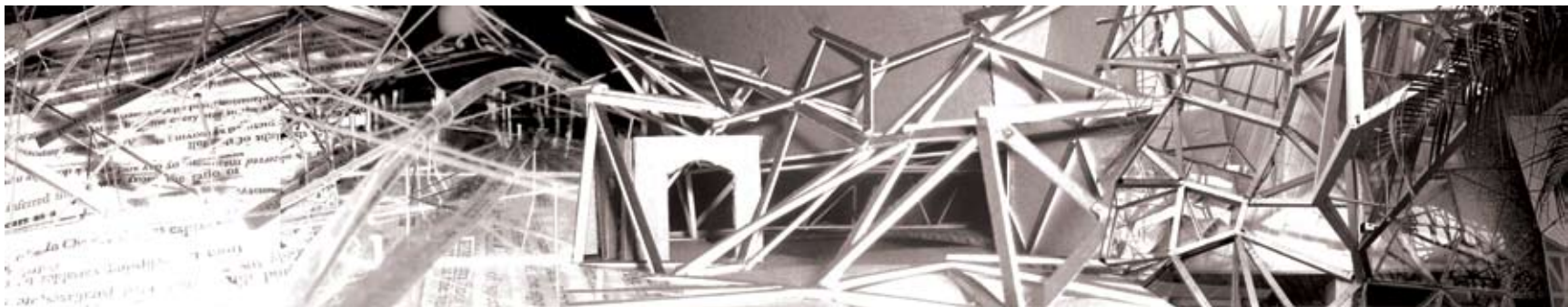




Agora

Transition through information to memory



AGORA

Transition through information to memory.

Submitted in fulfillment of part of the requirements for the Degree of Magister in Interior Architecture (Professional) in the Faculty of Engineering, Built Environment and Information Technology

By:

Marika van der Merwe

22 160 788

University of Pretoria

Study Leader: Catherine Karusseit

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This project would have been impossible without my base of support. Firstly all honour and glory to my Creator, Saviour and Lord and thank you to my family, and friends for understanding, helping and supporting me through this learning process. Catherine, thank you for your patience, guidance and dedication.



This project investigates Interior Architecture as the design of space within established physical parameters. The concept of an Agora as a public meeting space generating memory forms the design platform from which the investigation happens. After 100 years, the University of Pretoria is still relatively young compared to other similar institutions worldwide, and the current diversity of users further add to the loss of corporate identity that is shared between these users. The Agora creates a generator of information by hosting interaction between previously separated groups, exposing information to a majority of users on the Campus.



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Information - Memory - Knowledge



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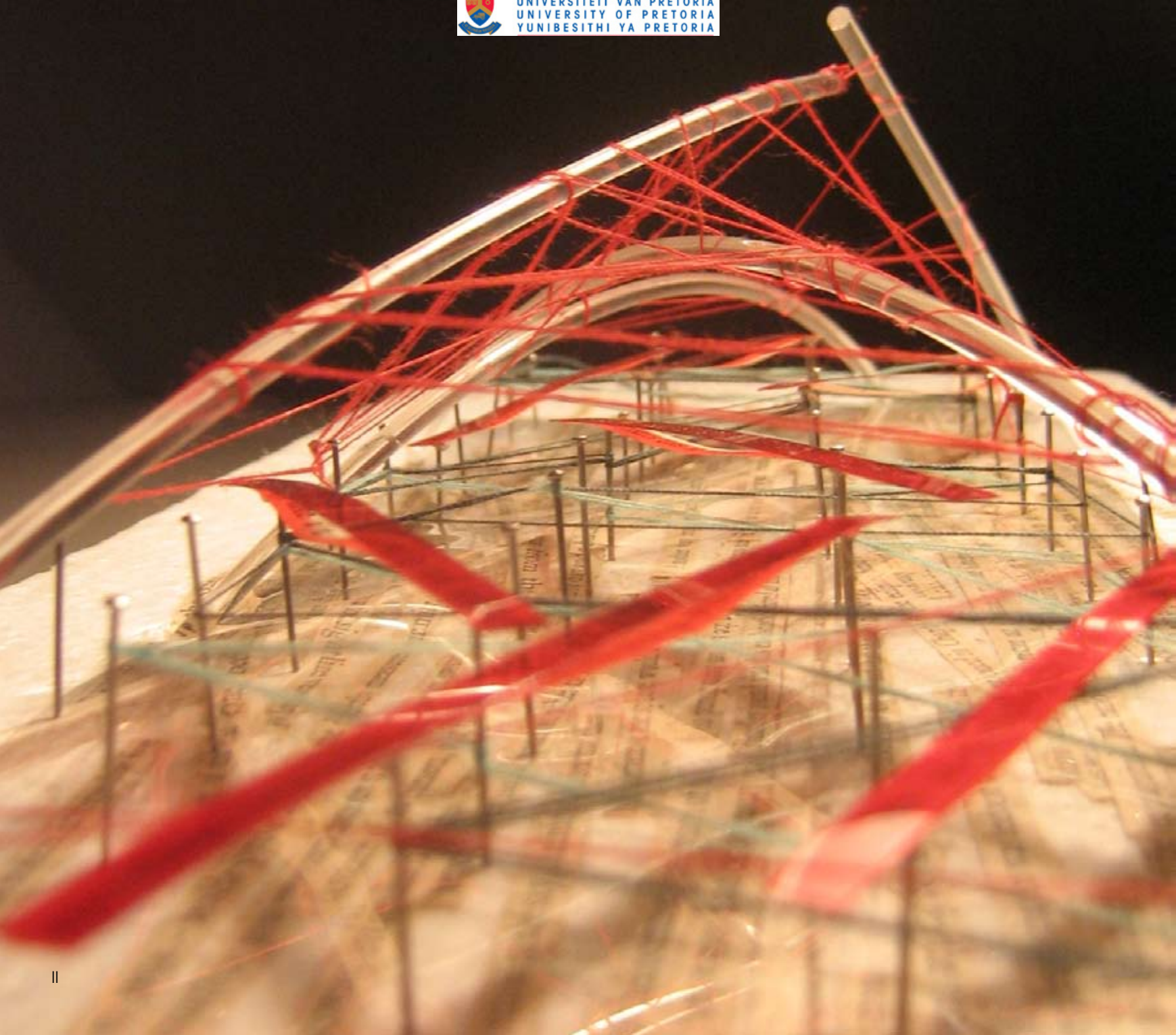
M van der Merwe 22 160 788 MProf(int)

Information - Memory - Knowledge



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Touchstone



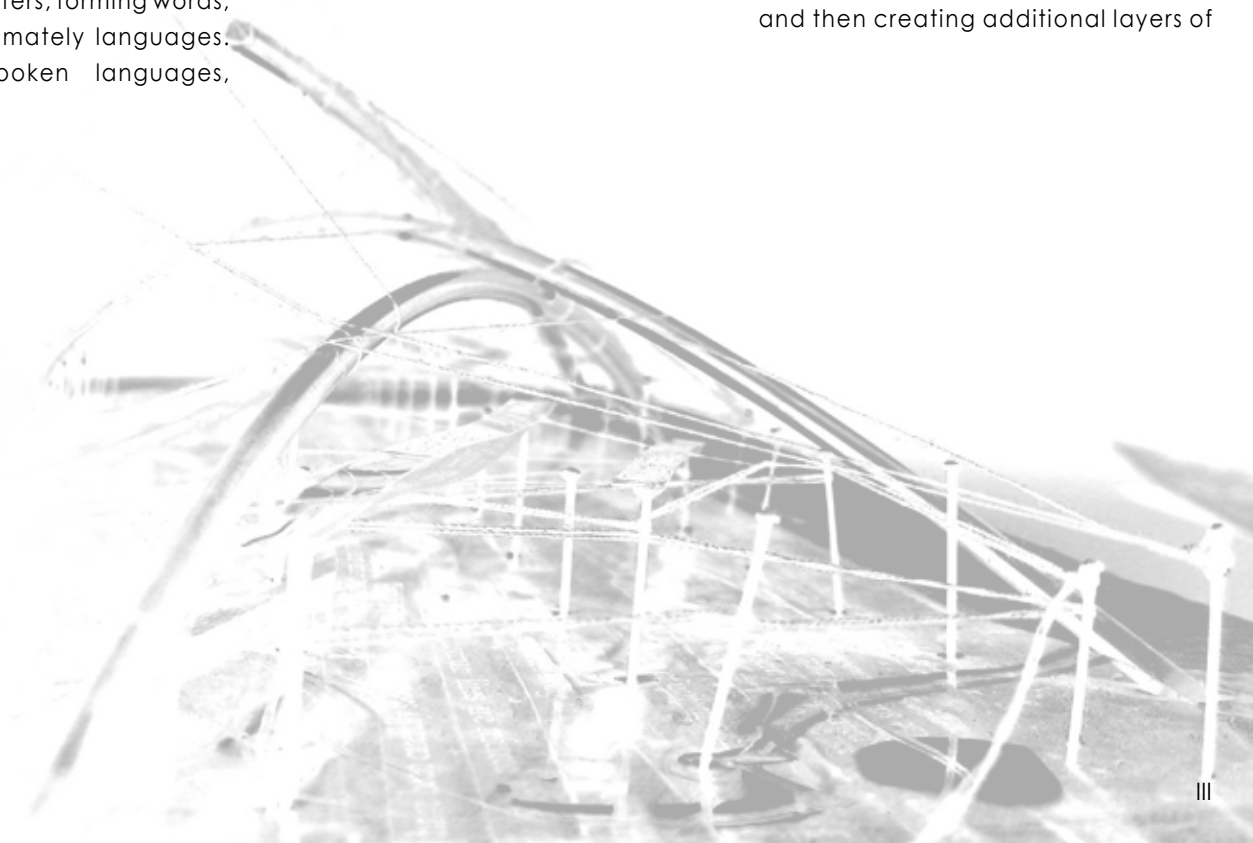
The Concise Oxford Thesaurus defines a touchstone as a criterion, a model or a point of reference. Commencing this dissertation by means of a touchstone is ideal to translate abstract concepts such as information, knowledge and memory into a physical project.

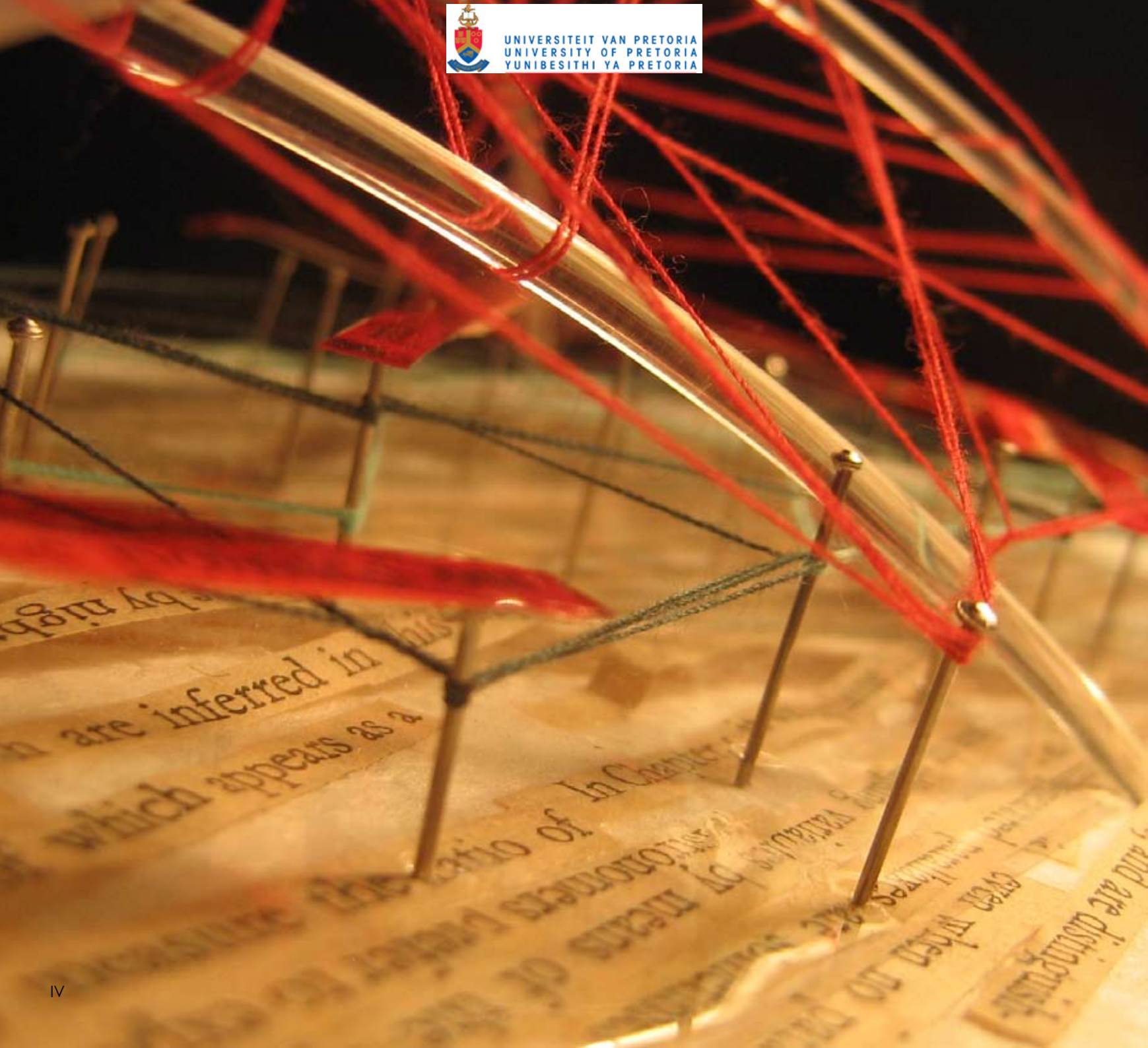
The starting point of the following investigation is the University of Pretoria and its main objective namely information. Forming the basis of information, are letters, forming words, sentences and ultimately languages. These include spoken languages,

written languages (historical languages) and even computer (binary) languages. Sentences at the base of the touchstone all refer to the universe. Mind-boggling and intriguing to most, unknown and daunting to others the universe remains one of the things in our frame of reference that still has some undiscovered secrets. It reminds one strongly of information - also vast and sometimes intimidating, yet it holds several "secrets" that still need to be discovered. People have captured information in various ways, but capturing anything implies tying it

down – taming it in a sense so that it can be accessed later on.

When this information is acquired by a human being, it becomes knowledge. Like pillars within the vast landscape of information, the human becomes a carrier of that knowledge. After this acquisition, the knowledge needs to be recalled and then applied. In its most basic form, recollection is summarized by the concept of memory. Memory is defined on various levels, as mentioned the first refers to recalling, then sharing that knowledge, and then creating additional layers of

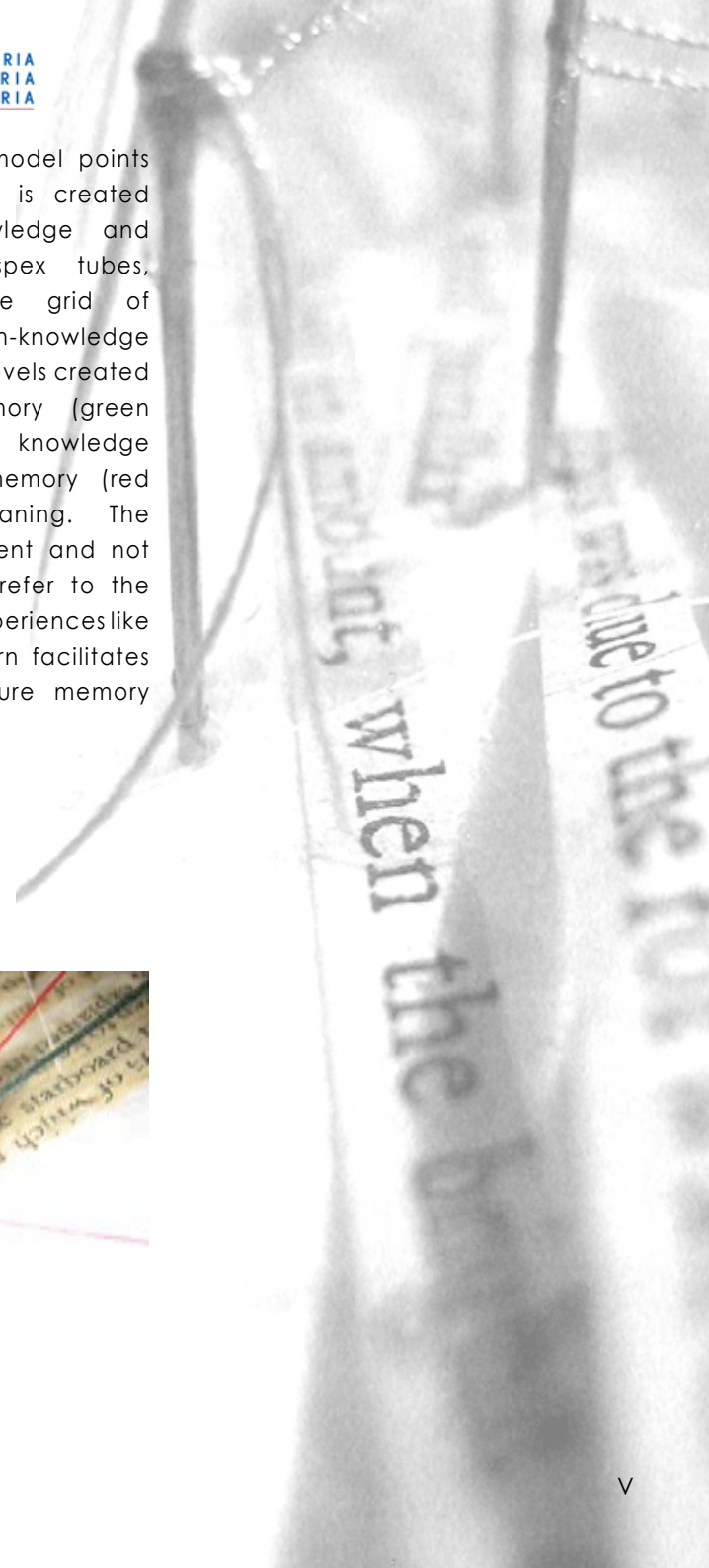




memory. Like strings connecting the pins of knowledge, memory forms a network of relationships, both direct and indirect.

Distinguished in red, the new information commences from pins of existing knowledge and the interaction between the fields of knowledge supports this new information. Although it cannot be separated from existing fields of knowledge, it exists on another level (containing influences from current social trends and other needs that will be captured and stored).

The red string on the model points to future memory that is created through existing knowledge and new information. Perspex tubes, independent from the grid of structured information-knowledge relationships, spans the levels created by the previous memory (green and blue string) and knowledge to carry the future memory (red string) to elevated meaning. The Perspex tubes, transparent and not clearly distinguishable, refer to the metaphysical (human experiences like conversation) that in turn facilitates and generates the future memory (red string).





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Chapter 1

Information, Memory & Knowledge



1.1 Introduction

The University of Pretoria main task focuses on the gathering and distribution of information with the aim of creating knowledge. Lecturers disseminate information to students who in turn through a process of learning and application gain knowledge in a certain field. The cycle can continue into research which generates new information and knowledge from the base of a previous information-knowledge relationship.

