security. Associations like these make people feel more comfortable and secure. However, post-modern societies have painted a picture of perfection and agelessness created by vast sheets of glass and steel. This does not reveal the tests of time, and does not evoke a sense of trust.

With regards to time, Hesselgren (1975) explains that a perception is an immediate or current observation. A memory is a past perception and anticipation is the possibility of perception in the near future. This notion becomes important when one moves from space to space. The past perception creates a memory of a space, which aids the process of way finding. The route can aid the anticipation of a perception of the destination, preparing the user for what lies ahead.

2.5.9 Multi-sensory Architecture

The above mentioned perception modalities propose an alternative way of thinking in contrast to the modernistic minimalist rationale. These perception modalities do not only create a perception of a space but aid the process of way finding and discovery. A visually impaired person can be informed by the route they are on about a destination they are about to arrive at. Landmarks can be established to help a patient orientate themselves within a rehabilitation centre. This ultimately ensures that a patient is regaining a sense of control and security. A combination of all these modalities together can form a multi-sensory system where the patient can perceive a space and be informed of critical information in order for them to feel comfortable and connected to their environment.

Haptic perception translates the visual and physical characteristics of the immediate surroundings to the visually impaired observer. The characteristics of the environment will inform the patient about the use of the space, the privacy gradient and the scale of that environment.

Kinesthetic perception aids the patient to orientate their bodies with their surroundings. This modality will set the other modalities in motion. One cannot perceive various spaces unless one is in motion within them. This becomes important when a patient is en-route to a destination or moving around in a space.

Auditory perception reveals both the scale and privacy of a space. Large spaces that echo, such as hallways, will feel very public and open. On the other hand, private rooms are smaller and the sound does not travel which would enable a person to feel secure and relax. A patient can now identify the purpose of their surrounding and adjust their mental and emotional state accordingly.

Light perception can highlight landmarks which aid the process of way finding for the visually impaired user. In the example of an auditorium, the stage will be bathed in bright light while seating areas will be dully lit. Important functions of a space or locations can now be emphasised and the patient will be further informed about their route and destination.

Smell perception will ignite memories and the latent visual connotation associated with a certain memory. This will enlighten the patient regarding their surrounding as well as evoking a desired emotion connected to a memory. This perception modality also aids the process of way finding.

The materiality of a building and space is what makes the building honest or deceitful. Brick or stone wear the effects of time which translates age and encompasses memories. Large smooth sheets of glass and steel portray perfection disconnected from time. An honest and true representation of a space is what will make a visually impaired person feel comfortable in a space. One can physically feel the difference between wood, masonry, concrete and stone. However this is not the case with glass and steel. Although both these materials have their reasonable and required use, the modern minimalistic architectural style uses these in abundance to portray seamless, clinical perfection.

It is evident that these perception modalities, in conjunction with one another, can aid the patient in perceiving their environment in totality. Therefore a design for the rehabilitation centre should accommodate the multi-sensory experience a visually impaired person would be accustomed to.

2.6 CONCLUSION

One can identify a common thread throughout the theoretical analysis – perception. Perception is the medium through which we experience and describe a space or an event. It is clear that perception is closely related to emotion, which in turn is in close relation to individuality. Therefore, regardless of whichever approach one takes, one has to remember that perception is the individual's own experience within a space. This is crucial when considering a rehabilitation centre for the visually impaired.

Phenomenology approaches perception from the emotional point of view; perception is an observation experienced in totality with the observer's emotion. This in turn suggests that perception is unique to the individual. The gestalt theory analyses perception in terms of its totality. An observer at first glance perceives an object as a whole instead of the sum of its parts. The third approach toward perception stems out of the glorification of sight. This approach suggests that the sense of sight has been 'favoured' throughout the advances of art and technology and that the remaining senses have been omitted. Therefore the experiences and perception of a visually impaired user would cause discomfort and uncertainty. This approach propose that design and architecture should be reverted back to the basic sensory experiences that humans always have been accustomed to prior modern contemporary architecture; an experience of space that allows the user to perceive a space without any discriminatory or lacking design intentions. The user will then subconsciously perceive their environment uniquely to their

individuality instead of to the omissions in design that would automatically have a negative effect on their perception.

The following chapter will apply these theories and concepts to existing designs of rehabilitation centres in a critical analysis. The precedent studies will be criticised and analysed in terms of the approach of this chapter; the holistic view of perception, multi-sensory stimulation and the re-introduction of independence.

CHAPTER 3 : PRECEDENT STUDIES

3.1 INTRODUCTION

This chapter will review and investigate existing examples of buildings similar to my research. The rationale behind the selection of the precedent studies was to gain a greater understanding of a multi-sensory experience that would aid the perception process. This study will assist in formalising an accommodation schedule for the proposed project later in this research. International examples have been used in order to gain a diverse understanding of the issues at hand.

3.2W. ROSS SCHOOL FOR THE BLIND

3.2.1 Background

The existing school was founded in 1872 in Brantford, Ontario, Canada (Fig. 3.1). This institute provides educational support for more than 200 students from pre-primary through to secondary school.

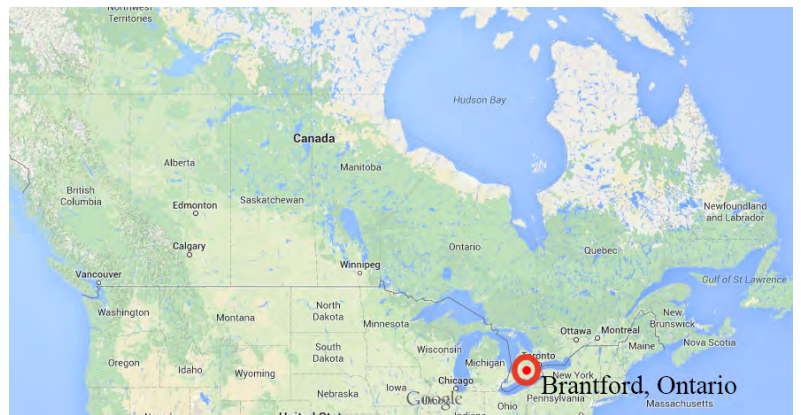


Fig. 3:1 Brantford, Ontario, Canada. (Source: maps.google.com, 2014)

G. Bruce Stratton Architects designed a new addition for this school to expand their primary school section (Fig. 3.2). Their brief was to design a 2 800 sqm addition that would accommodate the pragmatic, intangible and sensory needs of both the blind and deaf/blind students. The design also had to have a good aesthetic value due to the 40 sighted staff on the campus, and that the surrounding community would also be able to make use of the facilities available at this school. This school draws students from across the province; therefore living residences specially designed for the needs of a blind and deaf/blind student are available on campus.

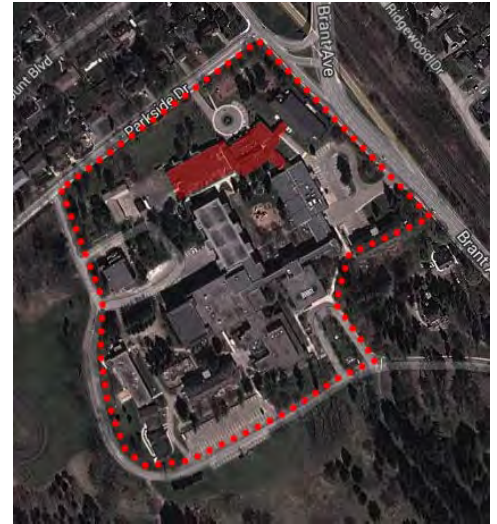


Fig. 3:2 W. Ross School for the Blind with area of addition indicated. (Source: maps.google.com, 2014)

3.2.2 Justification of precedent study

The selection of this precedent study is ideal in my analysis in terms of the multi-sensory stimulation design. Although this typology accommodates for children, which does not form part of this study, it is relevant in terms of sensory stimulation. The key questions of this study are dealt with in the design resolution and will be discussed later.

The architects of the building, G. Bruce Stratton Architects, also drew their inspiration from the writings of Juhani Pallasmaa. They extracted the notion that architecture in modern day society only accommodates for the sense of sight and that user without this capability is therefore disadvantaged. However, they do not neglect the sense of sight completely. The theory of Ocularcentrism and the concept of a multi-sensory experience is the foundation to the resolution of this design.

3.2.3 Multi-sensory experience

This building offers a barrier free experience for the visually impaired users that inhabit this space. The multi-sensory design stimulates all the various perception modalities. These inform the user of the space as to where they are in the building and what the purpose of the space is.

The building's form is horizontally orientated with some vertical elements that complement the streamline design. The building is composed by a combination of expressed forms, which makes every elevation a discovery of geometry (Fig. 3.3).

