



RESEARCH REPORT

Architectural wholeness and its place in psychiatric healthcare

Student name

David Nyoka 18086358

Supervisor

Dr J.N Prinsloo

Department of Architecture

Faculty of Engineering, the Built Environment and Information Technology

University of Pretoria

South Africa

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DECLARATION OF ORIGINALITY

I declare that the mini-dissertation, Architectural wholeness and its place in psychiatric healthcare, which has been submitted in fulfilment of part of the requirements for the module of DIT 801, at the University of Pretoria, is my own work and has not previously been submitted by me for any degree at the University of Pretoria or any other tertiary institution.

I declare that I obtained the applicable research ethics approval in order to conduct the research that has been described in this dissertation.

I declare that I have observed the ethical standards required in terms of the University of Pretoria's ethic code for researchers and have followed the policy guidelines for responsible research.

A handwritten signature in black ink, consisting of stylized, overlapping letters and a long horizontal stroke at the end.

Signature:

Date:2024/06/28.....

Preface

"Where is God in all of this?" This question, posed during an intriguing interview between Robin Williams and Philip Seymour Hoffman on *The Talk* (2022), revealed a sense of desire to see the supernatural as the individuals exchanged questions and theories about the existential questions of our time. As Robin Williams delved into his life journey searching for God—the ultimate possessor of all things good in a world rife with the opposite—this question resonated with me. It guided my reflections on my future and the decisions I make regarding the use of my time. Indeed, where is God in all of it? The pursuit of meaning in our existence is not a novel pursuit. Humans are consumed with the repetitive and often unrewarding task of seeking true meaning in our existence. Architecture pursues the same sometimes successfully and other times not. I find myself drawn to pursue a greater understanding of the universal purpose and in so doing guide my own efforts for more.

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Abstract

In *The Nature of Order* mathematician turned architect Christopher Alexander presents a comprehensive theory of architecture that intertwines science, philosophy, and art to articulate a vision of design grounded in the timeless and universal principles of life and beauty. He argues that the quality of the built environment profoundly impacts human well-being and proposes a new way of creating spaces that foster harmony and vitality through patterns, wholeness, and the pursuit of 'living structure'. This study aims to explore that theory and put into practice the design principles developed by Christopher Alexander and investigate its usefulness in dealing with the design of psychiatric health care centres. The study makes use of the 'research by design' methodology created by Rob Roggema to ultimately present a set of informed design principles that give agency to the building to become more than a shell for psychiatric practice but an active participant in the rehabilitation efforts laid out by the psychiatric healthcare fields. The research revealed a strong link between the physical environment and the quality of rehabilitation.

Chapter 1: Introduction

1.1 The architect's pen

“The inhumanity of contemporary architecture and urbanism stems from the way in which the art of architecture has become a vehicle of individual and corporate power rather than a means of human accommodation.”

-Juhani Pallasmaa

The current state of architecture displays a worrying trend of buildings that attract superficial attention but do little to foster conversation with the intangible aspects of life in our time. Globalisation has led to a homogenization of architectural styles, where local cultural identities are often sacrificed for a more 'universal' look and in so doing drains them of their connection to the people to whom these spatial manifestations belong. The buildings of our time are focused on facile motives that are geared to nurture upward financial trends as opposed to encouraging user intimacy. This trend is not new. English philosopher Roger Scruton shared similar sentiments towards the prevalence of modernism in the late twentieth century. He argues that the modernist dismissal of traditional forms and values has led to a fragmentation of culture, where the pursuit of originality overrides the quest for truth and beauty (Scruton 1979:18).

The architect is charged with the task of 'building' by making manifest the abstract ideas of the mind in built form. However, this task often takes on particular adverbs for different architects—some given and others chosen—at times it would be to build cheap, to build fast, to build flashy or for the sake of it, to abandon all tradition and build differently.

As seminal reading in the tuition of the architect, the Roman architect and engineer Vitruvius presents three core principles that ought to be presented in architecture to protect the purity of the interaction it has with its users. In his treatise *De Architectura* (On Architecture) published in 1436 Vitruvius claims there are three essential qualities that any structure must possess: *firmitas* (durability), *utilitas* (utility), and *venustas* (beauty) (Vitruvius 1914:15). It is fairly easy to understand the first two principles as they are fairly easy to quantify with a set of yes or no questions. However the last quality of beauty is one that provides the architect with a rich challenge and a noble adverb to the task of building and that is to build 'beautiful'.

This research paper aims to give agency to the architect to build a building that is capable of communicating 'beauty' to its inhabitants. The research will make its way past the superficial differences in taste that humans have in their understanding of beauty and search

into the fundamental modes of perception that are shared amongst humans. The ultimate goal is to develop an architecture that is beautiful, nurturing to the soul, rich in character and human connection. Philosopher Michael W. Mehaffy in (Zeki 2019) argues that the general experience of architectural beauty likely stems from its ability to satisfy inherent cognitive concepts related to proportion, harmony, and geometric relationships, which are often articulated in mathematical terms. Mehaffy goes on to expand on this argument mentioning that in essence, there are identifiable geometric features in our surroundings that people generally find appealing, and these features also enhance physical well-being and improve quality of life (Zeki 2019). This research will find its expression of these concepts in the relationship between architecture and healthcare, specifically psychiatric health care and look into the ways in which beautiful buildings can compliment the work done by the mental healthcare professionals within its walls.

1.2 Grey matter: The brain and its role in the understanding of beauty

In his book *The Master and His Emissary*, neuroscientist Ian McGilchrist (2010:9) delves into the complex ways our brains process information and the profound impact this has on our society. McGilchrist posits that the two hemispheres of the brain—the right and the left—have fundamentally different modes of perceiving and interacting with the world. The right hemisphere is characterised by its holistic, integrative, and context-aware approach, while the left hemisphere is more analytical, focused, and detail-oriented. McGilchrist uses this duality to explain the evolution of Western culture and the consequences of an imbalance between these two modes of thinking.

This research paper will explore in more detail the manifestations of this imbalance in architecture and the consequences it has on the human body.

Understanding how our brains function is crucial for defining and manifesting beautiful architecture. A novice level comprehension of this reality aids in nurturing a sense of agency in the architectural practice to engage with the tangible and intangible aspects of people. As McGilchrist (2010:9) suggests, an overemphasis on the analytical left hemisphere can lead to a fragmented and mechanistic view of the world, whereas a balanced engagement with both hemispheres allows for a richer, more connected experience of reality.

The Hebrew word *tov*, often translated as ‘good’ in the English translation of the Bible, offers a profound insight into this idea. It is commonly used in celebratory contexts, such as *mazel-tov*, and its expanded definition in the Bible points toward a concept of harmony within the natural world and with God. This definition lends itself well to understand the nuances in the terminology pertaining to beautiful things. In the biblical creation account, the term ‘good’ is

used at the end of each day to convey a sense of divine completeness and harmony within the natural world. The interactions between humans and nature, as well as nature's interactions with humans, were deemed 'good' (Genesis 1:31).

This notion of 'good' reflects a holistic perception that engages both hemispheres of the brain. When humans observe nature and the landscape, there is a measurable observed behaviour in the brain as it responds to the natural stimulus (Noordzij et al 2009:1). Our brains simultaneously process the technical aspects of the natural world (engaging the left hemisphere) and the intangible feelings of goodness and harmony that these experiences produce (engaging the right hemisphere). This dual engagement fosters a deeper connection to the world around us.

1.3 The prevalence of mental illness in our time

In a basic discovery on what could influence our perception of the 'beautiful' things in our world in a negative way, mental health is a prevalent theme and warrants deeper investigation. In 2020, Marissa Walsh recorded statistics highlighting the global prevalence of various mental health issues. According to her findings, 284 million people worldwide are affected by anxiety, 264 million by depression, 107 million by alcohol use disorder, 71 million by drug use disorder, 46 million by bipolar disorder, 20 million by schizophrenia, and 16 million by eating disorders (Walsh 2020). This study is also supported by data gathered by Deb Trishita (2024) who presents a number of alarming statistics regarding mental illness in America notably how suicide driven by depression is the fourth leading cause of death amongst people aged 15-29 years old.

There is an unsettling reality in which an imbalance of brain functions influences the human body's perceptions of the world. Medical practitioner Ihuoma Njoku (2022) says that mental illness can be defined as a health condition that alters an individual's thinking, emotions, or behaviours—sometimes affecting all three—and leads to significant distress and challenges in daily functioning. This study will look to find agency through which architecture can positively influence the physical environment and in so doing aid in the treatment of mentally ill patients. This research paper will not look to replace the current practices within the field. Njoku continues to mention that not all mental illness can be treated through a change in the physical environment, treatment has to be done under the medically tried and tested methods. Njoku warns against a dismissal of a holistic approach to mental rehabilitation mentioning that some mental illnesses can be associated with or resemble medical conditions. For instance, symptoms of depression may be linked to a thyroid disorder. As a result, obtaining a mental illness diagnosis typically requires a comprehensive health evaluation, including a physical

examination. This process may involve blood tests and/or neurological assessments. This study does not aim to replace the current state of how psychiatric healthcare is practised. The aim is to focus on the building in which this profession takes place. Ultimately a sense of responsibility for care should be undertaken in the design process and in finality design buildings that aid in the work being done by the programme of mental rehabilitation.

1.4 The disenchantment of modernism

The current landscape of the built environment often finds within itself cancerous manifestations of buildings that have an impersonal nature, buildings that resemble little to nothing of what life looks like. These buildings are a built representation of the imbalance in perception previously discussed. Modernist buildings exemplify this kind of architecture. Although modernism will always have its place in the built environment, the sterile nature of the movement drains the colour and character of our cities, reducing them to a series of blank canvases that offer little engagement with the detailed and nuanced experiences of human life (Reghukumar and Kishore 2019:34). Proponents of modernism argue that it represented a necessary evolution in art and literature, reflecting the complexities of the modern world. As Professor Michael Levenson (2011:3) points out, modernism's embrace of new techniques and forms was a response to the unprecedented changes and uncertainties of the time, from technological advancements to social upheavals. This break from tradition allowed artists and writers to explore new perspectives and push the boundaries of creativity (Levenson 2011:108). However, critics contend that modernism's emphasis on abstraction and experimentalism often resulted in works that were inaccessible to the average person. Bradbury and McFarlane (1976:27) argue that the movement's focus on innovation sometimes led to a disconnect between the artist and the audience, making it difficult for the public to relate to or understand the new art forms. They suggest that this detachment can be seen as elitist, prioritising artistic novelty over emotional and social relevance.

The modern movement is important for understanding the shifts in our perception of the world; it serves as a look into the architectural manifestations of an imbalance in how a society thinks collectively. Le Corbusier, a leading figure in the modern architectural movement, envisioned a future city where everything would be designed logically and efficiently along straight lines. Le Corbusier (1929:11-12) expanded on this vision by stating that such a city would be built for humans, not for what he referred to as the 'pack-donkey,' a metaphor for those who lack a clear purpose. The 'pack-donkey' stood in contrast to Le Corbusier's concept of the 'ideal man', a person characterised by intelligence, rationality, and a disciplined way of thinking,

guided by reason rather than emotion. However, this focus on an idealised and logical person ultimately contributed to the decline in appeal of modernist architecture. Architectural historian Zebun Nasreen Ahmed (1995:19-44) provides illuminating commentary on the way the modern movement thinking machine operated and what flaws it housed. The people for whom this style was designed eventually grew weary of conforming to this vision of perfection and began to stray from its rigid norms (Ahmed 1995:19-44). This idealisation of seeing man as a machine that ought to operate at optimum efficiency is not true of all modernist architecture with architects such as Frank Lloyd Wright holding closer to values of the natural aesthetic that are simplified in a way that holds truer to the reality of who 'man' is. In a 2017 article for *Archdaily*, Megan Schires (2017) notes that Wright critiques Le Corbusier's housing towers, claiming, "there is no life in them. There is only rent."

The issue with seeing man as a machine ultimately resulted in man being replaced by a better machine: the car. The focus on the car is exemplified in its truest form in the design of our cities and the way in which heavy accommodation is made for the vehicles on the road and not the inhabitants of them, propelling a move further away from an architecture that resonates with the human.

This commentary on the Modern Movement is to show how patterns of lifelessness made their way into the urban planning strategies of the late twentieth century, the consequences of which we are still exposed to in the current day. The disconnection between humans and the buildings they inhabit is exemplified commonly but not exhaustively in modernist buildings. This research paper aims to ultimately present 'the pattern language' as a graphic guide into well-informed space-making with a defined series of spatial suggestions that aim to combat the generation of lifeless buildings.

1.5 Mental illness and architecture in South africa

The state of the relationship between the human body and architecture is widely studied. Design elements such as natural light, open spaces, and ergonomic layouts have been shown to enhance mood, productivity, and overall mental health (Ulrich 1984:420-421).

A third of South Africans suffer from some sort of mental illness on a scale from the more cosmetic struggles (infrequent bouts of depression, unhappiness and stress) to the medically diagnosed illnesses (schizophrenia, bipolar disorder and other psychotic disorders). Unfortunately about 75% of these individuals are unable to access the necessary treatment (Sasop 2022). The rate of people suffering through emotional distress or mental health increased to 36% in 2021, which is an 8% rise from 2020 (Sasop, 2022). These statistics are

evidence of a growing problem in South Africa. These statistics are however impacted by the Covid-19 pandemic of 2020. Research has shown that the lockdowns during the Covid-19 pandemic heightened distress, reduced psychological well-being, and worsened social determinants of mental illness, such as poverty (Davies et al. 2023). As the national health budget decreases even further the reality faced by many individuals struggling with mental illness is that even if they do manage to gain access, some of these facilities are not well-managed and impede the work ought to be done by professionals employed to work in these places.

Psychiatric healthcare environments provide an ideal context for this study because of their direct influence on mental health and rehabilitation. They are designed to support therapeutic goals, mirroring architecture's role in shaping environments that facilitate human flourishing. By focusing on these settings, this research seeks to uncover how architectural design can improve therapeutic outcomes and contribute to the recovery of mental health.

The link between therapeutic spaces and architectural design underscores the potential for built environments to actively enhance human welfare. This study aims to offer valuable insights into how spatial considerations can positively impact mental well-being, emphasising the importance of designing spaces that support both functionality and emotional health.

1.6 Research lens: The pursuit of aliveness

This research is born out of a simple question: “what makes you feel more alive?” (Alexander 2002:127). This question was posed by mathematician-turned-architect Christopher Alexander during a conversation with a friend while they were examining a series of different objects. The goal of Alexander’s question was to discover how the physical environment engages with the part of the human form that perceives things as ‘life-giving’. This question is reflective of Alexander's approach to architecture and design, which centres on the concept of ‘life’ in buildings and spaces. He believed that certain patterns, structures, and designs have the power to evoke feelings of ‘aliveness’ and ‘wholeness’. His work, particularly in *The Nature of Order* (1977) and *A Pattern Language* (2002), emphasises creating environments that resonate with human emotions and experiences.

The concept of ‘aliveness’ is essentially a synthesis of the ideas of balance, symmetry and harmony that were presented in the introduction of this paper. Alexander uses this term ‘aliveness’ frequently to redirect the reader to the primary element of his book. Alexander’s work

has significantly influenced the field of architecture, emphasising the importance of human-centred design. His concept of 'wholeness' suggests that spaces and structures should not only serve functional purposes but also contribute to the psychological and emotional well-being of their occupants. In *The Nature of Order*, Alexander introduces the principle of 'centres' and 'living structure', arguing that certain configurations of space naturally draw people in and create a sense of harmony and connectedness (Alexander 2002:18). This is echoed by mathematicians and urban theorists like Nikos A. Salingaros, who in his work *Principles of Urban Structure* (2005), explores how Alexander's theories can be applied to urban planning to create more humane and liveable cities.

Furthermore, Alexander's emphasis on patterns in architecture has parallels in the work of Bill Hillier and Julienne Hanson, who developed 'Space Syntax theory'. In their book *The Social Logic of Space* (1984), they explore how spatial configurations influence social interactions and human behaviour, reinforcing the idea that the design of spaces profoundly impacts the quality of human life. This contributes to expanding the understanding of how our brains work to perceive the world around us. The manifestation of built forms speaks to a certain part of our brains and for us to relate to those forms they have to be balanced in how they entertain the needs of the left and right hemisphere of the brain. A dedicated effort to seek this balance will result in an architecture that deeply resonates with our brain and ultimately makes the people who occupy space in and around it feel more 'alive'.

1.7 Problem statement

Architects can enhance psychiatric rehabilitation by designing buildings that address both tangible and intangible spatial needs. Thoughtful consideration of factors like light, space, and materials can create environments conducive to healing. These design choices can support the therapeutic process by promoting comfort, safety, and a sense of calm.

How can architectural properties be aligned with the specific needs of psychiatric patients to foster a more effective rehabilitation experience?

Thesis statement: The development and presentation of a pattern language that is based on Christopher Alexander's theory of wholeness and embodies sensitivity to both the tangible and intangible needs of users, will positively aid in the rehabilitation process of psychiatric patients.

1.8 Research questions

The research questions are as follows:

- Where does Christopher Alexander's theory of wholeness fit into the broader discourse of life and lifelessness?
 - How does this theory address the short-comings of contemporary architecture?
 - How can the Alexandrian conceptual framework be adapted for effective use in psychiatric rehabilitation?
- What is the current state of buildings relevant to the field of study?
 - How can a series of explorations be used to generate a pattern language that will equip the designer to build a psychiatric healthcare centre?
- What ideal graphic representation of space can provide the designer with the needed tools to develop an architecture fit for effective participation in the psychiatric healthcare sector?

1.9 Research Methodology

Research by design represents a distinctive academic research methodology in which the act of designing serves as the primary method of inquiry. This approach involves developing a project and exploring various materials and methods, such as sketches and mapping, to carry out the design. Hauberg in (Giorgi et al. 2022:7) refers to this as a strategy which emphasises the intrinsic connection between design and research, illustrating how the process of designing can generate new knowledge about the world. The methodology seeks to cultivate urban perspectives that are not only desirable but also potentially surprising, in contrast to developments that are likely yet less favourable. The aim of the methodology aligns well with the aim of the research paper in the shared pursuit of reimagining urban perspectives. As the research manifests into design, the pattern language will be able to reinspire the current urban framework.

Landscape architect and professor Dr Rob Roggema describes the research methodology of design as being motivated by exploration and innovation. He expands on this thought by mentioning that design is a conversational process, often through mediums like paper and pencil, where creativity sparks enthusiasm and personal commitment. This iterative process generates novelty, making design both a subject of study and a method of conducting research (Roggema 2016:2).

Design and research are often seen as distinct fields. Scientific research is characterised by its analytical nature, striving to uncover objective truths and establish universal principles that are both cumulative and verifiable. However, as Nietzsche suggested, truths can be seen as worn-out metaphors, losing their original meaning and clarity (Nietzsche 2012:4).

Roggema conversely argues that design is explorative and innovative, pushing the boundaries of knowledge in both methodology and theory. It explores multiple truths and future possibilities, making it non-cumulative.

This understanding of the methodology as explained by Roggema equips the study with tools that will prove effective in the pursuit of developing the pattern language. The analysis undertaken by this research paper involves many drawings and studies of artefacts that will be used in the development of the pattern language. In order to guard against an ill-informed subjectivity in this analysis, the research by design methodology encourages explorations taken in volume and at different scales ultimately collating them to interpret the data and translate into a pattern language of building types that align with Christopher Alexander's theories of wholeness.

Research by design manifests in two major ways. First, it involves evaluating different sites for a given function by means of design. Second, it uses designing as a means of exploration, where planning becomes a dynamic, iterative process (Roggema 2016:2). This paper will follow the research by design principles in an effort to ultimately produce the tools necessary to design a completed artefact. The analysis undertaken in this study will explore the value that ought to be placed upon some artefacts or some features thereof in order to evaluate which artefacts ought to be preserved and which needs developing or removal altogether.

The table below showcases the definitions of research by design methodology and the way it will be adapted and used in this study:

Pre- design research phase	Design phase	Post-design phase
<p>Definition: This process emphasises the importance of comprehending the context prior to engaging in the design phase. It seeks to cultivate a foundational understanding by actively engaging with end-users, stakeholders, and subject matter experts. Through this</p>	<p>Definition: In an interactive dialogue with agents, the designer weaves implementation into the fabric of the inquiry process. This engagement facilitates the projection of future possibilities and the development of a comprehensive suite of proposals,</p>	<p>Definition: The work's final synthesis is presented clearly, making new knowledge accessible to a broader audience through deliberate communication. The interactive process concludes here, separating research from design (Roggema 2016:7).</p>

<p>exploration, it identifies potential solutions and prospective design pathways, while also assessing the complexity of the problem to determine whether a design inquiry approach is warranted (Roggema 2016:7).</p> <p>Application: The study will undertake an analysis of the chosen site in Westfort Village and its artefacts to decipher opportunities and threats.</p>	<p>which are then rationalised according to programmatic requirements. Within the Design Studio, students and tutors collaborate as research partners, jointly exploring and analysing complex problems. In this context, design functions simultaneously as a methodological approach and as a tangible outcome (Roggema 2016:7).</p> <p>Application: Once the data has been collected the pattern language will look to present the completed work. This completed work however will be an abstracted manifestation of what the finished building could look like once brought to completion. The completion of this phase will be seen in the final realisation of the design project.</p>	<p>Application: This phase will find its place as part of the urban strategy in the design project ultimately as a programme that encourages feedback from the exposed knowledge.</p>
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Table 1 Research by design methodology adapted from (Roggema 2016:7) (Author 2024)

Roadmap:

Section	Objective	Method
<p>Chapter 1 Defining (life)</p> <ul style="list-style-type: none"> - Exploring themes of the intangible and sacred reality of our existence. -Agency of the built environment in participating in the sacred. - Relevance of healing in architecture 	<p>To define the foundational theoretical principles of the research paper and presentation of research questions and problem statement</p>	<p>Breaking the chapter down into a series of different titles that will define terms and provide direction of the research paper. Introducing the research lens as well.</p>
<p>Chapter 2 Finding and seeing (life)</p>	<p>To present the theoretical and conceptual framework for the</p>	<p>Breaking down the literature review into the theoretical framework that</p>

<ul style="list-style-type: none"> - Alexanders 15 properties of wholeness - Case studies to support the definition of wholeness. -Synthesis of 15 properties <p>Restoring (life)</p> <ul style="list-style-type: none"> - Psychiatric healthcare and its relevance to the study. - The need for a pattern language in healthcare. -Understanding of technical approaches in healthcare 	<p>argument as a lens of exploring the available academic literature leading to identifying the research gap.</p>	<p>will focus on academic literature explorations of abstract and metaphysical theories relevant to the study. The conceptual framework will narrow the research into the two main vehicles of academic exploration: Psychiatry and Architectural wholeness.</p>
<p>Chapter 3 Analysis of the presence or absence of (life)</p> <ul style="list-style-type: none"> - Analysis of artefacts in 3 parts <ol style="list-style-type: none"> 1- Justification of relevance 2- Record of analysis against 15 properties 3- artefact report <p>Consolidated report of all artefacts and discussion of the state of the artefacts in the immediate region and the general state of current healthcare facilities.</p> <ul style="list-style-type: none"> - Show gaps and successes 	<p>To Document and discuss all the findings presented by the research.</p>	<p>Graphic explorations of plan-form, materials, volume and massing.</p> <ul style="list-style-type: none"> - Rubric as a method of quantitative analysis -Justify usefulness of intuitive thinking
<p>Chapter 4 Design of (life)</p> <ul style="list-style-type: none"> - presentation of a new pattern language - spatial studies and explorations 	<p>To synthesise the analysis and present a complete pattern language of building types that will aid in psychiatric rehabilitation.</p>	<p>Graphic presentation of drawings that are broken down into two different building types informed by the research analysis.</p>

Present as principles for composition		
Chapter 5 Living and preserving (life) - Observations and a look to the task at hand	To reflect on findings in the research.	Written account of lessons learned and answering the research questions.