Different fields of knowledge often intersect, having similarities or distinctions that support one another. In order for this interaction to take place, knowledge needs to be recalled and shared between two vessels of that knowledge. Just like energy that cannot be lost, but only transformed into a different form, information is transformed into knowledge, and then into memory which still in its barest form is information. Memory is information communicated

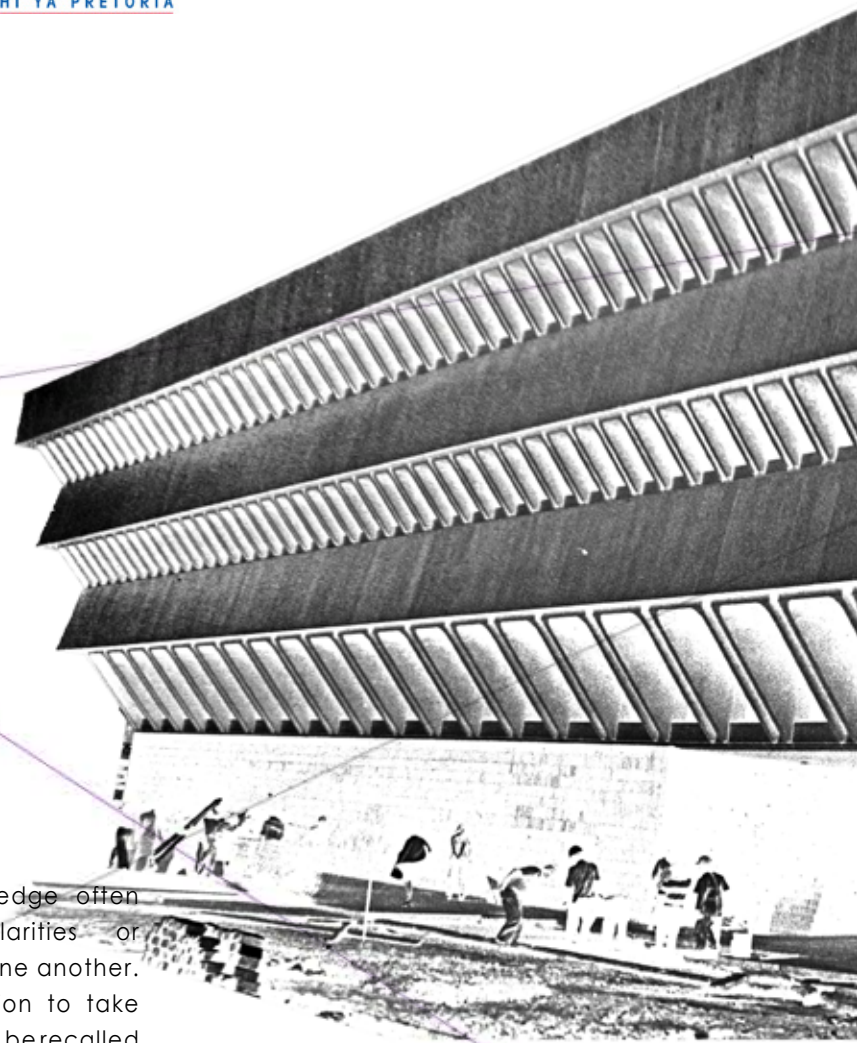
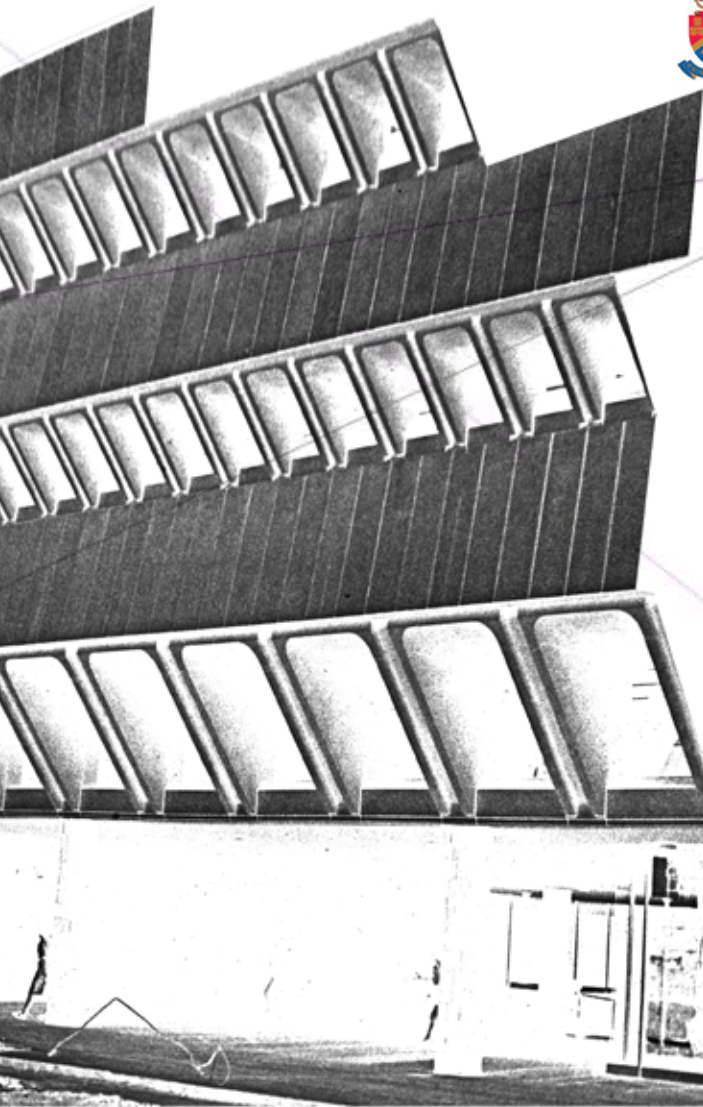


Figure 1.1: New Merensky Library shortly after completion

between two or more units, including communication between objects and humans, humans and humans and even objects and objects.



Memory refers mainly to the recalling of stored (by implication historical) events or data. Carving, painting and then writing formed the foundations of capturing information. Fundamentally memory refers back to something that happened in the past – it might still be happening, but in order to remember a part thereof, that part needs to be stored and then be recalled.

Memory as a current act deals with the actual collection and storage

of information and needs to happen continuously as new information becomes available. This process is executed through research, which in turn is still based on existing information and knowledge. However research is not the only form of memory, on a cultural level humans continually convey a lot of information through physical interaction which includes conversation, activities and general conduct that also builds up cultural and institutional memory.

Today, the rapid development of digital media brings with it a new way of dealing with this information. The building blocks, however, remain the same. Words – thought, written, read, spoken, taught and heard - form the basis of all information shared (communicated). Within this communication lies memory, linking the words to meaning, endowing it with use. The current state of our digital world (including concepts like “global village” and instant (internet) connection to anywhere in

the world) causes the collection and distribution of knowledge to happen even faster, and the generation of memory between groups of previously separated people to occur seamlessly.

Capturing memory intentionally for later reference indicates that current research is inseparably linked to the future, as it paves the way into new landscapes of information. The future is also involved in the continuous process of information management.

The thought of influencing the future through manipulation of current information and even human behaviour is an old idea.¹ Research is one way in which memory affects the future, new inventions change the course of human development irrevocably. The facilitation of research enhances and creates future memory.

¹ Imagine the possibilities had we not overspent the earth's resources, had we had the information we have on global warming we have today, our lifestyles would have been considerably different say 100 years ago.



Figure 1.2: Research facilities in the New Merensky Library shortly after completion in the 1970's



Figure 1.3: Modern day research facilities



MEMORY

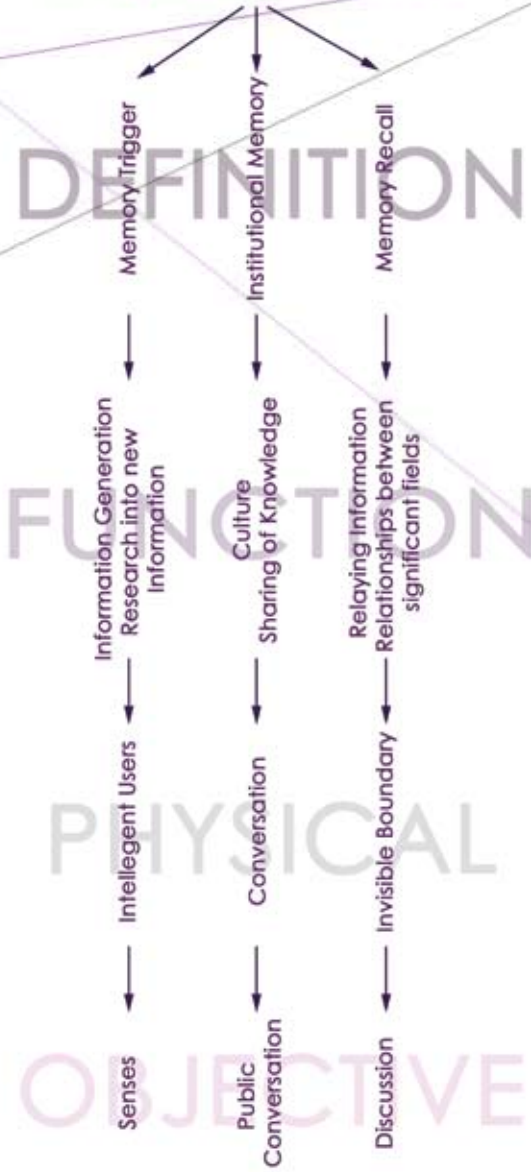


Figure 1.4: Memory definition to Spatial Objective

Looking to the future, we need to accommodate the growth of information into the new era, however, we cannot lose touch with the past. This accommodation would involve as many people as possible interacting with the available information to generate new knowledge, as well as the interface between different spheres of knowledge where memory exists through communication. Thus memory spans time and place – an ideal touchstone to re-use existing space.

1.2 Problem Statement

1.2.1 Real World Problem

2008 Marks the centennial celebrations of the University of Pretoria which creates an ideal platform for introspection and improvement on various levels.

Starting at physical infrastructure, the University has a rich heritage that began in 1908. The historical significance of the physical campus is not necessarily appreciated by the larger population – because of a limited interest in architecture and history as well as a lack of information linked to the main campus. Even though the information is available (Archives and Library) it is not observable by the average user of the space.² Information on campus is tied to faculties and subsequently hidden inside these buildings. As soon as the information is shared by surpassing physical boundaries, memory is created as part of the building.

² Walking about on campus, there is little to no "accidental" interaction with information about campus or its history.

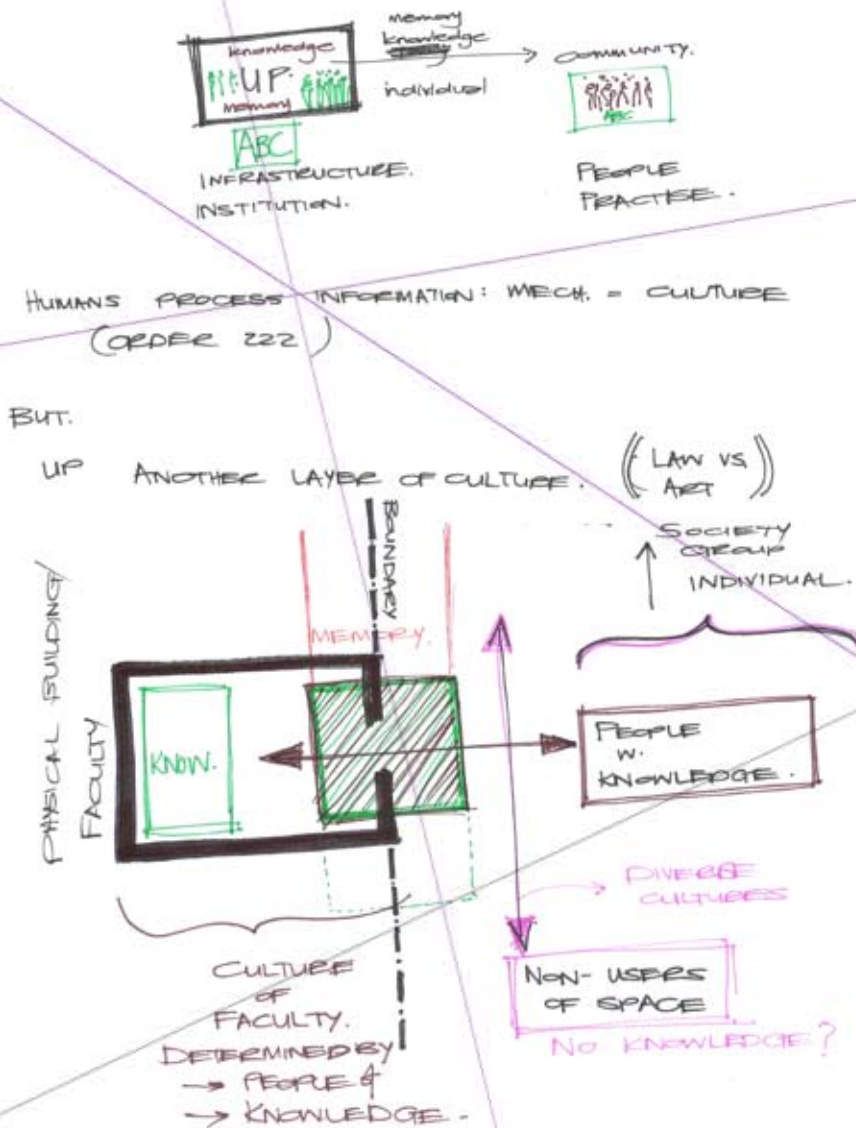


Figure 1.5: Relationship between memory and Built Environment



On another level, still physical, students generally arrive at their Faculty (generally a single building on campus) and then spend the largest part of their day within this building attending class. Like a typical urban area, there are several zones of related information on campus with definite boundaries between them. A problem arises because, as stated earlier (c.f.1.1), no area of knowledge stands on its own. Spheres of information are all connected to create a network of memory which

informs our reality. Opportunities for informative "accidents" are lost, as students are not exposed to various fields of information except their chosen field of study³.

³ If an engineering student "accidentally" encounters information from the Communication Pathology Department (CAAC) decides to research the archaic "hearing aid", does groundbreaking work in the field of micro-electronics while improving the services available to the general public, without realising this student becomes part of the "innovation generation". This student was exposed to a different sphere of information broadening his/her own frame of reference and in doing so catalysed innovation.

This bridges over to the metaphysical realm. Students acquire certain information to gain knowledge in that field and then apply the memory of that knowledge. This application of knowledge is most evident in the chosen career of the student, but on a more subliminal level, knowledge is also shared between individuals, including lecturers, students and even the general public, creating a boundless network of memory.

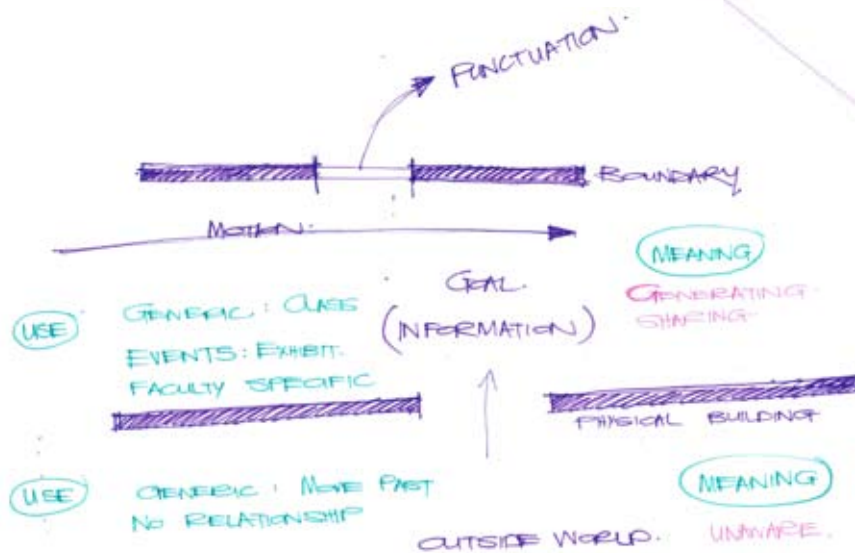


Figure 1.6: Relationship between information and User



Figure 1.7: Ancient Public communication in Agoran Space (Artist Impression)

Through the ages, man has held public meetings where not only opinions but also information and culture were shared (from the earliest gatherings around a fire to the Agora). Architecture and design responded to this human need for interaction with the design of the Agora, public squares and law buildings as well as public entertainment (early theatres). The ancient Agora defined boundaries and design influences. Here heated discussions generated new information while it remained a public event driven by creating seemingly non-essential social interaction that would later become the building blocks of civilisation.



The social aspect of day to day life is still central to a lot of our current activities, though we are in the midst of a technological era. People still like airing their views, but the medium has changed and the public domain seems to be restricted to shopping malls or reserved for politicians and law-practitioners. Today we have

blogs, e-mail and wiki's for the general public – communication and to a large part information has gone digital. Within this digital media, the need for social interaction is more and more evident with Facebook and twitter as some examples of social networking utilities online that are extremely popular.

To transform an existing architectural space into an informing place that will generate memory through communication of knowledge by facilitating human interaction with space.



Figure 1.8: Modern Day public communication (Digital media Brands)

1.3 Site Selection

At the heart of the campus (physical layout of infrastructure) are the student centre, the humanities building, the Library and the old chemistry building. The organisation of these buildings forms corridors linking different parts of the campus creating a public space where

most of the people on campus pass through daily. These corridors intersect generating a central node under the Library overhang. This culmination of space with its implied potential public use is just void, left-over space. To a large extent the traditional Library supplies written, static and historical

information. Social interaction is limited to preserve the silence needed for research and reading. Heated debating, brainstorming and public lectures are some of the interaction (information sharing) that is lost, but that should not necessarily be hosted inside the Library.



Figure 1.9 Site Synopsis (Aerial Image)

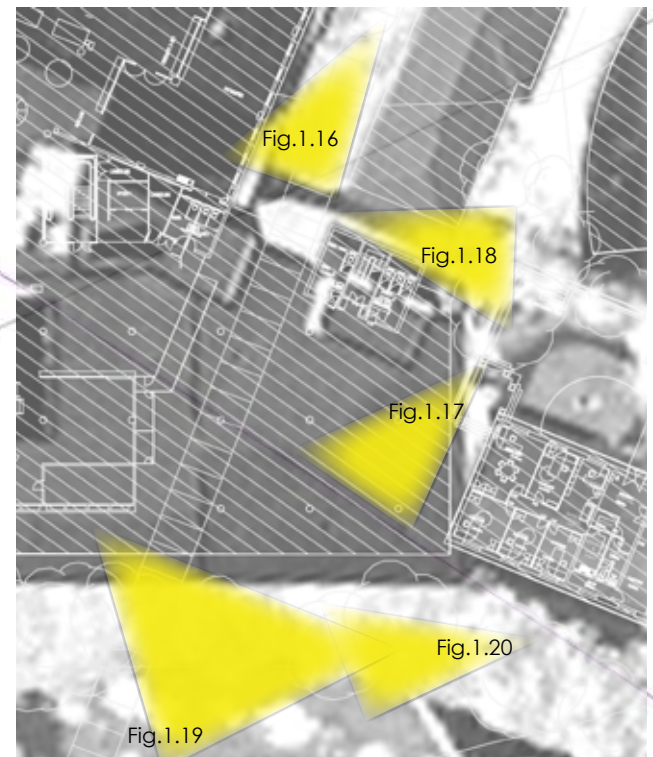


Figure 1.10: Site Key



The Library cantilevers over this space surrounded by several elements, creating an interior space outside a building. Meta-physically the presence of the Library implies that information is readily available, however this information is hidden within the building, an island in the flow of people. The existing transition

between the islands of information is a blank space, with the mother ship of information as another enclosed island in this progression. Research is supported by an administrative team on campus, situated in the Marketing Services Building (adjacent to the Library), another information-related building hidden from the passer-by.

Physically as well as meta-physically, information needs to get into the public realm, where accidental encounters can generate new knowledge. The space underneath the overhang of the existing Library on campus is ideal for this.



Figure 1.11: Site: Corridor west of existing Library overhang, looking in northern direction



Figure 1.12: Site: Corridor north of existing Library overhang, looking in eastern direction



Figure 1.13: Site: Corridor south-east of existing Library overhang, looking in eastern direction



Figure 1.14: Site: Existing Library overhang, looking in western direction

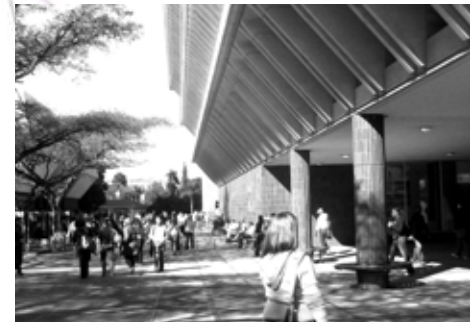


Figure 1.15: Site: Corridor east of existing Library, looking in southern direction

1.4 Hypothesis

An existing corridor leads from one open space to another creating a blank moment in time and space. This moment can be transformed into an event that will narrate information to the user of the space creating knowledge and through that knowledge generates memory by means of conversation

and debate, thereby connecting the users to the space by experience. The movement of the students through the space implies that the memory will be taken back to different Faculties (islands of information), which necessitates further points of contact with the various Faculties – creating a communication network on campus.