The building is made out of a carefully thought out combination of materials. Texturally unique poured and precast concrete combined with weathered steel, zinc cladding, concrete blocks and dark facebrick offers the user an abundance of tactile

variation. Coloured glass panels form a transparent screen around the conference room (Fig. 3.4). This glass creates colourful projected forms on the floor which creates a more playful and joyful space. This provides some visual stimulation for the users with low vision. Rainwater is directed via chains that runs from the soffit down to steel lined concrete trays filled with pebbles. This creates a sense of tranquillity and peacefulness that is much needed in the uncertainty of blindness. Aromatic pine trees line the court yard, creating a soothing and sincere aroma which, in totality, creates a multi-sensory stimulating environment.



Fig. 3.3: Vertical elements in horizontal planes (Source: Jen, 2005: 33)



Fig. 3.4: Transparent coloured glass (Source: Jen, 2005: 32)

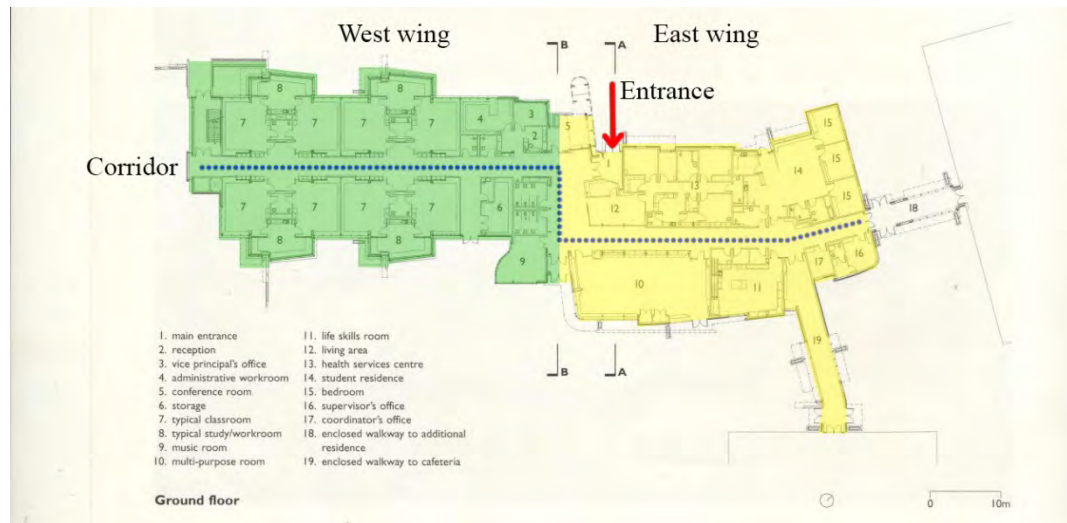


Fig. 3.5: Ground floor plan indicating entrance, main corridor and east & west wing.
(Source: Jen, 2005:34)

The floor plan of the building is long and linear to ensure the ease of navigation. The entrance to the school is located in the middle with wide corridors branching off on either side (Fig 3.5). This creates a distinct angle in the circulation which creates a landmark to help orientate the user. The east wing houses the student residences, multi-purpose space and further access to the rest of the school. The west wing houses classrooms and workrooms. The wings are made up with a 'street-like' formation to ease navigation. No sharp bend occur within the main corridor of these wings. This avoids disorientation, obstruction, collisions and injury. The wider than normal 1.8 meter wide corridor allows the building to be navigated with greater ease. The corridor also accommodates for the visually impaired to utilise their walking canes without obstructing their fellow users. Guide rails offer some extra support and guidance throughout this facility (Fig 3.6). Bigger than usual lockers are



Fig. 3.6: Wide corridors with guide rails and floor finish difference (Source: Jen, 2005:34)

situated alongside the corridors to offer some secure resting spaces for the users. The lockers include a seat and secure shelving for their storage.

The process of wayfinding is further supplemented by the materiality of the interior. The selection of materials has been chosen on the basis of their auditory and tactile properties. Porcelain tiles laid in brick formation makes up the bulk of the corridor flooring, but the crucial junctures with adjoining class rooms and facilities are emphasised by maple hardwood flooring. The difference in both the acoustic tonal values and tactile under footing informs the user of an entrance of another space.

One has to keep in mind that not all visually impaired users are completely blind. Users with low vision can detect and experience sharp contrasts in light. Lighting levels are important in these spaces as the users are very sensitive to glare. Sand blasted and tinted glass diffuses direct natural light in order to eliminate glare. Clerestory lighting ensures that the multipurpose hall is naturally lit (Fig. 3.7). Special light fixtures also avoids glare and the users can set the lighting levels to their own desire.



Fig. 3:7 Clerestory windows in multi-purpose hall.
(Source: Strattonarchitects.com, 2014)

3.2.4 Summary

The uncertainties and insecurities of a visually impaired user are comforted by the perceptual stimulation that this building has to offer. The user is



continuously informed about their current location and the destination of their next journey through the building. This has been achieved by easing the wayfinding process through materiality. A fundamental sense of control is reinforced in the user which not only creates a positive emotional state but also aids the user in the physical navigation through space and time.

Fig. 3:8 Outside view of conference hall. (Source: Jen, 2005:33)

The theory of phenomenology relates human emotions to an observation which forms a perception. The perception is first and foremost informed by the human senses. This building utilises materials to lend sensory clues in order for the person to subconsciously create a perception of their environment. The building is designed in such a manner that it eliminates all ‘uncertainties’ that a visually impaired person would have to confront in their process of navigating themselves through the building. This elimination of ‘uncertainties’ will have a positive effect on the person’s psychology, which in turn would promote a positive perception of the space.

The theory of gestalt expresses the perception of an object or space as a whole instead of their singular parts, and that this is generally measured by the scale of humans. After repetition and familiarisation with the building, the user would be able to identify the various different elements of the building and translate it into a single meaning. For instance; a change in floor finish would indicate a door is

close by, however after one is familiarised with the environment, the change in floor finish would indicate a whole other space. The user would not perceive the change in floor finish as merely a coincidence, but instead perceive that change as the entry to another space or perhaps their destination. The perception of space is translated through the human scale.. The guide rails are of a comfortable width (broader than the hand) to encourage trust. The main corridors are abnormally wider to indicate that the corridor is a public area. The user is informed about their surrounding by relating it back to their scale.

The architects of this building drew their influence from Pallasmaa's understanding and perspective regarding the theory of Ocularcentrism. The architectural team strove for this building to be a multi-sensory design, therefore not excluding any person, regardless of their capabilities, from experiencing this space. The multi-sensory design stimulates every human sense and enables anyone to perceive the space.

The planning of the building is simplistic and very effective, yet the detailing and materiality of this building is complex and elegant. This creates a well-balanced facility that does not only please the eye but all the senses in totality.

3.3VISION CARE CENTRE

3.3.1 Background

The Vision Care Centre is located in Bedminster, Bristol (Fig. 3.9) and was built in 1993. The brief of the project was to design a building where all the needs of the visually impaired



Fig. 3:9Bedminster, Bristol, United Kingdom.
(Source: maps.google.com, 2014)

user could be met under one roof. This building typology was one of the first of its type at that time. Eye-assessment, low vision clinic and the guide dog association was all to relocate to this new building. This idea was influenced by the Bristol Royal Society for the Blind's philosophy: "Encouraging independence, integration and normality". The architectural firm; Alec French Partnership, took it in their stride to research the needs of the visually impaired, as not many publications were available at the time. Thus they worked hand-in-hand with people with visual impairment to get a full understanding of everyday issues that a visually impaired person has to deal with.

3.3.2 Justification of Precedent Study

This selection of a precedent study is ideal for my analysis of the required functions that is needed in this typology, as the typology is similar to the one proposed. This precedent study also answers the key questions presented in Chapter 1.

The philosophy ‘Encouraging independence, integration and normality’ relates to the vision of the rehabilitation centre proposed in this study. The analysis of this study will include an understanding of the location of the facility within the city as this might create a clearer understanding of suitable site selection.

3.3.2 Re-introducing Independence

The location of this site was selected on the basis of size (that the site was big enough to house all the required facilities), affordability, location (within the city centre to ensure that it was close enough to public transport), close proximity to other daily amenities and low noise levels to ensure the user’s comfort.