Table 2 Roadmap of research study layout (Author 2024)

1.10 Limitations, delineations and assumptions

1.10.1 Limitations

This study encountered the main limitation of access to artefacts. Due to the sensitivity of some of the mental institutions, permission was not granted to photograph the area hence having to resort to basic 3D imagery from Google Earth. Other buildings in the site region were inaccessible due to the presence of urban sprawl in the area. Some artefacts that look empty on the internet are fully occupied when visited on site.

1.10.2 Assumptions

1. Spatial design should focus on creating aesthetic wholes, studying place morphology and syntax beyond geometric reduction (Prinsloo 2024:3).
2. Beauty reveals the invisible through the visible, making the aesthetic exploration of architecture essential (Prinsloo 2024:3).
3. Intangible qualities in artefacts are defined by a set of fifteen properties, including scale, centres, boundaries, and simplicity (Prinsloo 2024:3).

1.10.3 Delineations

This study focused on investigating psychiatric facilities under the jurisdiction of the city of Tshwane.

Other buildings considered as site artefacts were only considered if they fell within the boundary of the chosen site westfort village as demarcated by the Tshwane city plan scheme.

Chapter 2 - Literature review

2.1 Theoretical framework

The reality of something more. This research paper explores themes of the divine and metaphysical concepts in an effort to provide the reader with an appreciation of these intangible realities and a look into how they can make themselves manifest in the world around us. This literature review will seek to undertake the task of developing a theoretical framework based on the available literature defining abstract concepts such as life and morality. The review will also look to how the Alexandrian mode of thinking addresses the state of contemporary architecture and how to make use of the Alexandrian properties of wholeness when developing a pattern language for building psychiatric facilities.

<p>2. Thesis statement: The development and presentation of a pattern language that aligns with Christopher Alexander's theory of wholeness and embodies sensitivity to both the tangible and intangible needs of users, will positively aid in the rehabilitation process of psychiatric patients.</p>	
<p>2.1 Theoretical framework</p> <p>Definitions of abstract themes Introduction of Programme</p>	<p>2.2 Conceptual framework</p> <p>The psychiatric condition Theory of wholeness</p>
<p>2.3 Research Gap</p>	

Table 3 Literature review layout (Author 2024)

2.1.1 Life in our world

Life in its fully realised form is not just the condition of not being dead but rather the definition of life lends itself to a deeper and richer understanding of the world as we see it. English philosopher Douglas Hedley argues that life is imbued with a deeper meaning through the symbolic and iconic nature of human imagination. He proposes that life involves a relationship with transcendent realities, highlighting the spiritual and metaphysical aspects of existence (Hedley 2016:25). Hedley's perspective aligns with a broader philosophical discourse that emphasises the role of imagination and symbolism in understanding the human condition. This

discourse begins to colour the conversations around abstract concepts and philosophical discussions that wrestle with the existential questions of our existence. Philosopher Paul Ricoeur underscores the importance of symbols in shaping human experience and revealing deeper truths about our existence (Starkey 2011:140).

These expanded definitions are useful in understanding the Idea of 'life' that Christopher Alexander introduces and expands upon. This ideology can be better understood when other terms that are in the same realm of experience are defined. The literature concerning these terms will be useful when interrogating design decisions as to if they possess 'life' or not.

Divine; adjective (GOD-LIKE)

The concept of the 'divine' often described as relating to a supreme being or ultimate reality, plays a crucial role in these discussions. Mircea Eliade (1987:211) explores how religious symbols and myths serve as gateways to transcendent truths, offering a profound understanding of life's ultimate purpose and engaging with the divine. Henri Corbin's (1972:13-22) studies on the imaginal realm highlight the connection between imagination and spiritual experience, arguing that imagination facilitates a direct engagement with the divine. The 'divine' invokes a level of poetry into conversations about life and places a noble reward on those who pursue it. The presence of the 'divine' can make itself manifest in many different ways, one of which is in architecture.

Morality

As the study strives to generate a 'good' architecture the question of morality is one that needs answering. What then is 'good'? Is there an objective definition for it? In contemporary philosophy, Charles Taylor (1989:253) elaborates on the idea that human life is deeply intertwined with a moral and spiritual dimension, suggesting that our sense of self and purpose is shaped by our engagement with transcendent realities. According to Taylor, 'morality' encompasses the principles that differentiate between right and wrong or good and bad behaviour, and it is profoundly connected to our sense of self. In different social configurations all over the world there is a difference in what people see as being 'good'. As different social and cultural people groups come into contact the definition of what is good and bad becomes subjective. The definition that Charles Taylor proposes of what morality is useful in exploring what good architecture would be in a particular region. The designer would have to honour the

identity of the site to be able to produce an architecture that is good to the people that belong to it.

Sacred

Philosopher John D. Caputo (2001:90) also argues for the significance of the mystical and imaginative aspects of human life, contending that they open us up to possibilities beyond the empirical world. Caputo characterises the 'sacred' as that which is deemed deserving of spiritual respect or devotion, frequently associated with the divine and the transcendent. The 'sacred' ultimately manifests itself in architecture as a building, a symbol which has the capacity to point towards this greater reality and evoke a deeper sense of presence within the human. Rudolf Otto's (1917:216) concept of the 'numinous' highlights the encounter with the transcendent as a fundamental aspect of religious experience, which is often mediated through symbols and imagination.

Milbank, Ward and Wyschogrod (2003:6) write that these definitions of life serve the literature well in supporting the link between that which we see and that which we cannot see. However many other scholars commit their definition of life to strictly the biological definitions of the term. Richard Dawkins (1986:XIII) describes life through the lens of evolutionary biology and natural selection, focusing on genetic replication and adaptation. His work provides a strict biological definition of life, contrasting with the philosophical and theological dimensions explored by Hedley.

This philosophical perspective and understanding of abstract concepts is crucial in the realm of architecture, where the interplay of symbolism, imagination, and transcendent meanings shapes the design and experience of spaces. Architecture not only provides physical shelter but also embodies cultural, spiritual, and metaphysical dimensions that reflect and enhance human experience (Pallasmaa 2005:7). Architectural theorists like Juhani Pallasmaa (2005:13) argue that buildings should evoke the divine and sacred, fostering a sense of deeper connection and meaning. By incorporating these elements, architecture transcends mere functionality to become a profound expression of human existence and its relationship with the transcendent.

2.1.2 Lifelessness (death)

The Cambridge Dictionary (2024) defines lifelessness as the quality of not being or not seeming to be alive. In contrast to the expansive definition of life the reality of the absence of life is something we are confronted by regularly. We see the biggest absence of life in death, the final

culmination of not being. However, death similarly to life can also take on an expansive definition existing on a gradient upon which objects and people can find themselves losing 'life' qualities before reaching the ultimate stage of death.

Roman historian Mircea Eliade writes to define death and lifelessness in the context of human life and death as a non-linear event. "For religious men, death is not a purely natural event; it is not so much a final extinction as a passage to another mode of being."

(Eliade 1959:201). This can begin to give insight into how buildings become lifeless and what their lifeless existence looks like. Eliade continues to write that death does not mean ceasing to exist altogether. In traditional societies, the deceased remain connected to the living; they continue to engage in community life, albeit in a different mode of existence (Eliade 1954:98).

Lifelessness in built form looks similar in how lifeless buildings do not cease to exist; however, they still participate in the community and can either compliment or rival the efforts of life-giving spaces and buildings. The condition of lifelessness is one that finds place in our society far too often.

2.2 Conceptual framework

2.2.1 The psychiatric condition

Medical processes of recovery in psychiatric patients

In this argument, understanding the medical processes for rehabilitating mentally ill patients is crucial. The overarching goal is to establish an architectural pattern language that challenges the current building typologies. Developing this pattern language necessitates clarity on all stakeholders and their roles in creating systems that facilitate healing for psychiatric patients. Ultimately, it contributes to a broader discourse on building types that prioritise enhancing individuals' experiences and vitality, opposing lifeless structures that can harm the rehabilitation process.

Patients / User profile

Due to deinstitutionalization, most adults diagnosed with severe mental illnesses, such as schizophrenia, bipolar disorder, and major depression, now reside within community settings rather than institutional care (Anthony & Farkas 2009:9). Psychiatric rehabilitation operates on

individuals who experience significant psychiatric disabilities, rather than those who are suffering from more cosmetic struggles. These individuals typically possess clinically diagnosed mental health disorders that impede their ability to engage in various activities and functions, such as interacting with family and friends, attending job interviews, or preparing for exams. Consequently, their capacity to fulfil multiple roles within the community—including those of employee, resident, partner, friend, and student—is negatively impacted (Anthony & Farkas 2009:9).

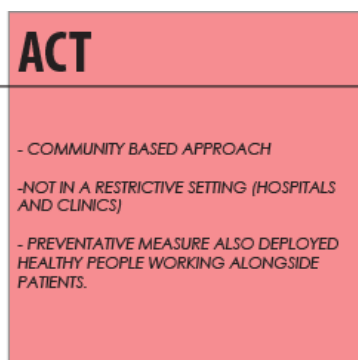
This exploration seeks to delve into the finer details of people like the ones described above on how to recover and be integrated back into society.

Current available models for rehabilitation

The scales at which models of intervention are delivered is carefully considered in measure to protect a goal that is shared in the psychiatric medical field in terms of outcome for different patients: The focus is on assisting individuals in developing the skills and accessing the resources necessary to enhance their ability to achieve success and satisfaction in their chosen living, working, learning, and social environments (Anthony & Farkas 2009:9).

The models used for rehabilitation exist in a matrix that seeks out to what extent someone is in need of help in order to restore them to function well in meeting their goals. The programs available to those in need of psychiatric care are ACT, Clubhouse, IPS and CGK.

1. Assertive Community Treatment (ACT)

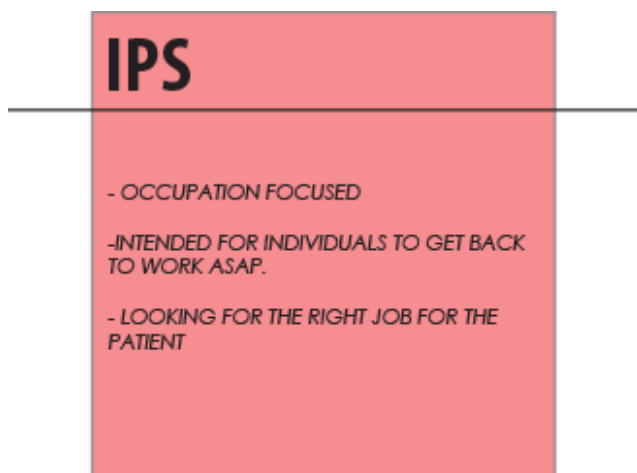


<p>Overview: Assertive Community Treatment (ACT) is a comprehensive,</p>	<p>Effectiveness: Research has consistently demonstrated that</p>	<p>Challenges: Despite its effectiveness, ACT comes at the cost of resources and</p>
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<p>intensive, team-oriented approach that delivers community-based psychiatric treatment, rehabilitation, and support for individuals with severe mental illness. Its fundamental components encompass multidisciplinary teams, low client-to-staff ratios, and 24/7 availability of services (Bond & Drake 2015:240-242).</p>	<p>Assertive Community Treatment (ACT) is effective in enhancing the overall quality of life for individuals with severe mental illness. Additionally, ACT has been shown to reduce hospitalizations and promote housing stability. A meta-analysis found that ACT significantly reduces hospital use and increases community tenure (Bond & Drake 2015:240-242)</p>	<p>may not be affordable in all settings. Additionally, it requires significant training and coordination among team members.</p>
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Table 4 ACT method summary (Author 2024)

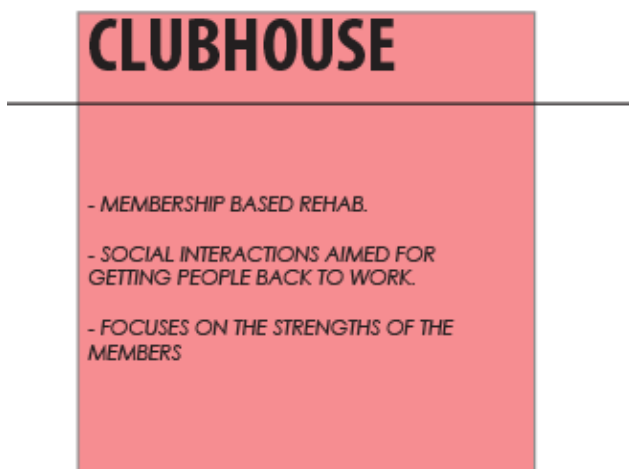
2. Individual Placement and Support (IPS)



<p>Overview: IPS is a model of supported employment for individuals with serious mental illness. It focuses on committed job search and placement, followed by ongoing support, rather than traditional vocational rehabilitation methods that involve extensive pre-employment training.</p>	<p>Effectiveness: IPS has been shown to lead to higher rates of competitive employment compared to other vocational rehabilitation approaches. A review by Marshall et al. (2014:16-23) confirmed that IPS is more effective in helping individuals with severe mental illness get jobs.</p>	<p>Challenges: IPS requires coordination with employers and can be challenging to implement in areas with limited job opportunities or where stigma against mental illness is prevalent.</p>
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Table 5 IPS Method summary (Author 2024)


3. Cognitive Behavioural Therapy for Psychosis (CGK)



<p>Overview: The Clubhouse Model is a community-based approach where individuals with mental illness work together to run a Clubhouse, participating in various activities that contribute to the running of the facility and receiving support from peers and staff. The model emphasises a strengths-based approach and a sense of belonging.</p>	<p>Effectiveness: Research supports the Clubhouse Model's effectiveness in improving social functioning, reducing hospitalizations, and enhancing overall quality of life. A study by McKay et al. (2018:39) found that Clubhouse participation is associated with better employment outcomes and social integration.</p>	<p>Challenges: The success of a Clubhouse depends on active member participation and effective management. Some critics argue that more rigorous, controlled studies are needed to firmly establish its efficacy.</p>
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Table 6 Clubhouse Method summary (2024)

4. Choose Get Keep method (CGK)



The image shows a red rectangular card with the text 'CGK' at the top. Below it, a horizontal line separates the title from a list of four bullet points: '- CHOOSE A GOAL', '- GET A GOAL', '- KEEP A GOAL', and '- REQUIRES A CONCENTRATED SITE FOR ITS PROGRAM.'

<p>Overview: Choose, Get, Keep (CGK) is a recovery-oriented approach that helps individuals with mental illness set and achieve meaningful life goals in areas like housing and employment, emphasising client empowerment and self-determination (Anthony & Farkas 2009:10).</p>	<p>Effectiveness: CGK interventions have shown promise in improving goal attainment, self-efficacy, community integration, and subjective well-being for individuals with mental illness.</p>	<p>Challenges: Resource limitations, complex client needs, stigma, and systemic barriers pose challenges to implementing CGK effectively, requiring advocacy and systemic changes for optimal impact. Engagement from patients, which can be challenging for those with severe symptoms.</p>
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Table 7 CGK Method summary (Author 2024)

These approaches to rehabilitation have all proven useful in different applications globally. The CGK method stands out as being the rehabilitation method that would best suit the aims of the research project. The need for a specific site location and the flexibility it has in lending some of its programmes to the immediate community open the door for direct spatial planning schemes to develop, seeking integration with the community and developing an identifiable spatial identity fit well with the goal of developing a pattern language of space-making informants for such a facility.

Rehabilitation vs relief

In giving the building agency as a place for rehabilitation a clear distinction has to be made between rehabilitation and relief to protect the identity of the facility.

Mental health services for individuals with severe mental illnesses are differentiated

by the distinctive content and outcomes associated with each service (Anthony & Farkas 2009:13). For instance, when individuals prioritise enhanced role functioning as their desired outcome, the main focus of service delivery is rehabilitation. Conversely, when symptom relief is the primary goal, the emphasis shifts to treatment (Anthony & Farkas 2009:12).

Rehabilitation aims at long-term improvement by enhancing coping skills, social functioning, and independence. Relief often involves crisis management and stabilisation, offering temporary respite from distressing symptoms. In contrast, rehabilitation emphasises holistic recovery, encompassing therapies, vocational training, and community support to foster lasting resilience and recovery. While relief provides immediate comfort, rehabilitation offers a pathway to sustainable well-being, empowering individuals to navigate life challenges and thrive beyond their mental health struggles.

The design of the facility is to be geared towards rehabilitation, this will give the building agency to encourage holistic well-being and merit it as a building that is capable of more than a centre for quick treatment but as a facility that is equipped to deal with patients that require stay. The level of readiness must be able to meet the technical requirements as well as the spatial design requirements of such a facility.

The helping relationship

The available literature also introduced a concept called *the helping relationship* that will aid in how the facility is set up and the degree to which the building will minister to the people who inhabit it, both patients and practitioners.

As crucial as any other aspect of the rehabilitation process is the relationship between practitioners and those receiving assistance. This contact must be carefully monitored and introduced to the patients, as mismanagement can hinder their progress (Anthony & Farkas 2009:13). This relationship can be as significant as that between a caregiver and a care receiver. Professional medical practitioners undergo rigorous academic and experiential training to intervene effectively in the lives of those in need. Additionally, the architectural design must also serve as a caregiver, with spatial considerations thoughtfully developed to enhance the patient experience.

2.2.2 The book that Alexander wrote: Theoretical framework of the Alexandrian principles

Christopher Alexander was a renowned architect and design theorist whose work profoundly influenced architecture, urban planning, and design theory. Best known for his seminal book *A Pattern Language*, Alexander introduced the concept of design patterns, which are recurring solutions to common problems in design. His approach emphasised the importance of human-centred, adaptive, and sustainable design practices. By focusing on the patterns of how spaces are used and experienced, Alexander aimed to create environments that promote well-being and harmony, making his work foundational for both practical design applications and theoretical discussions in architecture and beyond.

Wholeness

Christopher Alexander centred much of his work around the concept of 'wholeness' which he defines as "the source of coherence in any part of the world" (Alexander 2002:79-108). His main aim is to understand how the parts of a made thing—whether a crafted object, artwork, building, neighbourhood or city—appropriately belong together and have a fitting place in the whole (Seamon 2004:29). This definition may seem subjective however it puts into word the ways in which we interact with the world around us. In the first book of his four-volume publication *The Nature of Order* Alexander offers one of the most insightful explanations of wholeness. In a section discussing the 'global character of wholeness', he references an essay on portraiture by the artist Henri Matisse. Matisse argues that human character transcends mere physical facial features. He illustrates this through four self-portraits, displayed in figure. Each drawing portrays his facial features differently, yet all unmistakably represent the same individual and his character. According to Alexander, this intrinsic character exemplifies wholeness:

"It is the overall vector, the overall qualitative structure, the overall field effect of the face.... [We see that] wholeness is a global thing—easy to feel, perhaps, but hard to define. You cannot get the portrait of a person right unless you can see this underlying wholeness... In portraiture, as in architecture, it is the wholeness which is the real thing that lies beneath the surface and determines everything." (Alexander 2002:79-108).

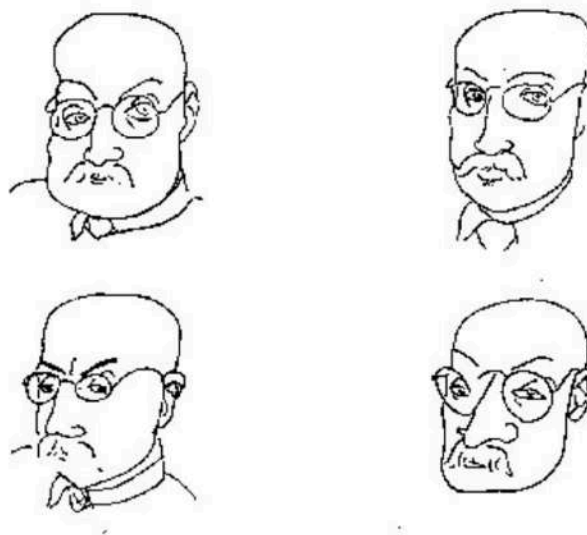


Figure 1 Henry Matisse's portraits Alexander (2002)

Artist Henri Matisse's four self-portraits. "The features are different in each case: only the wholeness remains the same in every drawing" (Alexander 2002:79-108).

Centres

Alexander introduces the idea of a 'centre,' a field like part of space or structure that is somehow distinct from the other centres around it; these are objects that are both animate and inanimate, as the fundamental element in the construction of the universe (Hora 2021). Centres as fields are overlapping, interlocked, co-dependent, defined in terms of their relationships to other centres. This perspective is liberating, as we can conceptualise everything we encounter in space and time as the product of relationships between centres (Hora 2021). The life or intensity of one centre is increased or decreased according to the position and intensity of other nearby centres. Above all, centres become more intense when the centres which they are made of help each other (Alexander 2002:79-108).

Alexander's investigations operate based on these two ideas: 'wholeness' and 'centres'. If a centre possesses a degree of wholeness —being its deep-seated coherence— its sense of aliveness increases and in doing that strengthens the connection between the user and the divine. This will form the basis of the framework I will use in my methodology.

Evidence and empirical research: its place in reality

In exploring wholeness and centres further it is best to provide visual stimuli by which we can understand these themes more.