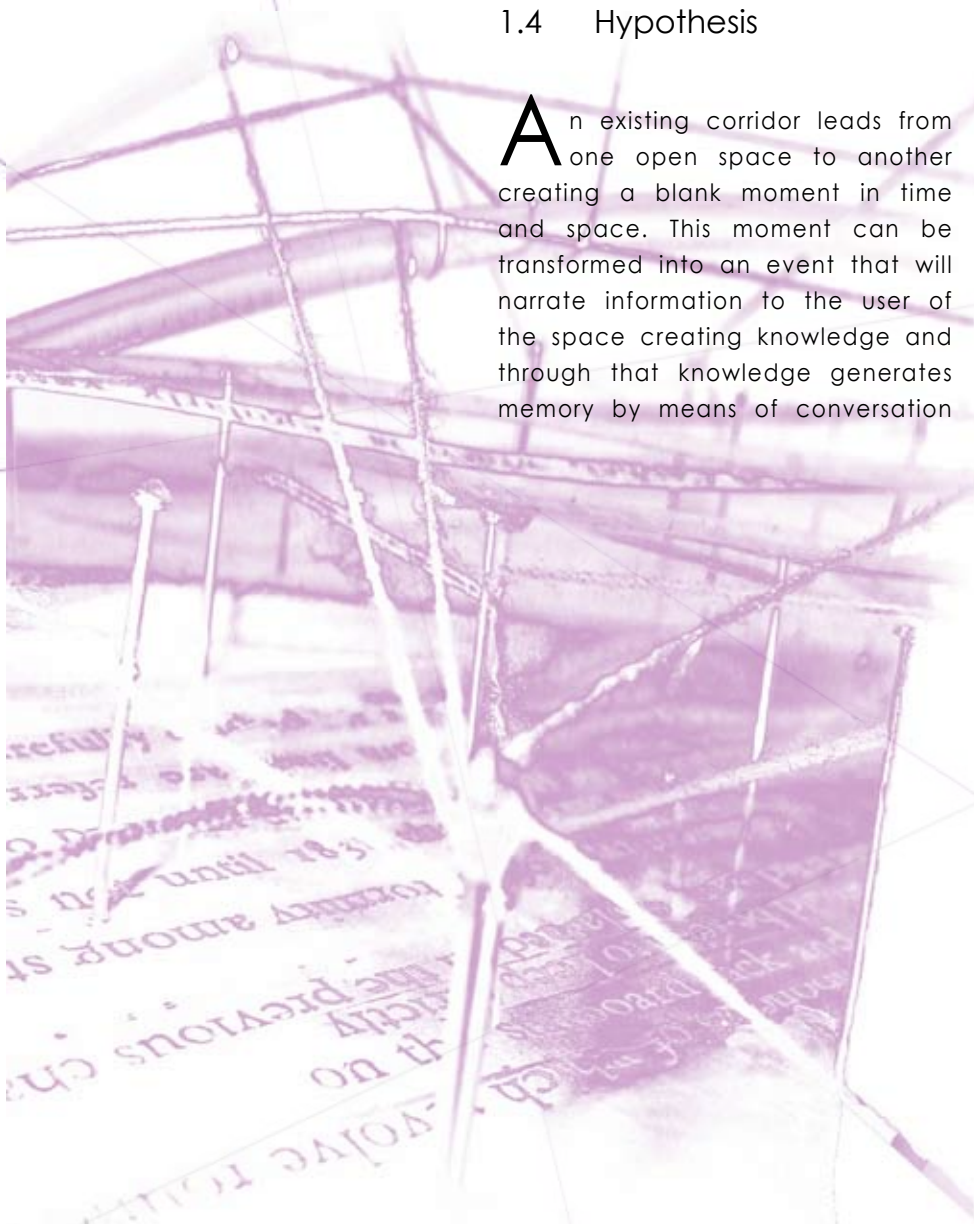
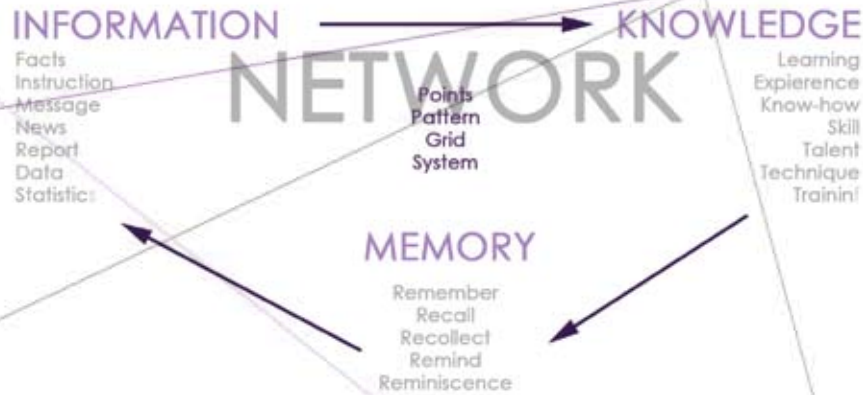


Figure 1.16: The users of the space indicated by the pins in the touchstone model meta-physically connected through information and knowledge, as indicated by the string



Information - Memory - Knowledge

Figure 1.17: the communication catalyst will function between information, knowledge and memory

Establishing a communication catalyst on campus through which information is shared between all interested parties to create "new" knowledge in individuals, and then create memory when these individuals meet in a public space designed for this purpose.

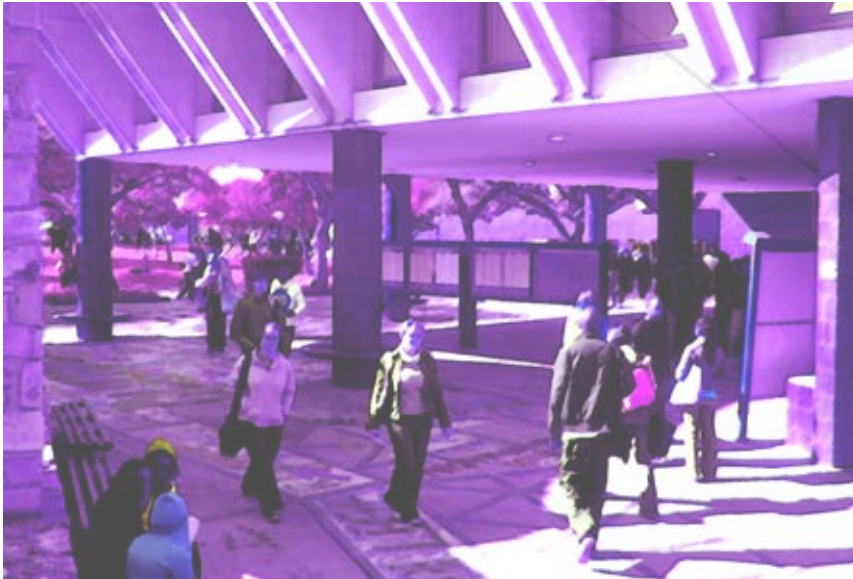


Figure 1.18: Site: The users of the space are currently disconnected from one another as well as from the space

1.5 Project Brief

Staying with the University's vision for the future, the macro framework will be addressed on two levels. Firstly the educational vision of the University and the goals set out. Secondly, the physical framework as designed by architectural students working in the same area.

According to the University's website (Bosman: University of Pretoria Webpage), part of the strategic plan for the future is to become an internationally recognised teaching and research intensive institution. This means a more focused plan for research as well as improving the teaching standards. With the intensified focus comes a need for support systems to carry this vision successfully into the future. From

the same website it seems that the University is already considered as one of the leading educational institutions in the country, and that the future of the research part of the vision still needs to be developed.

Most of the students (under-graduates) are not exposed to research on a regular basis, if exposed at all. This means that an opportunity is being missed to motivate under-graduates' interest in their studies to a point where their degree becomes a key to new information rather than a destination. This new information could be a topic that is being researched by post-graduate students from any department. Or it goes as far as to spark interest in a topic because the lack of information is evident in

the current research trends within a specific department.

In view of this argument, the project for this dissertation will incorporate the relationship between students, lecturers and research as one of the levels on which information needs to be relayed.

Infrastructure provides the second framework for a macro brief. The architectural students have designed an urban framework for the University, a look into a desirable future. This new perspective includes the following ideas: opening the University's grounds to allow for greater public access, creating enhanced pedestrian routes through campus and re-evaluating the current public spaces on and around campus.



Figure 1.19: Site: The library to the left of this image, showing the definite boundary prohibiting any flow of information from within

1.6 Client Brief

Creating a client brief from the above mentioned information will react on the following levels:

- the needs of the University in terms of research exposure,
- the obscure need for an institutional identity after 100 years of existence (and multiple changes in the social landscape surrounding the country and by implication society),
- the meta-physical needs as described (c.f.1.1)

Using the analogy of a “mother-ship”, a vessel carrying smaller vessels into a remote field, (a mobile and base station analogy) the space will be designed as a nucleus from which information will be dispatched. The “mother-ship” will be stationary in terms of its physical location, but much of its presence will need to change constantly. The smaller vessels carrying the information will be the users of the space. Different users imply different goals within the design, from the “stationary” Library-user, to the general passer-by.

Subsequently the space will inform the users so that they could access the space from any direction, and leave again in any direction, but they will always acquire some information. This information is defined on various levels, mainly levels of involvement of the user. On the outer level – the edges of the concept – lies the most current information, which changes frequently; news. News is shared with the masses, but will be viewed by individuals. An individual within the bigger group could form an opinion on this news, and decide to share it with the people in his proximity. Reminding one of a soapbox of old and a blog in today's terms, this information is shared from an individual to a group. The space will need to direct these conversations into academic terms, and catalyse research, so as to accommodate discussions and thoughts and maybe even solutions to the problems faced today throughout the world.

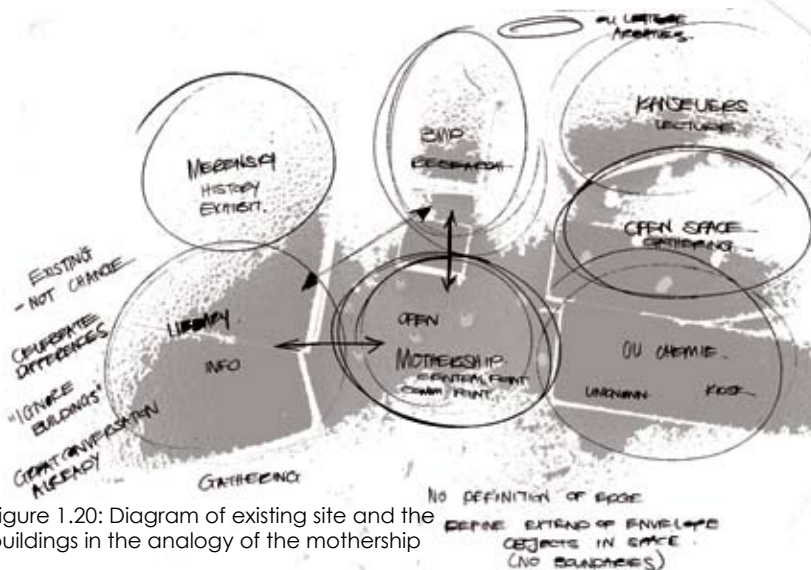


Figure 1.20: Diagram of existing site and the buildings in the analogy of the mothership



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Chapter 2

Theoretical Approach



2.1 Introduction

Within the mentioned framework of information, knowledge and memory (c.f.1.1), memory is the last step, and in this dissertation the main objective is the generation and sharing of memory. This is a very broad term, and needs to be defined first, particularly the built environment's answer to the problem. Subsequently



Figure 2.1: Available information on site is not informing any memory. There is no relationship between the users and the information within the Library

this implies a level of awareness of human behaviour in the created space. This brings us to the final question concerning memory, the interaction with our current digital era where information (and subsequent knowledge) is readily available on a screen with the touch of a button, excluding physical space to a large extent.

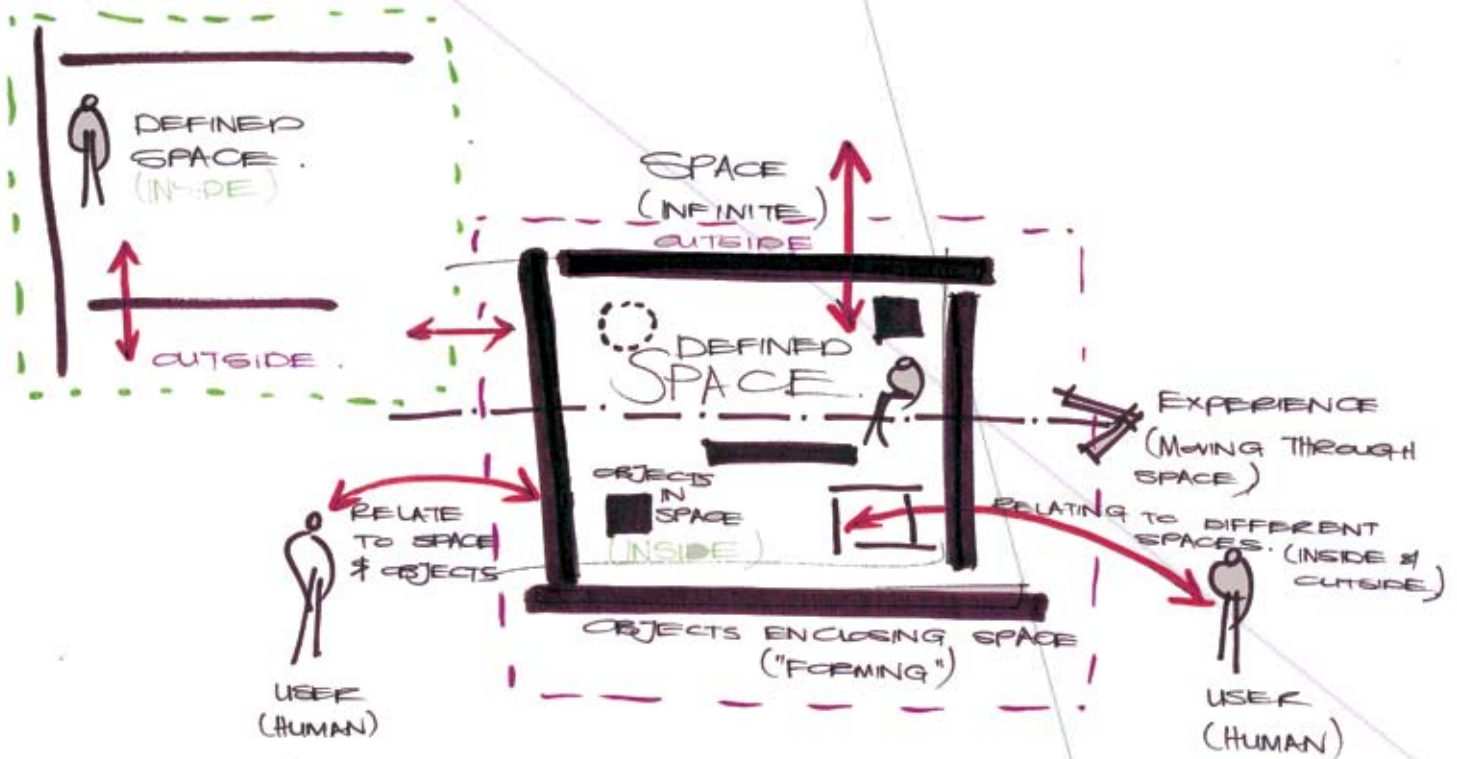


Figure 2.2: The relationship between users and space

2.2 Memory

The chosen site has apparent significance (c.f.1.3) in the analogy of information, knowledge and memory (c.f.1.1) that needs to be translated into space. The cognitive process of humans (particularly in space) has been the focus of architectural research for some time (Lang: 1973, 90) because of the relationship between space and its users. Gibson (Lang: 1973, 91) regarded the senses as "aggressive, seeking mechanisms", and redefined

the five senses as we know it into systems (c.f.2.3). These systems rely on interdependent senses to "feel" space. The variety of possible factors that influence the user of the space forces another set of parameters to drive the inquiry into cognitive processes and its place in architectural design. By looking at the basic functions of the mind; receiving, processing, storing and production of information, some human behaviour can be related to perception.

2.2.1 Memory defined

"There is no neater definition than de Bono's 'A memory is what is left behind when something happens and does not completely happen.' Perception is based on memory, because it is impossible to perceive phenomena which are not partially related to past experiences" (Smith, 1974: 21)



Figure 2.3.1: A model of the conceptual space



Figure 2.3.2: The actual space, indicating the relationship between the user and the space. The seeking of the senses seems to go unanswered



Figure 2.3.3: Conceptual memory added to existing layer of users in the space



Largely the typical Library can be seen as the best-known concept of gathered information. With this comes a definite memory, ideas including the notion that libraries are inaccessible by certain communities, silence, old books and a singular approach (books, reading and text). This project aims to create another level of information and subsequent memory, supporting the Library, but functioning separate from it. The site has a large number of students moving through it on a daily basis (c.f.1.6),

and is perceived as an empty space without any relation (the scale of the site removes even the sense that it is the Library overhead). Activating the site is ideal to trigger the memory of these students on a different level. Mainly a path of travel, the information gathering is accidental at first becoming an attraction as the site becomes known to students. This will create a new memory of information (and knowledge), as something that is vibrant, challenging and accessible, available to any and all.

"Yet the function of a university is not only to pass on our history in its fullest and richest sense, but also to try to significantly contribute to it. When they are functioning as they should, universities act to protect what we know while providing pathways to discovery and creation." (Bornstein, 1997: 52)



Figure 2.4: Approaching the site from the south, indicating the library to the left, as a monument of gathered information



Figure 2.5: The amount of users traveling through the empty space



Figure 2.6: The site to the right, indicating movement past the site, an ideal opportunity to introduce information to the users

2.3 Space

2.3.1 Memory and Space

Lang (1973: 92) refers to the training of memory as integral to the experience of space to remember that space. Quintillian (Lang: 1973, 92) describes memory of space as an “image of the environment, subordinate images and some idea of path”.

The chosen site has certain attributes signifying that it is space inside certain boundaries. Unconventional, but not new, the space feels like an outside room. Contrary to the notion that interior architecture is limited to the inside of buildings, this site is

experienced as an interior space defined by the external walls and overhang of surrounding buildings. Memory informs the user that certain identifiable artefacts are present, and therefore the space should be experienced in a certain manner.

Memory of the familiar triggers and influences our perception of the new. The house as a type of personal space with its many recognisable artefacts that belong to the owner is a model for the city and subsequent public space. Reading public space in this manner we can truly feel like we

belong. Identifiable artefacts stretch outside the realm of physical objects to include senses such as boundaries, possession, the notion of centre (Brett, 1970: 146, 147) and the sense of enclosure. When a relationship is established between a human and space, ownership can be taken of the space and the space will be used optimally (Bloomer, 1977: 51, 54). Habitability of public spaces refers to users “feeling at home” in the space, even if the users just feel like they have allies in that space sharing a certain identity (Bloomer, 1977: 84). It is necessary to differentiate between public spaces that are designed to be utilised by the public and spaces that are accessible by the general public, but are of no value to the users.



Figure 2.7: Site: identifiable as an interior space

2.3.2 Public Space

The surrounding buildings are erected in a seemingly haphazard pattern, creating what is referred to as “left-over” spaces between the buildings. Bloomer (1977: 84) refers to these spaces as “great blank horrors”, “spaces that belong to no one”, “neither public nor private”, “neither comfortable nor inspiring nor even safe” calling it “no-places”. This space

is void of memory; it evokes nothing, stirs nothing and implies nothing. With no identifiable “artefacts”, the space has no relationship with the user. Public space is not owned by a specific entity (therefore being accessible by the general public), but the term also includes spaces designated and designed for use

by the public. Elucidating the idea of space accessible by the public is a space designed to host that user (public) and generate certain behaviours which will happen through the definition of public areas as social space. Social space in this sense includes public space that is designed and not just left blank.