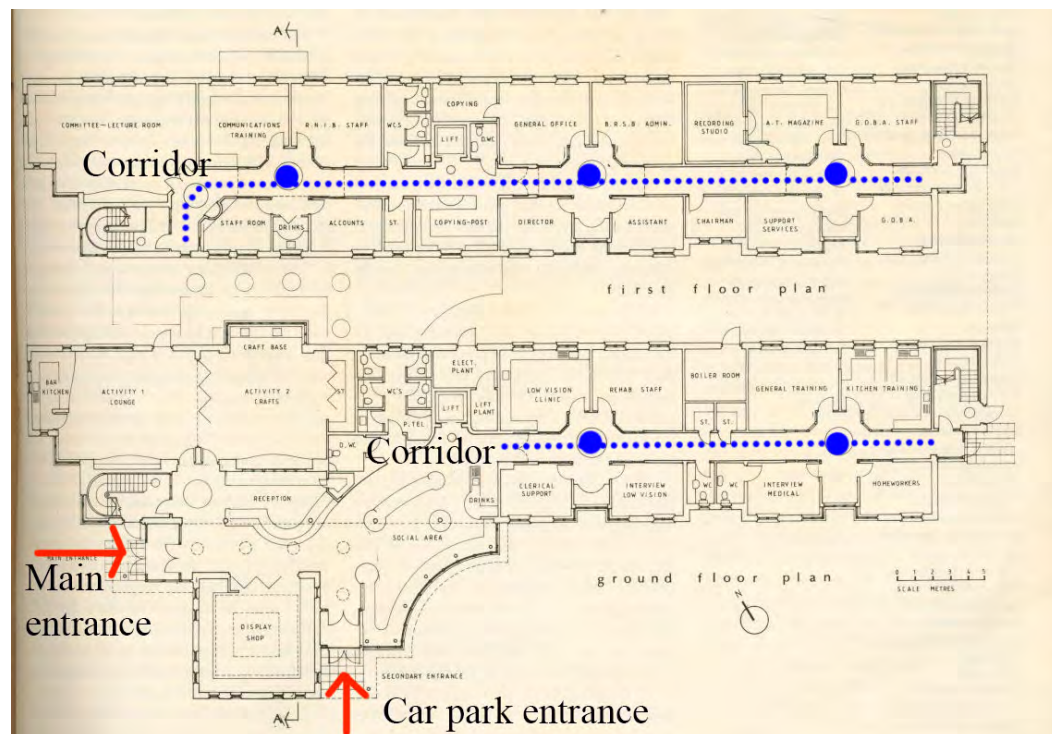
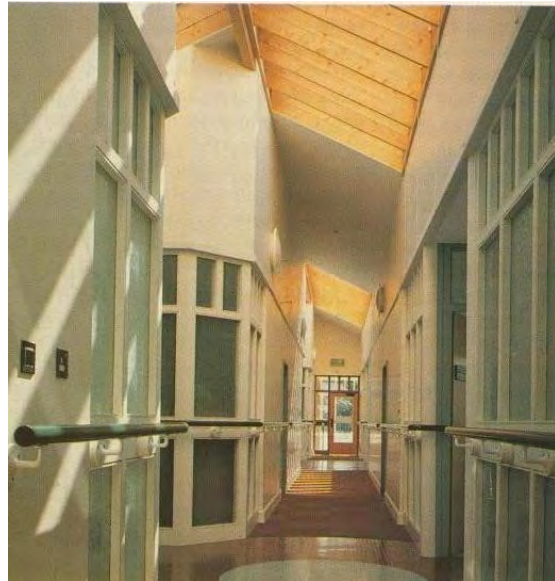


Fig. 3:10 Ground floor and first floor plans indicating main corridors and entrances.
(Source: Penton, 1993:45)

As can be seen from Fig. 3.10 the building has two entrances, one for the pedestrian and another accessible from a car park. The pedestrian entrance is assessable from the street to the main entrance, the car park is introduced to a round fountain that directs the visually impaired through sound. The sound of the

fountain also creates a sense of tranquillity as the sound of water is associated with peacefulness. Both the entrances lead to a main reception desk opposite a shop for everyday needs. This creates a landmark to ensure that the visually impaired person can orientate themselves within this facility. This main reception desk acts as the headquarters of this facility. The ground floor of this rehabilitation centre is dedicated to the visually impaired. The first floor houses the administrative department of this centre. The visually impaired user now does not have to negotiate stairways and the office area is quiet and secluded from the public areas. The public spaces are located towards the front of the building and the rehabilitation and training rooms are situated towards the back in order to create a level of privacy. The design also has one major corridor to ensure that the visually impaired user does not get disorientated. This aids the process of way finding.

The corridors of this facility are lined with carpet, except for when there is an entrance to a room; then the floors are lined with vinyl (Fig. 3.11). The corridor has a recess wherever there is an important entrance, this also articulates the monotony of the long corridor. Round handrails lend extra guidance to the users. The handrails are dark, which make them more



noticeable to the user. The floor is a darker colour to the walls; this allows the users to distinguish between vertical and horizontal planes. The ceilings are white to maximise the lighting levels within the space. Doorways are darker to make them more identifiable. The rooms all have different acoustic qualities. This makes it easier for the user to identify the purpose of that room.

Fig. 3.11: Corridors (Source: Penton, 1993:48)

The architects of this project considered light as one of the most important factors in creating a space for the visually impaired. Artificial lighting has been placed strategically above doors and stairways to ensure that the users are informed about their surroundings. Sun lights between the rafters ensures that as much natural light enters as possible without causing glare (Fig. 3.12).



Fig. 3.12: Sun lights in the rafters
(Source: Penton, 1993:44)

3.3.3 Summary

The building houses all the required facilities successfully and innovatively. The planning of the building is simplistic and easily navigated by the visually impaired user. The design certainly does accommodate the sense of touch, smell and sound. However one has to ask does it still appeal to the eye? The theory of Ocularcentrism, in terms of this dissertation, does explain that architecture has been accommodated for the sense of sight



Fig. 3.13: Building exterior, main entrance (Source: Penton, 1993:41)

only. However, this should not mean that the sense of sight should be neglected completely. The lack in colour contrast would not be stimulating for a person with low vision. The monotony of the geometry of this building does not emphasise important areas and entrances, this can be confusing for a person with low vision.

The exterior of the building lacks diversity in material selection, which institutionalises the typology of the building. The interior of the building lacks the variety in colours. Colour stimulates the residual vision for the visually impaired user.

The theory of phenomenology is evident in both precedent studies. The building makes use of materials to encourage a positive perception. Positive perceptions evoke a positive emotional state that aids the rehabilitation process. The user is informed about their surrounding which eliminates fear and uncertainty. The user is now able to regain confidence in themselves and the environment.



Fig. 3.14: Building exterior, car park entrance (Source: Penton, 1993:43)

As per the first precedent study, the user is given subtle clues that would create a gestalt perception. The user would become familiar with the meanings of the subtle clues, which would be translated into information. The physical properties of materials are converted into a mental understanding of the implication of the materiality of the building. As in the case of the W. Ross School for the Blind, the change in the floor finish is simply not only a physical change in floor finish, this change resembles a change in location and area that notifies the user about an oncoming entrance or destination.

As in contradiction to the theory of Ocularcentrism; this building does not glorify the sense of sight. The design does not stimulate the sense of sight, as a variation in colours are not evident. Therefore this building does not provide a complete multi-sensory experience.

3.4CONCLUSION

This chapter analysed precedent studies that were relevant to the theories of this dissertation. The investigation into these precedents revealed some commonalities which will inform the dissertation.

The common thread between the two precedent studies is the multi-sensory experience. This indicates that multi-sensory design is vital for the success of a rehabilitation centre for the blind. A multi-sensory design will stimulate the perception modalities, which in turn will have a positive effect on the visually impaired person's emotional state and rehabilitation process.

Architecture can aid the rehabilitation process by expressing space through materiality. The innovative selection of materials based on the tactile, acoustic and aromatic properties can translate the use, scale and privacy of a space. The notion of a multi-sensory design has been proven successful in the chosen precedents studies.

Wayfinding has also been one of the key design generators for both precedents. This process of orientating oneself within a building can be achieved by simplistic design in terms of planning. But as mentioned; the careful selection of materials is of great importance. Materials can give tactile, aromatic and acoustic clues about the route and surrounding spaces, which aid the process of wayfinding.

The incorporation of all the needed facilities into one building has been proven successful and achievable. This will contribute to the efficiency of the rehabilitation process.

The following chapter will investigate case studies in terms of the effectiveness of the design. The effectiveness of the design will be based how the multi-sensory

experience is achieved and also on how the planning of the facility aid in the process of wayfinding.

CHAPTER 4 : CASE STUDIES

4.1 INTRODUCTION

There are numerous key components that need to be understood in order to generate an appropriate solution for a rehabilitation centre for the visually impaired that would provide for all the emotional and physical needs of the patient. This chapter will review South African case studies of existing rehabilitation centres which would be used as a guide to produce an appropriate intervention in this regard.

These two studies address the relationship between perception and space, how adults perceive their environments and how architecture can aid in the rehabilitation process. Primary data was collected through discussions and interviews with various staff members of the facility. The discussions and interviews revealed the effectiveness and shortcomings of the facilities. Further information was gathered by a critical analysis of the facilities.

By analysing the facilities, conclusions shall be drawn that would inform the design development of the proposed building typology of this dissertation.

4.2 WORCESTER INSTITUTE FOR THE BLIND

4.2.1 Background

In 1880, the Western Cape Synod of the Dutch Reformed Church made a decision that led to the establishment of the Institute for the Blind and Deaf in Worcester. The institute originally only provided education to blind and deaf children due to the neglect of these persons in mainstream academic institutions. However, in 1933 the institute started to provide employment opportunities for young adults. This shift in vision occurred when some of their matriculants could not find employment due to their impairment. The facility provides employment to 160 visually impaired adults in six different factories on site

and is one of the biggest of its type in South Africa. The centre accommodates children and adults with both visual and hearing impairments. The facility provides all the necessary components that are needed on site to ensure that all needs are catered for throughout the rehabilitation process.