Figure 2 Humanities building University of Pretoria (Jay Jay Gregory 2021)



Figure 3 Old Arts building university of Pretoria (University of Pretoria Museums n.d)

In comparing the two figures above —as buildings and also as centres— and attempting to answer the question which of these two buildings make you feel more alive, I am inclined to answer the figure below, the Old Arts building lends itself to a richer interaction with the world around it, it is a more beautiful building, the nuance within the building resonates more closely to the nuanced experiences we have in our lives. This is not an opinion I hold on my own, it takes a quick look during graduation season to see how many graduates flock to this building to take pictures of themselves as they celebrate completing their studies.

There is a presence of wholeness in the Old Arts building, a visual representation of small parts coming together coherently forming a whole centre, contributing to its sense of aliveness. The humanities building is a stark contrast, its repetitive and predictable form offers little engagement with its surroundings and visually is an unattractive building.

This test can be repeated numerous times using the same set of questions to interrogate different artefacts around us. We see how wholeness is something we resonate with naturally and repetitively. Below are a series of artefacts from Alexander's work that we can use to deepen our understanding of wholeness and which of them are a more accurate representation of self.



Figure 4 Two cups (Alexander 2002:320)

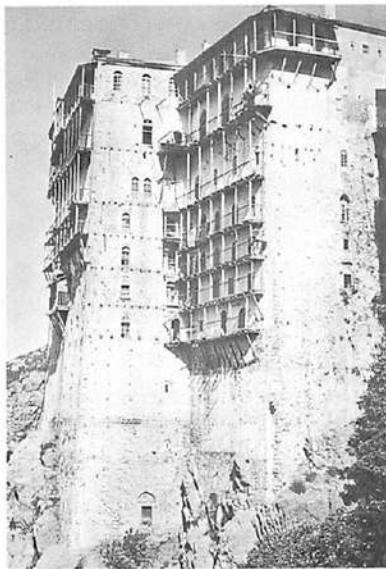


Figure 5 Greek monastery (Alexander 2002:329)



Figure 6 Detroit apartments (Alexander 2002:329)

In the first comparison of the cups the image on the left is the more accurate depiction of self and in the second comparison it is the first image of the Greek monastery.

Design properties and standards: A complimentary study on the work of Christopher Alexander.

Christopher Alexander poses a theoretical basis of understanding the world around us through the built environment in a way that allows for the whole human to participate in understanding space, this commentary on the building properties that ought to be introduced and applauded in our world today requires more than intellect, it requires a sensitivity to the intangible parts of the human body that make us who we are, reaching into our metaphysical properties allowing for the whole human to be activated in search of good buildings.


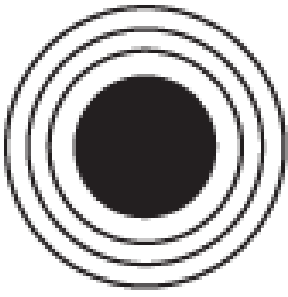

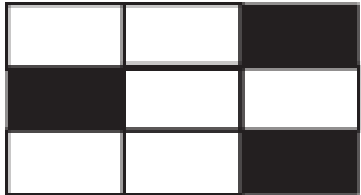

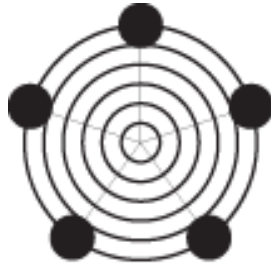
The phenomenon of life

Christopher Alexander sets out to appropriately define how we experience the world around us. When discussing architecture and the design of a pattern language we ought to commit to a set of criteria that we measure our efforts against. Alexander further expands on this to say that the reason for this reality is the presence of order within these structures. Order in a deeper more exhaustive sense, a system through which different things function, a reasoning behind their existence, and the experience of the life force that they carry. In a sense, everyone knows what order is. Alexander (2003:10) goes on to state the following “but when I really ask myself: what is ‘order’? — In the sense of deep geometric reality, deep enough so that I can use it, and so that it is able to help me create life in a building— then it turns out that this ‘order’ is very difficult to define.”

The 15 properties

To be more specific about the nature of manifestation of ‘life’, editor Dave Hora (2021) comments that after 20 years of research, Alexander identified fifteen properties that serve as positive indicators of life in order. While he acknowledges that this number is not definitive, he believes that the approximate range is accurate—there could be between ten and twenty properties one might derive, but not as few as five or as many as fifty. These properties each have a measurable connection between centres. When centres embody a collection of these

properties, the conclusion is that they have more 'life' (Hora 2021). Below are the fifteen properties illustrated and with explanatory text adapted from analysis into *The Nature of Order* done by researchers at the Danube University Krems that looked into the role of the pattern language in propelling societal change.

 <p>LEVELS OF SCALE. Different-sized centres intensify each other, creating a unified whole when well-organised.</p>	 <p>STRONG CENTRES. A living whole contains nested strong centres, with one often dominant.</p>	 <p>BOUNDARIES. Ring-like centres, formed from smaller ones, enhance and connect enclosed centres with their surroundings.</p>
 <p>POSITIVE SPACE. Every part of a living whole serves as a strong centre, leaving no empty areas.</p>	 <p>THE VOID. Empty spaces within centres maintain balance and calmness.</p>	 <p>ALTERNATING REPETITION. Repeated centres with subtle variations create harmony and unity.</p>



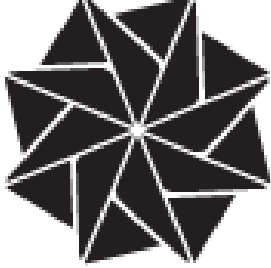





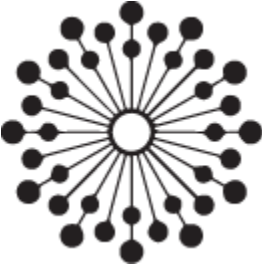
 <p>GOOD SHAPE. A well-formed whole consists of coherent centres, making it meaningful and effective.</p>	 <p>LOCAL SYMMETRIES. Overlapping symmetrical segments create coherence within a living whole.</p>	 <p>DEEP INTERLOCK AND AMBIGUITY. Forms interlock with surroundings through ambiguous centres.</p>
 <p>CONTRAST. Sharp differences between centres and surroundings intensify their impact.</p>	 <p>GRADIENTS. Qualities change gradually across space, forming unified centres.</p>	 <p>ROUGHNESS. Local irregularities adapt to environmental demands, enhancing perfection.</p>
 <p>ECHOES. Underlying similarities unify elements within a living whole.</p>	 <p>SIMPLICITY AND INNER CALM. Removing unnecessary elements creates inner calm and meaning.</p>	 <p>NOT-SEPARATENESS. Deep connections between centres and surroundings create harmony.</p>

Table 9 15 Properties of wholeness illustrated adapted from (Baumgartner, Gruber-Muecke and Sickinger 2017) (Author 2024)

Generated and Fabricated structure.

The war against lifeless buildings starts with the processes through which we put them together, more often than not a building has died before it is even built because of the processes it underwent to become a building in the first place were mechanical, impersonal and uninformed by the surrounding centres. Alexander makes the distinction between generated and fabricated buildings and even from those two words we can already see the differences and which of the two has life in them.

Generated structure	Fabricated structure
Additive Living process Operates alongside existing centres Express clear language of the whole and completeness	Dead and uninspiring Exists as an island responding to nothing Driven by impersonal design principles

Table 10 generated vs fabricated structure (Author 2024)

Dave Hora comments on this by writing about this distinction: Generated structure emerges from a dynamic, living process, whereas fabricated structure results from a static, non-living process. The fifteen properties of generated structure are evident because each step enhances or preserves the relationships between existing centres through structure-preserving transformations. For instance, when framing a wall, we take into account the overall layout, lighting, and the character of the spaces on both sides before deciding where to place the window. On the other hand, in a prefabricated structure, time is not a factor, as the construction process doesn't necessarily preserve the integrity of the structure (Hora 2021).

Analysing this process reveals that the sequence of decisions is vital for creating a living structure. Architects should work towards a shared vision best communicated through patterns in words and minds, avoiding overly detailed drawings that preclude necessary on-site decisions (Hora 2021). In the end, a pattern-based vision needs to be converted into a 'brutal' geometric order, which imposes a physical and structural rhythm on what was initially a flexible idea. Each step should bolster the overall configuration, respecting the results of earlier steps and guided by the holistic sense of life that Alexander has highlighted since the start of Book One (Hora

2021).

The role of the architect

Alexander introduces the concept of the 'morphogenetic process', a type of living process that directly shapes the built environment. Embracing morphogenetic processes means integrating all the ideas presented in *The Nature of Order*. The process holds true to the Alexandrian interpretation of objects and buildings being centres. In order to create 'life' in our buildings there has to be a building process that embodies 'life' as well. Dave Hora (2021) again writes that this concept, though seemingly simple, embodies the fundamental principles of Alexander's work.

2.3 The research gap

The emergent research gap lies in the nexus of architecture and healthcare, specifically in the lack of clear design patterns that can aid in designing psychiatric healthcare facilities. These facilities should reach deeper into the sacred and intangible aspects of life, complementing the work being done within them. The available literature provides rich insight into elements of the sacred and intangible, as well as the current condition of the healthcare industry. However, there is not much balance between the two. Considering the previously mentioned text regarding the relationship between the left and right hemispheres of the brain, the current landscape of healthcare facility design shows evidence of imbalance. These designs are often centred around specific technical requirements, such as beds, number of rooms, and accommodation schedules for different-sized institutions. The available information leaves much to be desired in ensuring that the final built structures are imbued with a deeper sense of agency through spatial gestures aligned with the sacred. This alignment will ultimately benefit patients, staff, and the community by providing a beneficial change to their current physical environment. This gap is shown in the diagram below:

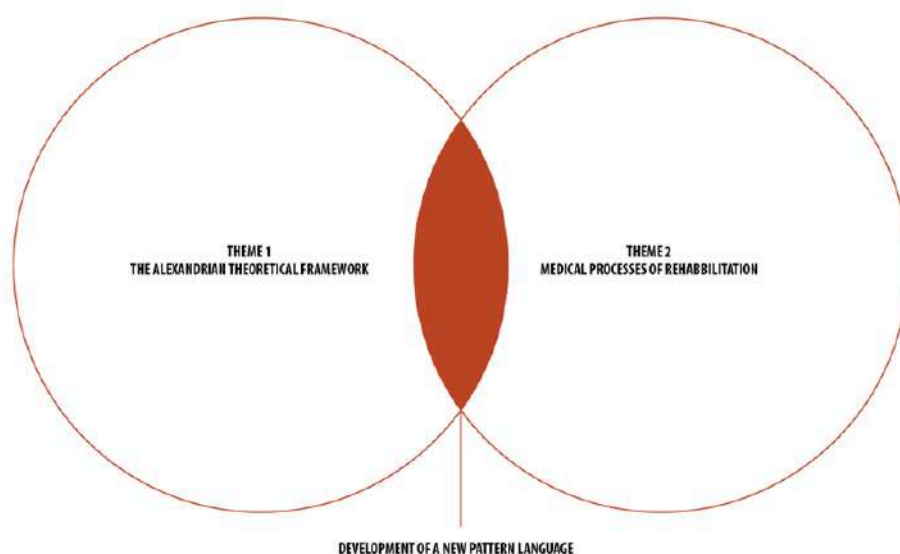


Figure 7 Research gap diagram (Author 2024)

2.3.1 The emergent argument

The argument I propose is that Christopher Alexander's explorations into the connection between humans and their environment—embodied in the 15 properties of wholeness he developed—are critical in developing architecture that connects to the sacred elements of life. His work seeks to place a cosmic level of 'aliveness' into built form, creating environments that meet both the tangible and intangible needs of the human user. This argument will manifest in the creation of a new pattern language specifically designed for a psychiatric rehabilitation centre. As patients explore this space, they will be exposed to a divine sense of beauty that will aid in their rehabilitation. Christopher Alexander's concept of wholeness in architecture is grounded in his theory of pattern languages, suggesting that certain spatial configurations have intrinsic properties that foster human well-being.

Research into therapeutic environments supports Alexander's ideas, particularly in the context of psychiatric rehabilitation. Studies have shown that environments designed with attention to natural light, access to nature, and coherent spatial organisation can significantly enhance mental health outcomes (Ulrich et al. 2008:61-125). These elements, which align closely with Alexander's properties of wholeness, suggest that architecture can play a crucial role in the healing process.

Incorporating a divine sense of beauty into architectural design, especially in therapeutic settings, involves creating spaces that evoke peace, safety, and transcendence. This can be

achieved using natural materials, harmonious proportions, and the integration of art and nature. According to Kellert, Heerwagen and Mador (2015:4) biophilic design, which emphasises human exposure to nature, has proven to reduce stress and promote recovery in healthcare environments. By aligning these principles with Alexander's framework, architects can create spaces that not only meet physical needs but also nurture the spirit.

2.3.2 A suitable programme

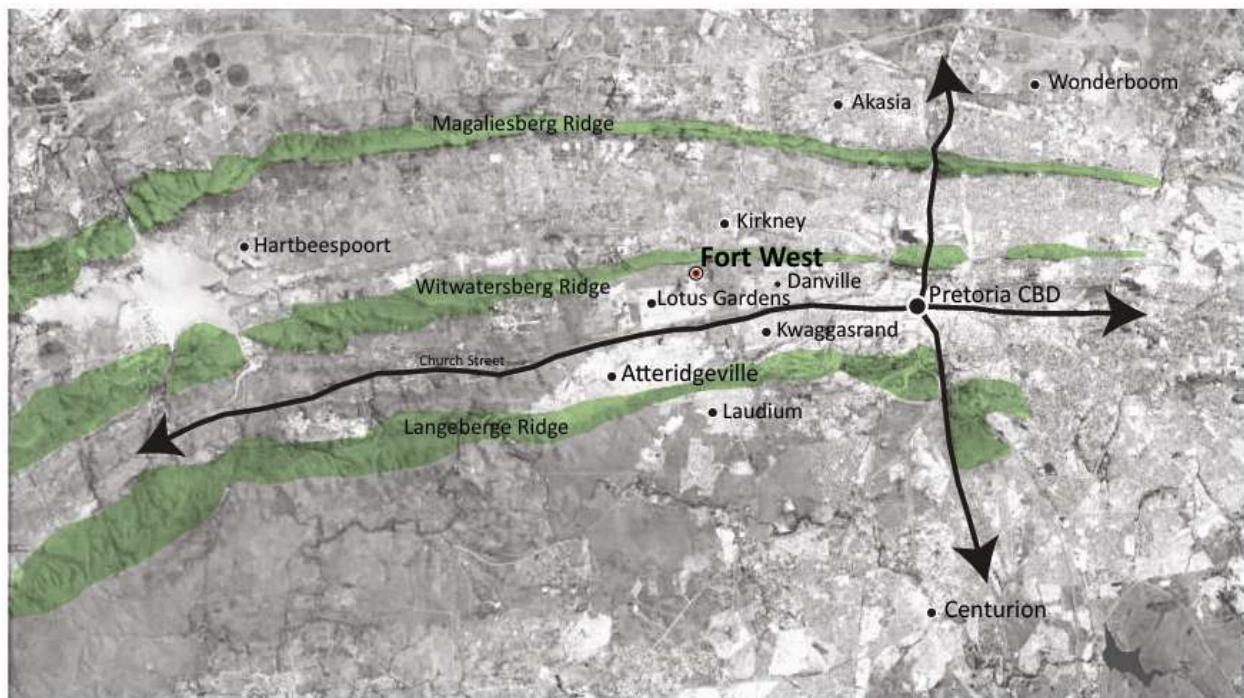
A psychiatric rehabilitation centre designed with these principles would serve as a sanctuary for patients, offering a holistic approach to healing that addresses both the body and the mind. Such a centre could include features like therapeutic gardens, meditation spaces, and communal areas that encourage social interaction and support. By fostering a connection to the divine and the natural world, these spaces would provide patients with a sense of purpose and belonging, aiding their recovery journey.

Christopher Alexander's theories offer valuable insights into creating sacred and healing spaces. By integrating his principles with contemporary research on therapeutic environments, architects can design buildings that fulfil functional requirements while uplifting the human spirit. This holistic approach to architecture holds the potential to transform psychiatric rehabilitation, making it a process of spiritual renewal as well as physical and mental recovery.

Chapter 3 - Analysis

3.1 Discussion of rationale and method

This research paper is situated in a study site within Westfort Village, Pretoria, South Africa. Westfort Village, boasts a rich history dating back to the early twentieth century. Originally established as a leprosy colony in 1898, it accommodated patients until its closure in 1997. The village comprised medical facilities, residences, and communal areas for patients and staff (Grunewald 2012:6). Following its closure, the site fell into disrepair and has since been largely abandoned. Today, Westfort Village is in a state of neglect, with many buildings dilapidated and overgrown.



Site location in relation to Pretoria and surrounding topography (Grunewald 2012)

Despite its historical significance, there have been limited efforts towards preservation or redevelopment, leaving it a ghostly reminder of its past. This site serves as an appropriate testing ground for this study to take place; the site is rich with buildings and artefacts as informants, some that are open to being challenged and others preserved.

To adequately develop this new pattern language, the research needs to include a formulaic analysis of artefacts that will inform this pattern language. Like the exercise conducted in 2.2.2. This analysis seeks to delve into whether certain artefacts relevant to the program and

framework possess a level of aliveness that can be translated into a geometric spatial gesture, and if not, how to address that.

This study will select artefacts relevant to this study and test them against all 15 of Alexander’s properties, celebrating the successful gestures they already possess and noting the properties they lack. These artefacts will ultimately be rated against a marking system and given a score out of 5, indicating the level of aliveness the structure exhibits.

In Alexander’s studies, he mentions that not all these properties have to be present at the same time; however, they ought to exist in an interdependent whole that comprises the centre. The artefacts with the lowest scores are most likely to be those that are the most lifeless.

3.1.1 Rubric for testing

The following rubric will be used as a guide for testing the different properties that make up each centre and indeed testing the artefact as a whole. This will serve as a quantitative means of gaining insight into which gestures within these artefacts are successful and in need of preservation and place in the pattern language and which are better off not being used at all.

1	2	3	4	5
Incomplete (1): The work lacks cohesion and coherence, with disconnected elements that fail to create a sense of unity or completeness.	Emerging (2): basic presence of elements being integrated, but the overall structure or theme lacks clarity or depth, resulting in a fragmented or inconsistent portrayal of wholeness.	Competent (3): The artefact demonstrates a reasonable degree of unity and coherence, with identifiable connections between elements contributing to a sense of wholeness. However, there are areas where	Proficient (4): The artefact effectively integrates various elements to create a cohesive and harmonious whole, demonstrating a strong presence of unity within the whole. Connections	Exemplary (5): The work exemplifies the highest standards of wholeness according to Christopher Alexandrian principles. It seamlessly integrates diverse elements to create a rich,

		the integration could be strengthened or refined.	between elements are clear and purposeful, enhancing the overall impact and meaning of the piece.	multifaceted portrayal of unity and completeness. The connections between elements are not only evident but also profound, resulting in a deeply resonant and impactful experience for the audience.
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3.1.2 Selection Rational

For this exercise I divided the artefacts into different categories each category being relevant to the completion of this design language:

Programme relevant buildings.

- These artefacts are buildings that speak to the character of what mental institutions currently look like. An understanding of the current landscape of these buildings will serve the research well in identifying shortcomings and celebrating successful spatial gestures.

Site specific artefacts

- Artefacts chosen from this site will be tested in the same way as all the others. The spatial gestures that remain will form part of the new pattern language. These artefacts will inform the building's sense of place, through an understanding of materials and composition the new pattern language can learn from the site artefacts and develop it.

3.1.3 Desired and expected outcomes

This analysis will look to identify the artefacts with the most successful spatial gestures and use them as a means to contribute to the pattern language of the region.

As the analysis is undertaken the artefacts are expected to reveal a series of recurring motifs that can be used to develop a language that is true to Christopher Alexander's definition of wholeness and a sense of aliveness. This documentation of artefacts will not present itself as the final manifestation of the pattern language: the results will be analysed and correlated against the text and make suggestions as to how some things ought to be redone and reinvented in order to develop the pattern language.

3.3 Programmatic artefacts

3.3.1 Artefact 1: Denmar Psychiatric hospital

Location: 507 Lancelot Rd, Garsfontein, Pretoria, 0081

Pretoria East



Figure 7 Denmar (2007)

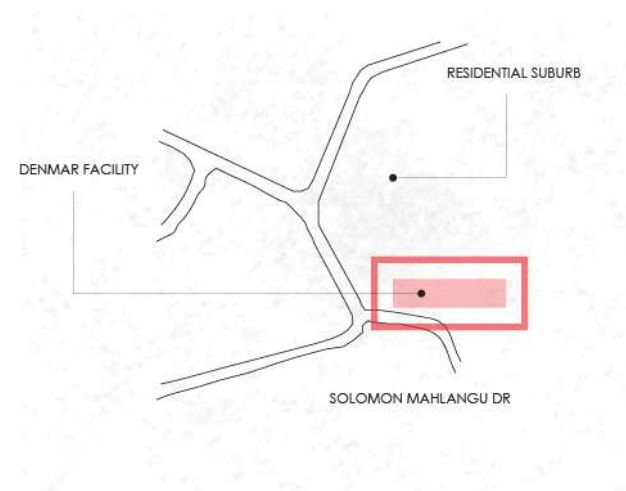


Figure 8 Denmar map (Author 2024)

Mediclinic Denmar Mental Health Services, founded in 1951, was the pioneering private psychiatric clinic in Pretoria. Through ongoing development and upgrades, it has become one of the largest private psychiatric hospitals in the country.

As an artefact this building will serve to show how psychiatric facilities behave as buildings in relation to the practices within them. In the pursuit of defining a new pattern language the building ought to inform ways through which practical spatial gestures should be implemented in

the design and composition of such a facility.

Upon approach the building introduces itself as a typical modernist building with notions to postmodernism in the colours it deploys along the facade. In true modernist fashion this building rejects ornament and embraces minimalism. The immediate issues that arise with such a building are found in the critique of modernism itself. Architect and virtual designer Svetla Popova (2004:1) mentions that one of the main criticisms of modernism from traditionalist perspectives is that its use of geometric abstraction is disruptively imposed onto natural and traditional landscapes, often disrupting and even destroying the cultural and urban heritage of the past.

This is seen to be true in the case of Denmark as well. The elements presented in its composition are void of life with the success of the programme relying mainly on the medical practices displayed inside. As the analysis aims to develop a new pattern language, institutions such as Denmark would benefit highly from such a pattern language.

Graphic analysis: as mentioned in the limitations of this study some artefacts like the one below were not able to be fully studied due to limited access and could only be analysed from information found on the internet and google earth.