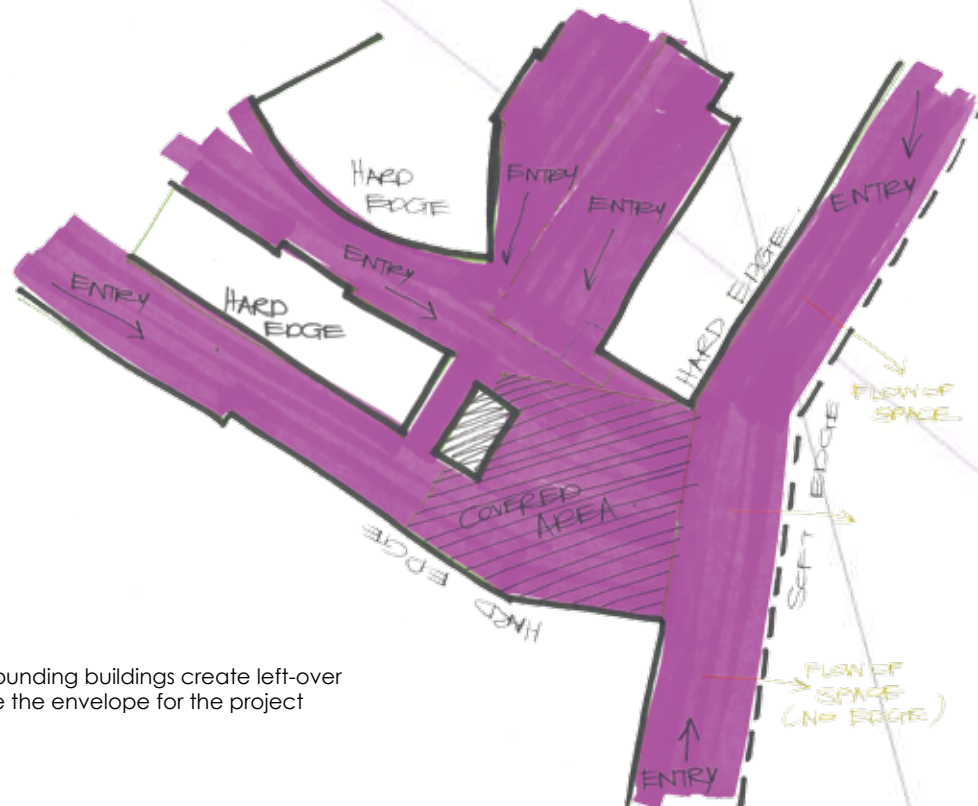


Figure 2.8: The surrounding buildings create left-over space that provide the envelope for the project

2.3.3 Social Space

Public space consists mainly of involuntary relationships between users and space; however some spaces, referred to as social spaces, are designed for specific public use. Pre-supposed relationships are anticipated and designed, spaces such as the reception areas just beyond the entrance. In order to look at the relationship between space and its users, however, one needs to define "social space".

Humphrey Osmond (Powel Lawton: 1973, 66) refers to two aspects of "social space": sociopetal space, encouraging social interaction, and sociofugal space, separating / isolating people. Some spaces are used by more people and would evidently have a greater incidence of people meeting within that space. Space that has this outcome is defined as social space and typically includes inside space such as lobbies, halls and reception spaces, as well as outdoor spaces such as public squares

and amphitheatres. Apparently one of Frank L Wright's favourite quotations is from Lao-Tze, "...the reality of the building consists not of the walls but of the space within" (Brett: 1970, 46). This statement points to space as an entity in relation to physical structures. Space is infinite, a statement reiterated by the universe. This immeasurable entity is inhabited by humans, and as designers we concern ourselves with the design (taming / defining) of parts of this infinite entity.



Figure 2.9: The existing public and social space.

In a sense the ever-expanding concept of space is reversed to something small enough to include only one human being. With this user-focus, the design of space is approached in a series of relationships simultaneously exposing inside and outside (c.f.2.1.1), above and beneath, and on the in and out flowing of space relationship, all anchored in clearly traceable relations, moving in all directions (Brett: 1970, 32)¹.

The site consists of void public spaces (c.f.2.2.2) through which students are continuously moving. Through memory it will be transformed into

social space (c.f.2.2.3). Space is used as a descriptive term as a building in itself is superfluous. A lecture room is a highly recognisable "artefact" on campus even though this is usually related to a memory of enclosed interior space. By creating clusters within a larger space, humans can more easily relate to the space (c.f.2.2.1). Working with the existing use of the space motion contributes to the new function of the space by a progression of relationships between users and the space. Moreover applying sociopetal space to the periphery of sociofugal space so that these interactions could then inform the more isolated group interaction.

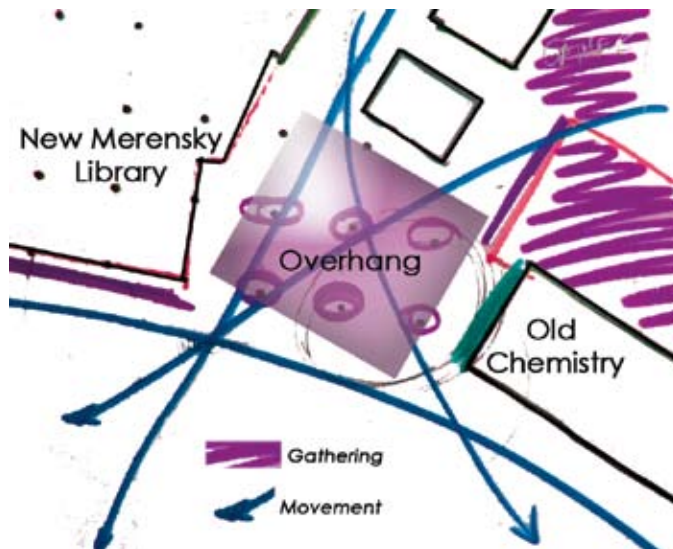


Figure 2.10: Sociopetal space (gathering) and motion through the existing space

"Formerly the architect made from visible, measurable and well-proportioned volumes building masses, calling this 'space creation'. But real spatial experiences rest in simultaneous interpenetration of inside and outside, above and beneath, and on the in and out flowing of space relationship, on the invisible play of forces present in the materials. Thus a present-day space creation does not consist in putting together heavy building masses, nor in the formation of hollow bodies, nor in the relative positions of well-arranged volumes. ...Space creation is today much more an interweaving of parts of spaces, which are anchored for the most part in invisible but clearly traceable relations, moving in all directions, and in the fluctuating play of forces." L. Moholy-Nagy, The New Vision (1939) [Brett, 1970:32]

2.4 Behaviour

The built environment concerns itself with defining space by objects (enclosing space by objects, or placing objects within space) for human experience and use. Only by perceiving space can the user relate to and experience the space. The perception of space can be divided into 3 categories, the first being differentiation, concerning the whole and its included parts, secondly the relationship of the parts (specifically the boundaries defining the space), and lastly the user inhabiting the space.

2.4.1 Memory and Behaviour

Gibson (in Bloomer, 1977:33) regarded the senses as "aggressive, seeking mechanisms", and redefined the five senses as we know it today into systems. These systems were identified as the visual, auditory, taste-smell, basic orienting and the haptic system; which all rely on interdependent senses to inform experience. Humans and their reaction to space are then important in architecture to create successful place rather than accidental space. Gregotti (1996:10) notes that the difference between group

behaviour and individual behaviour has decreased to a point where it coincides to a large extent. This tendency could be traced back to our culture of consumerism, where branding motivates us to be more alike.

The link between space and the user is argued in both directions (complete influence versus no relationship) (Lipman: 1973, 24 – 25). However the focus should shift from controlling human behaviour to accommodating existing and catalysing new human behaviour.



Figure 2.11:Site: walking into a defined space without boundaries

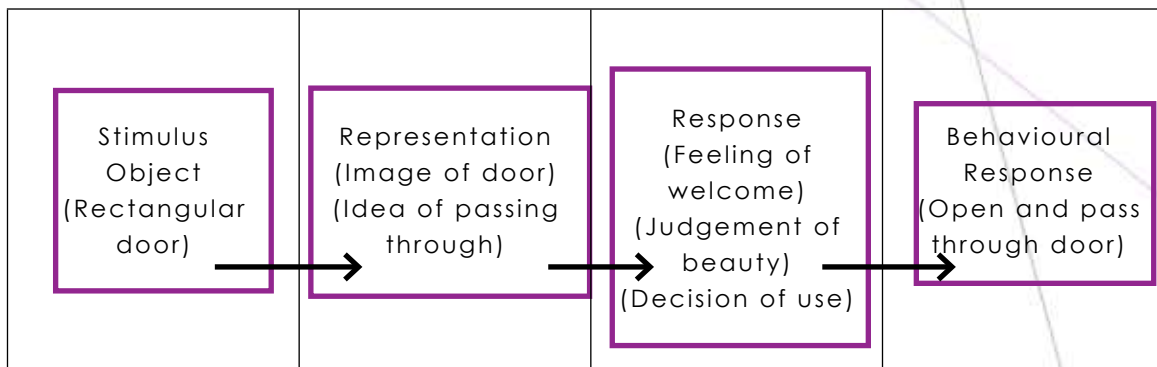
*"By regrouping the senses around the types of information that individuals seek in their transactions with the physical environment, he has provided us with a rich mechanical model of perception from which we might better understand some of the processes that generate experience in architecture."
(Bloomer, 1977:35-36)*

The conceptual theory behind human reaction to space and metaphors in space is described as architectural meaning. The stimulus object (transcending physical objects to include conceptual objects) relies on the memory of similar objects. Entry to the site as a celebrated threshold is not necessarily a front door, but rather a moment in time and space implying a change in hierarchy of experience. This stimulus triggers the memory of similar objects and appropriate responses which in turn generates certain behavioural response.

The cantilevered section of the Library creates a space that is defined by psychological boundaries

rather than physical boundaries (the mind perceives walls where none are apparent). The underside of the slab resting on the columns limits infinite space, entering into this space happens when the threshold between open and covered is crossed and is defined by a definite contrast between light and shade. Scale contributes to the experience; a large and solid mass hovers over the space creating an abrupt opening that is considerably smaller in relation to the space. It is then read and understood as an intimidating space, dark and unknown, the transition between two open spaces becomes uncomfortable.

"The first hundred years of modern architecture have been principally devoted to the expression of technological revolution and new aesthetic intentions. There are welcome indications that the next hundred years of architecture will consider the act of experience, both communal and individual, as a primary generator of significant form." (Greene, 1976:106)



ARCHITECTURAL MEANING

Figure 2.12: Memory in the built environment: Architectural Meaning

2.5 Communication

The focus of this dissertation is on the recapturing of lost space. Activating this space implies identity, established by the designer so as to generate a relationship between the user and the space.

The design aims to emphasize and enhance the current dialogue between object and user, thereby generating more levels of communication.

Communication between humans as well as collective communication supports the notion of social space. This network of communication becomes a social stage, interactive and informing – a window on humans and their behaviour and ultimately on culture. Displaying the culture (institutional memory) in this manner will amplify the growth of any existing memory (knowledge and culture).

*“Though the communal pleasures of hearth and fire have long ago died out, ... the centrality of forum – a place indoors or out where people can assemble to have a town meeting, or see or stage a spectacle, or talk, or collect signatures – is still important to us (though electronic communication and the takeover of the public realm by the privately owned shopping centre are casting long shadows over this fragile part of the public life; it is very difficult, for instance, to engage in political activity in most shopping malls).”
(Bloomer, 1977: 83)*



Figure 2.13: Meta-physical communication defining the space to create user-experience

2.5.1 Space & Human

Using communication to achieve the behaviour and memory in space (c.f.2.3.1) is important to form an identity in a “no-place” (Bloomer, 1977: 84) (c.f.2.3.2) to generate an informing place. Most of the dialogue between space and human happens on a sensory level, having certain psychological effects. However, as stated previously, (c.f.2.3.1) experience does not happen in a simple way (pertaining to a single sense). For many years sight was the main focus of experience and architecture (Bloomer, 1977:49).

However, communication happens through all senses, manifested by material usage, scale, sound, rhythm, metaphors and light in space (Bloomer, 1977:71) (c.f.2.3.1).

2.5.2 Human & Human

A more obvious level of communication is the interaction between humans, including between two individuals, between an individual and a group as

well as between groups. Social spaces carry the highest probability of social interaction. The richness of public space through history dwindled and with the development of consumerism, people are completely self-absorbed into the here and now, chasing time and focusing the attention of the individual on a cyber-reality. As early as 1976 the “need for experiences of communicative acts” as embodied by pueblos of Mesa Verde (with its imagery of urban theatre) highlights the importance of form generated by social acts irrespective of electronic communications (Greene, 1976:107).



Figure 2.14: Communication is vital to share information and generate knowledge

“all architecture functions as a potential stimulus for movement, real or imagined. A building is an enticement to action, a stage for movement and interaction. It is one partner in a dialogue with the body.” (Bloomer, 1977: 59)

2.5.3 Information, Knowledge & Human

By using the analogy of a "mother ship" as the heart of a communication, sharing of information can be accommodated and this in turn can act as a catalyst for the generation of memory. Reference points lead the user on a journey to not only encounter information, but to actually absorb it. The differentiation between knowledge and information is notable here. Knowledge in this

sense has to do with information that has been acquired by someone and in this document mostly refers to academic information. Information is a wider scope, including noteworthy facts that do not necessarily need to be remembered or shared by the receptor of that information. Subsequently this covers quite a large range of possibilities.

First of all, media according to the Oxford Thesaurus (Spooner, 2001) refers directly to communication and includes conversation, dialogue, document, message, news, notice, statements, writing, newspapers and radio. This coincides with information, informing the user of the site, but not necessarily generating new information or knowledge.



Figure 2.15: Boundaries and movement on site

2.6 Conclusion

Like all educational institutions, the University of Pretoria concerns itself with information and knowledge. Memory completes the process of information that accumulates in humans to become knowledge which is then shared and applied. Accommodating this

memory in different forms will greatly contribute to the overall identity of the University.

Memory is present on campus in the conversations and everyday actions of the users of the University,

as well as in the outside world in careers and social interactions of people. The challenge is to design a catalyst, a place where these acts, conversations and interactions can be stimulated. This public space needs to accommodate existing information as well as generate new information,



Figure 2.17: Existing public space adjoining the Library (hosting information)

knowledge and memory. Most of all the space needs to communicate, become a medium for the transition of information to memory.

By specifically accommodating the conveyance of information to the passer-by the senses are activated

and the perception of the space enriched. As soon as the users get used to the existence of the space, the space itself will become a canvas hosting changing information. The memory of the space pushes the information to the foreground, creating social space where the existing void is. Architectural meaning

implies that the existing space is experienced as interior space. Rather than just moving through public space, the user walks into social space with a known identity expecting to encounter information. This identity includes audio and visual information as opposed to written information as supplied by the Library.

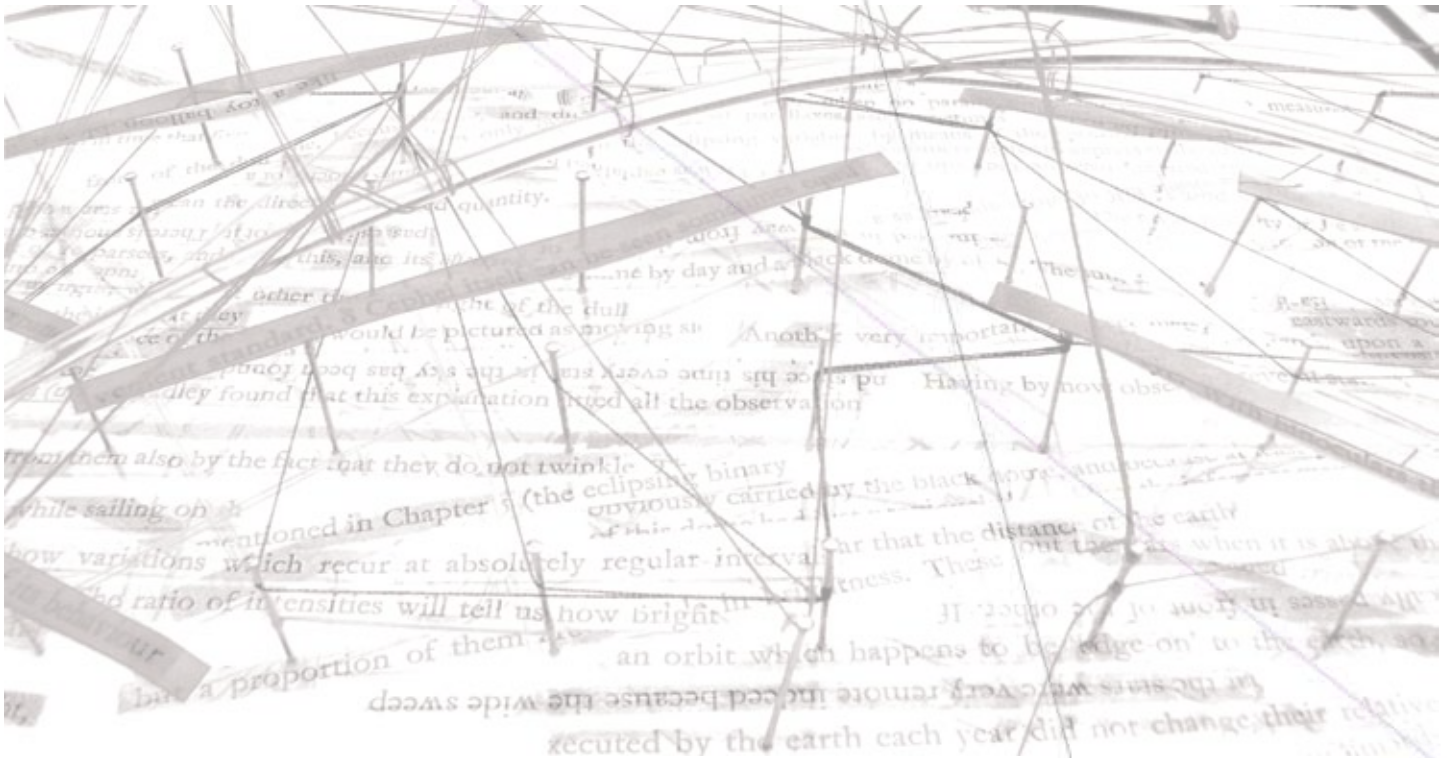


Figure 2.18: Touchstone: networks of links between students, lecturers, information and knowledge that needs to be hosted and developed in a single space on campus



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Chapter 3

Context



#3 - "Kanseliers"
Finished in 1960 (South) & 1964 (North)
Function then: Lecture Halls
Function now: Lecture Halls



#2 - Old Chemistry
Finished in 1911
Function then: Lecture Halls
Function now: Offices & Kiosk



#7 - Student Centre
Finished in 1995
Function then: Food & Offices
Function now: Food & Offices



Old Arts
Finished in 1911
(few months after Old Chemistry)
Function then: Lecture Halls
Function now: Exhibition space / Archives
Architect: P Eagle/JC Cleland
Style: Late French Renaissance
(Transvaal Sandstone)



#4 - Marketing Services Building
Finished in 1960
(together with "Kanseliers")
Function then: Lecturer's Offices
Function now: Research Support Offices



#5 - Old Merensky
Finished in 1939
Function then: Library
Function now: Exhibition space
Architect: Gerhard Moerdyk
Style: Persian/Egyptian



#1 - Merensky Library
Finished in 1975
Function then: Library
Function now: Library
Architect: Louw Marais Marquard & Kuhn /
Tectura (Heirs to Norman Eaton's Practice)
Style: New brutalism (after humanities block)



#6 - Humanities
Finished in 1973
Function then: Lecture Halls/Offices
Function now: Lecture Halls/Offices
Architect: Brian Sandrock
Style: New Brutalism

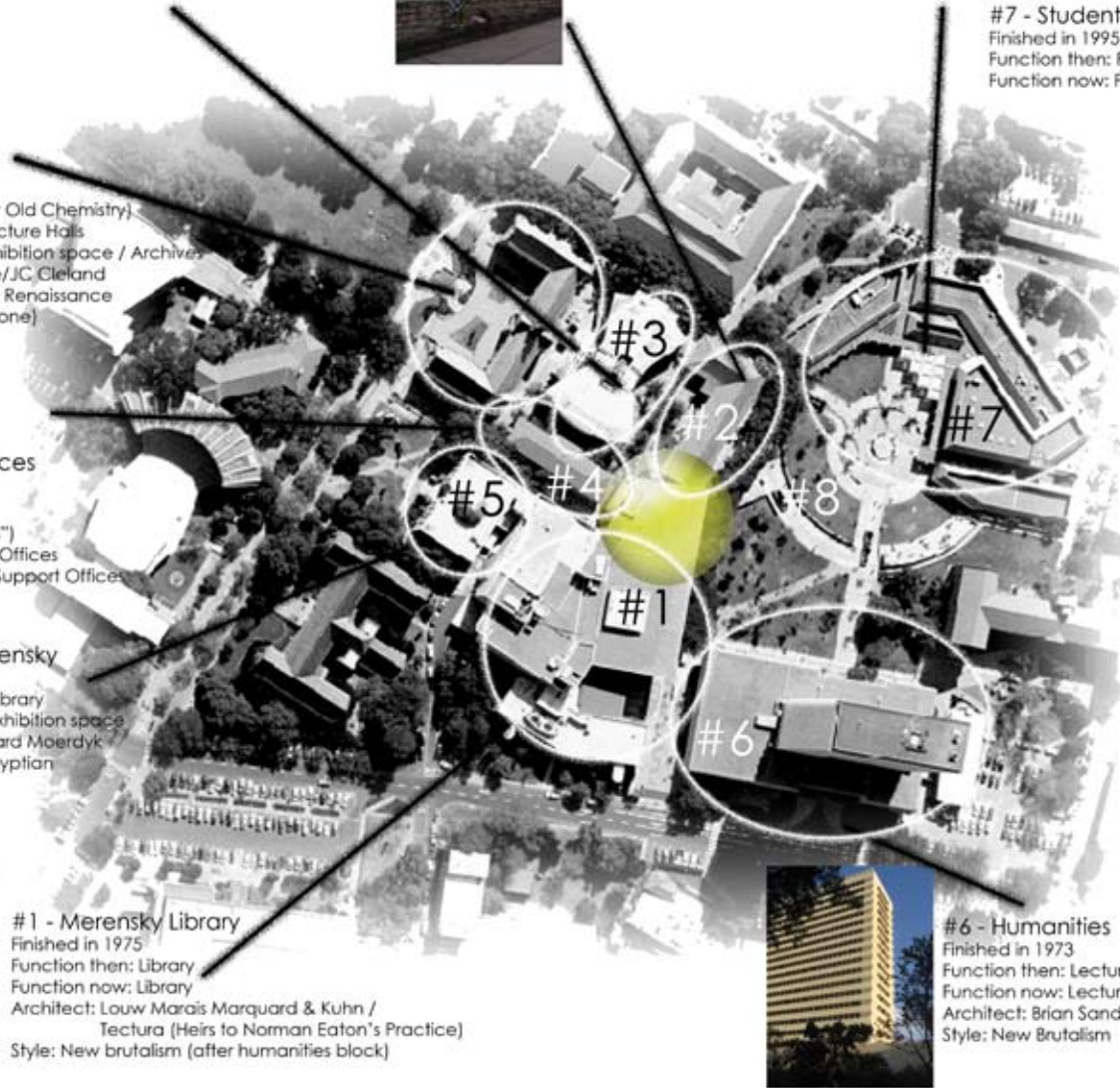


Figure 3.1: Historical Context



3.1 Historical

The site is situated in-between some of the oldest buildings on Campus. Over time buildings evolve, changing aspects that seem unimportant at the time, only later to reveal a certain lost legacy. It is therefore important to consider the historical context of the site so that the new architectural intervention improves the legacies represented by each building rather than detracting from it.