4.2.2 Justification of Case Study

This case study is appropriate due to the fact that this rehabilitation centre provides all the necessary facilities on site. Their vision; “Together we create a future for the visually impaired” (Institute for the Blind, 2014), deals with the issues that this dissertation is aiming to confront and generate an appropriate design response to.

The setting of this institute is appropriate for the aim to rehabilitate newly visually impaired adults back into an urban society. The facility promotes a non-discriminatory design whilst still preparing the visually impaired person for an environment that is discriminatory towards persons with impairment due to their minority.

Phenomenology, the theory of gestalt and the Ocularcentrism theory will be dealt with in a more practical sense and translated architecturally.

These are all factors that would influence and inform my findings and recommendations for the proposed typology of this dissertation.

4.2.3 Location

The facility is located within the small town of Worcester, outside of Cape Town (Fig. 4.1). Worcester is situated on a flat typographical area between the Western Cape mountain range. The facility is within an urban setting, however, the environment is one of tranquillity and serenity. The Centre is within walking distance of Worcester train station and other basic daily amenities. It is a block away from both main roads; the R43 and High street (Fig. 4.2).



Fig. 4.1: Worcester, Cape Town, South Africa (Source: maps.google.com, 2014)



Fig. 4.2: Worcester Locality Map (Source: maps.google.com, 2014)

4.2.4 Analysis of design

Since this institute has been established in 1880 in a single building, the institute has grown and expanded to take up an entire city block. Over time the institute has been able to purchase adjacent properties in order to provide more facilities to cater for the needs of the visually impaired. Due to this, buildings are scattered and may seem random. This creates a number of problems; navigation in between

buildings may become difficult and somewhat confusing to a person without sight and there is no uniformity between the buildings where the lack of architectural identity is evident. There are solutions to these problems that have been dealt with and will be discussed in this chapter.

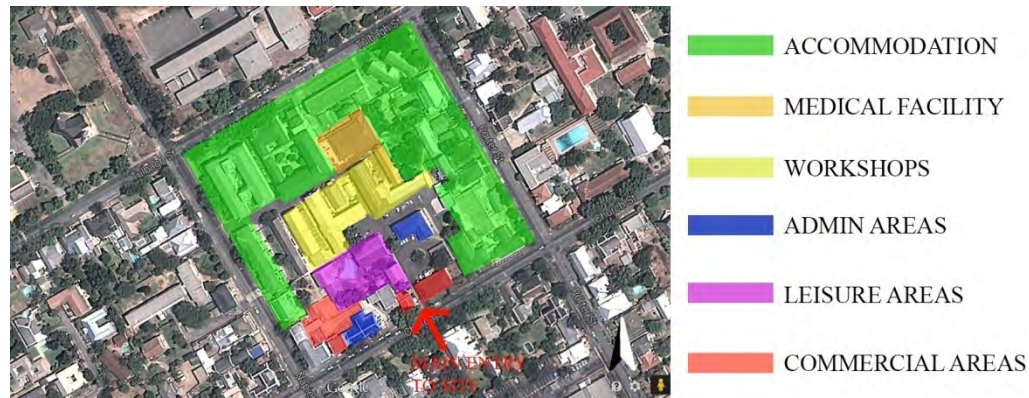


Fig. 4.3: Worcester Institute for the Blind (Source: maps.google.com, 2014)

To familiarise oneself with the institute, one can refer to Fig. 4.3. On entry to the site one is greeted with the institute shop where all products made on site are sold (Fig. 4.4). The entire south eastern street frontage is designed to capitalise on commercial interaction between the facility and potential customers. The institute has their own coffee shop, wool shop (Fig 4.5) and merchandise shop.



Fig. 4.4: the merchandise shop (Source: van den Berg, 2014)

These shops supplement the financial sustainability of this institute. A unit on the southern corner of the block is being rented out by the institute which also brings in some revenue for the institute. However, they do still depend on donations and government funding. Along the remaining street frontages is the live-in accommodation for all the patients of this institute, including; the visually impaired, the deaf blind, the mentally challenged and the elderly. However, for the purpose of this dissertation the main focus will be on the visually impaired

patient. The centre on the site is made up of all the workshops and medical facilities. Between the spaces of some of these buildings serene and tranquil outdoor leisure areas are designed. The patients are encouraged to socialise within the facility and to partake in activities. An example of such a space is the chess board area. This area is marked with a large checkered square (Fig. 4.6). The squares resemble those of a chess board game. The blocks of different colours are slightly raised to better distinguish between the two sides. Sharp contrasting colours are also used to identify the



Fig. 4:5 The wool shop
(Source: van den Berg, 2014)

different blocks. The patients can now easily partake in this activity. This social interaction between patients calms each other. This activity is located between trees where the rustling sound of leaves and vegetation contribute to the ambiance of this outdoor space. Whether one is

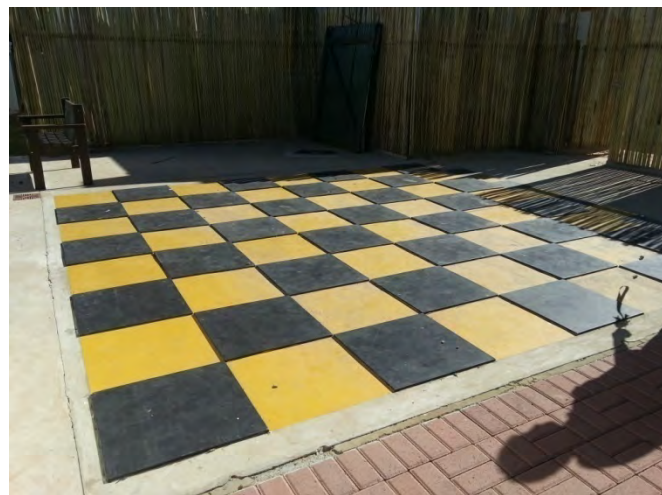


Fig. 4.6. Chess board (Source: van den Berg, 2014)

partaking in the activity or merely relaxing on the grass observing the activity; it is sure to be a stress-free space.

Many other recreational activities are provided for the patients. Activities such as; assisted bike riding, swimming, bowling, gymnasium, musical lessons and choirs. All of which has been designed for onsite.

In order to understand the appropriateness and effectiveness of this facility, one has to understand the rehabilitation approach of this institute. The rehabilitation approach have a direct influence on the architectural design, it is the foundation to every institute.

4.2.4.1 Rehabilitation approach

As per their vision “Together we create a future for the visually impaired” (Institute for the Blind, 2014), they aim to re-establish and re-introduce the visually impaired patients back into their communities in order to gain back as much as their normal life as they had before the impairment. The institute still remains realistic in understanding that many of these newly visually impaired persons may never be able to return to their careers as, in many cases, these rely on sight. In such cases, the institute will source other employment opportunities, either within or outside the institute to help the patients. Unfortunately, the institute can only accommodate 160 workers at a time. The independence of having their own job, gives the visually impaired patient meaning to life, which in turn aids the emotional healing process.

The institute teaches each newly visually impaired patient life skills in order to cope in society. In the institute the patients learn to both physically and emotionally adapt to their impairment. This process may take anywhere from three months to one year depending on the severity of the sight loss and the emotional state of the patient. The institute considers the environment in which the patient is accustomed to, and develop a rehabilitation process to best suit their individual needs. The institute forms a community-like environment which supplements the emotional support to the patient as they interact with people in similar situations. Within this community, the patient can establish close emotional bonds that simulate the support usually found at home amongst family.

As part of the rehabilitation process, the patients will be taught how to navigate the urban environment safely by relying on their remaining senses.

4.2.4.2 Urban Intervention

In co-operation with the local municipality, the direct urban environment around the facility has been modified to accommodate the visually impaired. This urban intervention is proving successful in the adaption process of way finding within the urban context. This intervention provides subtle yet noticeable clues about oncoming pedestrian crossings and when it is safe to cross the road, however, it does not interfere with any other urban systems.



Fig. 4.7: Pedestrian crossing.
(Source: van den Berg, 2014)

The visually impaired pedestrian is cautioned about an oncoming pedestrian crossing by means of change in pathway texture. Bright yellow painted rectangular paving blocks with moulded dome-like nodes can be easily identified by the means of a walking cane or easily seen by a low vision pedestrian (Fig. 4.7). The visually impaired pedestrian now knows that they need to stop until it is safe to cross. They are taught to either depend on their hearing sense to listen when vehicles perpendicular to their point of stance are still standing, or a guide dog will assist or by the assistance of a traffic light. Traffic lights are equipped with devices that sound and vibrate when the traffic light is signalling green (Fig. 4.8).



Fig. 4.8: Traffic light crossing device (Source: van den Berg, 2014)

These urban interventions are minor, yet extremely effective. These interventions are achieved by the innovative use of colour and texture. Rough texture can be used to indicate important walkways or crossings ahead and colour can be used to make something stand out. The materiality of the environments proves vital in how the adult can perceive space and architecture, and how architecture can aid the visually impaired. The visually impaired patient can now navigate themselves through the urban environment with minimal assistance. This notion re-establishes the sense of independence which aids the rehabilitation process.