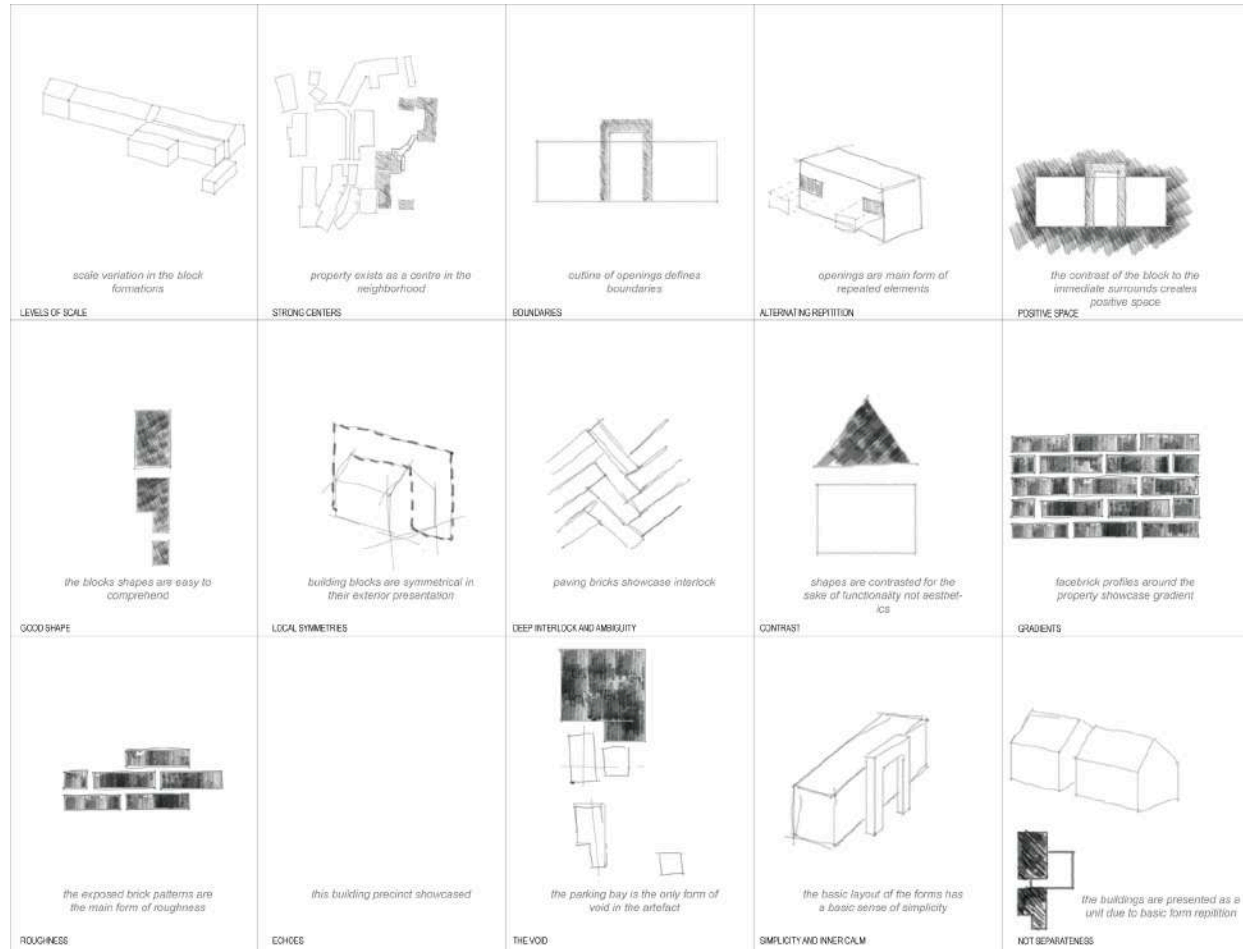


Figure 9 Denmar analysis (Author 2024)

Report:

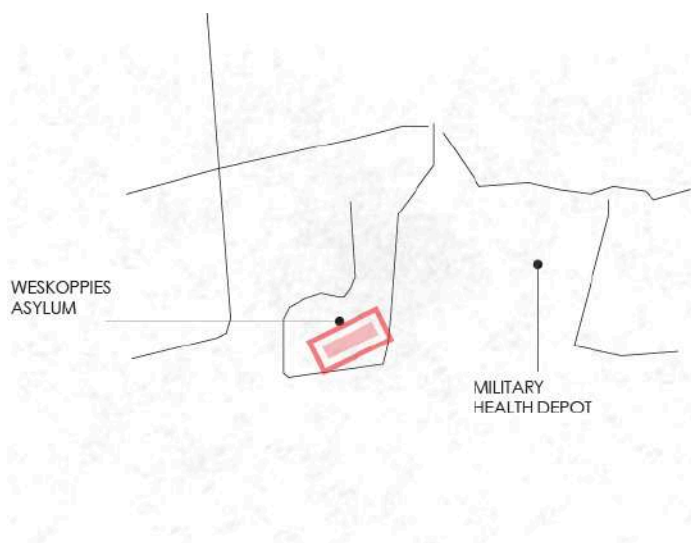
Score	Observation and notes
(2)	The building has a basic structure to it. It satisfies the legal requirements of a psychiatric institution however falls short in presenting itself as a building that strives for a sense of aliveness

Table 11 Denmar report (Author 2024)

3.3.2 Artefact 2: Weskoppies Psychiatric Hospital

Location: Weskoppies, Pretoria Townlands 351-Jr,
Pretoria, 0078 Pretoria West

Figure 10 Weskoppies map (Author 2024)



In 1892, the Zuid-Afrikaansche Republiek (ZAR) established its first psychiatric institution, the Krankzinnige Gesticht Pretoria (Pretoria Lunatic Asylum), which later became Weskoppies Hospital (Plug & Roos 1992:218–221).

With the ultimate goal of this research project being to develop a new pattern language that will aid in the care of patients, the story of Weskoppies provides context in how the practice ought to include more complimentary systems to expand resources, this also presents an opportunity for the building to aid in that relationship as well.

Weskoppies provides context in how the practice ought to include more complimentary systems to expand resources, this also presents an opportunity for the building to aid in that relationship as well.



Figure 11 Weskoppies facade (Author 2024)

It is concluded that the compassionate care of institutionalised psychiatric patients has not been, and is still not, ensured by progressive policies

alone, but rather relies on adequate resources to implement these policies effectively. (Plug &

Roos 1992:218–221). Resources in the context of this research paper can be extended to include the building as a resource.

Graphic analysis:

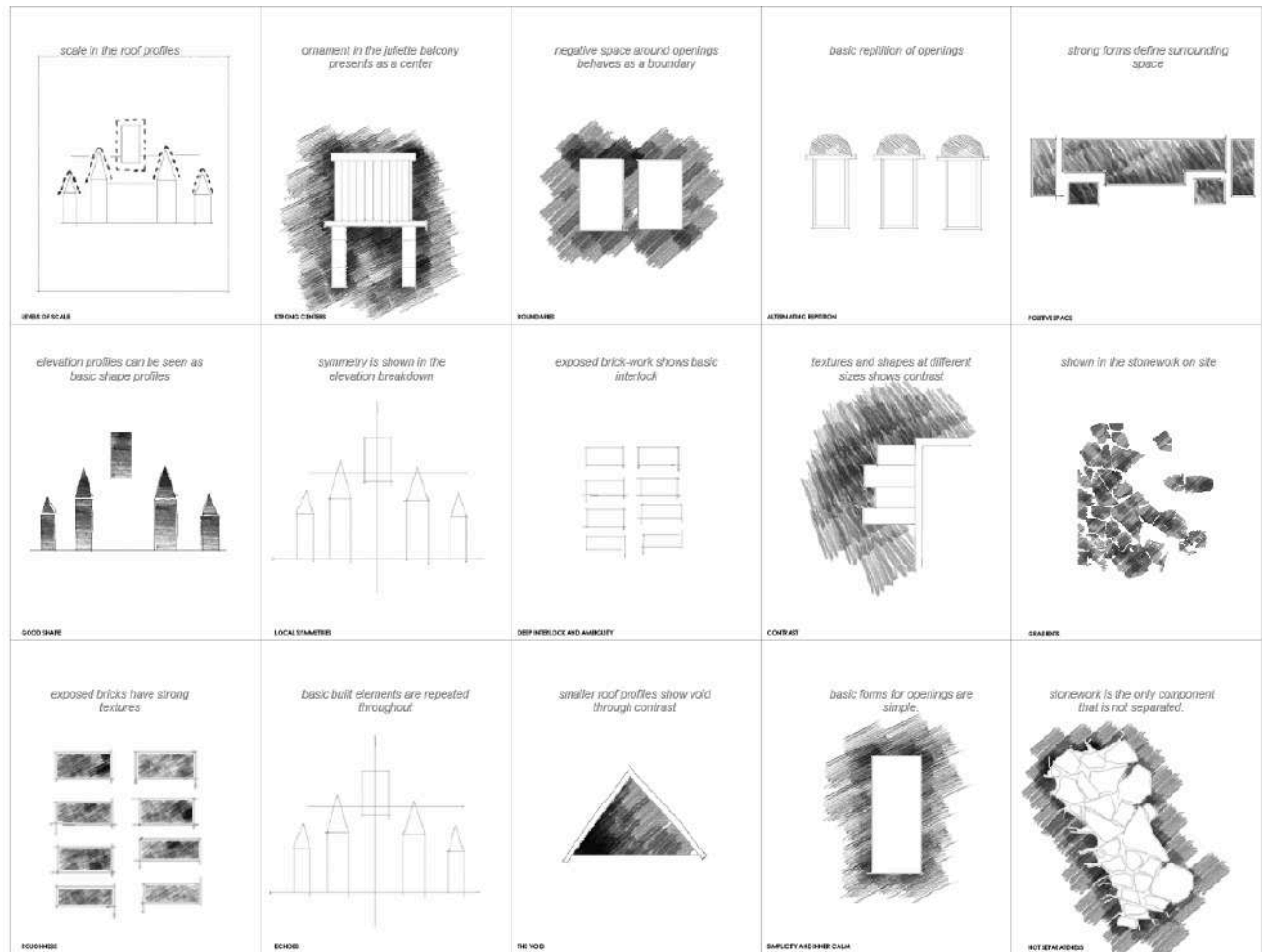


Figure 12 Weskoppies (Author 2024)

Report:

Score	Observation and notes
(3)	Weskoppies is an institution that stands in difference to other institutions. The building style is appropriate for the time in which it was built with many government institutions taking a similar weight in their presence in the landscape. This building houses identifiable

	qualities of wholeness that can be synthesised to inform the pattern language.
--	--

Table 12 Weskoppies report (Author 2024)

3.3.3 Artefact 3 Vista Private Psychiatric Clinic

Location: 135 Gerhard Street Centurion 0157
Centurion

Founded in June 1984, Dr Japie Vermaak identified the need for a private psychiatric hospital in Pretoria after one of his patients committed suicide as a result of no bed available at the state psychiatric hospital in those years.

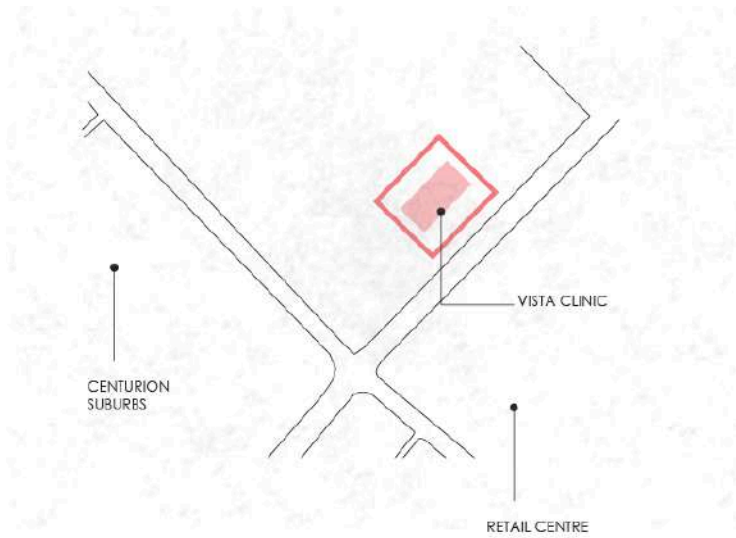


Figure 13 Vista map (Author 2024)

Vista clinic operates on a large scale but placed in a suburban environment. The Building presents strong contemporary elements, big glass openings and orthogonal shapes defining the rest of the building composition.

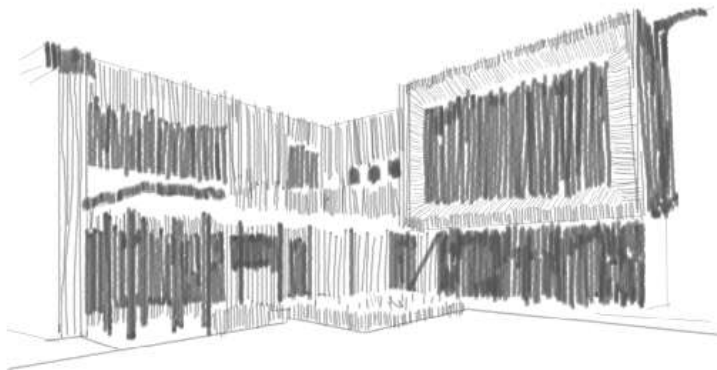


Figure 14 Vista facade (Author 2024)

Graphic analysis:

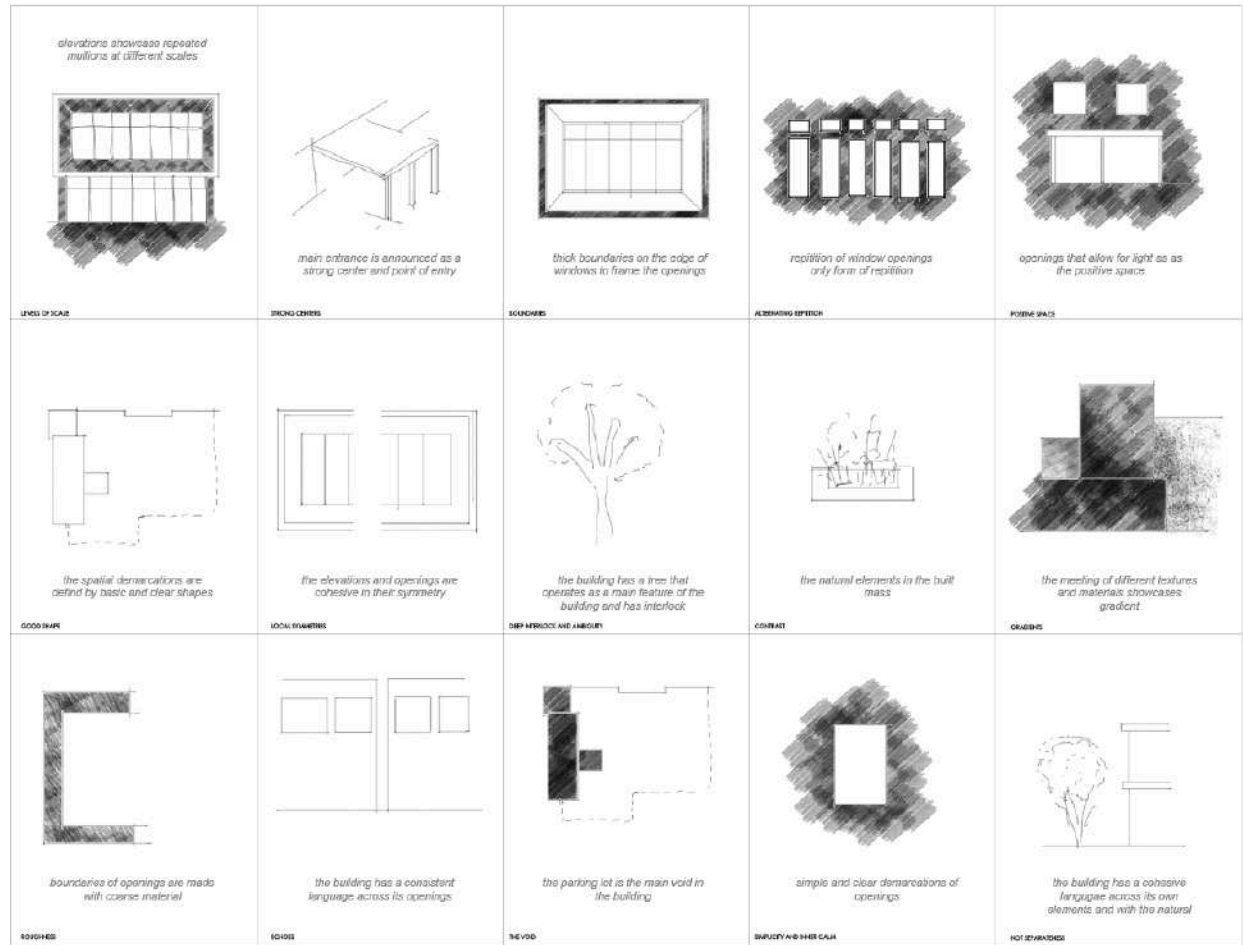


Figure 15 Vista analysis (Author 2024)

Report:

Score	Observation and notes
(4)	Vista Private clinic is a good example of what contemporary architecture seeks to do currently with striking spatial gestures aimed at defining space and the building's presence in the landscape. This building is probably the most alive of the three program specific artefacts.

Table 13 Vista report (Author 2024)

3.4 Site artefacts

The Westfort Village was erected as a collection of buildings spread out across an approximately 10 Kilometre Radius forming the Westfort Village. The first buildings were the administration block and staff accommodation. Researcher Tosica Grunewald (2012:11-21) details the style of building at the time: The buildings constructed during the ZAR period reflect the architectural style favored by the Department of Public Works under Wierda. These structures are marked by elegant proportions, sturdy brick construction, corrugated iron roofs, stone plinths, and sandstone detailing.

3.4.1 Artefact 1 Fort Daspoortrand



Figure 16 Fort Daspoortrand (Grunewald 2012)

Fort Daspoortrand, built in 1864 by Boer settlers, served as a strategic defence post against indigenous resistance and later British forces during the South African Wars. It symbolises the tumultuous colonial history of Westfort, South Africa, showcasing the conflicts and tensions of the era.

Graphic analysis:

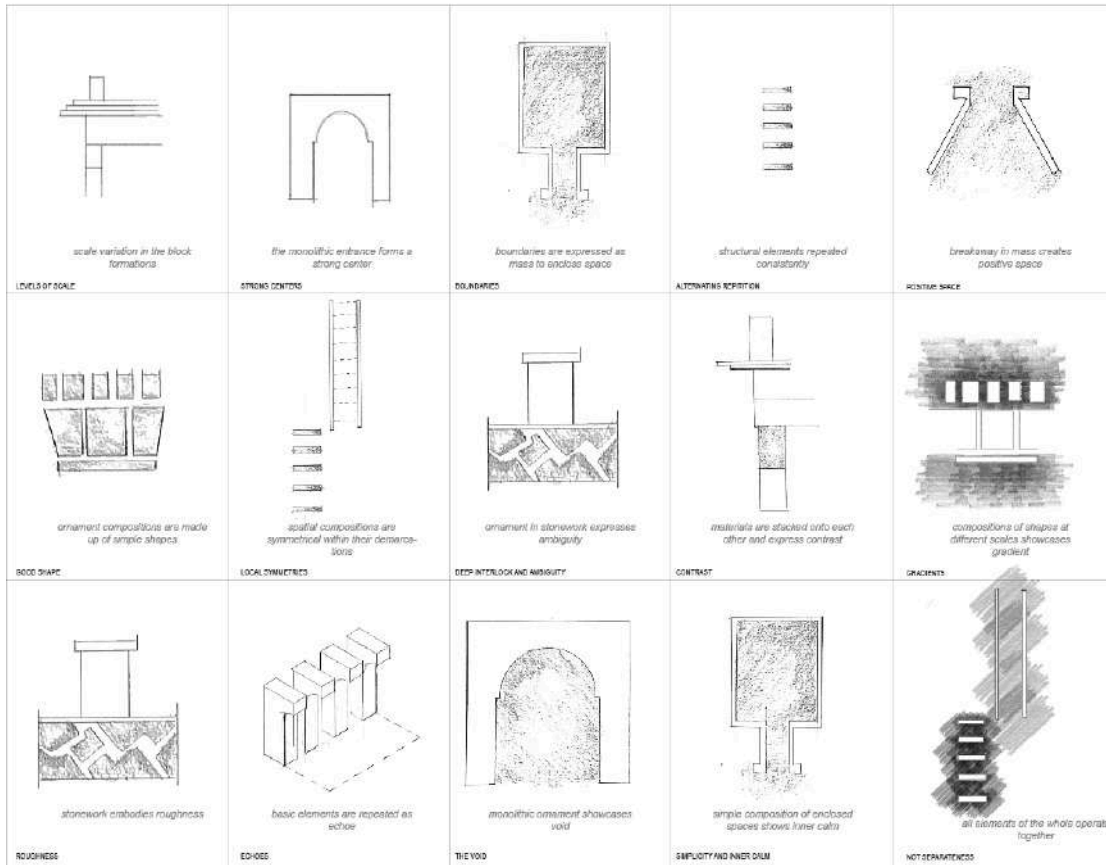


Figure 17 Fort Daspoortrand analysis (Author 2024)

Report:

Score	Observation and notes
(3)	The fort boasts a lot of strong spatial gestures intended to preserve the functionality of the fort during the anglo-boer war. As an artefact it makes good use of stone and masonry to generate a form that is durable and has a sense of presence within the landscape.

Table 14 Fort Daspoortrand report (Author 2024)

3.4.2 Artefact 2 Westfort village housing complex

The housing on the site emphasised the segregation practices of the space, with the sick patients being placed far away from everyone else as part of the treatment.