The old chemistry building, the oldest building on campus, was partially demolished in the early 1970's to clear space for the erection of the New Merensky Library. The only memory of this older building is an arch structure, detached from its previous context and slightly out of place. The historical plans of this building are not available, but

photos from the University's archive indicate the demolished section. In its original state, the building represented a mirrored J plan form with the remaining arches indicating some symmetry in the original. As this project does not aim to recreate the old, but rather highlight the memory of it, this information will suffice to conclude the necessary shape and size of the historical plan.

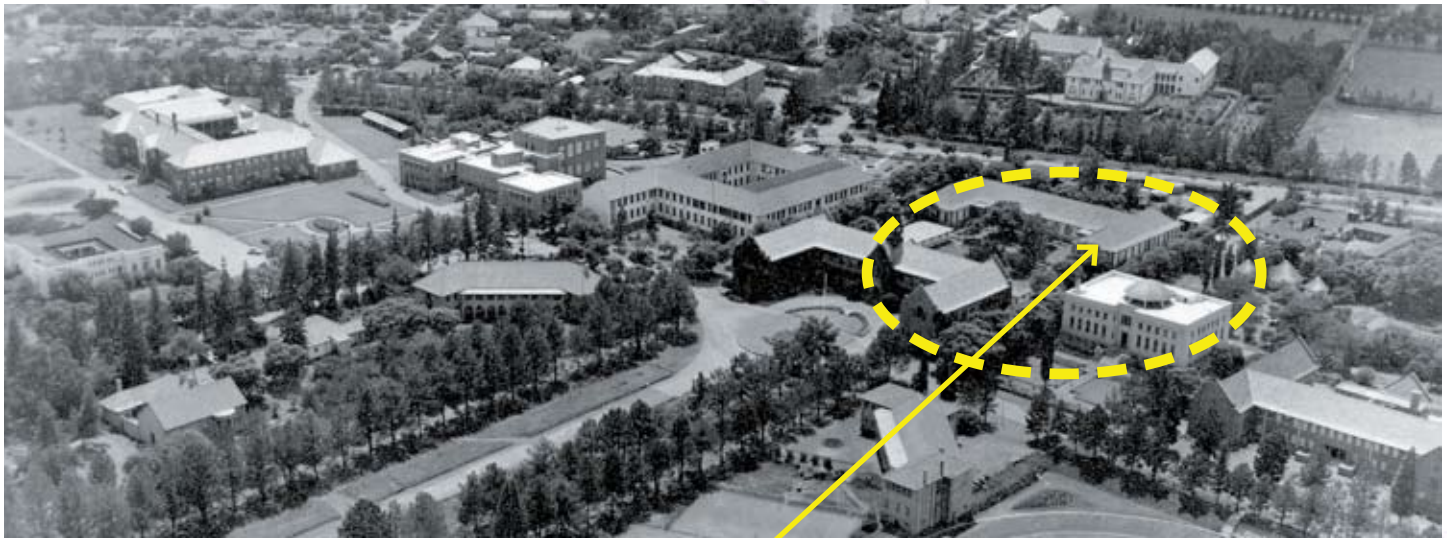


Figure 3.2: Historical aerial photograph of the site indicating the Old chemistry building in its original state



Figure 3.3: Construction of the New Merensky Library, to the left the partial demolition of the Old Chemistry (the arches were left in tact)



Figure 3.4: Construction of the New Merensky Library



Figure 3.5: The Old Arts building in the foreground with the Old Chemistry building in the background

3.2 Structural

Concurrent to the historical context are the structures that envelop the buildings. Within the chosen site, the structural context pertains mainly to the overhang of the New Merensky Library. Peripheral to the site are the exterior walls of the Old Chemistry Building, the Marketing Services Building and the Library itself.

As the Library forms most of the boundaries of the project it influences most of the technical decisions. The Library itself relies on a structural grid of concrete columns (8m x 8m). The Library's footprint (excluding the overhang), extends two levels below ground to the level of the Library's basement floor. The supportive

columns under the overhang terminate a meter below the floor of the basement. This structure allows for some excavation around the columns.

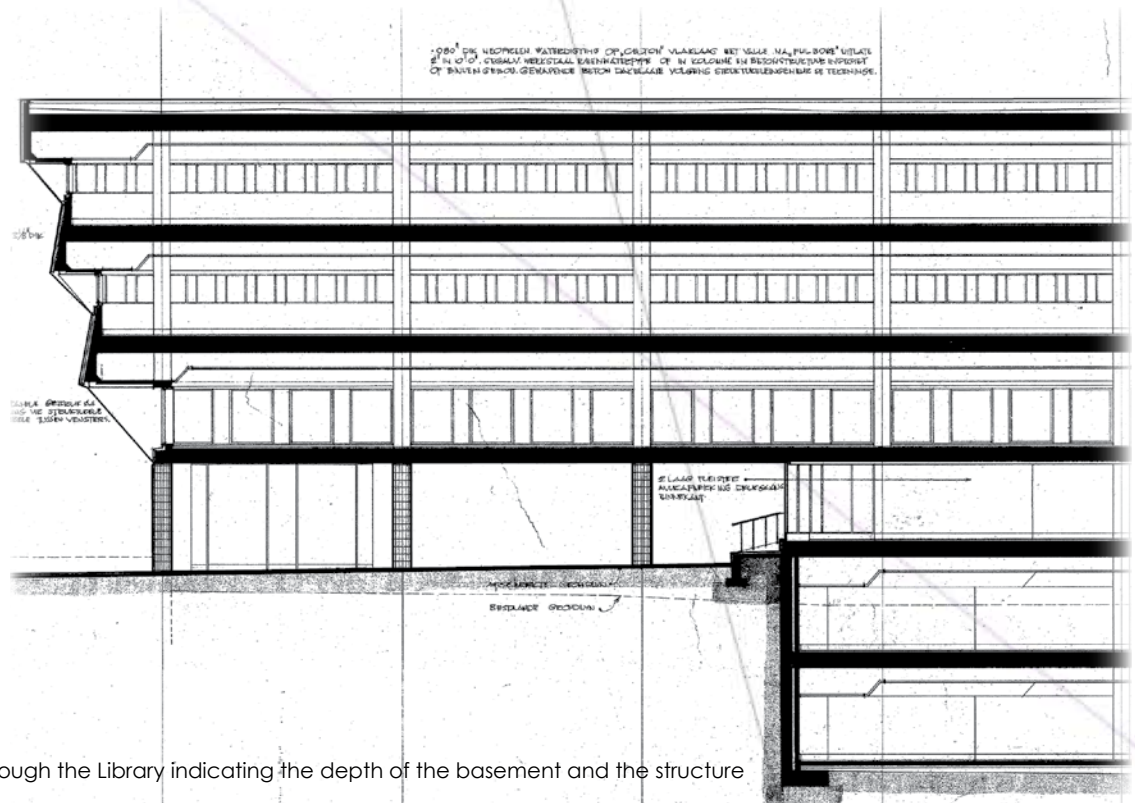


Figure 3.6: Original section through the Library indicating the depth of the basement and the structure



Figure 3.7: Physical Context

3.3 Physical

Located under the existing New Merensky Library Overhang (#5) and currently not utilised for a specific function, the chosen site serves as a thoroughfare for users walking to and from classes, the Library (#1), the Client Services Centre (Humanities #6), and the Student Centre.

Given that a large number of students and staff walk through the site on a daily basis, the location of the site is central to most activities on campus. Situated between the food suppliers: Campus Kiosk in the Old Chemistry Building [#2] and the student centre

[#7], lecture halls: "Kanseliers" [#3], Humanities [#6], Economics, Zoology, Geography, Engineering, Musaion and Theology and the Merensky Library (#1) the space serves as an important transitional zone.

These buildings define this movement of users by forming corridors of negative space between them, and in so doing provide visual links to other parts of the campus. The most effective visual link is the corridor between the Old Merensky Library and the Marketing Services building, which links the area surrounding the

Aula, Amphitheatre and Musaion to the public space adjacent to the Student Centre.

Defining the space to a certain extent is the graffiti wall, on the southern perimeter wall of the Old Chemistry building. Even though this element was not part of the original, it is significant to the site in its own right. Informing students of activities and allowing the expression of opinions foretells the necessity of a space to evolve this concept into information that will trigger memory.



Figure 3.8: Approaching the site under the overhang from the west past the Old Merensky Library



Figure 3.9: Approaching the site under the overhang from the east from the Piazza



Figure 3.10: Approaching the site under the overhang from the west past the "Kanseliers" Building



Legend

Existing Movement
(Users of the site)



Gathering of Students



Entrances of Buildings
(More students)



NEEDS:
(current attractions to site)

WC Facilities



ATM

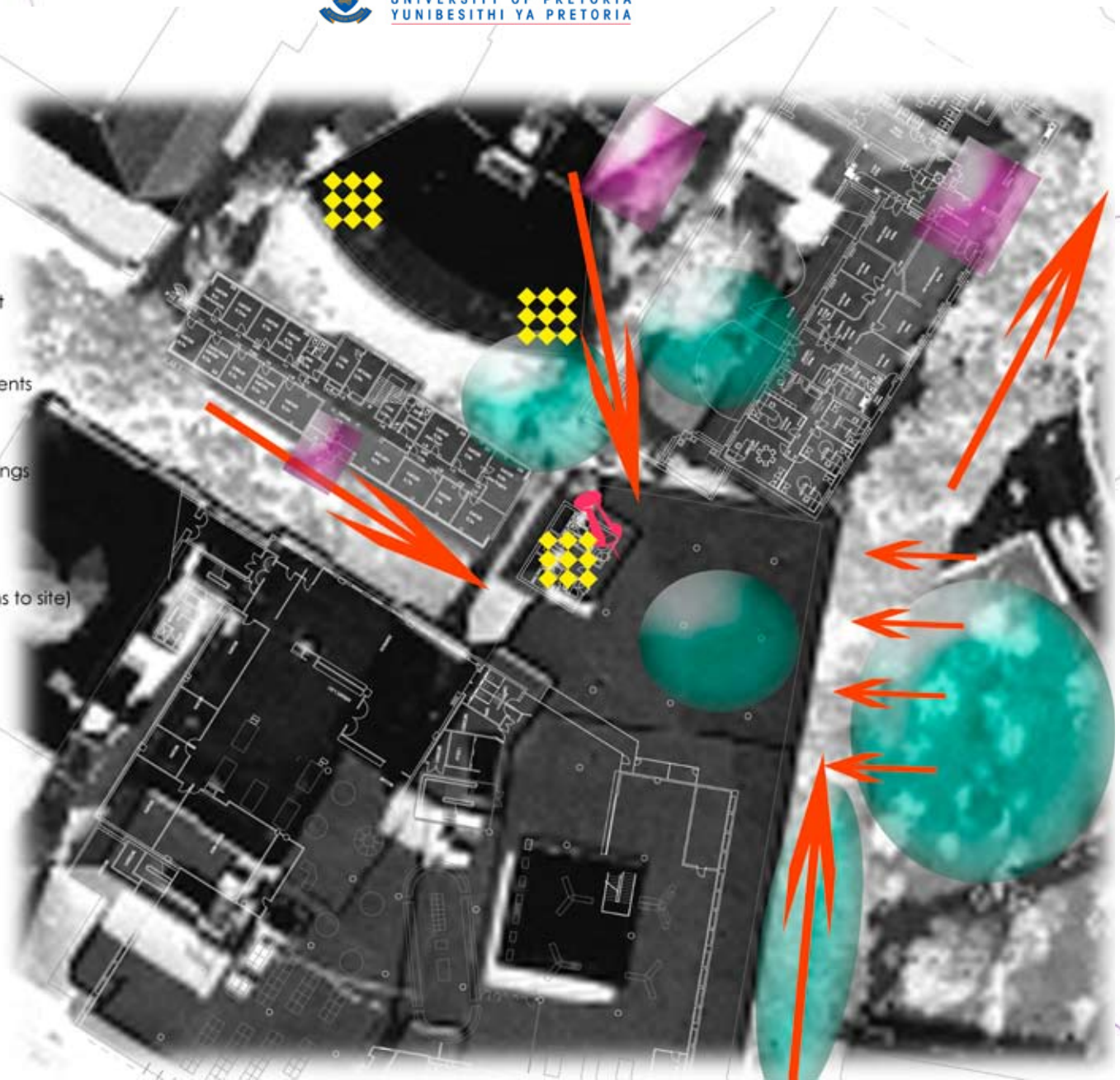


Figure 3.11: Social Context



3.4 Social

Student activities currently present on site are limited due to the nature of the site and its surroundings. Elementary seating within and around the site allows some students to linger in the space. Also present are an ATM and WC facilities in the “supporting column” of the Library as well as the “Kanseliers”, which draws a fair number of students to the site. Most of the gathering spaces seem to be utilised simply because that is the only space provided. The scale of the Library and some of the surrounding buildings provide a significant amount

of shade, which in turn encourages the gathering of students.

Another factor influencing the number of activities present on site is that most of the surrounding space is left-over negative space (outside of buildings). The only spaces with an end-use are the entrance to the Library, the entrance of the “Kanseliers” and the Campus Kiosk.

Social space in the vicinity seems limited to the Piazza and student centre. However, the piazza seems largely dysfunctional due to the openness of the exterior area: exposure to elements, performance limitations and seating limit activities. The Student Centre is utilised as a big cafeteria, and does not lend itself to many other activities.



Figure 3.12: Existing ATM under cantilever



Figure 3.13: Existing benches provided outside the Library (Eastern wall)



Figure 3.14: Negative space between “Kanseliers” and Old Chemistry

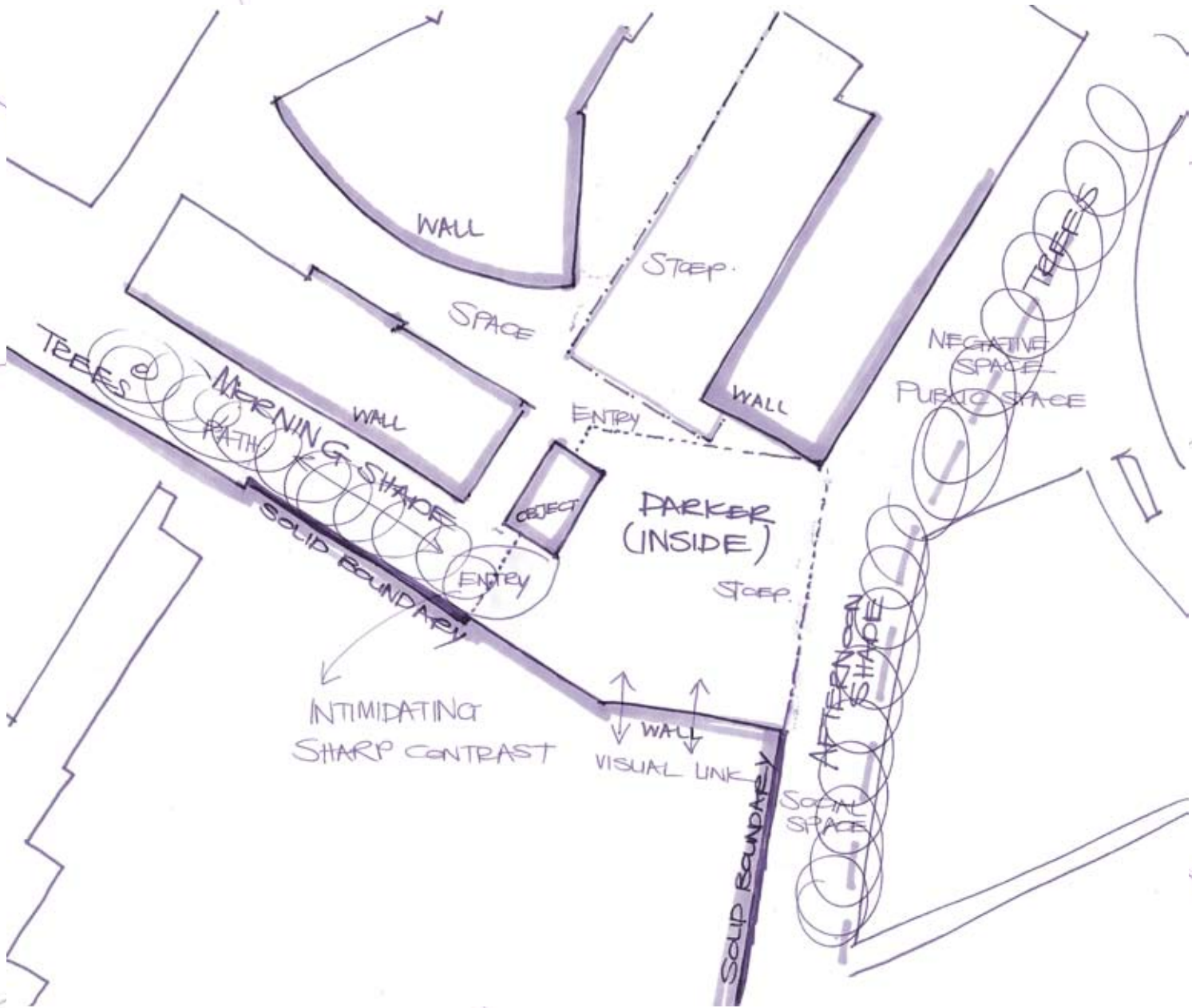


Figure 3.15: Diagram indicating haptic qualities of the site

3.5 Climate

The corridors formed between the surrounding buildings create some wind between the buildings. Due to the moderate climate of Pretoria, wind is limited to strong breezes that do not cause discomfort. Due to the orientation of the site, the main climatic consideration would be the sun and then rain water as affected by the slope of the site and the proposed excavation.

Discomfort on the existing site that is experienced because of the sun has a twofold implication. Firstly the stark contrast between light and shade when moving into the space actually highlights the monumental scale of

the Library overhang. The light colour of the in-situ concrete walkway as well as the surfaces of the building further add to this experience by causing uncomfortable glare, almost blinding the user before they enter the relatively dark space under the overhang. Secondly, by altering the space to become habitable, any direct sunlight entering the space would be detrimental to productive workspaces because of glare. On the contrary, however, natural light within an interior space is favourable, meaning that the sunlight within the space should be managed accordingly.