4.2.4.3 Reintroducing Independence

One of the main focus points of this institute is to re-introduce independence to the patients as much as possible. According to Sharon Goosen, Rehabilitation manager of The Institute for the Blind in Worcester, this has been the main factor accounting for the high success rate of the institute. The notion of independence evokes a positive emotional reaction to the situation that a newly visually impaired patient is faced with. This positive emotional state aids the rehabilitation process. Independence is encouraged throughout the rehabilitation process. Patients are taught to navigate everyday obstacles in a secure and safe environment. Patients are taught how to use their remaining senses to perceive a space. This perception in turn creates an emotion, which in turn drives the rehabilitation process.

Patients are taught in various ways to depend on their remaining senses. New patients get familiarised with different types of textures in the exhibition hall as seen in Fig. 4.9. It is here where they can learn to understand that the sense of touch can be extremely informative of



Fig. 4.9: Exhibition centre
(Source: van den Berg, 2014)

what an object is. This exercise fine tunes the sense of touch so that the patient can link the information gathered by this touch to the visual memory gathered prior the visual impairment. This process reinforces the gestalt perception and the user learns how to perceive objects with the use of sense of touch.

Prior to the visual impairment, the mind subconsciously linked sound to sight in order to gain directional information. In this institute the patient is taught how to use the auditory senses to link sounds to direction. For instance, upon crossing a pedestrian crossing, the visually impaired pedestrian is informed when it is safe to cross the road by hearing cars moving parallel to them and cars idling perpendicular to them. Another example is that the user can use sound to identify the type of building they are approaching. For example, a user who needs to go to the wood working workshop will know in what general direction the workshop would be by paying attention to the typical sounds coming from such a workstation. The patients are also taught how to use their walking cane to gain information through sound. Different types of surfaces will make different sounds. This institute relies on different types of surfaces to identify a safe walkway for the user to use.

As mentioned before, this institute provides job opportunities to the patients. Various positions exist within the facility where patients fill a position according to their traits and capabilities. Patients with carpentry skills can be placed in numerous workshops onsite (Fig. 4.10).

The facility manufactures their own

mattresses, wooden bed frames, their own brand of odourless paint, woven products such as mats, all of which are sold on the premises in their own shop. All these facilities require labour, which are being filled by the patients of this institute.



Fig. 4.10: Typical workshop
(Source: van den Berg, 2014)

The variation in building typologies within this institute requires the visually impaired user to refine their wayfinding capabilities. This too prepares the patient to navigate the complex environment one would find in the urban context independently.

4.2.4.4 Wayfinding

The process of wayfinding within the facility is aided by the use of texture, sound and colour. The buildings itself are simplistic and reasonably easy to navigate once a person is familiar with the building. However, the building's interior does lack sharp contrasting colours which could further aid the process of wayfinding and familiarisation.

The way finding process between buildings is simplified by designated pathways which are surfaced with a different type of texture compared to the road surface. The pathways are also outlined in bright yellow to make it more noticeable for patients with low vision (Fig. 4.11).

The designated safe pathways will sound different to the none-walking areas with the tapping of the walking cane and the user's own footsteps to inform the user through the hearing sense.

Pathways between the industrial type buildings are more hard and concrete-like. However, the pathways between leisure spaces are much more soft and tranquil. The user is now informed of the type of area they are in or about to enter.



Fig. 4.11: Designated pathways of different texture and colour (Source: van den Berg, 2014)

4.2.5 Summary

This institute is large and accommodates all the necessary needs of the visually impaired user. Due to the lack of funding, the institute has to expand as time and finances allow them to. This notion does create a scattered and random formation of buildings, however, the institute has taken this 'weakness' and converted it into one of their strengths. New patients can now learn the basics of way finding within the facility first and once they have mastered this ability, they are able to learn about the direct urban environment that surrounds the facility. This environment also includes some urban intervention that aids the visually impaired so by the time they feel comfortable with this environment, they are ready to negotiate their way through the complexities of an un-intervened urban context. This reinforces the notion of independence which is ultimately the key to accepting and adapting to this new found lifestyle.

The commercial activities that are included in the design are appropriate and innovative. Not only do they generate revenue for the institute, they also create job opportunities for the patients/users of this facility. This in turn creates an awareness of the institute that could generate donations. Financial sustainability forms a substantial part of the institute. Sharon Goosen explained that if the institute had more funding, that the facility could be bigger and would be able to accommodate more patients.

Through the theory of phenomenology, the environment of this institute is rich with sensory stimulation that would aid the process of perception. The architecture of this facility encourages a sense of security and safety which ultimately aids the rehabilitation process.

The theory of gestalt is implemented by familiarising a person with textures of an object in the exhibition hall. This ultimately will utilise the visually impaired person's visual memory in order to re-establish the gestalt perspective.

The facility encourages a person to utilise their capable senses in totality, whether it may include the sense sight or not. The building does, however, lack the architectural identity and uniformity (experienced through the sense of sight) that one might expect from an institution. The theory of Ocularcentrism, in terms of this dissertation, suggests that no sense should be excluded in a multi-sensory design.

This facility is extremely successful as patients from all over South Africa contact this institute for help and support. The waiting list to be enrolled into this facility suggests that there is a great need for similar institutions in South Africa.

4.3 KZN SOCIETY FOR THE BLIND (UMBILO ROAD, DURBAN)

4.3.1 Background

In 1919, John Edward Palmer established the KwaZulu-Natal Society for the Blind. Between the time period of 1919 and 1994, various residences, workshops and centres have been opened by the KZN Society for the Blind with these facilities being spread all over KZN on the south coast, Pietermaritzburg, Sherwood and Durban. The headquarters for this Society, located in Umbilo road, Durban, accommodates the rehabilitation centre, life training skills centre and a workshop.

The facility accommodates 170 patients in KZN throughout their various branches across the province. It provides rehabilitative services for blind, partially sighted and deaf/blind patients.

4.3.2 Justification of Case Study

This case study is appropriate due to the fact that this facility has some contrasting elements opposed to the first case study. The contrasting elements are vital in gaining a better understanding of how a building typology such as this can and must perform better to ultimately enhance the quality of life for the patients that it is catering for. “The KwaZulu-Natal Society for the Blind seeks to enhance the quality of life of people who are blind or partially sighted; their families and where possible, people with other disabilities.”(KwaZulu-Natal Society for the Blind, 2014)

The location of this facility emphasises the importance of what effect the direct urban environment has on the rehabilitation process of a visually impaired person.

The theories and concepts outlined and discussed in this dissertation are dealt with in a more practical sense and translated architecturally. These are all factors which would influence and inform the findings and recommendations for the proposed typology of this dissertation.

4.3.3 Location

This Society is located within the major urban context of Durban (Fig. 4.12). The facility is located in the commercial / industrial area of the main road, Umbilo road (Fig. 4.13). The direct environment around the facility is busy and noisy. The centre is within walking distance from transport services and convenience stores.

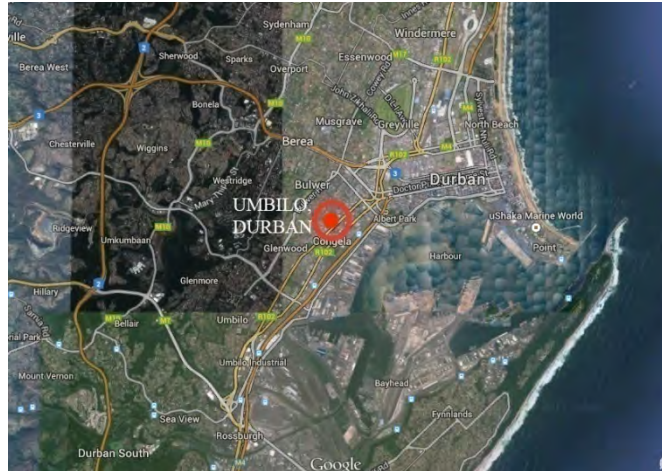


Fig. 4.12: Umbilo, Durban (Source: maps.google.com, 2014)

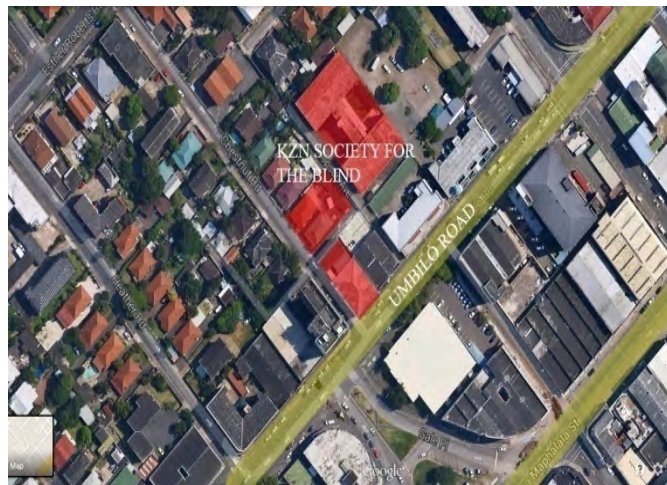


Fig. 4.13: KZN Society for the Blind (Source: maps.google.com, 2014)

4.3.4 Analysis of Design

Since the Society has been established in 1919, the facility has been decreasing in terms of property ownership. For unknown reasons, the residences close to the facility has been moved to the neighbouring area of Sherwood. Patients of this facility make use of public transport to arrive at the facility every day and then back to their various accommodation facilities in the afternoon.