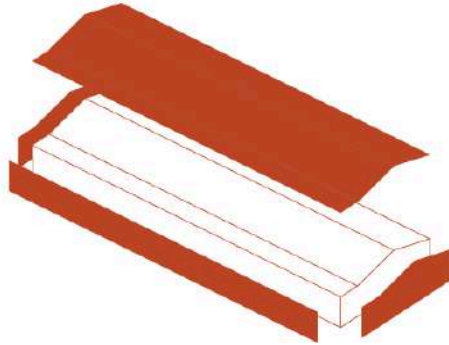


Figure 18 Westfort village housing complex Grundewald (2012)

Graphic analysis:

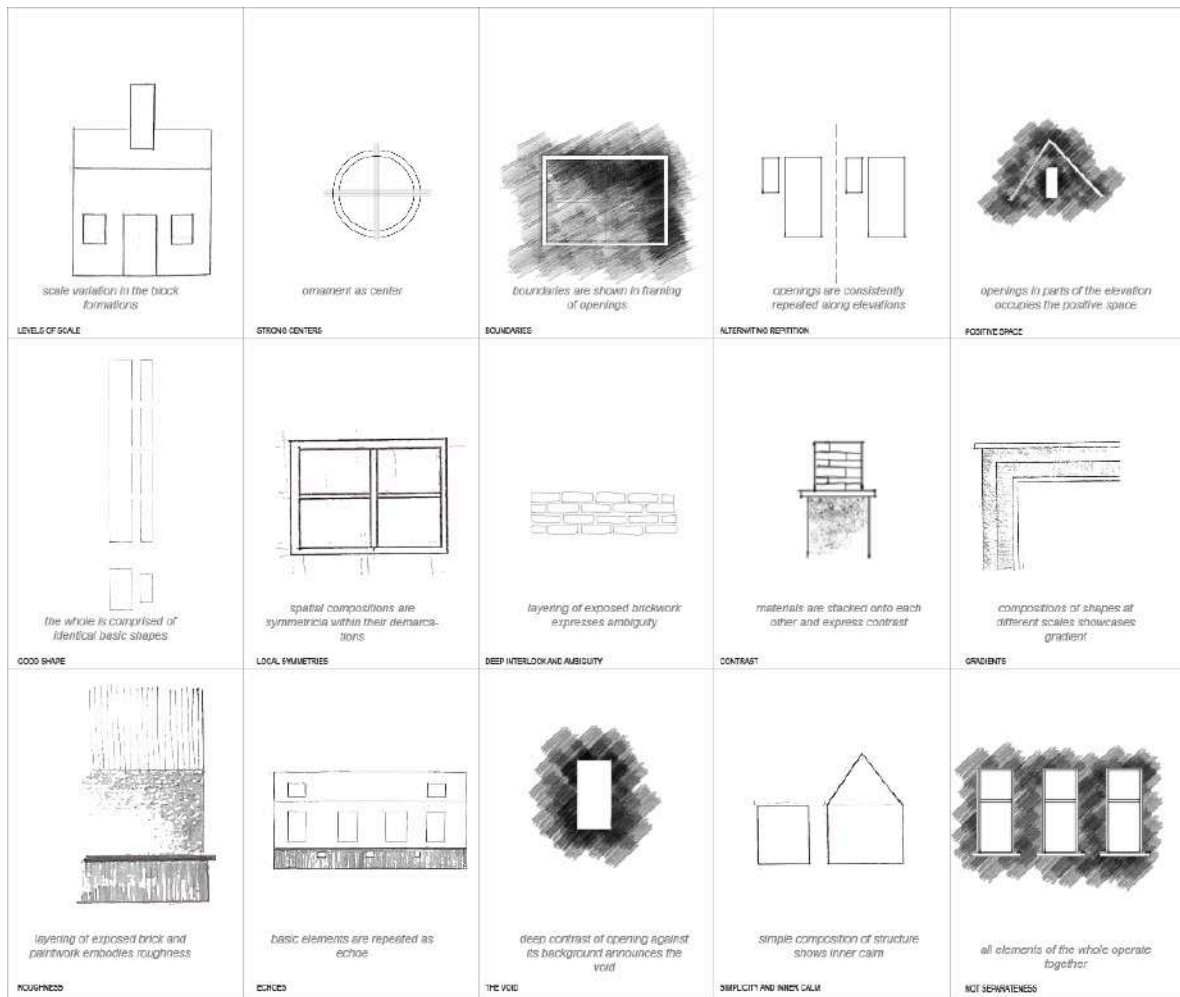


Figure 19 housing complex analysis (Author 2024)

Report

Score	Observation and notes
(3)	Much like many of the buildings across the village this building makes good use of texture and simple shapes to generate its form. There is a charm in its simplicity that ought to be preserved in the pattern language.

Table 15 Housing complex report (Author 2024)

3.4.3 Artefact 3 Westfort village catholic church

The Catholic church is part of a few churches that were oriented to cater for a plurality of belief systems.

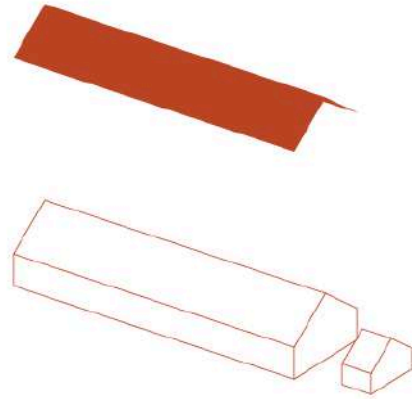


Figure 20 westfort Village Catholic church (Grunewald 2012)

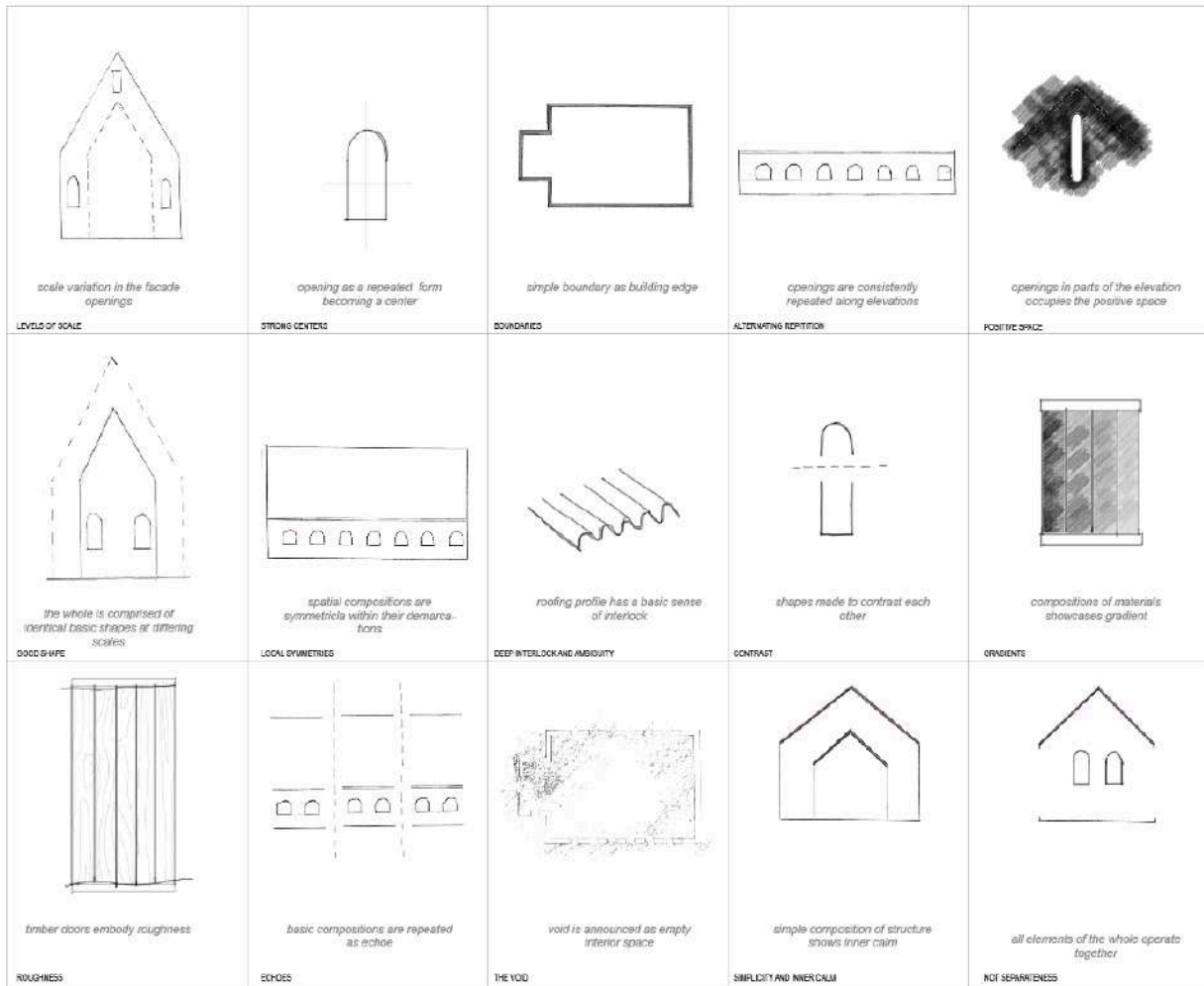


Figure 21 Catholic church analysis (Author 2024)

Report:

Score	Observation and notes
(3)	This artefact falls short in presenting ambiguity or a sense of their being more. In this case the simple structure and layout is overwhelming and if coupled with more spatial gestures that are informed by the Alexandrian properties this artefact would hold a greater degree of wholeness within it.

Figure 22 Catholic church report (Author 2024)

3.4.4 Artefact 4 Westfort village rondavel housing

The rondavel housing is the only native building typology on the site.

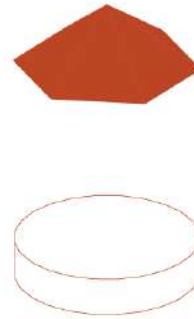


Figure 23 Rondavel huts (Grunewald 2012)

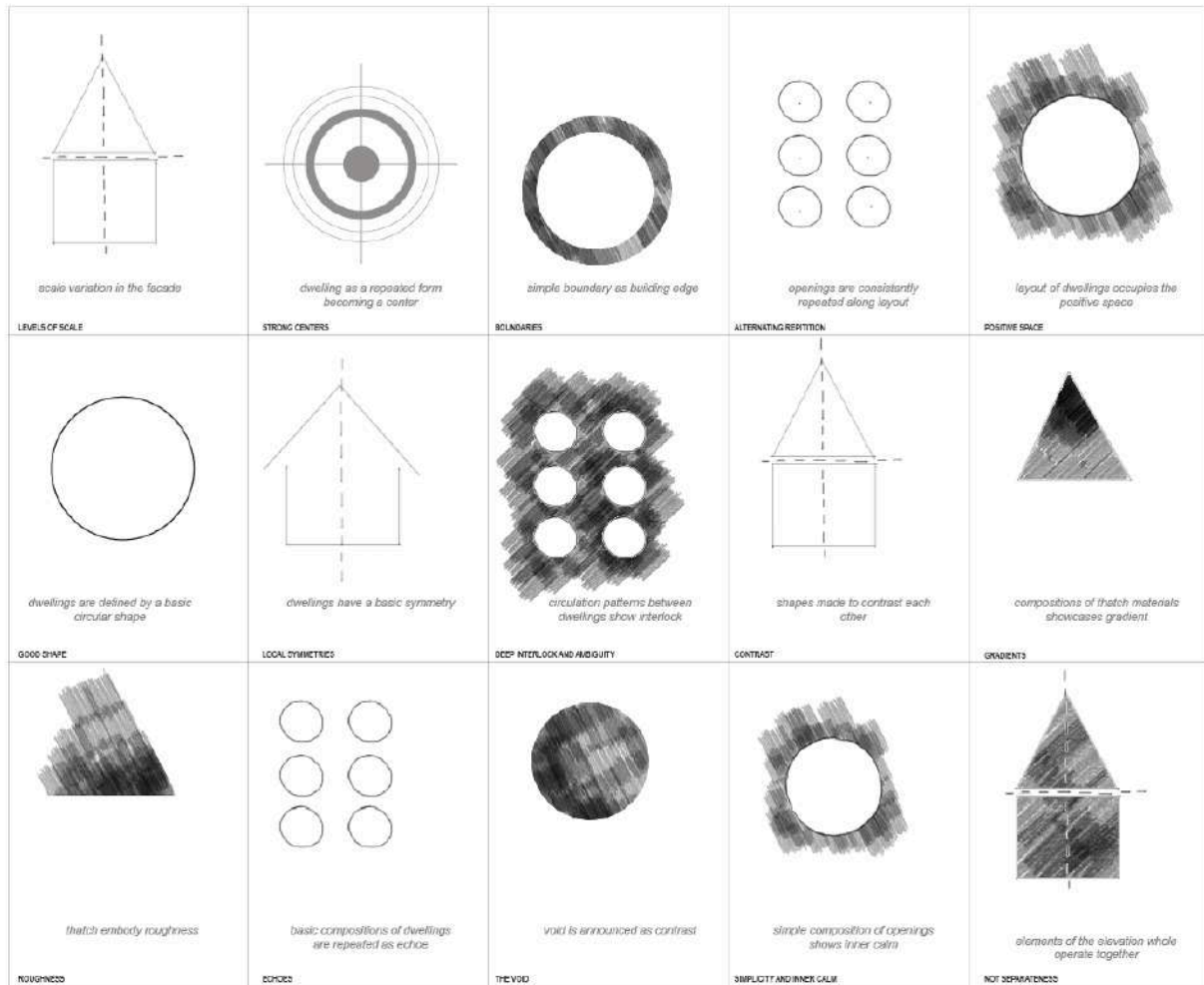


Figure 24 Rondavel huts analysis (Author 2024)

Report:

Score	Observation and notes
(2) wholeness.	As the only indigenous building type in the whole village these rondavels fall short of presenting a connection with African building typologies. The circular forms are a welcome contrast that contributes to the region and can be used to inform the pattern language.

Table 16 Rondavel huts report (Author 2024)

3.4.5 Artefact 5 Westfort village dutch reformed church

The Dutch reformed church on the site designed by Sytze Wierda.

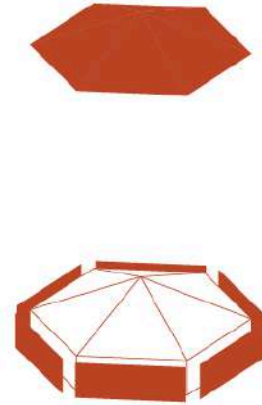


Figure 25 Figure 20 Octagonal church (Grunewald 2012)

Graphic analysis:

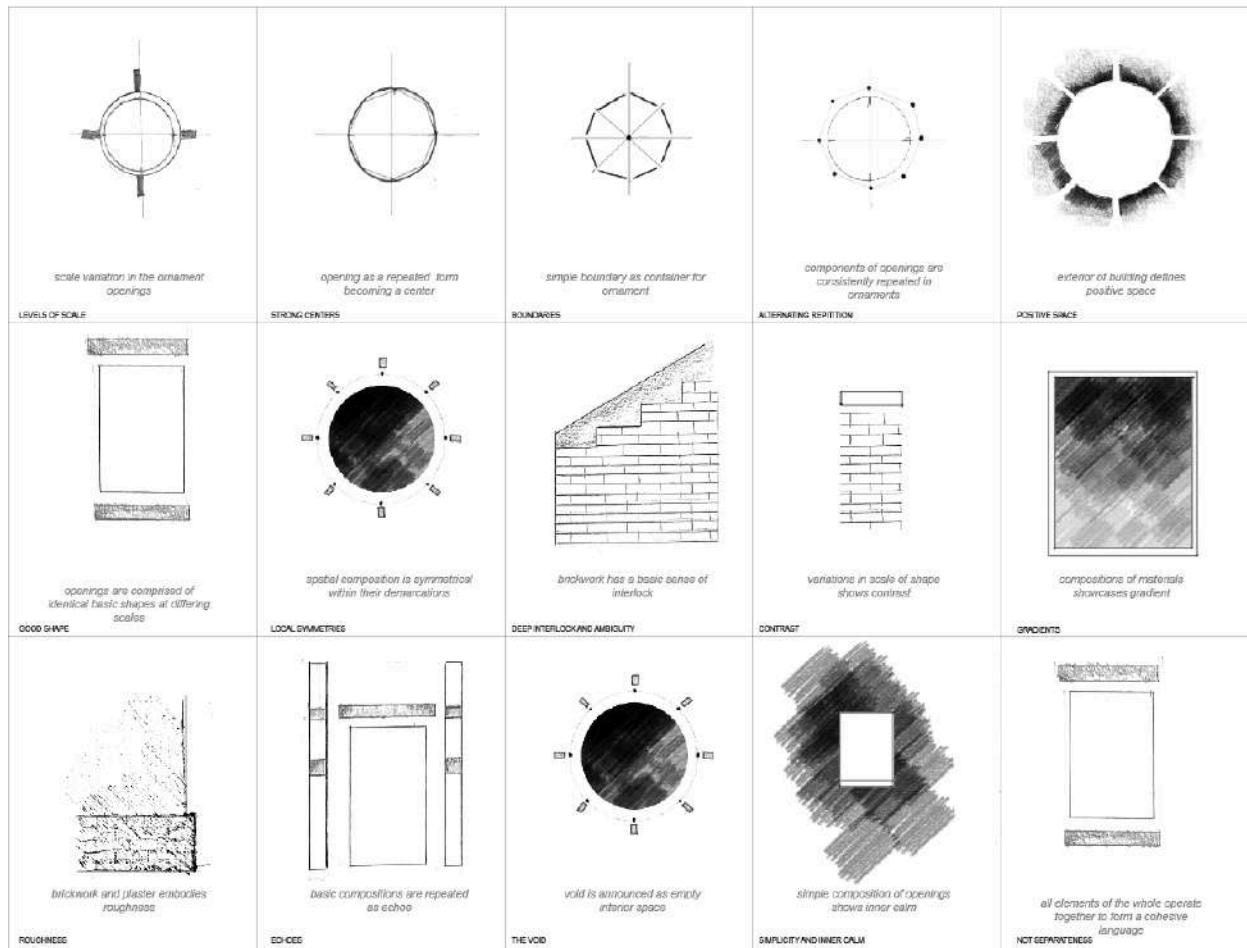


Figure 26 octagonal church analysis (Author 2024)

Report:

Score	Observation and notes
(3)	This octagonal church lacks monumentality for the gestures it holds. If coupled with buildings closer to it that could compliment scale and textures used, this building would be a good precedent for the region as a whole. However the gestures the artefact possess contribute to the building's unique identity.

Table 17 Octagonal church report (Author 2024)

3.4.6 Artefact 6 Westfort village old administration building

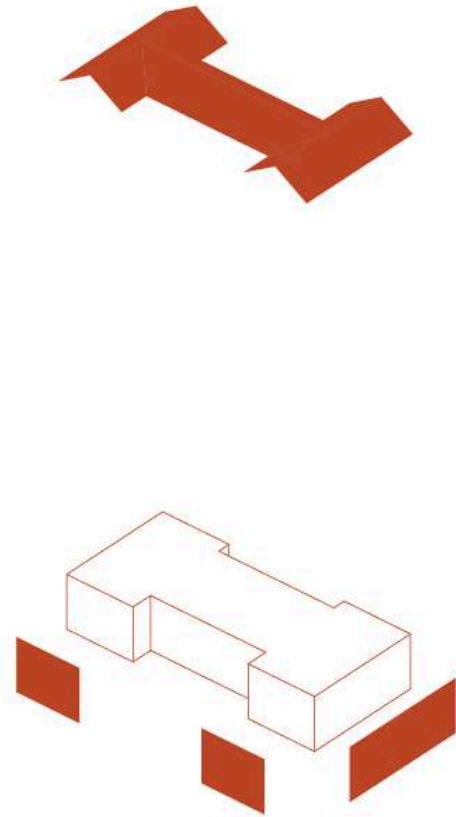


Figure 27 Old administration building (Grunewald 2012)

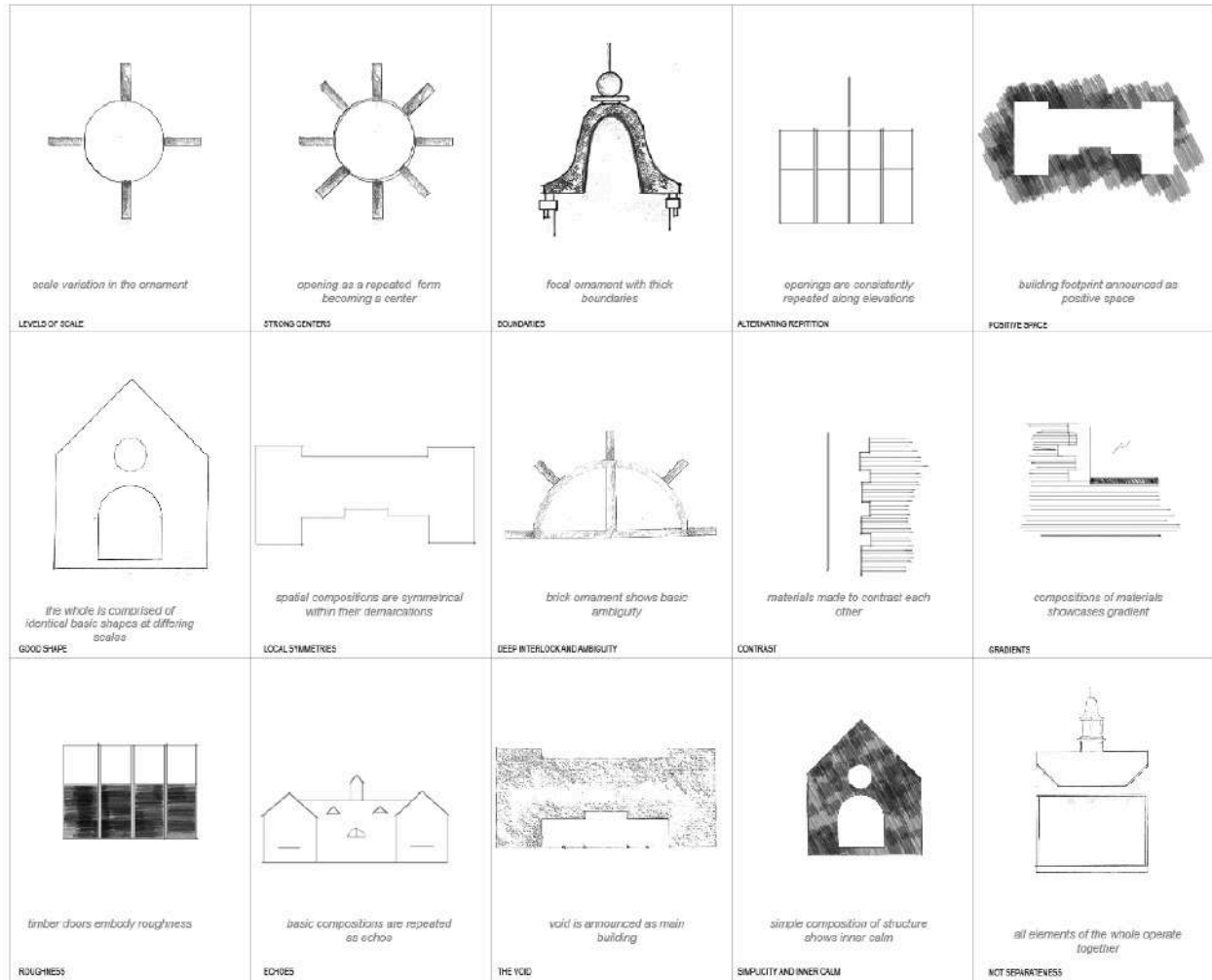


Figure 28 old administration building analysis (Author 2024)

Report:

Score	Observation and notes
(3)	This building contains a lot of the gestures that are present in the region. The repetitive forms at differing scales work well to speak to the region's imposed identity. The layering of materials and observation of their contrasting connection is useful in defining the pattern language

Table 18 old administration building report (Author 2024)

3.4.7 Artefact 7 Westfort village old pharmacy building

The old pharmacy building is currently dilapidated and in need of repair. The language of the architecture remains prominent.