The site slopes toward the western side and the existing concrete surfaces add to the amount of runoff water on the site. This needs to be addressed in the design. Together with the sun, the rain entering the site also needs to be managed in order to use the site as an interior space. To fully utilise the site, more protection from these elements needs to be added to enhance the spatial properties of the site and make it habitable.



Figure 3.16: Slope of site
(Old Chemistry in the background)



Figure 3.17: View from inside the space towards the western corridors, light difference creating glare



Figure 3.18: Approaching the site, darker space under the overhang



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Chapter 4

Precedent Studies



4.1 Introduction

The aim of this dissertation is to create a public space, between and under buildings, with the properties of an interior space. The following Precedent studies address some of the issues of public space, interior space as well as structural questions arising in designing space underneath an existing building.

4.1 The Ancient Greek Agora

Function: Public Space

Architect: Various

The Agora was the cultural and educational centre of the Mediterranean, a marketplace that was also the focal point of public

life (Camp, 2003: 3) until 6th century AD. A large open square surrounded by buildings, the Agora served a very specific purpose in all aspects of the everyday life of Athenians. The political system was hosted in several of the buildings including the Bouleuterion (Council Chamber), Royal and South Stoas (public office buildings) and Metroon (archives). Long stoas provided shaded walkways for social interaction while monuments and a Library answered the cultural needs of the citizens and temples met religious needs. The Agora was a well-designed city centre, with a broad street passing diagonally through the site (Dromos or Panathenaic way). (Camp, 2003)

The Agora is evidently of particular relevance when designing a

social space for the University. The interactions between users are important to relay information and ultimately create new memory. As with the Agora, the current movement of users through the site could potentially expose information to them. Another aspect of the ancient Agora is the availability of supporting structures, with the Dromos leading directly past the Peristyle Court (a colonnaded open space), the other buildings are within sight for a large part of the journey. The Dromos is as much a part of the design of the ancient Agora as any of the buildings. Creating a similar space on campus involves firstly the route of movement of the users, secondly an anchor space (such as the Peristyle Court), and lastly supporting spaces.



Figure 4.2: Interior of Apple Retail Store New York

4.2 Apple Retail Store, (Fifth Ave, New York)

Function: Retail Store

Architect: Bohlin Cywinski
Jackson

This precedent is included for the creative reaction to very definite limitations similar to those experienced on my site. General Motors' building in Fifth Ave, New York, was given as the context. A historic building, alterations by way of expanding the skin of the building would not answer appropriately. The basic brief was an existing retail building that needed more space; the extra space had

to be "splendid architecture" that would create a "retail presence". Due to inherent space restrictions, the architect decided to go underground creating the opportunity to have an even more celebrated entry. This was resolved in the form of a cube. This entrance on the ground level constructed of glass is the feature element of the project, and activates subterranean retail space. This is an

interior space without exterior walls or peripheral elements, such as windows and doors. Climatically, this concept as a direct application would not work on my site, but the idea of an interior outside the scope of a building will be addressed through the new Agora under the Merensky Library, excavating the space below ground level.



Figure 4.3: Interior of Apple Retail Store New York, the ceiling becomes the shopfront



Figure 4.4: Exterior of Apple Retail Store New York, the main aesthetic feature is the glass entrance



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Chapter 5

Design Discourse



AGORA

Transition through information to memory.

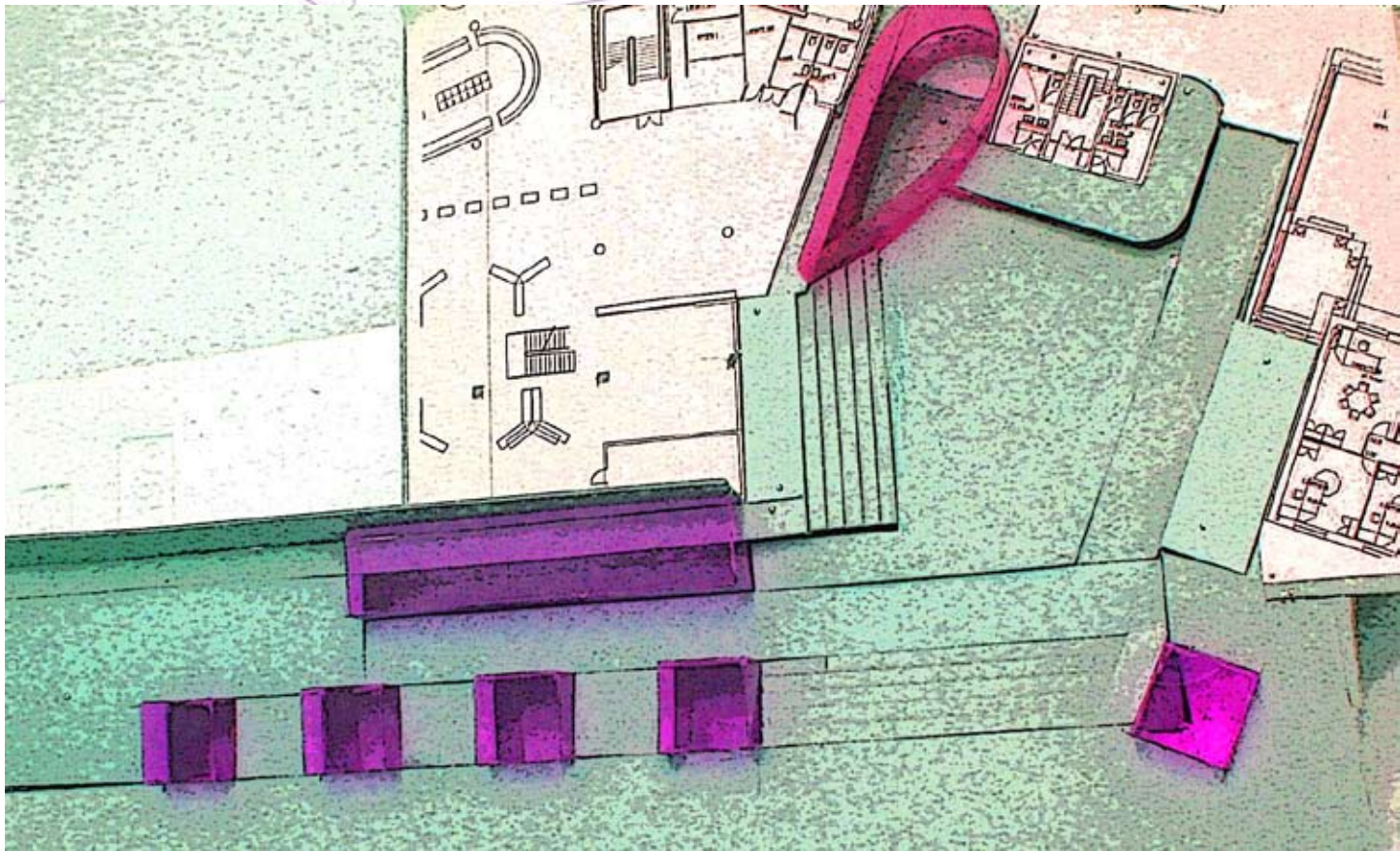


Figure 5.1: Conceptual Site development - June 2008

5.1 Introduction

The concept of an Agora has disappeared from our modern frame of reference. Instead of intellectual conversations challenging the thoughts and ideas of individuals, many public interactions happen around commercial activities where the masses become a sea of conformity. The University is a place for sharing and challenging of accepted ideas and for the subsequent generation of new information. The creation of an Agora, at the heart of the main campus of the University of Pretoria, has this concept as its goal.

Information is the main function of the Agora, the disseminating and gathering thereof to gain knowledge and create memory. The traditional static mountain of information is established in the Library right next to the space, and it serves a definite purpose. However, information is still hidden within the walls of the building, and a majority of the people on campus walk past this static mountain of information without noticing. Evoking the search

for additional information will extend existing knowledge and in so doing support the use of the Library.

The activation of the site to introduce new information to its users involves accidental contact from a completely different source. The Agora space will remain constant, as well as the medium (sound and digital); however any faculty can use the Agora as a platform to disseminate their information, thereby exposing it to the majority of the users on campus.

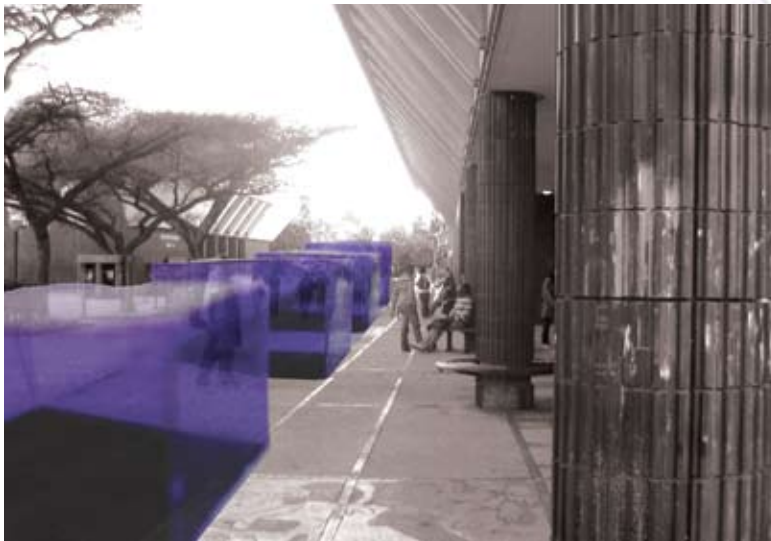


Figure 5.2: Conceptual Site development: interrupting the journey of the user with information

5.2 Ground Floor Level

Hidden underground and within an alternative interior space, the Agora announces its presence on site by means of the web-like external structure contrasted to the existing heavy and solid brutalism of the Library as well as the stylised neo-classic Old Chemistry building. The structure morphs from under the Library, seemingly having its source in the Agora itself and lightly rests on the surrounding ground. Supporting structures around the existing

columns support the ceiling and rest on the subterranean ground floor level minimising the effect on the slab structure of the Library.

The structure envelops the space, brooding over the activities that it accommodates while still allowing these activities to spill into the surrounding area. Contrary to a traditional solid boundary, the skin provides protection from the elements yet links the interior to the exterior. As if lightly walking over the site and its surroundings the random pattern of the

structure, coupled with the lightness of the steel with glass infill, causes the structure to seem in constant motion. The fractal skin extends from under the Library, providing some shade and then evolves through elements resting on the ground to form walls. Through this structure, the left-over negative spaces are bound together as a whole, with clearly defined and celebrated entry points that bridge the scale difference of the Library overhang to the interior space. The tension created through this structure draws more attention to the



Figure 5.3: Conceptual investigation of the steel structure within the existing space.



Figure 5.4: Conceptual investigation of the steel structure within the existing space. Looking in a western direction, this corridor is the new main circulation route

surrounding site by highlighting the solid building masses of the surrounds, and in doing so emphasises the existing properties of the buildings.

The existing public space under the overhang of the Library is transformed into a multi-layered social experience focused on the dynamic interaction between people and information. The organisation of the Agora is generated from the existing circulation of students through the site. The current circulation is directed by forcing the main flow of people through defined walkways to counter the fragmentation of the space. The main thoroughfare, situated closest to the Library window, has a direct visual link to the space beyond the existing corridor, consisting of a ramp that smoothly bridges the existing slope of the site. The visual link is maintained and enhances the journey through the site by creating a window from the Agora to the spaces beyond the walkway. Eliminating the psychological apprehension of walking into an unknown space, this main walkway is intended to allow for the majority of the users to utilise it.

Due to a sewer servitude under this section of the site (see plan), very little can effectively be changed. The rest of the site is therefore quite small, not adequate to host large numbers of people as would be expected from a public space. In order to still allow for the flow of people through and past the site, as well as providing

an architectural intervention on this historical site, the project will comprise of an excavated space, with a redefined "roof", creating a public square over the space. This public square has some seating elements, linking to the space below, steps and ramps bridging the level differences.



Figure 5.5: Space that was fragmented by users of the site is redefined through the management of user movement on the site

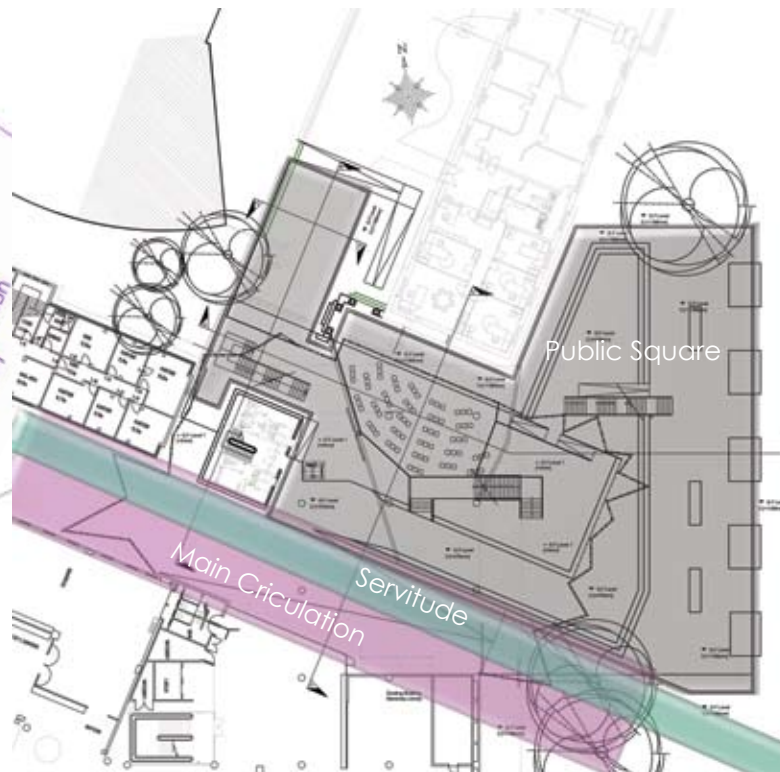


Figure 5.6: Public square over the excavated site

Two structural systems influence the aesthetics of the space indicating the contrasting memories on site. Firstly the Library was constructed on a grid of concrete columns (8m x 8m) that extends to the site under the overhang. This grid aligns with the eastern wall of the New Merensky Library that directs the main flow of users past the

site of the Agora. The second visual system is inferred by the position of the buildings surrounding the site and aligns with the Old Merensky Library (off-axis when compared to the grid). The Agora will recognise the memory of the Old Chemistry building as well as the memory of the New Merensky Library.



Figure 5.7: Structural systems that define the site: columns and buildings



Figure 5.8: Plan of structural systems that define the site: columns and buildings

the side of the window that look down into the Food Outlet. Food and drink in this space need to support interaction between people by being accessible by any person within the user-group. This would imply that a person on his or her own should feel comfortable to venture into the space. Supporting this concept, the outlet will sell pre-prepared food that can then be taken to a table or the

seating bench (resembling a fast food outlet). This bench, facing the wall detail, offers the person on his or her own in the space some privacy as well as a seat to consume the food. Within the theoretical framework (c.f.2.1) the Food Outlet disseminates information, supplying news on television screens, and information as shared between individuals and maybe even strangers.

The wall detail was designed to facilitate three aspects of the Food Outlet Space. The three dimensional fractal wall panels consist of three different materials, mirror, acoustic panels and pin-up boards. The mirrors at different angles reflect the opposite wall and window, relating the user to the space outside as well as the screens installed on the walls. When looking into the Food Outlet by means of the angled window the users

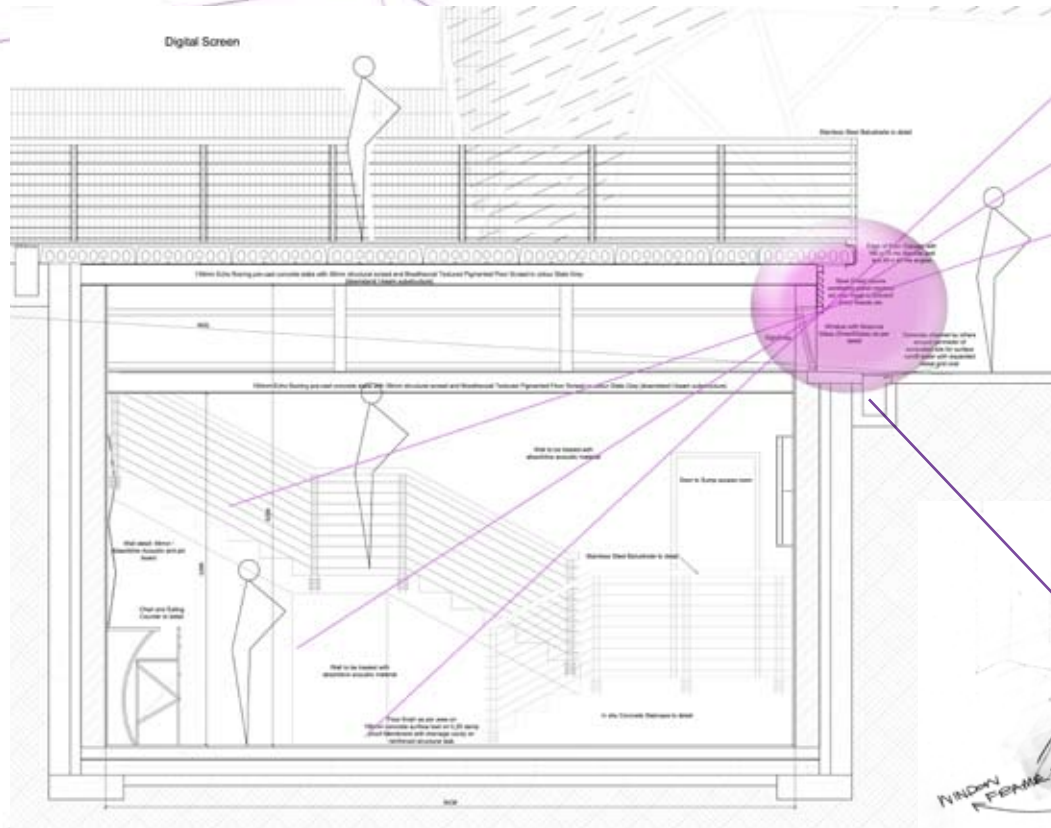


Figure 5.12: Section through Food Outlet

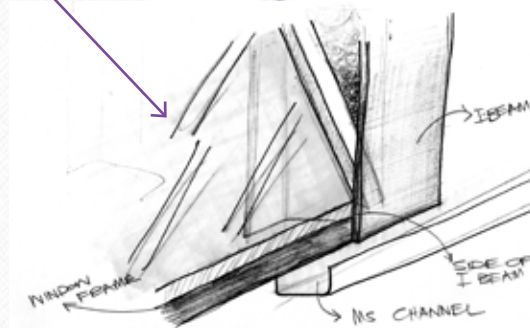


Figure 5.13: Detail of window at Food Outlet

on the ground floor level will catch fragments of what's going on inside the space through the reflection of the angled mirrors. Visual and physical links between the outside level (ground floor level) and the sunken interior are important so as to maintain a connection with the rest of campus and prevent the Agora from becoming a dungeon-like island separated from reality.