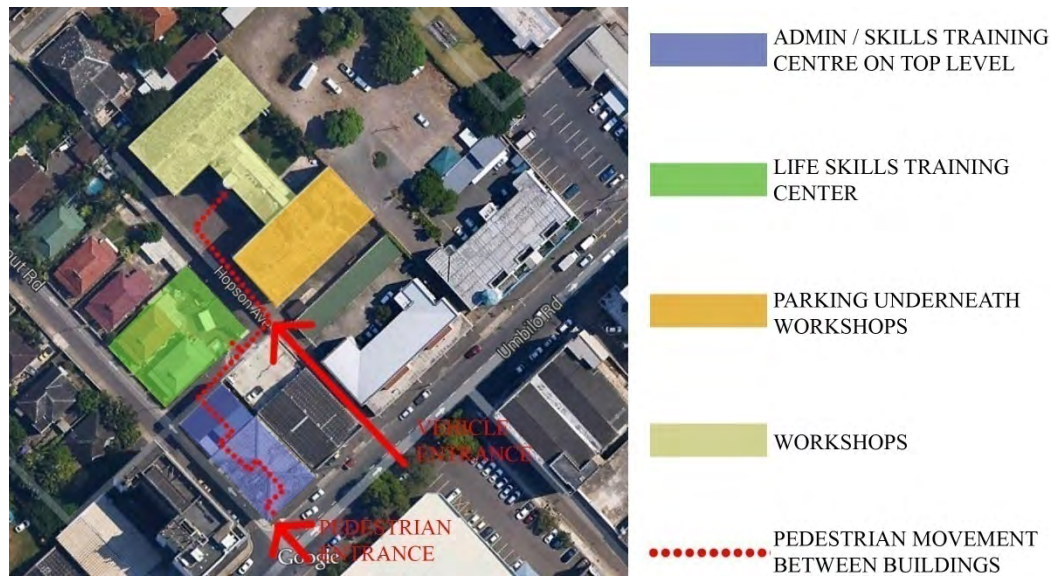


Fig. 4.14: KZN Society for the Blind (Source:maps.google.com, 2014)

The Society's headquarters comprises of three major buildings (Fig. 4.14). The first building is the administrative area, with a skills training centre and a commercial shop where the merchandise made in the workshops is sold (Fig. 4.15). The second building is a life skill training centre (Fig. 4.16) and the third building is the workshops (Fig. 4.17). These three buildings are fenced off individually with a service road providing access for both pedestrians and vehicles. (Fig. 4.18). Navigation in and between these buildings is difficult and confusing to a person without sight or limited sight as these pathways are unsafe and hazardous. As per the first case study, the buildings also lack uniformity and architectural identity.



Fig. 4.15: Admin building / Entrance (Source:van den Berg, 2014)



Fig. 4.16: Life skills training facility (Source: van den Berg, 2014)

The facility has a few options of entry. The first being from a pedestrian's point of view; a person would enter the facility straight from Umbilo road into the Society's merchandise store. From there, one can proceed to your desired destination. The second option is from a driver's point of view; a vehicle would enter via a drive way into a parking facility underneath the workshop building. It is important to clarify that both delivery vehicles and private vehicles share this driveway (Fig. 4.18).

Soft, green outdoor space is limited and appears neglected and uninspiring (Fig 4:19). The outdoor areas that are used, comprise of hard paved driveways (Fig 4:18) and roads with entry gates to every facility.

In order to understand the suitability and effectiveness of this facility, one has to understand the rehabilitation approach of this institute. This approach has a direct influence on the architectural design as it is the foundation to every institute.



Fig. 4.17: Workshops (Source: van den Berg, 2014)



Fig. 4.18: Vehicle entrance crossing the path of pedestrians on their way to the workshop (Source: Author, 2014)



Fig. 4.19: Neglected outdoor area with few seating options (Source: van den Berg, 2014)

4.3.4.1 Rehabilitation Approach

This Society's rehabilitation approach is based on community outreach. Community social workers work and scout within various rural and urban areas for persons with visual impairment. This is a great initiative due to the fact that poorer communities do not have access to information regarding their impairments. The Society empowers people who might have lost hope and slipped into despair. The visually impaired person is advised and supported by providing them with counselling, mobility training and life skills training. These persons can also be employed within the facility; either in the workshop or by forming part of the emotional support group that this facility has to offer. The Society is a firm believer that social interaction between patients is extremely important for the emotional healing process.

As part of the rehabilitation process, the patients are taught how to navigate through the urban environment safely by relying on their remaining senses.

4.3.4.2 Urban Intervention

Due to the lack of co-operation between the municipality and the Society, no specific urban interventions have been applied in order to aid the visually impaired. This is an area of which substantial improvement can be made

in order to provide the necessary support that is needed to aid the visually impaired to navigate their way through

the urban environment. However, specially designed traffic light indicators (such as those being implemented in Worcester) are in the process of being negotiated.



Fig. 4.20: Harsh street frontage onto Umbilo road. No urban interventions to aid the visually impaired. (Source: van den Berg, 2014)

The patients of this facility are being trained to adapt and navigate the urban context in a much harsher environment. This is due to the close proximity of the main road and the lack of urban interventions to aid the visually impaired (Fig. 4.20).

4.3.4.3 Reintroducing Independence

The main focus of this Society is to train people who have lost their sight on how to utilise their remaining senses in order gain a sense of independence back into their life. As mentioned before, independence is one of the most important factors that contribute to a positive emotional state. This positive emotional state will create a chain reaction that will aid the visually impaired person in their rehabilitation process.

Patients are taught to depend on their remaining senses to adapt to their new found life style. This is done in life training skills, where a home-like scenario has been designed in order to provide realistic situations that will benefit the patient. Patients are also taken on excursions to places that will stimulate all the senses. This process evokes the visual memory of a visually impaired person in order to teach the person to create the same visual perception via the remaining sensory systems. This process will reinforce the gestalt perception and the user now learns how to perceive objects with the use of the remaining senses in totality. The user now will learn how to perceive single elements in terms of gestalt perception. This, as mentioned before, is due to the latent visual memory that still exists within the newly visually impaired person.

The facility provides job opportunities for the patients of the facility (Fig. 4.21). This creates a sense of independence and gives new meaning to their life. These opportunities are created through the workshops and support groups within the society. The items made in the workshop are for sale in the society's merchandise shop (Fig. 4.22). Not only does this re-introduce independence but it also evokes a sense of pride and accomplishment. All these factors are necessary to re-create confidence within the newly visually impaired person.



Fig. 4.21: Basket weave workshop
(Source: kznblind.org.za, 2014)



Fig. 4.22: Merchandise store
(Source: Author, 2014)

The complexity of the design and placement of buildings requires the visually impaired user to refine their wayfinding capabilities. This too prepares the patient to navigate the complex environment one would find in the urban context independently.

4.3.4.4 Wayfinding



Fig. 4.23: Complicated and hazardous pathway from entry to workshop. Note the lack of caution signs, handrails and contrasting colours.(Source:van den Berg, 2014)

The process of wayfinding within this society is completely detached and unaided by the architecture. The normal path a person would have to walk from the main building entrance to the workshop entrance is complex and full of sharp bends; this is extremely complicated when one has to navigate this as a visually impaired person (Fig. 4.23). This process is achieved by familiarising the user with the surroundings in terms of counting their steps. Walking canes support the user by warning them of hazardous obstacles in their way, however, safe and secure pathways do not exist in this facility.

One of the main methods of aiding the process of wayfinding is through sharp contrasting colour and familiar or specific sounds. This facility does not introduce these sharp contrasting elements in the design which makes it extremely hard for a

partially sighted person to identify important entrances, pathways and changes in floor levels. Due to the busy location of the facility, the outdoor spaces have little difference in sound that would notify a visually impaired person of the area that they are about to enter. This can be confusing as the user can not solely depend on their sense of hearing in order to identify the space they are about to enter.

4.3.5 Summary

The KZN Society for the Blind in its totality is large and does fulfil a desperate need in support for the visually impaired in KZN. However, due to the separation of residences, workshops and the rehabilitation centre; the navigation and transportation between these facilities becomes hazardous and dangerous for a person with loss of sight. The location of the area is less than appropriate as it is situated alongside a busy main road. This road also contributes to unnecessary noise that may confuse the visually impaired user.