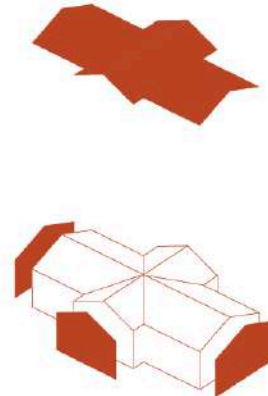


Figure 29 Old Pharmacy building (Grunewald 2012)

Graphic analysis:

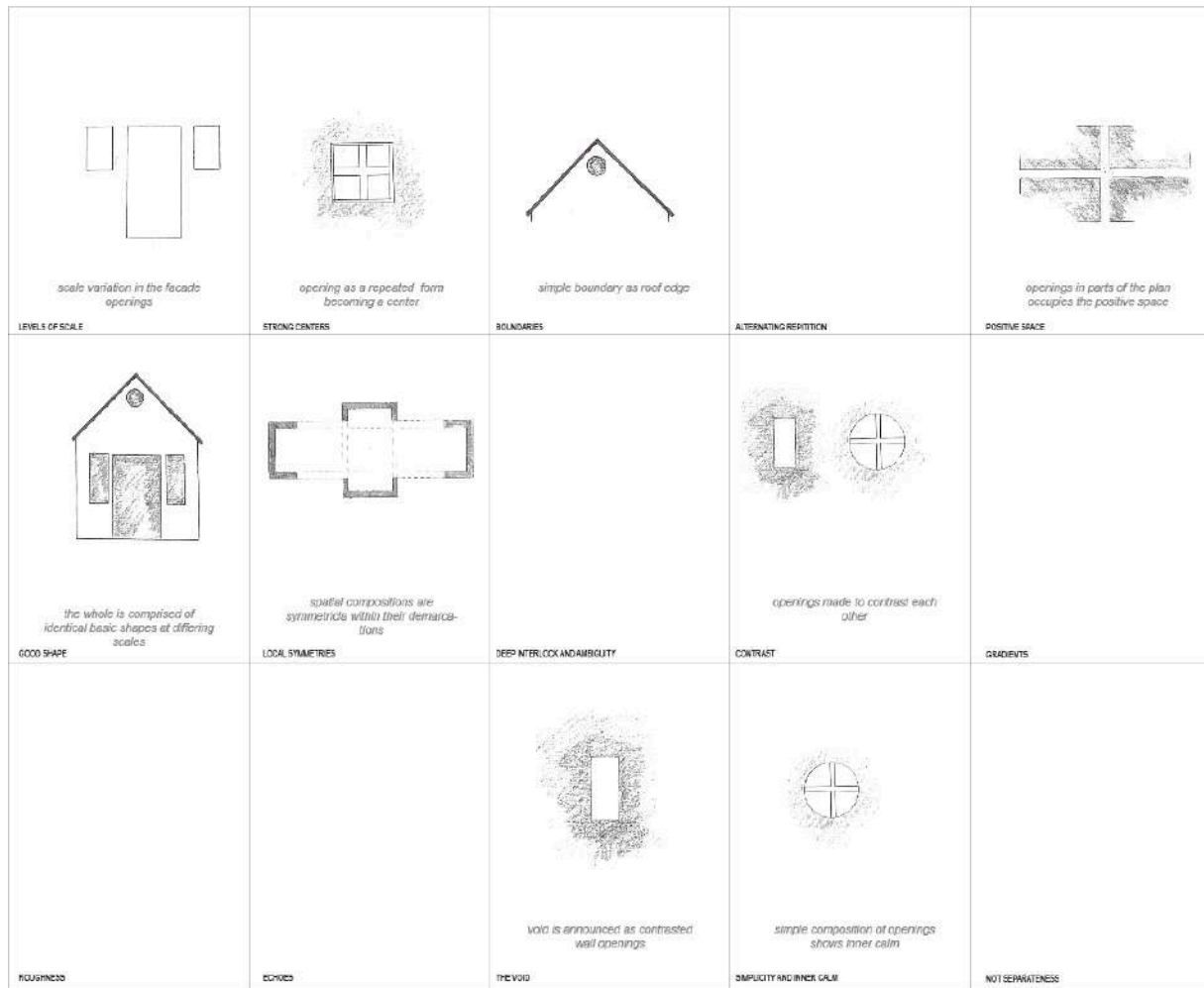


Figure 30 old Pharmacy building analysis (Author 2024)

Report:

Score	Observation and notes
(3)	This building presents itself very simply in the region with basic form and minimal variation in scale and texture. Buildings similar to this one have the potential to be reimagined to better house the Alexandrian properties.

Table 19 old pharmacy building report (Author 2024)

3.5 Summary and observations

This artefact analysis revealed many positive spatial gestures that are to be celebrated in the development of the pattern language and also showcased many of the shortcomings in their designs.

Observation 1:

The program specific artefacts are mainly designed with functionality in mind and a commitment to the technical and legal requirements of healthcare institutions. This is more pronounced as time goes on with the buildings housing these programmes being focused to accommodate the accommodation schedules. The contemporary building style prevalent in the Pretoria region is also problematic in that some of the gestures expressed are not designed for immediate gratification and do not possess a level of richness within them that allows one to experience the building at different scales. In a sense the poetry in the buildings is lacking.

Observation 2:

The Westfort Village region is demarcated spatially with buildings that were intended to form the leprosy village and serve its various needs. The repetitive use of similar form and textures allows for the village to take on a unique character. The pattern language will look to provide a series of spatial gestures that can also manifest at a similar scale to redefine the identity of the village as a whole.

Observation 3:

The artefacts collectively speak to a shallow to moderate presentation of aliveness. The components that define them are placed together in a way that is void of the deep intimate level of craftsmanship that appeals to humans as we appreciate good buildings. The effect of time is also evidenced in that a lot of the buildings built before the turn of the century are more closely aligned with the principles of wholeness that Alexander speaks about.

Chapter 4 - Pattern Language presentation

4.1 The pattern language

The core concept of *A Pattern Language* is that design can be broken down into a series of patterns, each addressing a specific problem or aspect of the built environment. These patterns range from large-scale urban planning issues to minute architectural details. Each pattern is presented as a solution that has proven effective across various contexts and times. The book contains 253 patterns, organised hierarchically from the most general, concerning regional planning and city design, to the most specific, such as room layouts and construction details (Alexander 2018:3-9)

The presentation of this new pattern language is at the building scale and venturing into the ornament scale at some points. The use of this pattern language is meant to inform specifically the design of a psychiatric healthcare building in westfort village that makes use of the Alexandrian properties of wholeness. This pattern language can be expanded to take on different programmes as well, when in full effect the pattern language should define the built identity of the region.

4.2 The roof the walls and the floors

The Oxford English Dictionary defines a building as a structure with a roof and walls. These primary building elements are complemented by a floor plane that serves as the foundation. This pattern language presentation aims to develop a well-informed language of architectural gestures that manifest in form to aid in the rehabilitation of psychiatric patients. These three primary elements are expanded upon to become vehicles for manifesting the Alexandrian properties of wholeness.

The pattern language presentation will first define each of the aforementioned primary building elements and use those definitions to present a pattern language capable of informing the design and manifestation of a psychiatric facility. By examining these three elements as more than mere geometric forms, this approach seeks to create spaces that support the psychological well-being of their inhabitants.

Walls

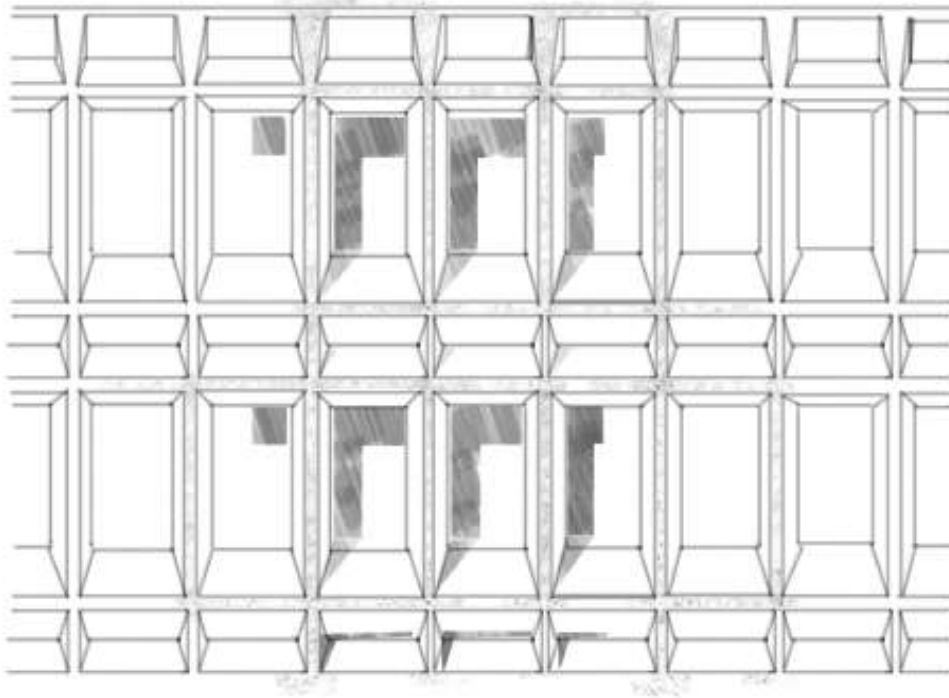


Figure 31 IBM research centre La Gaude, Var, France Marcel Breuer adapted from (Ching 2014)

In traditional architecture, walls are the vertical elements that define spaces, provide shelter, and support the roof. In the context of psychiatric rehabilitation, walls should be designed to offer a sense of security and privacy while allowing for a visual connection to the outside environment. Studies have shown that access to natural light and views of nature can noticeably reduce stress and improve mood in psychiatric patients (Ulrich 1984:420-421). Walls present themselves to us at eye level, appearing as vertical two-dimensional planes capable of defining space. When walls connect with other walls, they form containers of three-dimensional spaces. In psychiatric settings, these walls must balance the need for security and privacy with the therapeutic benefits of openness and natural light. By thoughtfully designing these vertical elements, architects can create environments that support both the physical structure and the psychological well-being of patients, fostering spaces that are not only functional but also healing. This holistic approach underscores the importance of integrating architectural principles with psychological insights to enhance patient care and recovery.

The pattern language will use this term to categorise built elements and show how they can be used in design.

Floors

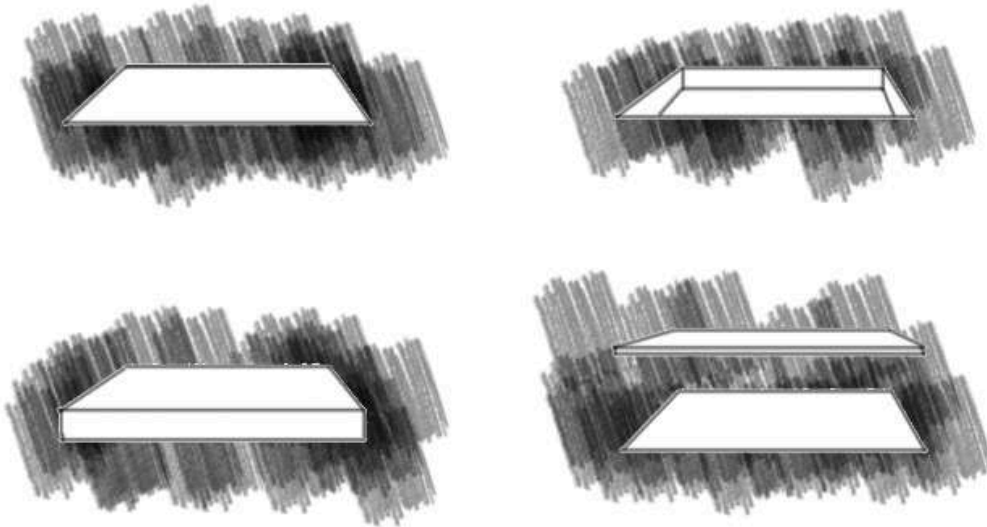


Figure 32 Floor principles Ching (2014)

The floor as the base plane, a flat two-dimensional figure against a contrasting backdrop, shapes space and gives structure to our surroundings (Ching 2014).

The floor plane serves various purposes, from facilitating access to fulfilling ritualistic needs in sacred spaces, to being an artistic expression in itself. By documenting a graphic language for floors that share similarities, we aim to promote consistency and coherence within a given environment.

For instance, the intricate floor designs found in Muslim mosques aren't merely decorative; they guide worship practices. These designs, repeated across mosques globally, contribute to a universal language of mosque design. Similarly, this pattern language of floors can guide designers in shaping spaces for different rehabilitation activities within built structures.

Roofs

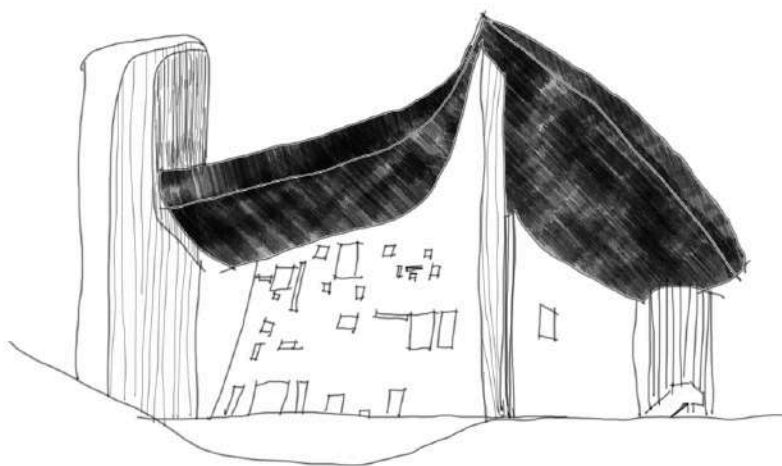


Figure 33 Ronchamp Chapel Le Corbusier (Author 2024)

The roof represents the fundamental necessity of shelter, providing a covering over one's head. Throughout various periods, the concept of the roof has evolved diversely. During the rise of the modernist movement, Le Corbusier reimagined the roof as more than just a functional covering, but as an additional facade that could serve as inhabitable space. The reimagined roof gives agency to the working out of the pattern language that the roof can be developed to have prominence not only as a stylistic device that speaks to the identity of the place but also as a functional element of the building that could potentially serve more than one purpose.

Consistent typologies of roofs play a vital role in establishing a recognizable pattern language, contributing to the character and identity of a place. Think of the white-washed buildings along the shores of Greek cities or the prevalent use of clay roof tiles across Europe; such roofs imbue regions with distinct character. When fully realised, this pattern language should be consistently replicated throughout a region, lending it a renewed sense of identity and presence.

To achieve this, the roof must be considered at various scales. This comprehensive approach ensures the roof's prominence within the region and provides designers with a rich vocabulary to craft a cohesive language throughout.

In the design of new psychiatric facilities, the roofing profiles should adhere to Christopher Alexander's 15 properties of wholeness. While the roof, as a basic geometric element, may not directly impact the recovery of psychiatric patients, aligning its design with these properties contributes to a broader sense of wholeness within the building and the region. This holistic approach can potentially enhance the recovery process for patients.

4.3 Presentation of new pattern language

The pattern language was derived from the analysis. Having identified repeated characteristics in the analysis the elements found were expanded upon and drawn with slight modifications using influence from Alexander's principles. The diagram below explains the nexus out of which the pattern language was produced.

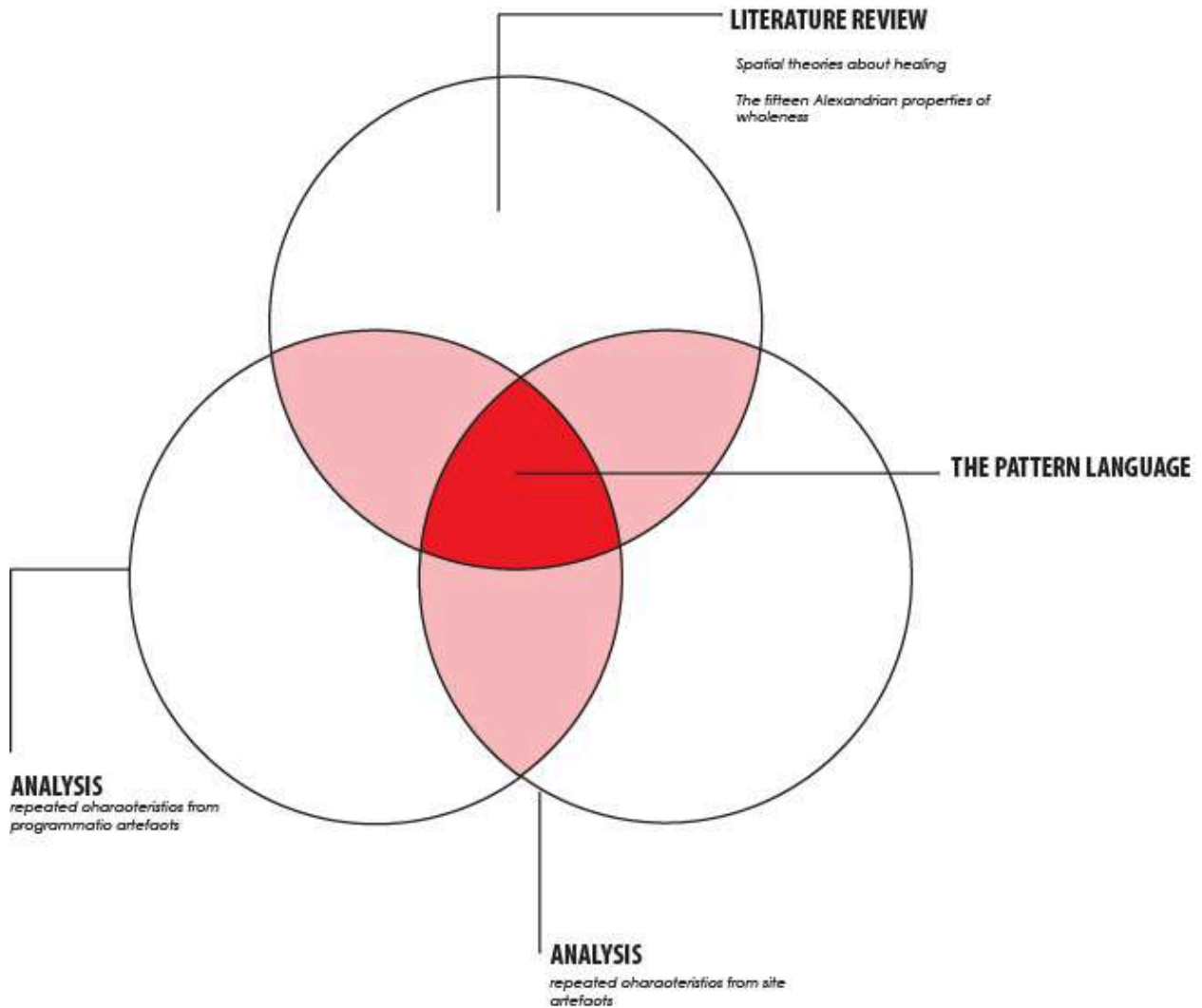


Figure 34 Pattern language explained diagram (Author 2024)

This pattern language will take 2 forms: Type A and Type B

- Type A: will provide a pattern language with a set of spatial gestures that are most closely linked with the state of the region as it is now. Developing existing motifs and iconographies within the village to produce a refined pattern language that is embodied with a richer sense of the fifteen properties of wholeness.
- Type B: will provide a set of spatial conditions that are aimed at challenging the existing typology of the village and introduce different expressions of the fifteen properties informed by indigenous spatial gestures and spatial conditions of buildings explored as precedents in earlier chapters of this research.

In an effort to add more weight to the presentation of the pattern language the book *Architecture form, space and order* by writer Francis Ching (2014) served as a cornerstone for developing clear yet meaningful notions of spatial gestures. Many of the drawings presented in this book as a whole and in the pattern language in particular take precedence from the work of Ching in an effort to guide the presentation of information with clarity and purpose.

4.3.1 Type A

Roof types:



Figure 34 Roof Profiles (Author 2024)

The roofing typology of Type A is closely linked with the ones on site, strong and consistent hipped roof provides a foundation for different compositions to take place.