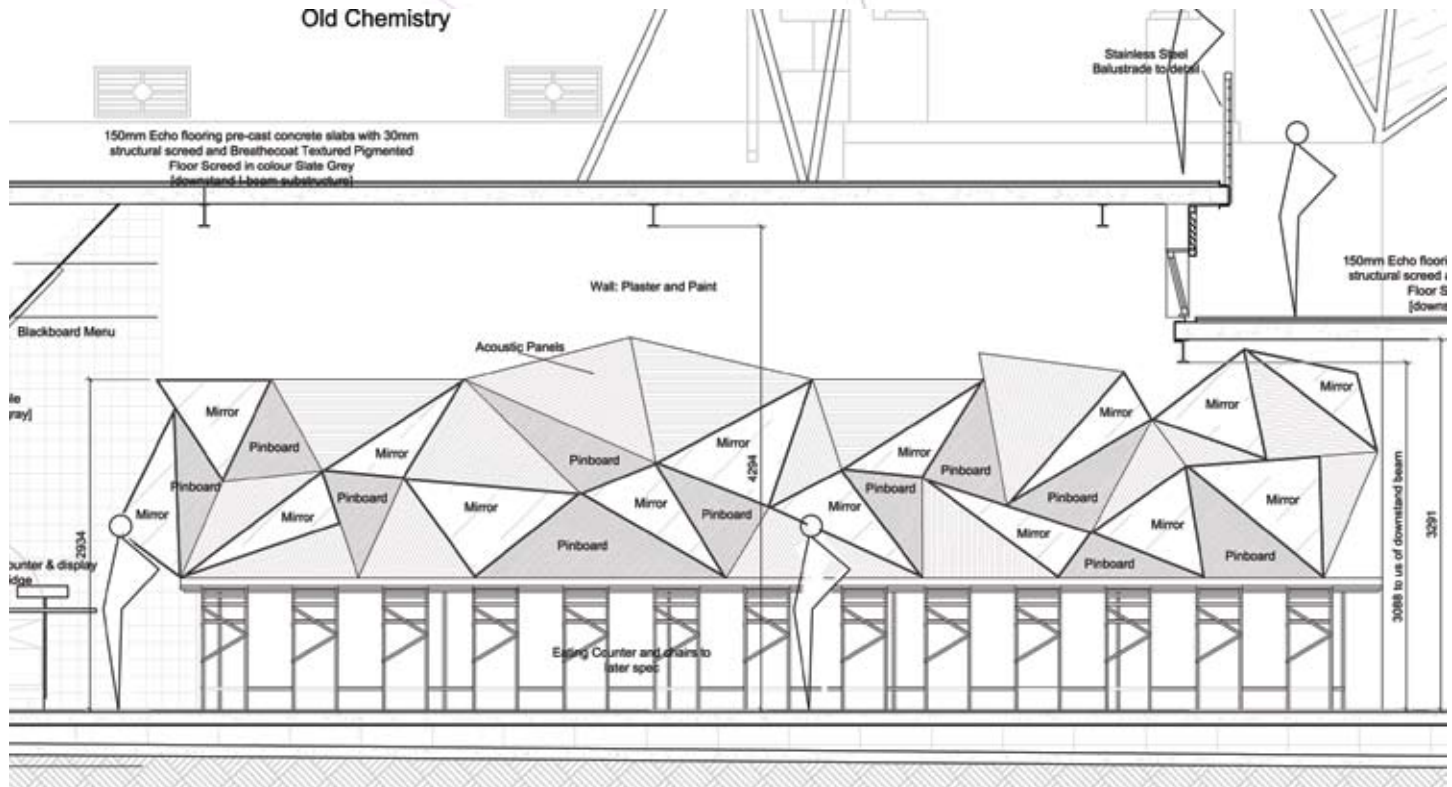


Figure 5.14: Fractal Wall Detail elevation

5.4 The Open Lecture Auditorium

To supply alternative and supporting information to the Library, dynamic teaching and learning will be the main attraction of the site. Other than supplying necessities to the users, the Agora needs to offer new and exciting information to the passers-by, to involve them in the generation of new knowledge

and memory. The Open Lecture Auditorium, accessible to any of the passers-by, becomes the anchor to the subterranean space. Referring back to my theoretical discourse (c.f.2.1), currently Open Lectures regularly take place at various departments on campus but contrary to their classification, these are usually held within buildings, hidden from the public. Open lectures on campus provide needed information on new developments outside of the

scope of curriculum, and have the potential to interest more people than present in the faculty. The Open Lecture Auditorium will offer these open Lectures to a large majority of students that walk through the space on a daily basis. The Agora will provide the ideal space to host these lectures thereby exposing a larger number of students to the information. It also greatly increases the percentage of accidental student interaction with information. The users will now walk

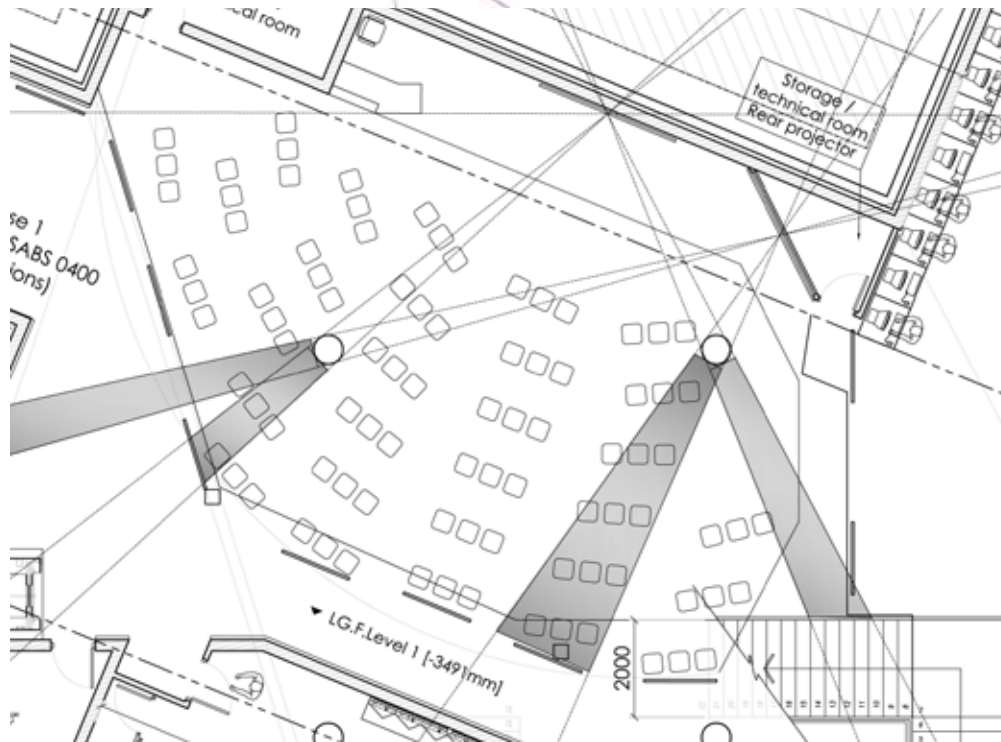


Figure 5.15: Plan of Open Lecture Auditorium

through a transitional space that introduces new information to them. These lectures will take information to the next step within the analogy (c.f.2.1), by imparting academic information (relevant to the current happenings in the world) to students to further their knowledge.

The main function of the space is public lectures and the auditorium

design therefore lends itself to stage-based performance. The space can also be utilised as:

- A meeting room for groups of people
- A public discussion space and other related uses such as student court currently hosted elsewhere on campus,
- The Drama Department and the Music Department.

In order to accommodate different activities, the seating of the

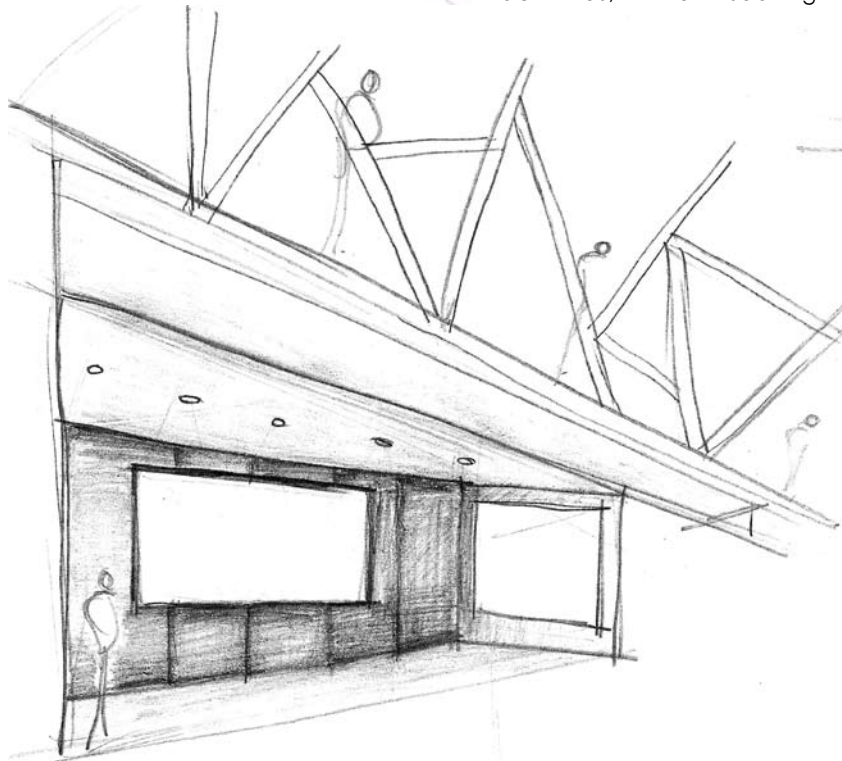


Figure 5.17: Stage of the Open Lecture Auditorium, Secondary circulation corridor above

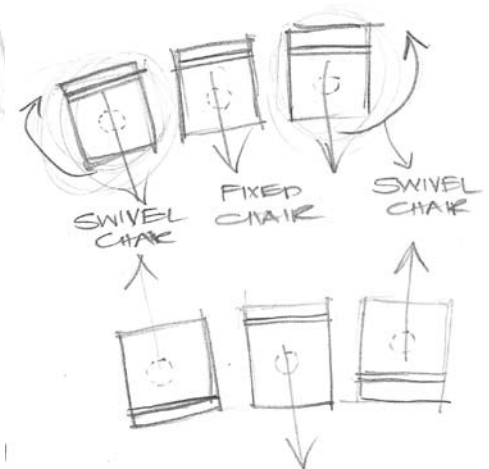


Figure 5.16: Fixed Chair configuration of the Open Lecture Auditorium

auditorium is fixed and the side chairs of each trio can swivel around (180°) to accommodate different settings.

Moving from the public square into the space below happens through one of two ways: firstly an elevator into the corner of the space below, opening to the back of the Auditorium and secondly the main staircase (also leading to the back of the Lecture Hall).

The elevator is not as prominent a design feature as the staircase, but provides the adequate vertical circulation for the disabled user. A screen will guard off most of the noise of people entering the Agora, as well as provide wayfinding information about the Agora.

The staircase is the first element in the space reflecting the grid which the rest of the space also adheres to. Reminding of a sweeping staircase

in a great public hall, the staircase celebrates the entry into the Agora. Motion up and down the staircase should stay within the parameters of public space, feeling wide and open with the user maintaining contact with the Agora throughout use. Linger between the spaces enhances the sense of being in a single space even though the user travels between different vertical levels. The staircase therefore is 2m wide (building regulations only require a width of

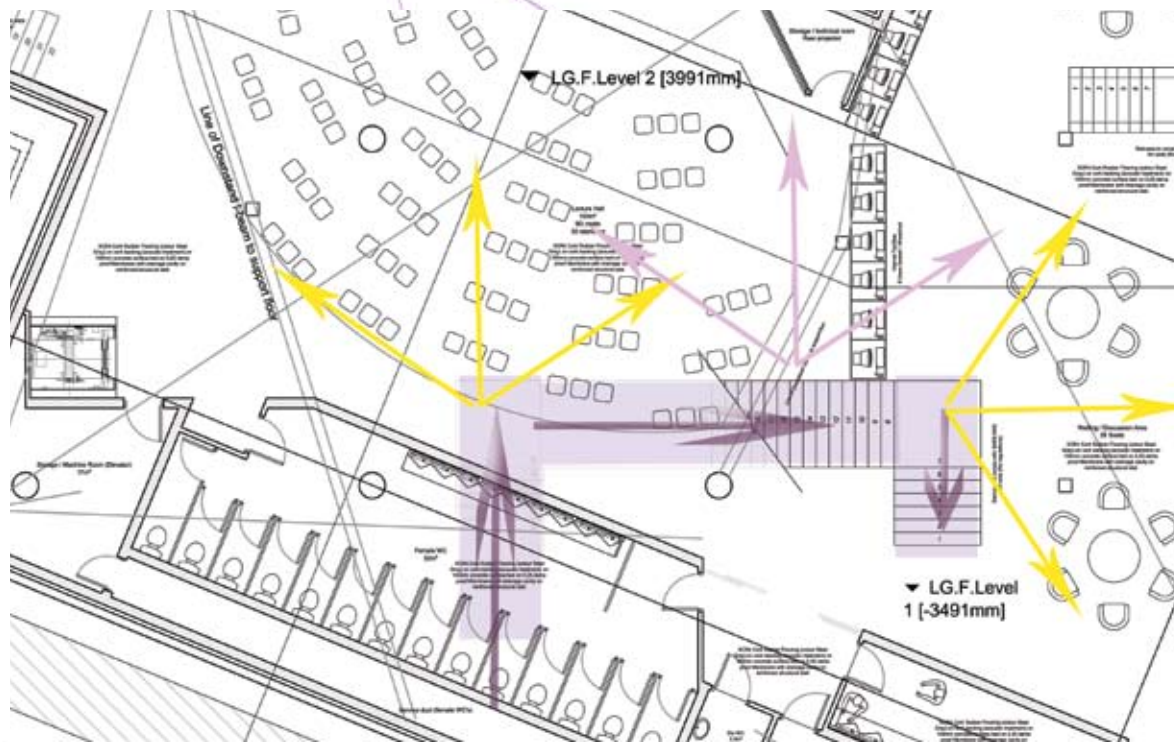


Figure 5.18: Circulation into the Agora behind the Open Lecture Auditorium

1,1m) and changes direction twice, leading the user to view specific parts of the space. Stepping onto the first (extended) landing, the user is brought closer to the Open Lecture Hall, acting as a type of viewing balcony. The direction of movement from this point onwards leads the user to face the Meeting Areas (Pnyx) as they travel down the stairs. The last change in direction is also where the staircase terminates (against a wall);

this wall will have information on what is happening at the Agora as well as signage explaining the use of the space.

One of the major elements defining the Open Lecture Auditorium is the double volume space that it occupies, creating a sense of openness. This space is important to connect the ground floor level with the subterranean space. Users standing

on the ground floor level, looking down into the space should feel as much a part of the seated audience in the auditorium as possible. The external structure originated from the idea of adding another skin under the Library to accommodate the necessary acoustic and weather treatment of the space.

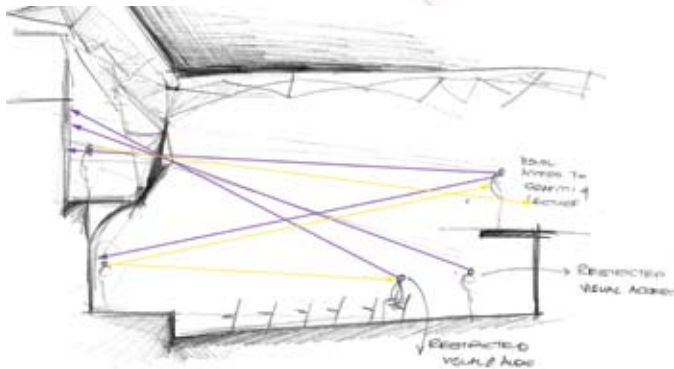


Figure 5.19: Double Volume Space that is utilised as Open Lecture Auditorium

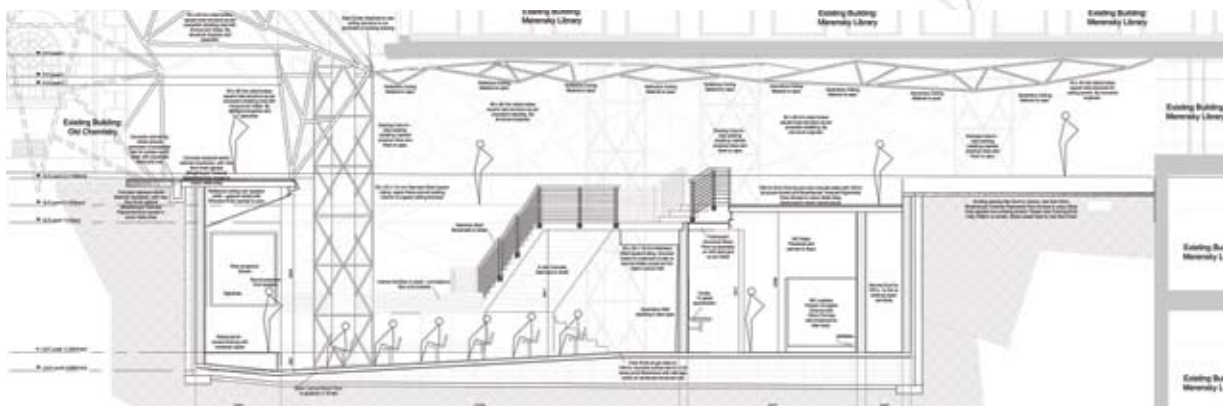


Figure 5.20: Section through Double Volume Space that is utilised as Open Lecture Auditorium

5.5 Pnyx (Meeting Rooms)

The word Pnyx was used to describe some meetings that took place in ancient Greece. It's understood that the meetings that used to take place in the Agora later moved to another location called (Pnyx). (Website – Glowacki: The pnyx).

This space is very important to the functioning of the Agora. Supporting

the Open Lecture Hall, it involves reception facilities, internet facilities and the meeting areas and rooms, it is here that knowledge infuses memory. Discussion is such a big part of learning and this sharing information as well as practicing others skills (public speaking, debating and forming opinions) are some things that are lost in the scope of a Library (another collaboration of information and its subsequent

users).The meeting areas have the sole purpose of generating new knowledge and exposing students to other fields of information.

The area allows different levels of interaction, from the completely open comfortable chairs to the more structured tables and chairs, to the specialised meeting rooms. These rooms are mainly for use by

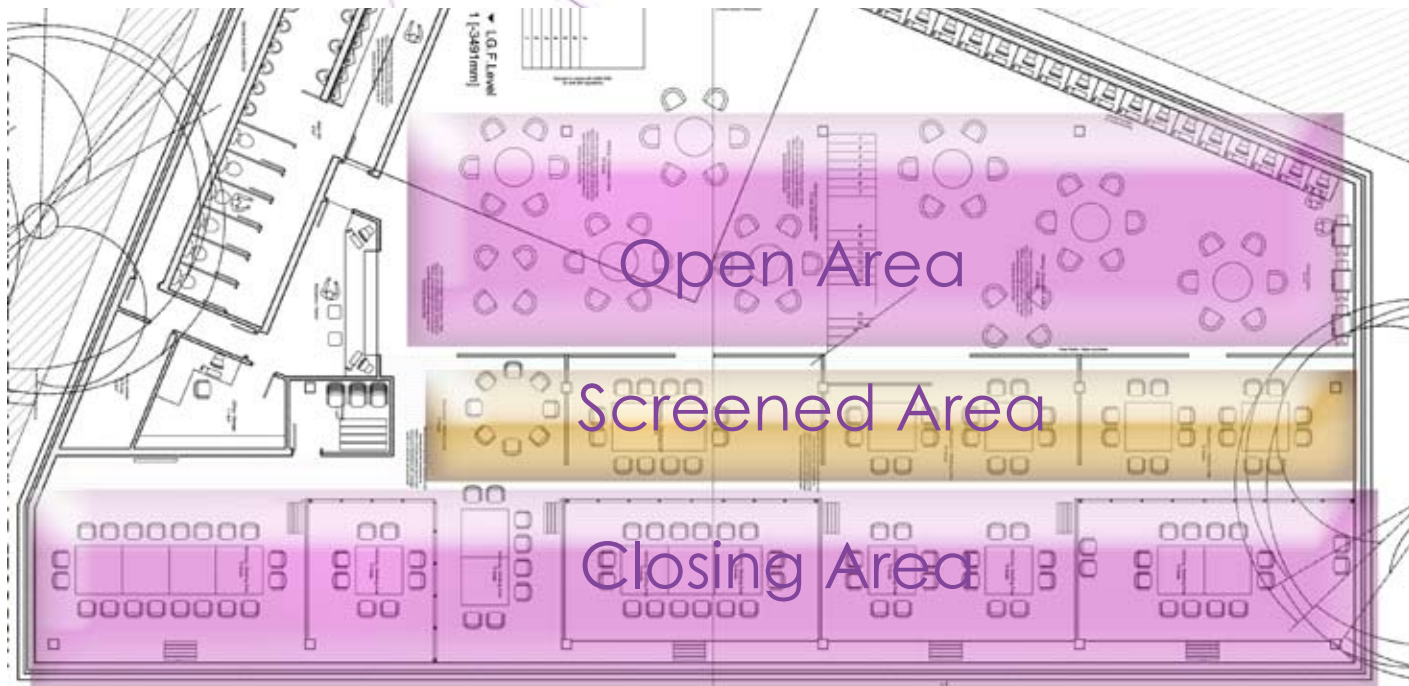


Figure 5.21: Pnyx indicating different configurations within the space

post-graduates doing research into a certain field but can be utilised (without the digital workstation) by anyone on campus. This creates a neutral platform where students from different faculties, undergraduate as well as post-graduate and lecturers can all interact – whether on purpose or not. Three of the four walls consist of glass writing surfaces and pin-up surfaces to facilitate the flow of

ideas. The fourth wall incorporates an electronic workstation (that is otherwise locked) where ideas and research can be captured and reproduced (see detail).