With reference to phenomenology, the building provides no clues for the visually impaired user's remaining senses. This makes the perception process more complex, which would evoke a negative emotional state. The patient can feel uninformed and confused as the architectural environment offers little support to the rehabilitation process.

The perception of gestalt is linked to the visually impaired person's latent visual memory. This memory has to be activated by introducing textures with previously known objects. This building provides little variation in texture and tactile clues. The monotony in the materiality of this building does not encourage the perception of gestalt. A user in this building may be left feeling insecure, unsafe and uncertain of their environment. This notion hinders the process of rehabilitation.

This is a prime example of architecture failing to stimulate the senses in totality. A multi-sensory design as suggested through the theory of Ocularcentrism is non-existent. The buildings provide no sensory stimulation. The rehabilitation process of the facility solely depends on the hardworking staff's assistance and counselling within this Society and is un-aided by the architecture. One has to understand that due to lack of funding, these facilities have to make do with minimal financial input, and therefore creating alternative financial input is of great importance.

4.4 CONCLUSION

This chapter of the dissertation was a comparative analysis of two similar building typologies. Through the critical analysis of these two facilities, one has a clear understanding of how these buildings function and how it can be improved in this dissertation's proposed building typology.

This chapter investigated how existing facilities do or do not utilise architectural elements in order to aid the visually impaired. It has become clear that architecture can play a much bigger role in the rehabilitation process of the visually impaired. This can be achieved by designing simplistic floor plans in order to make the process of wayfinding easier and also by the materiality of the space. Selecting the correct materials is vital in terms of how the remaining senses experience a space. The characteristics of a chosen material will inform the user about the scale, purpose, location and identity of that space. The visually impaired user can now depend on the architecture in conjunction with the emotional support of the staff members of such a facility.

Discussions and interviews with various staff members of these facilities have been conducted and will contribute to the understanding of how one perceive and experience these buildings.

Both the precedent studies and case studies will inform and generate the brief for the design of a rehabilitation centre for the visually impaired. These studies have exposed crucial and vital information into the practical and functional requirements of the proposed building typology.

CHAPTER 5 : ANALYSIS AND DISCUSSION

5.1 INTRODUCTION

This chapter will analyse the theories of this dissertation together with the interviews conducted with persons at the selected case studies. This analysis will highlight the fundamental issues that need to be addressed within the proposed building typology of this dissertation. The data collected was to gain a greater understanding of how architecture can ultimately aid the rehabilitation process for visually impaired adults. The outcome of this exercise was to establish how architecture and human psychology is connected, and in what ways architecture can be improved in order for people with disabilities to experience the built-environment.

5.2 ANALYSIS OF THEORIES

5.2.1 Phenomenology

The theory of Phenomenology relates human emotions to an observation; this combination of emotion and observation results in a perception. Due to the element of human emotion a perception is unique to each observer as this is connected to past memories and experiences of the observed object or space. Therefore, a person who has become blind in their adulthood still has a latent visual memory and it is of great importance that one should note that their whole perception process will be linked to these memories.

The uncertainties that come together with the traumatic event during loss of sight, such as identifying one's physical surroundings, learning to navigate through space and to perceive possible dangers does have a negative effect on the human psyche. The built environment can be designed in such a manner that the surroundings can be easily identified, navigated and perceived by means of all the remaining human senses. The initial emotions after being diagnosed with a visual impairment such as shock, fear and hopelessness can be eased if these

uncertainties are eliminated through architecture. This ultimately will aid the healing process of the newly visually impaired adult.

As mentioned, a newly visually impaired adult will subconsciously link their perception to their latent visual memory. This reinforces the theory of gestalt; the whole is greater than the sum of its parts.

5.2.2 Theory of Gestalt

The theory of gestalt expresses a perception of an object or space as a whole instead of its singular parts. Together with a newly visually impaired person's latent memory and familiarisation of a space, the person would be able to identify various elements of their surrounding and translate it into a single meaning.

This process of perception is supported by the measure of human. One can achieve a greater understanding of the object in terms of its scale compared to the human body. This analysis of human scale reveals privacy, identity and the use of a space. This will inform the visually impaired user of their surroundings, which in turn will re-instate a sense of control to the user. This sense of control will encourage confidence, which is crucial in the rehabilitation process.

The gestalt perception would be perceived through the remaining sense modalities as the sense of sight is lost or impaired, thus, a multi-sensory design is of great importance. In a design for the visually impaired, the stimulation of the remaining senses cannot be neglected as this will hinder the rehabilitation process due to the fact that their surroundings cannot be perceived and experienced by means of their capabilities.

5.2.3 Ocularcentrism Theory

Modern minimalist architecture has developed and evolved to be an experience for the sense of sight first and foremost. This is due to the rapid development in visual technology and mass media. One can observe spaces and objects from across the other side of the planet from the comfort of your seat at home. This observation would be completely detached from the other senses, and an observation would purely be one of visual stimulation. During this rapid development in visual technology, modern architecture has been focused to be a statement of iconism and economic status, therefore, the experience of such architecture is through the sense of sight only and the remaining senses are neglected. This neglect disables a person without the sense sight from experiencing the same space or object. The glorification of the sense of sight (Ocularcentrism theory) is extremely discriminatory towards persons without the sense of sight.

The built-environment should allow everyone, regardless of their capabilities, to experience their surroundings. A multi-sensory design that stimulates all the human senses will enable anyone to perceive that space.

5.3 ANALYSIS OF INTERVIEWS

The interviews that were conducted with staff members of the selected case studies, The Worcester institute for the Blind (WIB) and the KZN Society for the Blind (KZNSB), were extremely valuable and revealing (see Appendix A). One can gain a greater understanding and possible solutions for the key questions proposed within this dissertation after analysing the interviews that have been conducted. The outcome of the interviews will be explored in terms of the three theories; phenomenology, theory of gestalt and ocularcentrism theory.

5.3.1 Phenomenology

Phenomenology of perception is the process of which the human brain connects an observation with emotion. Therefore, how an adult perceive an architectural space would be directly related to their emotional state. From this notion one can understand the importance that the relationship between architecture, perception and emotion has to play in designing a safe and secure rehabilitative environment for the newly visually impaired.

The response to Question 3(*In your opinion, what is the first issue a newly blind person needs to confront?*) explained that a newly blind person will need to confront the notion of acceptance. The majority of the interview participants mentioned that acceptance is the hardest obstacle to overcome. It is once the patient has overcome this hurdle that the rehabilitative process becomes less difficult. This negative emotional state will influence the way patients perceive space, which in turn will create a sense of insecurity and vulnerability within the patient. It then becomes crucial for the built environment not to add any more uncertainty to this process. The built environment needs to be designed in such a manner that the patient will be informed about their surroundings in order to be able to navigate themselves through space and time. This will enforce a greater sense of control and independence that has been lost through the traumatic event of sight loss. This positive shift in the emotional state will aid the patient to overcome the issue of acceptance and ultimately aid their rehabilitation process.

Question 6(*What methods does the facility employ to ease and treat the emotional stress of a patient with a new found loss of sight?*) revealed that The WIB provides both individual and group counselling. The facility also provides numerous leisure activities that are both enjoyable and therapeutic. These activities relieve stress and encourage a positive emotional state. The institute is designed in such a manner that the patients can partake in activities within secure multi-sensory stimulated outdoor and indoor areas. The combination of the institute's

rehabilitation process and the architectural interventions does make this facility extremely successful in the aim to re-introduce independence with the newly blind.

The KZNSB, as indicated in the case studies, does lack architectural interventions. This Society's method to ease the emotional stress of a patient is purely from an emotional support point of view. The break in connection between architecture and the rehabilitation process will have a negative emotional influence on the psychology of the newly blind person. The environment is filled with many uncertainties that will evoke emotions of vulnerability and insecurity. This argument is supported by the outcome of Question 8 (*In your own capacity, do you think that the patients of his facility feel comfortable and secure in this environment?*) The majority of the participants from the KZNSB mentioned that patients feel unsafe and vulnerable when navigating their way through the facility. This is due to the lack of architectural guidance (lack of handrails, no designated pathways and un-secured pathways) so that the patients do not feel comfortable navigating themselves independently through the facility.

This insight reinforces the crucial relationship between perception, architecture and emotion.

5.3.2 Theory of Gestalt

The theory of gestalt describes the manner in which a person perceives an object or space. The human brain combines the various individual elements to create a holistic perception, which in turn leads to an assumption. It is this assumption that informs the user about the object or space that they are perceiving.

It has already been established that in the case of the WIB that architecture does play a crucial part in their facility. The built-environment is designed in such a manner that it guides and informs the patient about the location they are currently

in. The designated pathways is a prime example of this fact. The pathways are so designed that the foot surface is a different material or texture. This difference creates a different sound and creates a different tactile sensation. This difference is not only bound to the physical properties of the materiality but it encompasses many different assumptions. The patient will assume that the difference in floor finish means that they are either going on the designated pathway or an important crossing lies ahead. This minor change in floor finish together with the surroundings creates an holistic perception that is informative to the visually impaired user.