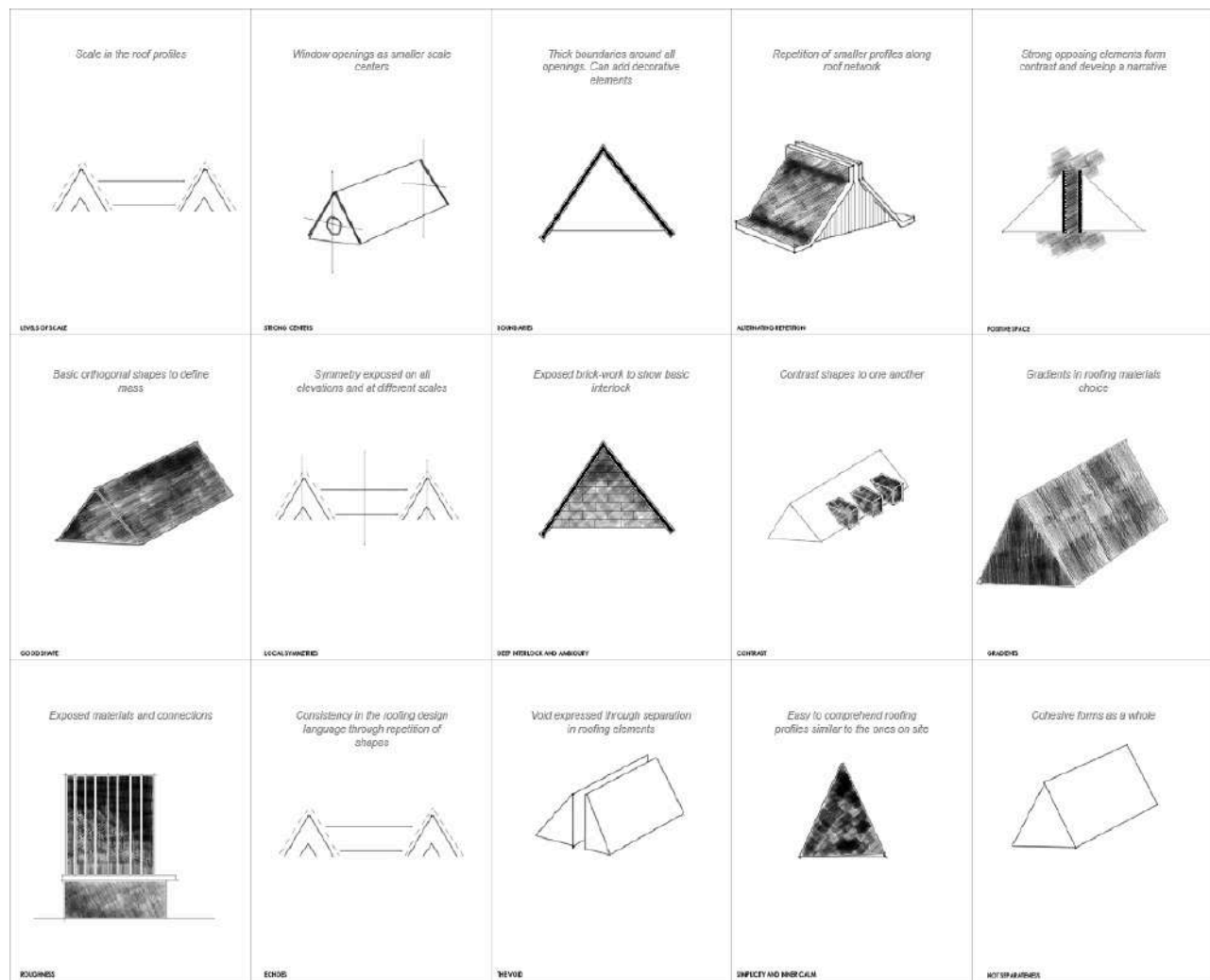


Figure 35 Roof Profiles (Author 2024)

Wall types:

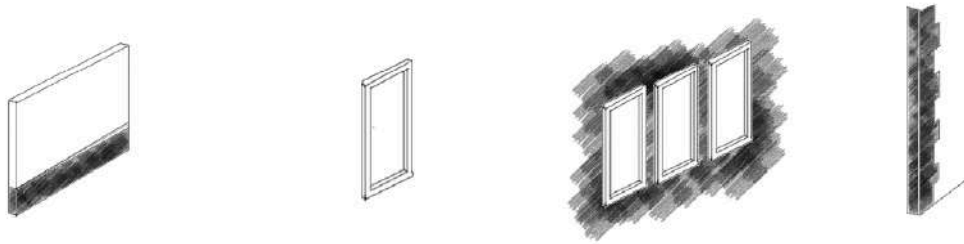


Figure 36 Wall profiles (Author 2024)

The wall types here express the simplicity of form that is present in the village but aim to accompany that simplicity with variations of form and textures to add character to the wall profiles.

<p>Scale the wall elements to announce different spaces</p> <p>UNUS EFSQUE</p>	<p>Thick boundaries around openings in the walls to define centers</p> <p>SING CHIBES</p>	<p>Negative space around openings behaves as a boundary</p> <p>BOYOWES</p>	<p>Basic repetition of smaller elements scaled within larger elements</p> <p>ALBHDANG IETEBER</p>	<p>Thick wall masses that demarcate the surrounding empty spaces</p> <p>POSINEPACE</p>
<p>Provide simple shapes to contain space</p> <p>BOCO SHUP</p>	<p>Symmetry in all elements of the wall</p> <p>LOCA SHAMBRES</p>	<p>Arrange wall profiles on plan to communicate dynamic circulation patterns</p> <p>DEP MEBROCI AND AMIBERU</p>	<p>Contrast different shapes to define space</p> <p>CHIBASE</p>	<p>Gradients in different forms of exposed brickwork</p> <p>CHADIBAS</p>
<p>Make use of layered textures to develop roughness</p> <p>BOYOWES</p>	<p>Wall elements are repeated consistently and at different scales all across the building</p> <p>BOYOWES</p>	<p>Openings in thick masses as threshold into a different space</p> <p>TEYOR</p>	<p>Basic forms to announce those in quieter places</p> <p>SIMPLICITY AND KIND CALM</p>	<p>Floor plan layout is a cohesive unit that fits well with itself</p> <p>HOUSPAREWESSES</p>

Figure 37 Wall profiles (Author 2024)

Floor types



Figure 38 Floor profiles (Author 2024)

The flooring profiles do not demarcate and give character internally only but as they are repeated will look to define the region even at a city scale view, showing repeated layout patterns informed by the properties of wholeness.

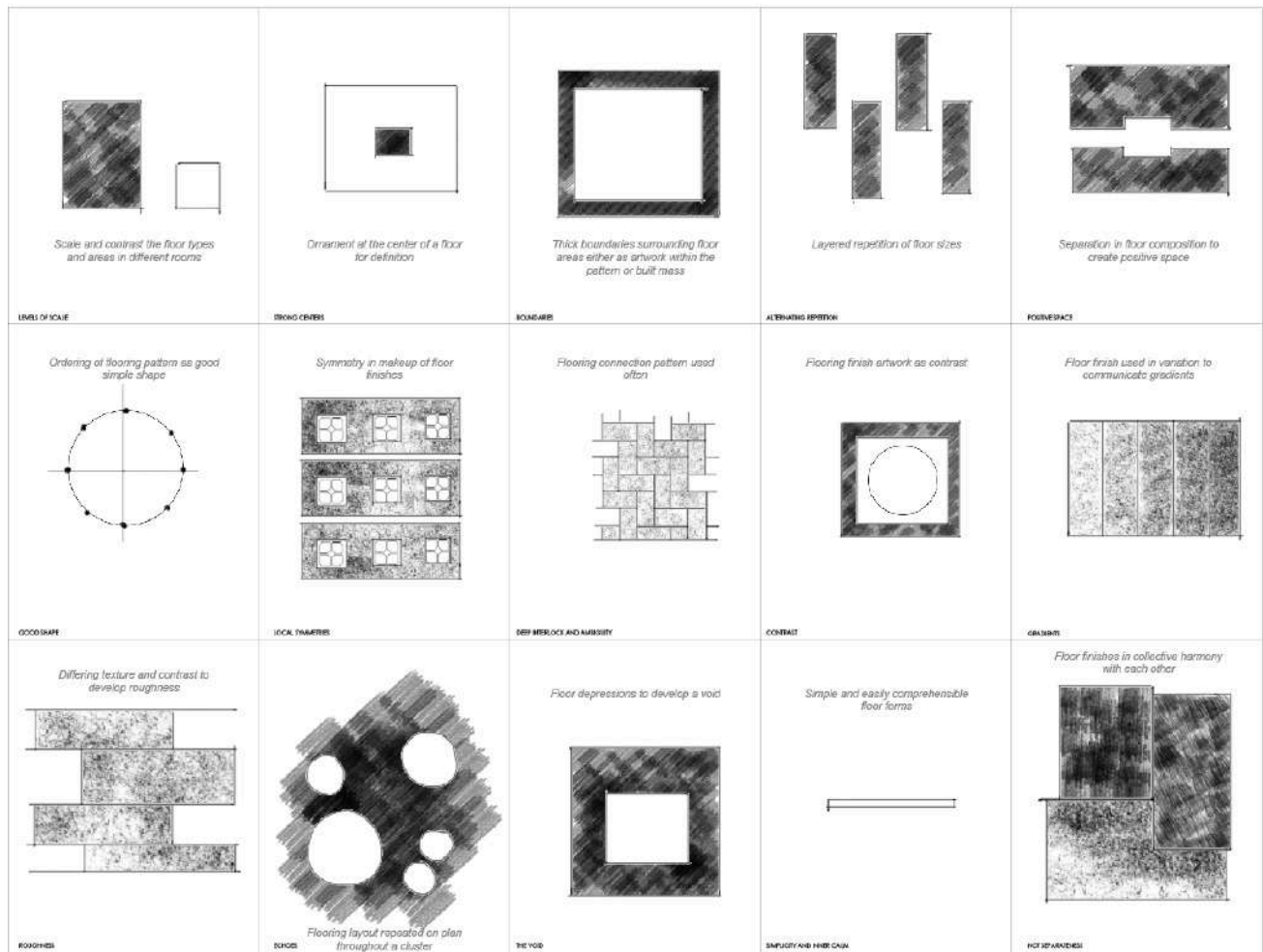


Figure 39 Floor profiles (Author 2024)

4.3.2 Type B

Roof Types

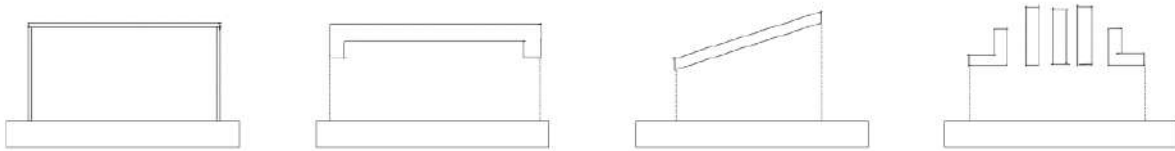


Figure 40 Roof profiles (Author 2024)

The roof profiles explored here are less specific than the ones in type a, the roofing profiles here are meant to encourage design of particular roofing profiles that have these properties.

<p>Scale in the roof profiles</p> <p>LEVEL OF SCALE</p>	<p>Roof must have identifiable character</p> <p>STRONG CENTER</p>	<p>Roof can be thick boundary overlaid</p> <p>BOUNDARIES</p>	<p>Repetitive roofing profiles</p> <p>ALTERNATING RHYTHM</p>	<p>Identifiable layout on plan across the region</p> <p>FOURLEAF</p>
<p>Elevation profiles can be seen as basic shape profiles</p> <p>GOOD BUILT</p>	<p>Symmetry is shown in the elevation breakdown</p> <p>LOCAL SYMMETRY</p>	<p>Exposed brick work shows basic interlock</p> <p>SEE THROUGH AND AROUND</p>	<p>Contrast adjacent roof profiles</p> <p>CONTRAST</p>	<p>Dark and light patterns in the same section of roof</p> <p>DIAPHRAGM</p>
<p>Exposed bricks have strong textures</p> <p>EXPOSURE</p>	<p>Identifiable built elements are repeated throughout the region</p> <p>REPEATS</p>	<p>Contrast shown in the roof depressions</p> <p>THE VOID</p>	<p>Basic forms for profiles are simple and easily comprehensible</p> <p>IMPLICIT AND FRESH CALM</p>	<p>Roof profiles are connected to each other in composition and weight</p> <p>KEY SPANNERS</p>

Figure 41 Roof profiles (Author 2024)

Wall types

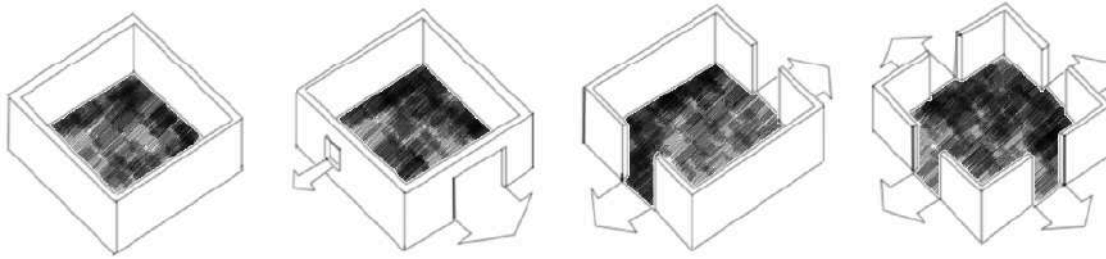


Figure 42 Wall profiles Ching (2014)

The wall typologies are designed to encourage dynamic movement through the space and provide agency as a tool for story telling in the space. As the facility is designed the occupants will feel a sense of nurture as the building constantly seeks to encourage movement and complimentary moments of contemplation.

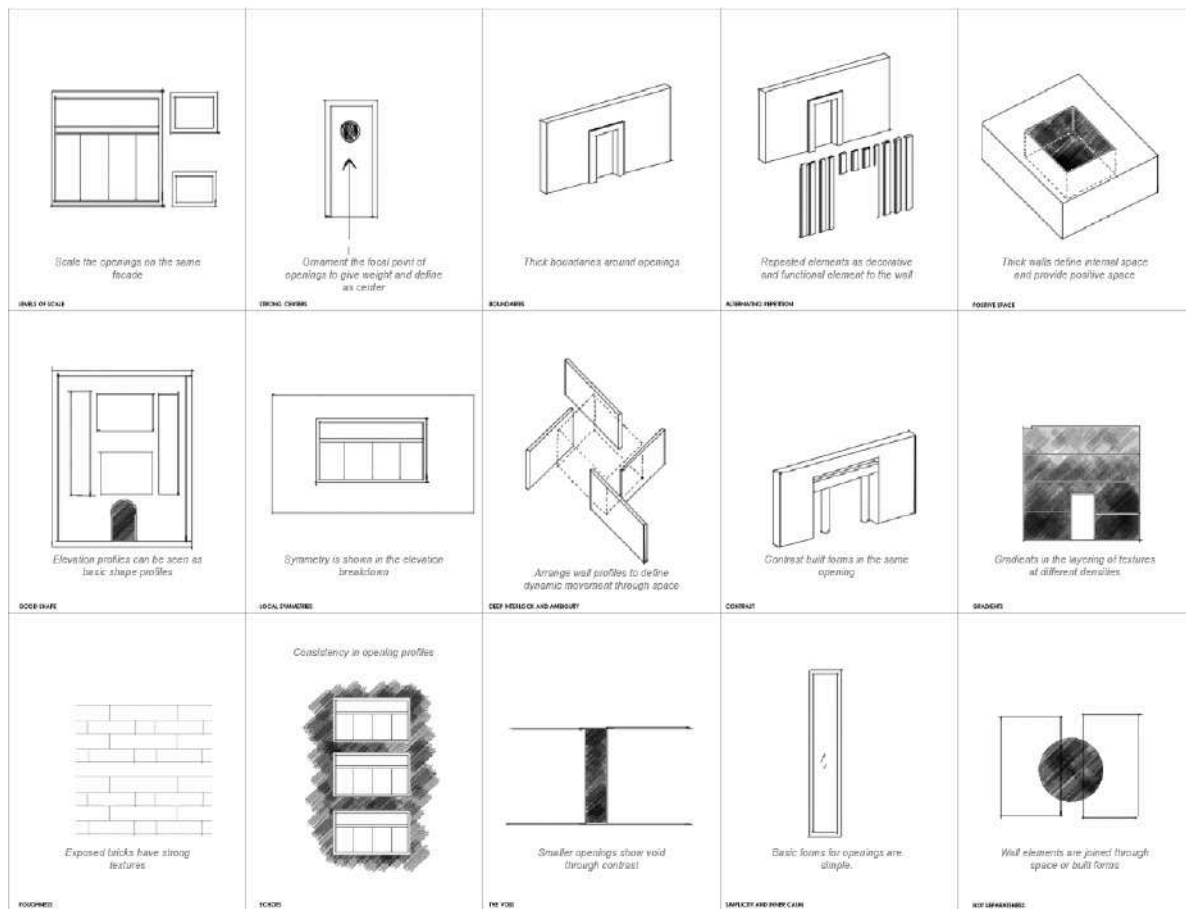


Figure 43 Wall profiles (Author 2024)

Floor Types

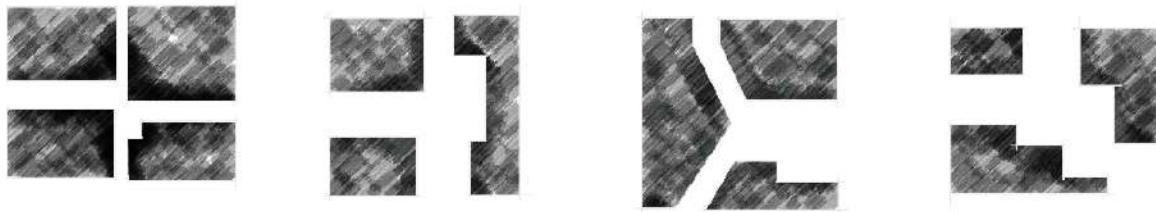


Figure 44 Floor profiles (Author 2024)

The flooring types here mainly rest as vehicles to define interior space and provide a sense of wholeness inside the building. The flooring patterns not only present themselves as ornament but also as functional tools with changes in texture and gradient being able to announce the rhythm of the space and quality of others.

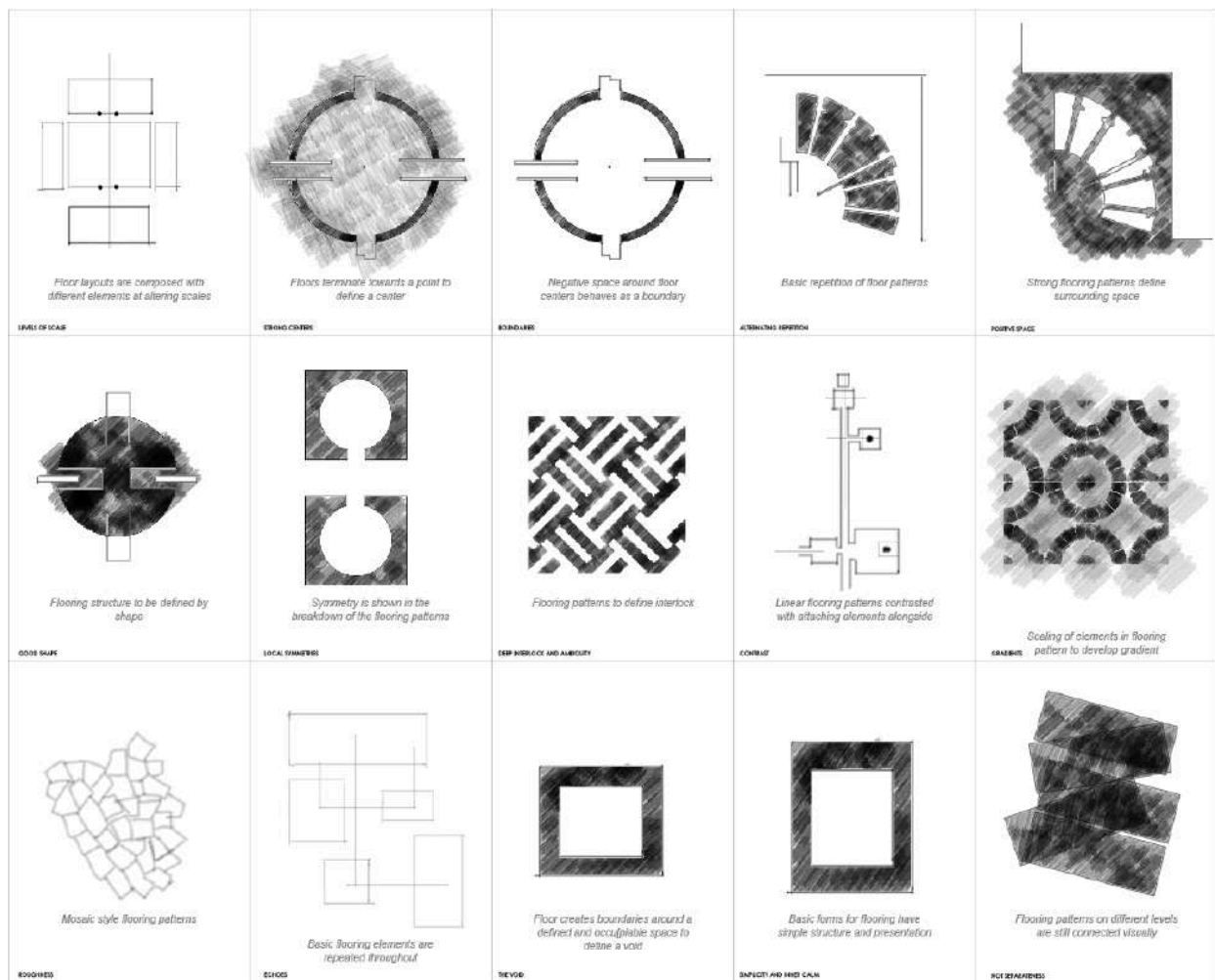


Figure 45 Floor profiles (Author 2024)

4.3.3 Compositional ideals

As a motion towards what the ultimate realisation of this pattern language could look like, a phenomenology study that showcases the potential reality of the user experience proves helpful. The two compositional ideals below are a basic representation of what the composition of the gestures in each type could look like when manifested as a series of design considerations. These Ideals are presented as an end to the research presented, taking a design leap into what will be developed and fully realised at the end of the design project.

The diagram below explains how the research has made its way to present the compositional ideals.