Question 17(*If you could, what changes would you make to this facility to make it more suitable for the newly blind patient?*) reveals the architectural shortcomings of the KZNSB. The majority of the participants mentions that they would like see more architectural interventions such as colour contrast to emphasise doorways and pathways, guidance rails and urban interventions. These would help better empower the patient to make an informed assumption and ultimately guide themselves safely and securely through the facility. As mentioned before, this notion will encourage independence and confidences which ultimately leads to a successful rehabilitation process.

5.3.3 Ocularcentrism

Ocularcentrism describes the notion that sight has been glorified and the remaining senses have been neglected in modern architectural designs. For this reason, persons with out or low sight find it extremely difficult to perceive and experience architecture. In such a space, a visually impaired person would not feel safe and secure as the person won't be informed by their surroundings.

This notion has been avoided in the case of the WIB. The architecture is so designed that it does stimulate all the senses. This becomes evident in Question 8(*In your own capacity, do you think that the patients of his facility feel*

comfortable and secure in this environment?). Patients are happy, this indicates that the patients feel secure and safe in their environment. This emotion is evoked by independence and a sense of control. A patient will feel independent and in control only if they are informed by their surroundings. The surrounding can only be informative if it provides a multi-sensory stimulation. Thus the positive emotional state of the patient is indirectly related to the architectural interventions of this facility.

However, in the case of the KZNSB, it becomes evident that if a person is without sight, it is extremely difficult to navigate one's way through the facility. This becomes clear in the response of Question 17(*If you could, what changes would you make to this facility to make it more suitable for the newly blind patient?*). The participants indicated that they would like to employ more architectural interventions in order to help guide the patients through the facility. This lack of multi-sensory stimulation causes a person to be confused and uninformed about their surroundings. This will prevent them from navigating their way through this facility confidently and securely, ultimately affecting the rehabilitation process of the newly visually impaired.

5.4 CONCLUSION

The primary data collected through the case studies and interviews is of great importance as it will inform the design of the proposed building typology. This study highlights the issues that do exist in this field of study and how architecture has been both successful and unsuccessful in confronting these concerns. The following chapter will conclude Part One of this dissertation with recommendations that will ultimately inform the design process of the proposed building typology of this dissertation.

CHAPTER 6 : CONCLUSIONS AND RECOMMENDATIONS

6.1 INTRODUCTION

This dissertation set out to explore the understanding of the human senses and what impact it has on the built environment to ultimately propose a rehabilitation centre for visually impaired adults. The focus of this study was to discover how architecture can relay information about the direct environment through the remaining senses when one is destitute without the sense of sight. For final conclusions and recommendations to be made, one has to be reminded of the hypothesis stated in chapter 1 (section 1.3.5): When one is faced with the disadvantages of newly visual impairment, one relies on the remaining senses to re-establish and reinterpret one's surroundings. This is a vital step in adjusting to the reality of this new life. The built environment can help to restore confidence and security after such a traumatic experience.

A variety of research methods have been used in order to gain a greater understanding of how architecture, perception and human emotion are related. The research and information throughout this dissertation has been linked to the research topic, key questions, theories and concepts. This ensured that the information and findings are relevant to the research topic at hand. The critical analysis of the literature review, precedent, case studies and interviews have been extremely informative in revealing the issues that this dissertation aimed to address.

The conclusion of this chapter will summarise the relevance of the three theories throughout the dissertation in conjunction with the hypothesis and key questions. The three theories being: Phenomenology, Theory of Gestalt and the Ocularcentrism theory.

6.2 CONCLUSIONS

It is important to note that the structure of the theoretical framework is of great importance to clarify and understand the position of this dissertation in terms of

perception. The first theory, phenomenology, describes and establish what perception is and how the perception process works in relation to human emotion. The second theory, theory of Gestalt, establishes the point of view of this dissertation on how humans perceive objects. The third theory, Ocularcentrism theory, connects the human senses to perception. The theory describes how the sense of sight has been glorified and that architecture should revert back to the notion of a multi-sensory design.

Phenomenology is an extremely vast field of study, however, for the purpose of this dissertation the focus was on the phenomenology of perception. Phenomenology describes the process of perception which relates an observation to human emotion. It is through perception that humans experience space and architecture, thus architecture can influence how humans perceive objects or space. A perception can either lead to a negative or a positive emotion. When a person is destitute without the sense of sight, their emotional state is extremely vulnerable and therefore perception plays a vital role aiding the visually impaired. If a building is designed in such a manner that it encourages a positive perception, then it can support and have a fundamental impact on the rehabilitation of the newly visually impaired person.

The theory of gestalt describes the notion of a holistic perception. The theory argues that human beings perceive space and objects as a whole instead of their separate parts. This is crucial to a person who has lost their sense of sight in their adulthood. Such persons have established and created memories throughout experiences, observations and visual perceptions. These memories also manifest themselves in a form of a latent visual memory of the visually impaired. This latent visual memory will be a constant field of reference for a person who had lost their sight. Therefore when a person utilises their remaining senses to perceive an object or space it will be referred back to the latent visual memory in order to create a holistic perception. For this reason it is crucial for a rehabilitation

centre to be designed from a multi-sensory approach so that the remaining senses are stimulated and able to perceive a space or object without the sense of sight.

The Ocularcentrism theory suggests that the sense of sight is being glorified and that modern architecture prioritises design to please and stimulate the sense of sight in isolation from the remaining senses. This becomes problematic when a person does not have the sense of sight. They are unable to perceive the space which will evoke a negative emotion. This negative emotion can cause uncertainty and leave the visually impaired user feeling even more vulnerable and insecure, adding to their already negative emotional state. This will not aid the process of rehabilitation. However, if architecture accommodates for all the senses, the experience will encourage a positive emotion as the visually impaired user can now perceive the surroundings and be informed of crucial elements of their environment. The visually impaired user is informed and this eliminates the sense of uncertainty and independence. This ultimately does aid both the emotional and physical rehabilitation process of the visually impaired.

6.3 RECOMENDATIONS

The objective of this dissertation is to understand the connection between the human senses and architecture which will ultimately lead to a design resolution of the proposed building typology. The proposed building typology will be a prime example of how architecture can aid the visually impaired by stimulating all the human senses in a multi-sensory design.

The design resolution should be driven by a multi-sensory approach in order to create architecture for the senses. The building should stand for and represent the rehabilitation approach of the proposed building typology. The approach is based on re-introducing independence within a safe and secure environment.

The building should be texturally diverse in order for a visually impaired person to differentiate between spaces, uses, scale and privacy. The planning of the building should, however, also be simplistic enough to avoid the visually impaired user becoming disorientated in their process of navigation and wayfinding. The building should be a place of sanctuary and tranquillity where a visually impaired person can come to terms with their new found lifestyle within a safe and secure environment.

This proposed building typology should be a place that is accessible to all people regardless of their capabilities. The direct urban context can be intervened in to accommodate persons with disabilities as in the case of the Worcester Institute for the Blind.

Each stage of the formation of the accommodation schedule and design brief was informed and driven by the findings of this research in order to maintain a clear connection between the research and the proposed built environment product.

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APPENDIX A

FOCUSED INTERVIEWS

INTERVIEW TO BE CARRIED OUT BY ERICA VAN DEN BERG
MASTERS OF ARCHITECTURE STUDENT AT THE UNIVERSITY OF
KWAZULU-NATAL
STUDENT NUMBER – 207 501 642

PART A

Name:.....

Age:.....

Date:.....

(the above are optional)

Name of facility:.....

PART B

1. What are your job/role/duties at this facility?

.....

2. How many patients are currently accommodated for within this facility?

.....

3. In your opinion, what is the first issue a newly visually impaired person need to
confront?

.....

4. Would you agree that this facility accommodates for all the needs of a blind person?

.....

.....

5. What is this facility's approach to the rehabilitation process of a newly blind person?

.....

.....

6. What methods does this facility employ to ease and treat the emotional stress of a patient with a new found loss of sight?

.....

.....

.....

7. How would you rate the design of this facility?

.....

.....

8. In your own capacity, do you think that the patients of this facility feel comfortable and secure in this environment?

.....

.....

9. Would you agree that the direct environment of the patient influence their healing and the rehabilitation process?

.....

.....

10. In your opinion, what is the hardest obstacle to overcome by a newly blind patient?

.....

.....

11. How many patients share a room?

.....

.....

12. In your opinion, does social interaction between patients aid the healing process?

.....

.....

13. Does this facility provide secure outdoor spaces for the patient?

14. In your opinion, does outdoor environment have a positive impact on the psychology of the patient?

.....

.....

15. What is the average time period of a patient's stay at this facility?

.....

.....

16. What aspects of this facility do you think benefits the patient the most?

.....

.....

17. If you could, what changes would you make to this facility to make it more suitable for the newly blind patient and why?

.....

.....

.....

.....

.....

18. In your own capacity, do you think there exist a need for a rehabilitation centre exclusively dedicated to rehabilitating the newly blind?

.....

.....

.....

THE END