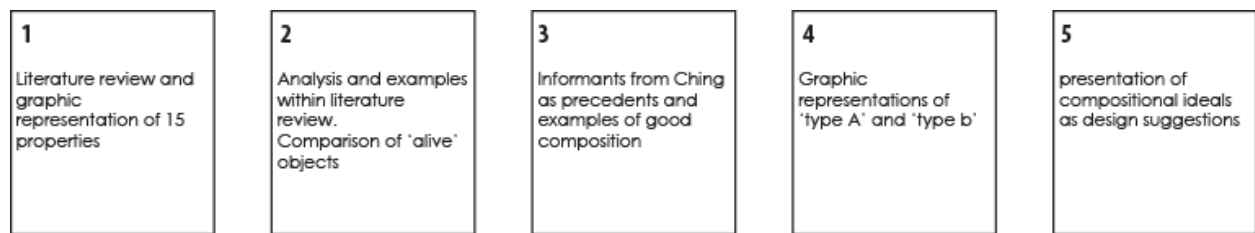


Figure 46 Compositional ideals (Author 2024)

Type A compositional ideal:

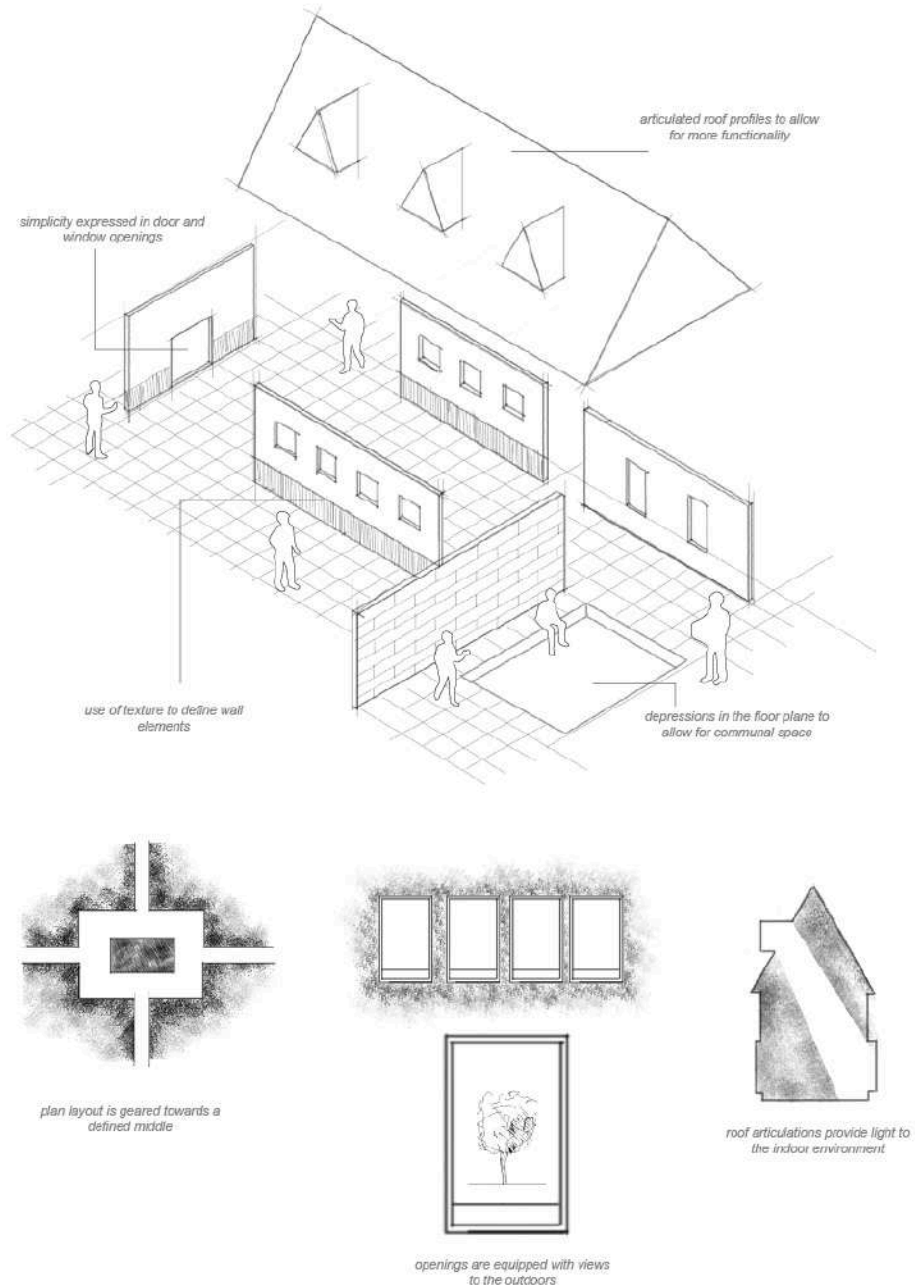


Figure 46 Type A compositional ideal (Author 2024)

The manifestation of the 'type A' pattern language gives a look and feel that is very similar to the current pattern language of the region. One of the pros of this pattern language will be that although it may not be starkly different it is designed better, with a richer connection to the alexandrian properties.

Type B compositional ideal:

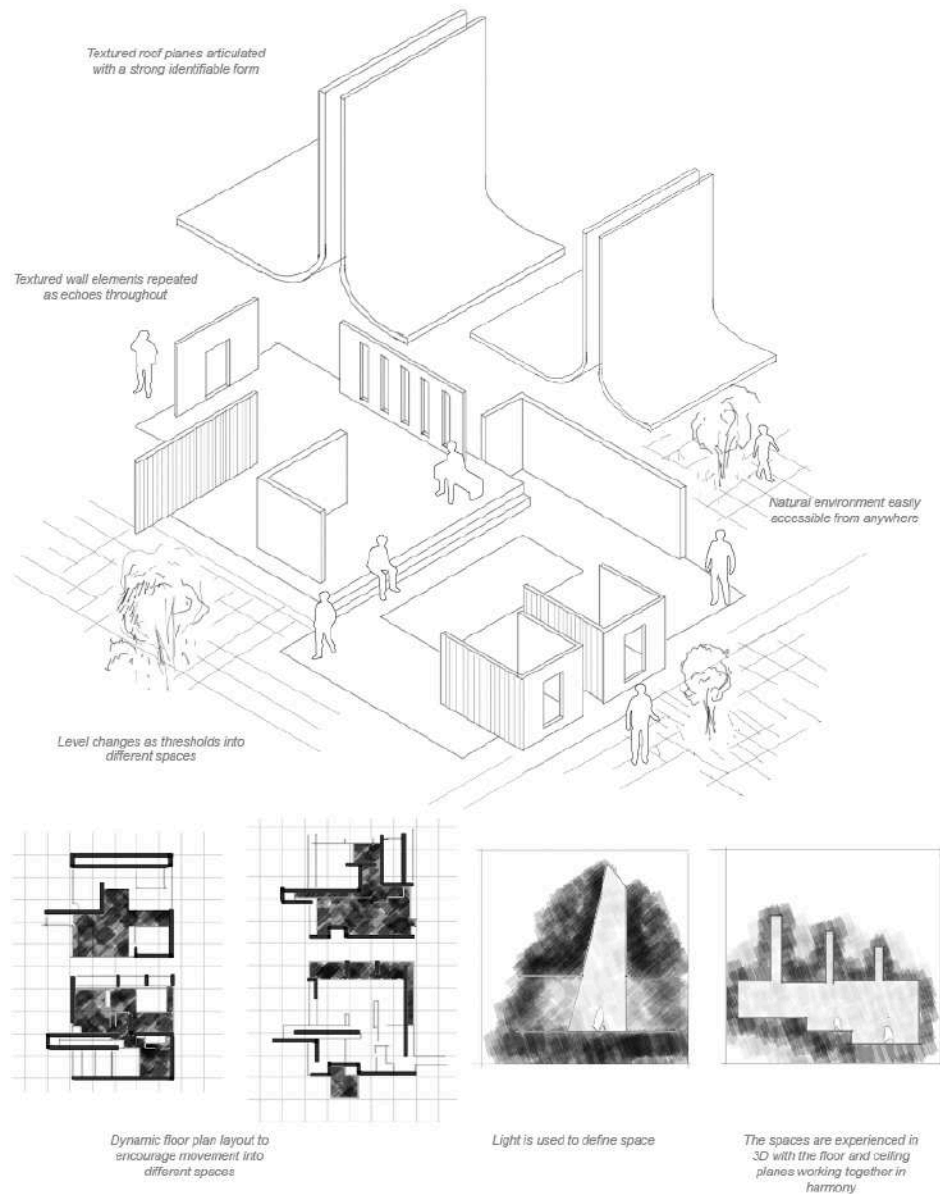


Figure 47 Type B compositional ideal (Author 2024)

This spatial study shows the composition of the less specific elements, gesturing more towards what each element should be doing. The spatial condition of this type leaves room for expansion and repetition with strong identifiable forms that are able to be repeated at different scales all across the region.

Chapter 5 - Close out and summary

5.1 Interpretation of data and discussion of meaningful findings

Observation 1

The relationship between architecture and healthcare should be further explored to provide designers with comprehensive design guidelines that include both qualitative and existing technical aspects. Integrating these guidelines will enable architects to create environments that are not only functional but also enhance the well-being of patients and staff. Juhani Pallasmaa emphasises the importance of sensory experiences in architecture, which can significantly impact the healing process (Pallasmaa, 2005). Additionally, Christopher Alexander's theories on pattern language highlight the need for spaces that promote human comfort and satisfaction (Alexander, 1977). Therefore, a holistic approach to healthcare architecture is essential for optimising health outcomes and patient experiences.

Observation 2

The Alexandrian principles offer valuable insights into design; however, there is a lack of supporting literature that provides precedents within the African context. This gap hinders architects and designers from fully realising the potential of the fifteen properties of wholeness in their work. Christopher Alexander's concept of wholeness, which emphasises the interconnectedness of elements in design, is universally applicable but requires contextual adaptation (Alexander, 2002). To bridge this gap, it is essential to develop case studies and literature that illustrate how these principles can be effectively implemented in African settings, thereby enriching the global discourse on architecture.

Observation 3

The themes on how our brains perceive information, as expanded upon by Iain McGilchrist, are crucial for equipping architects with the tools to understand user profiles and meet human needs both tangible and intangible. McGilchrist's work on the brain's hemispheric functions reveals how different modes of thinking influence our interaction with spaces (McGilchrist 2009). This understanding is vital for architects to design environments that cater to the cognitive and emotional needs of users. By integrating insights from neuroscience into architectural practice, designers can create spaces that enhance well-being and foster positive experiences for inhabitants.

5.2 Revisit research questions.

The initial set of research questions explored in the research have been met with a conclusion:

- What architectural theories and conditions currently exist to better understand and define the existential questions of life and lifelessness?

The work done by Christopher Alexander in developing the 15 properties of wholeness allows the architect to not only investigate the built form they see but to understand to some extent the impact that the building has in ways we do not see. The theories presented in his work open up to theories such as the theory of centres and wholeness which can be adapted in many ways.

These tools for analysis prove helpful in developing a refined means of understanding built form and pursuing to design architecture where the designer is mindful to curate the physical presence of the building in a way that shows care to both the tangible and intangible aspects of the built form.

- Where does Christopher Alexander's theory of wholeness address the short-comings of contemporary architecture and how can that principle be adapted for effective use in psychiatric rehabilitation?

Firstly, his theory enables the architect to be critical of 'lifeless' buildings, providing them with a well-informed lens through which they can interrogate the state of modern and contemporary architecture. This is still a little bit more metaphysical as he introduces questions with regards to 'aliveness' and the way we 'feel' towards buildings. Secondly Alexander then equips the architect with a guide through the 15 properties through which the architect can both expand upon his or her criticism of the built forms around them and be equipped to design the kinds of buildings that would not suffer the same criticism they would give to lifeless buildings.

- How can the manifested series of explorations be used in generating a pattern language that will be adequate in equipping the designer to build a psychiatric healthcare centre?

The Pattern language is designed out of a diligent exploration of artefacts without which the pattern language would not exist. The nature of designing good buildings as per the Alexandrian theoretical framework would require buildings to be built with context in mind or rather with a sensitivity to other 'centres' that are in close proximity. The pattern language especially 'type A' is rooted within its context and provides a deep level of placeness that would complement the work of rehabilitation being done inside the buildings.

5.2 Close out

In concluding the findings and the literature explored in this study it is evident that the architectural profession ought to be guided by a pursuit of something more, in order to wage war against placelessness and the prevalence of poor, ill-informed building practices in the built environment. The theoretical framework presented by Christopher Alexander is a valuable tool that every architect must have as they navigate the architectural field. The architect must be able to understand the world around them with a balanced perception of reality not leaning too heavily on one hemisphere over the other.

This research presents the architect with a poetic challenge that is to be explored thoroughly in the individual capacity of every designer and that is: To build beautiful buildings for goodness' sake.

List of References

- Admin Vista Clinic. 2014. *Celebrating 30 Years of Specialised Psychiatric Care*. [Online] Available from: <https://vistaclinic.co.za/celebrating-30-years> [Accessed 2024-06-06].
- Ahmed, Z. N. 1995. Modernism in architecture and its aftermath. *Theoretical Perspectives, Centre for Research on Politics. University of Dhaka*, 1(1):19-44.
- Alexander, C. 2002. *The Nature of Order, Book One: The Phenomenon of Life: An Essay on the Art of Building and The Nature of the Universe*. United Kingdom: Center for Environmental Structure.
- Anthony, W., Farkas, M. 2009. *Primer on the psychiatric rehabilitation process*. Boston, MA: Boston University Center for Psychiatric Rehabilitation.
- Baumgartner, P. 2017. *Pursuit of Pattern Languages for Societal Change - PURPLSOC: Designing Lively Scenarios in Various Fields*. Germany: Edition Donau-Universität Krems.
- Bond, G.R., Drake, R.E. 2015. The critical ingredients of assertive community treatment. *World Psychiatry*, 14(2):240–242.
- Bradbury, M., McFarlane, J. 1976. *Modernism: A Guide to European Literature 1890-1930*. Kiribati: Penguin Books..
- Cambridge Dictionary. 2005. *Lifelessness*. [Online] Available from: <https://dictionary.cambridge.org/dictionary/english/lifelessness> [Accessed: 2024-03-17].
- Caputo, J.D. 2019. *On Religion*. 2nd ed. London, England: Routledge.
- Ching, F.D.K. 2014. *Architecture : Form, space, and order*. 4th ed. Hoboken, NJ: Wiley.
- City of Tshwane. 2024. *e-GIS Viewer (Geographic Information System)*. [Online] Available from: https://e-gis002.tshwane.gov.za/E_GIS_Web/ [Accessed: 2024-06-09].
- Connellan, K., Gaardboe, M., Riggs, D., Due, C., Reinschmidt, A., & Mustillo, L. 2013. Stressed spaces: Mental health and architecture. *HERD: Health Environments Research & Design Journal*, 6(4):127-168.

Corbin, H. 1976. *Mundus Imaginalis: Or, The Imaginary and the Imaginal*. United Kingdom: Golgonooza Press.

Corbusier, L., Etchells, F. 1929. *The city of tomorrow and its planning*. London: John Rucker.

Davies, T., Daniels, I., Roelofse, M., Dean, C., Parker, J., Hanlon, C., et al, editors. 2023. Impacts of Covid-19 on mental health service provision in the Western Cape, South Africa. *The MASC study*. 18(8). [Online] Available from: <https://pmc.ncbi.nlm.nih.gov/articles/PMC10461815/#:~:text=Results%20showed%20that%20Covid%2D19,closure%20of%20psychosocial%20and%20therapeutic> [Accessed: 2024-04-26].

Dawkins, R. 1986. *The blind watchmaker : why the evidence of evolution reveals a universe without design*. London: Penguin Books.

Daykin, N., Byrne, E., Soteriou, T., O'Connor, S. 2008. The impact of art, design, and environment in mental healthcare: A systematic review of the literature. *The Journal of The Royal Society for the Promotion of Health*, 128(2):85-94.

Eliade, M. 1987. *The Sacred and the Profane: The Nature of Religion*. Translated by W.R. Trask. San Diego, CA: Harcourt Brace Jovanovich.

Friedrich Nietzsche 2012. *On truth and lies in a nonmoral sense*. Scotts Valley, CA: CreateSpace Independent Publishing Platform.

Giorgi, E., Cattaneo, T., Karol, P.S. 2022. The Principles of Design for Vulnerable Communities: A Research by Design Approach Overrunning the Disciplinary Boundaries. *Buildings*. 12(11):7.

Grunewald, T.D.G. 2012. *For(t)midable landscapes. Unpublished dissertation*. Pretoria: University of Pretoria.

Hedley, D. 2016. *The Iconic Imagination*. London, UK: Bloomsbury Academic.

Hillier, B., Hanson, J. 1984. *The social logic of space*. Cambridge, UK: Cambridge University Press.

Hora, D. 2021. *Alexander's 'Nature of Order,' Books One & Two Summary*. [Online] Available from:

<https://medium.com/approaching-alexander/alexanders-nature-of-order-book-one-book-two-summary-702647f3bffa> [Accessed: 2024-02-22].

Huisman, E. R., Morales, E., van Hoof, J., Kort, H. S. 2012. Healing environment: A review of the impact of physical environmental factors on users. *Building and Environment*. 58(1):70-80.

Iba, T., Munakata, K. 2018. *Wholeness Egg: Methodology of Designing a 'Living' Workshop by Differentiating a Whole*. Proceedings of the 23rd European Conference on Pattern Languages of Programs, Germany, 4-8 July. [Online] Available from: <https://dl.acm.org/doi/10.1145/3282308.3282311> [Accessed: 2024-05-11].

Ioannouolga, O. 2017. *Research by Design by R. Roggema*. [Online] Available from: <https://ioannouolga.wordpress.com/2017/06/05/research-by-design-by-r-roggema/> [Accessed: 2024-02-23].

Janson, A., Tigges, F. 2014. *Fundamental Concepts of Architecture: The Vocabulary of Spatial Situations*. Germany: De Gruyter.

Jonas Hollerup Helle. 2023. *Philip Seymour Hoffman & Robin Williams (Part 2)*. Youtube. [Video presentation]. [Online] Available from: <https://www.youtube.com/watch?v=AXwmxtCqIXU> [Accessed 2024-05-23].

Kellert, S. R., Heerwagen, J., Mador, M. 2011. *Biophilic Design: The Theory, Science and Practice of Bringing Buildings to Life*. Germany: Wiley.

Leather, P., Beale, D., Santos, A., Watts, J., Lee, L. 1998. Outcomes of environmental appraisal of different hospital waiting areas. *Environment and Behavior*, 30(6):817-840.

Levenson, M.H. 2011. *Modernism*. New Haven, CT: Yale University Press.

Marshall, T., Goldberg, R.W., Braude, L., Dougherty, R.H., Daniels, A.S., Ghose, S.S., et al. 2014. Supported employment: assessing the evidence. *Psychiatric Services*, 65(1):16–23.

McGilchrist, I. 2009. *The Master and His Emissary*. New Haven, CT: Yale University Press.

McKay, C., Nugent, K., Johnsen, M., Eaton, W., Lidz, C. 2018. A Systematic Review of Evidence for the Clubhouse Model of Psychosocial Rehabilitation. *Administration and policy in mental health*, 45(1):28-47.

Mediclinic. Not dated. *Mediclinic Denmark Mental Health*. [Online] Available from: <https://www.mediclinic.co.za/en/denmar/home.html> [Accessed: 2024-05-04].

Mehaffy, M.W. 2020. The Impacts of Symmetry in Architecture and Urbanism: Toward a New Research Agenda. *Buildings*, 10(12):249.

Milbank, J., Ward, G., Wyschogrod, E. 2003. *Theological Perspectives on God and Beauty*. United Kingdom: Bloomsbury Academic.

Njoku, I. 2022. *What is Mental Illness?*. [Online] Available from: <https://www.psychiatry.org/patients-families/what-is-mental-illness> [Accessed: 2024-04-23].

Noordzij, M,L., Newman-Norlund, S,E., De Ruiten, J., Hagoort, P., Stephen, C., Levinson, T, I. 2009. Brain Mechanisms Underlying Human Communication. *Frontiers in Human Neuroscience*, 3(14):1-12.

Otto, R. 1917. *The idea of the holy : [an inquiry into the non-rational factor in the idea of the divine and its relation to the rational]*. Harmondsworth, UK: Penguin.

Pallasmaa, J. 2005. *The Eyes of the Skin: Architecture and the Senses*. Hoboken, NJ: Wiley.

Plug, C., Roos, JI. 1992. Weskoppies Hospital, founded 1892--the early years. *South African medical journal*, 81(4):218–221.

Popova, S. 2004. *Le Corbusier and the Critique on Modernism*. [Online] Available from: https://www.researchgate.net/publication/323523325_Le_Corbusier_and_the_Critique_on_Modernism [Accessed: 2024-05-12].

Prinsloo, J,N. 2024. *Design Investigative Treatise (DIT 801) 2024*. Pretoria: Department of architecture University of Pretoria.

Reghukumar, A., Kishore, K. 2019. Aren't we destroying our cities in the name of modernism and development? INVISIBLE CITIES by ITALO CALVINO –A literary review. *International Journal of Scientific and Research Publications*, 9(9):33-40.

Roggema, R. 2016. Research by Design: Proposition for a Methodological Approach. *Urban Science*, 1(1):2.

South African Society of Psychiatrists (SASOP). 2021. *Mental health funding*. [Online] Available from: <https://www.sasop.co.za/mentalhealthfunding> [Accessed: 2023-11-16].

Schires, M. 2017. *When Frank Lloyd Wright and Le Corbusier had a public argument in The New York Times*. [Online] Available from: <https://www.archdaily.com/871380/when-frank-lloyd-wright-and-le-corbusier-had-a-public-argument-in-the-new-york-times> [Accessed: 2024-03-08].

Scruton, R. 1979. *Art and imagination : study in the philosophy of mind*. South Bend, IN: St. Augustine's Press.

Seamon, D. 2004. Revealing Environmental and Place Wholes. *Philosophy Documentation Centre*, 1(1):13-33.

Starkey, J. 2011. Ricoeur and the Symbolic Roots of Religious Experience. *Journal of French and Francophone Philosophy*, 16(1):16.

Sternberg M, D., Esther, M. 2010. *Healing Spaces: The Science of Place and Well-Being*. Cambridge, MA: Harvard University Press.

Stichler, J, F. 2012. Creating healing environments in critical care units. *Critical Care Nursing Quarterly*, 35(4):335-348.

Taylor, C. 1989. *Sources of the Self: The Making of the Modern Identity*. Cambridge, MA: Harvard University Press.

Trishita,D. 2024. *Mental Health Statistics 2024 By Wellness, Treatment, Lifestyles*. [Online] Available from: <https://media.market.us/mental-health-statistics/> [Accessed: 2024-05-02].

Ulrich, R. 1984. View Through a Window May Influence Recovery from Surgery. *Science*, 224:420-1.

Ulrich, R. S., Zimring, C., Zhu, X., DuBose, J., Seo, H. B., Choi, Y. S., et al. 2008. A review of the research literature on evidence-based healthcare design. *HERD: Health Environments Research & Design Journal*, 1(3):61-125.

Verderber, S. 1986. Dimensions of person-window transactions in the hospital environment. *Environment and Behavior*, 18(4):450-466.

Vitruvius, P., Morgan, M.H. ed. 1914. *Vitruvius the ten books on architecture*. London: Humphrey Milford Oxford University press.

Walsh, M. 2022. *Mental health statistics*. [Online] Available from: <https://www.singlecare.com/blog/news/mental-health-statistics/#:~:text=Mental%20health%20statistics%20worldwide> [Accessed: 2024-05-19].

Employee Assistance Professionals Association of South Africa (EAPASA). 2023. *The state of mental health in South Africa*. [Online] Available from: <https://www.eapasa.co.za/the-state-of-mental-health-in-south-africa/#:~:text=South%20Africa%20scored%20the%20lowest> [Accessed: 2024-05-20].

Zeki, S. 2019. Beauty in Architecture: Not a Luxury - Only a Necessity. *Architectural Design*, 89(5):14–19.

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