To suit a variety of scenarios, some of the panels between the rooms stack against the walls allow for larger groups.

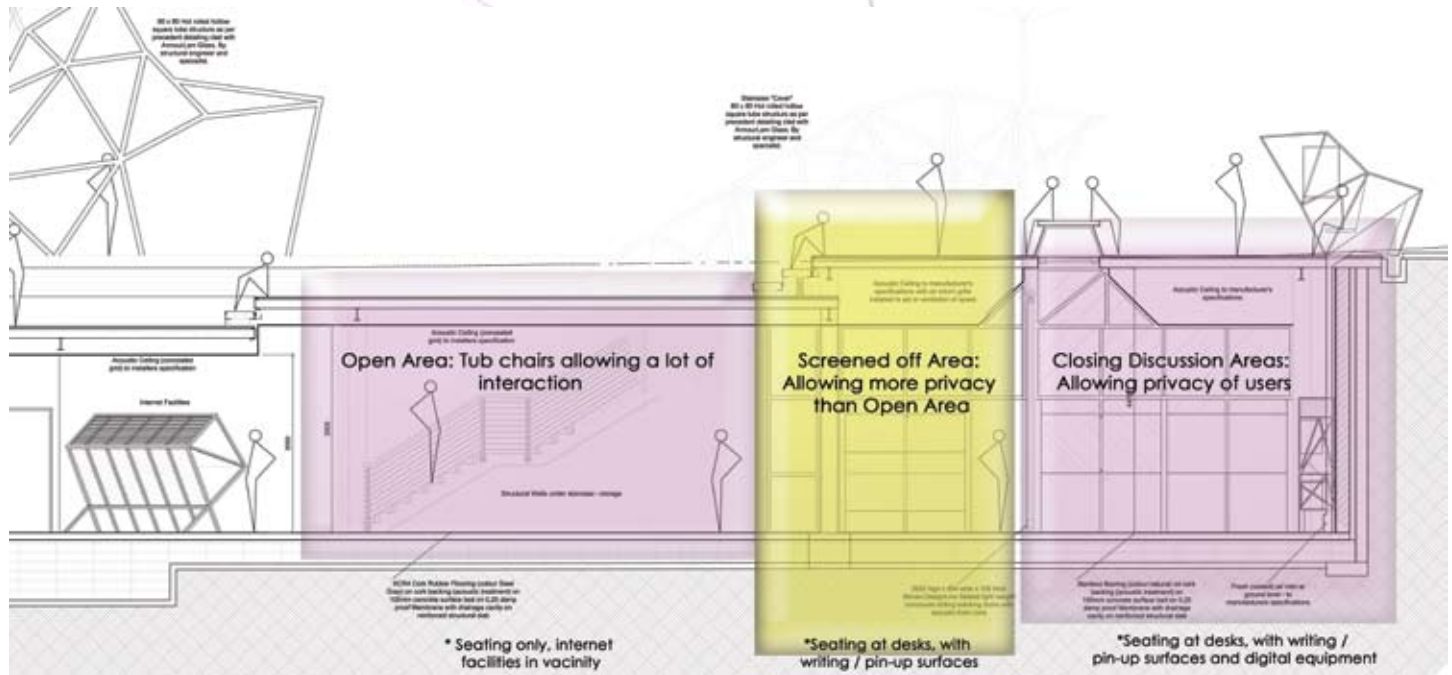


Figure 5.22: Section through Pnyx



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Chapter 6

Technical Report

6.1 Introduction

The Agora is largely subterranean, implying certain structural considerations and applications. This chapter introduces the structural processes and solutions as well as non structural elements that will enhance the use and experience of the Agora.

6.2 Demolition and Excavation

As this space will not be erected within an existing building, no structure or part thereof will be demolished. However, most of the Agora will be located below the ground floor level, which will subsequently be excavated and with it the removal of some surface material – mainly concrete cast in situ. The existing ramp to the original entrance of the Library will be demolished, as well as a part of the plinth around the arch ruins of the Old Chemistry Building.

There are a number of existing trees located in the area that will be excavated. Mature, large trees can be moved and replanted (<http://www.freemoving.com/index.htm>) (Hall, 2002), however the cost implications of this, as well as the operations and time required (two months to prepare the tree before excavating it can start), needs to be carefully considered.



Figure 6.1: Plan: Site Excavation



6.3 Accommodation Schedule

The Agora will function as a public space, but needs to be subdivided into categories of use to determine the accurate design population. Three definite areas can be distinguished: the Open Lecture Auditorium, the supporting Meeting rooms and the Food outlet.

6.3.1 Design Population

Area	Occupation Class		Design Population (SABS 0400-1990)	Area	Total
Lecture Hall	Theatre (Peak usage)	A2	1 person / 1m ² or seat	90 seats 30 m ² open space	120 people
Meeting Rooms	Educational Facilities (lecture/study)	A3	1 person / 5m ²	600m ²	120 people
Food outlet	Public Meeting Area (eat/drink)	A1	1 person / 1m ² or seat	48 seats 123m ²	50 people

(See SABS 0400-1990 pg 34&35)

Table 6.1: Design Population

6.3.2 Sanitary Requirements

[SABS 0400-1990 pg 124]

- Lecture Hall (subject to peak use) – Table 7 SABS 0400-1990 pg 127
- Meeting Rooms – Table 6 SABS 0400-1990 pg 126
- Food outlet – Table 6 SABS 0400-1990 pg 126

Area	Population	Gents			Ladies	
		WC	HWB	Urinals	WC	HWB
Lecture Hall	120	1	1	3	2	1
Meeting Rooms	120	3	5	6	9	5
Food outlet	50	2	3	3	5	3
Total	290	6	9	12	16	9

Table 6.2: Minimum WC Requirements

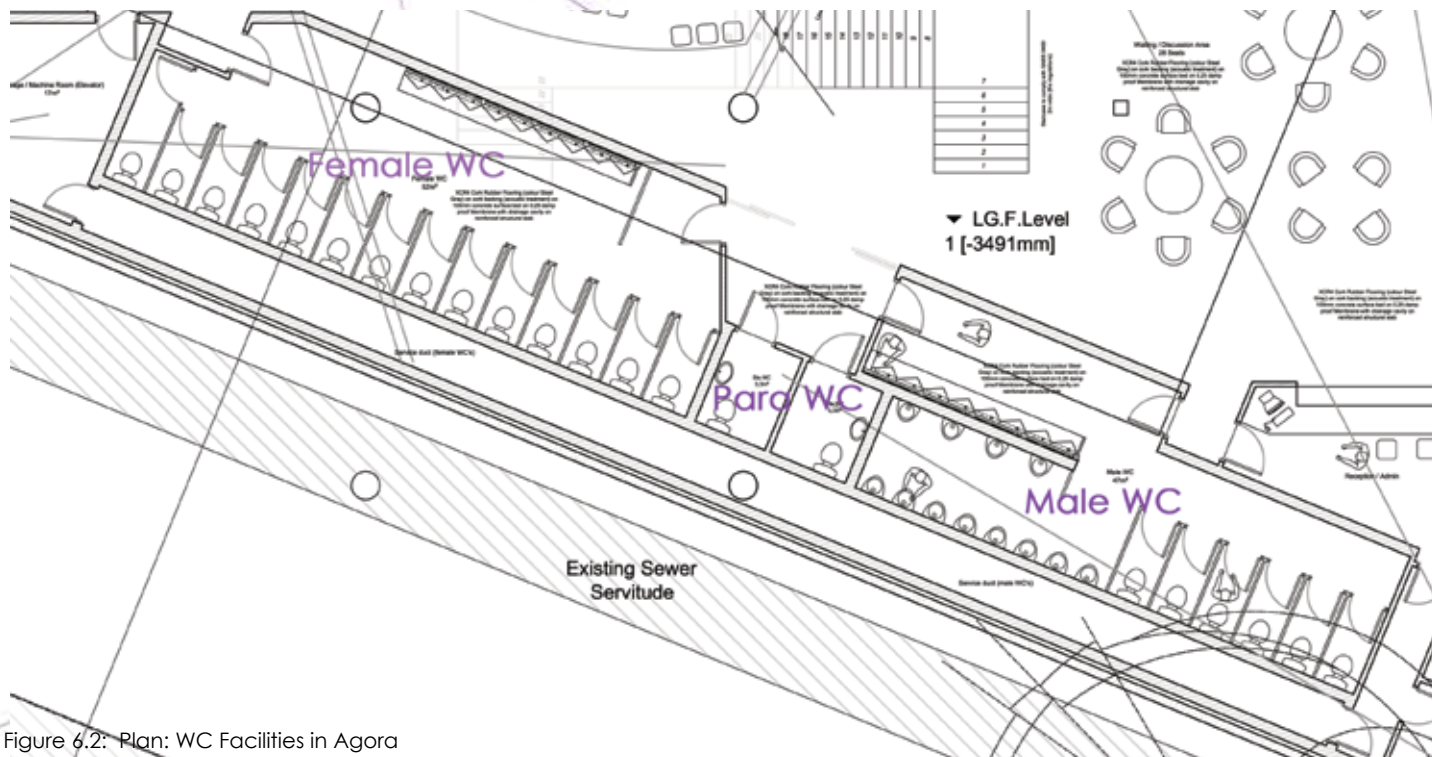


Figure 6.2: Plan: WC Facilities in Agora



6.3.3 Adjustments for Disabled users

[SABS 0400-1990 pg 153]

The above-mentioned regulations indicate that a building with more than 20 WC's (collectively) should provide 2 cubicles specified for use by wheelchair-bound users. However the same regulations state that 2 cubicles (for normal use) can be replaced by one cubicle for disabled use. Adjusting the above table as follows:

Minimum Requirements	Population	Gents			Ladies	
		WC	HWB	Urinals	WC	HWB
Total	290	4	8	12	14	8
Disabled WC	*Unisex	*1	*1		*1	*1

Table 6.3: Adjustment to WC Requirements to include facilities for disabled Users

*Please note that this is the minimum requirements and The Agora will provide the following:

Actual Provision AGORA	Population	Gents			Ladies	
		WC	HWB	Urinals	WC	HWB
Total	290	6	8	12	14	9
Disabled WC	*Unisex	*1	*1		*1	*1

Table 6.4: Agora WC Provision

6.4 Structure

Due to the Agora being located underground the structure enveloping the space needs to be engineered to ensure habitability of the space. The structure of the space consists of two distinct parts, the subterranean part as well as the web structure (forming the ceiling as well as some "walls"). The web defines the project and binds the space as a whole.

6.4.1 Subterranean Structure

The Agora's structure consists of a concrete outer wall (cast in-situ) supported by H-piles driven into the ground before excavation commences, after which wood lagging is installed as the excavation progresses. On the sides of the excavation the soldier pile and lagging wall is supported by post-tensioned anchors drilled and grouted into the soil around the excavation. (Excavation

Support Systems: Boulanger). After this outer skin is prepared the structural screed is laid at an incline to aid with the water management. On top of this screed concrete blocks are laid to create a cavity. A waterproofing membrane is then installed over the blocks after which another screed is cast to accommodate the floor finish as approved.



Figure 6.3: Site excavation



Figure 6.4: Preparation of cavity floor in basement

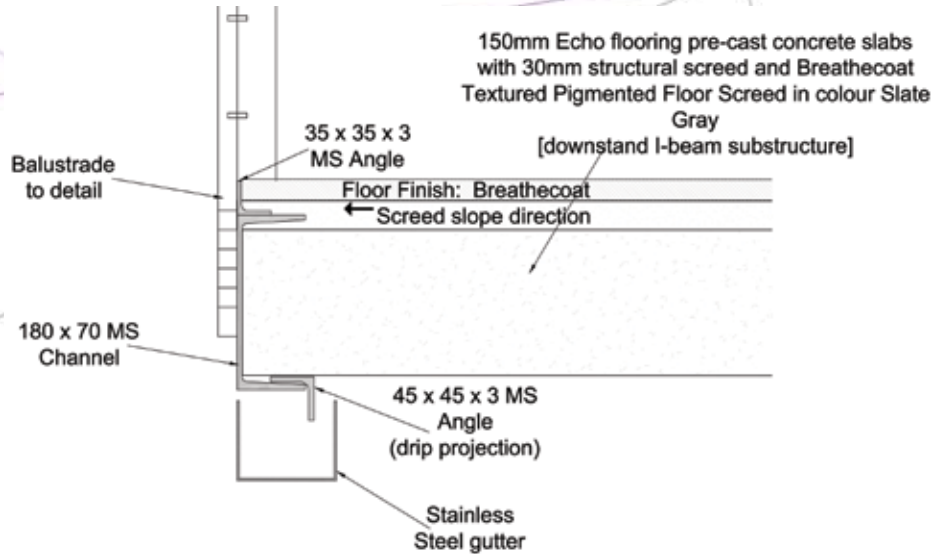


Figure 6.5: Perimeter detail to manage surface water at level differences

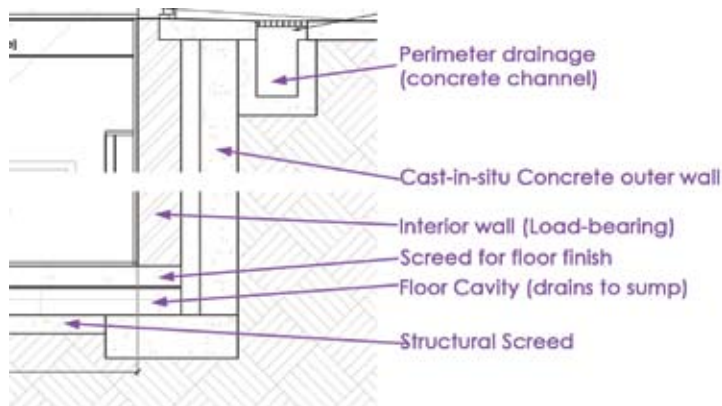


Figure 6.6: Perimeter detail to manage surface water where the new floor is level with existing site level

Water management is a major concern and includes surface run-off as well as water seeping through the structure (damp and groundwater). Waterproofing the space can be approached from different angles: - interior sealing, exterior waterproofing, or interior drainage (Wikipedia: Basement waterproofing). Degrading of any material applied to the exterior skin of the building is inevitable due to constant exposure to moisture and pH differences. Preventative to this is drainage of any water that might enter the structure to ensure the longevity of the building.

The perimeter run of is managed through the use of stainless steel gutters incorporated in the structure (see sections). A sloped screed on top of the floor structure will further aid in the process.

6.4.2 Web Structure

One of the main features of this project is the exterior structure. This skeletal structure serves to bind the leftover spaces between the buildings into a single space that has its own identity apart from the surroundings. It will not carry massive loads like conventional building structures and will mainly provide protection from the elements. The

precedent determining the aesthetics and structure is Federation Square in Melbourne, Australia – an array of buildings recently completed as part of the gateway to this city.

According to Federation Square's website (www.federationsquare.com.au) the exterior structure (called the "Fractal Façade") utilises "new understandings of surface

geometries". With this new approach to surface, the architecture itself is unique and creates a very definite and identifiable space. Not much information is available on the construction of this web-like structure, however, some details can be derived from photographs of the buildings. The same site (Venue/Building Design page) describes some of the details classifying the glass façade of the



Figure 6.7: Federation Square in Australia, fractal facade



Atrium (one of the buildings) as a 3-dimensional system glazed “both inside and out” that acts as a thermal chimney to exhaust hot air. Transport (the name of another building in the complex) has perforated screens embedded into a zinc-clad “shard” that creates “virtual form” through shadows by day and light emission at night.



Figure 6.8: Federation Square in Australia, double glazing as part of the fractal facade

The application of this precedent study will mainly be as a visual element within the site. Activating space underneath a building implies the presence of a ceiling (in this project the only physical element that directly influences the new project). This is a flat-surfaced concrete slab, which would not accommodate the optimal use of the site (acoustics being the main concern). To create

a definable space underneath the existing building without detracting from the surrounding buildings, a very different architectural language will create the necessary contrast and highlight the existing.

The new skin enveloping the Agora will comprise of a main structure (80 x 80 x 6mm drawn steel square section), welded together at the intersections

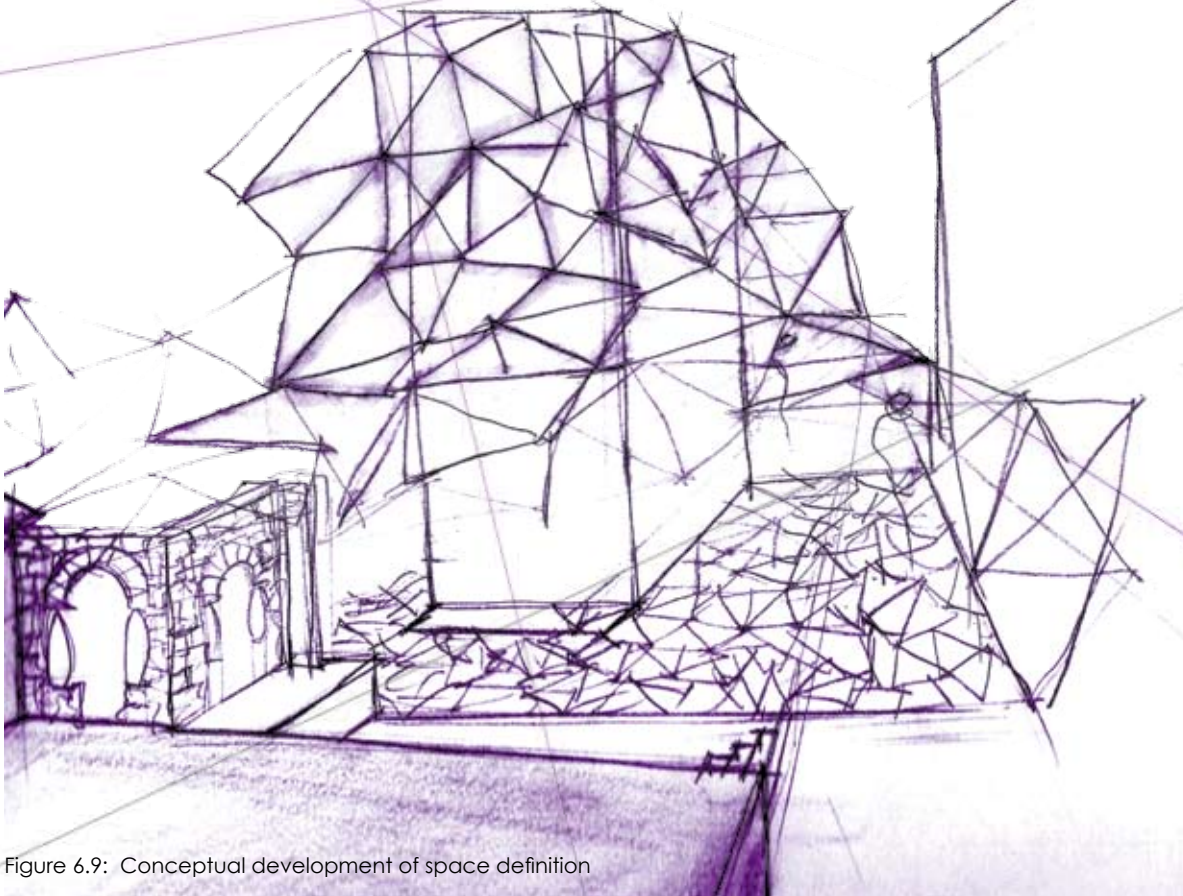


Figure 6.9: Conceptual development of space definition

(see picture... of precedent study [Federation Square] and with steel flat bar (70 x 6mm) welded to the square section. The glass will be installed using a single member spider fixture, that is fixed to the square section as per manufacturer or installers detail, the glass panel itself needs to be installed at approximately 5mm away from the flat bar (see detail), as this joint will be sealed with a

flexible silicone sealant (as used in marine applications). Rainwater will necessarily flow to the lowest point (in this case the profiled section of the composite structure) and the structure then becomes the rainwater management system. The glass used to clad the system (in some places, see plan) is 9,52mm Solarshield S20 High impact Glass by Smartglass (20% light transmission) in colour Silver.

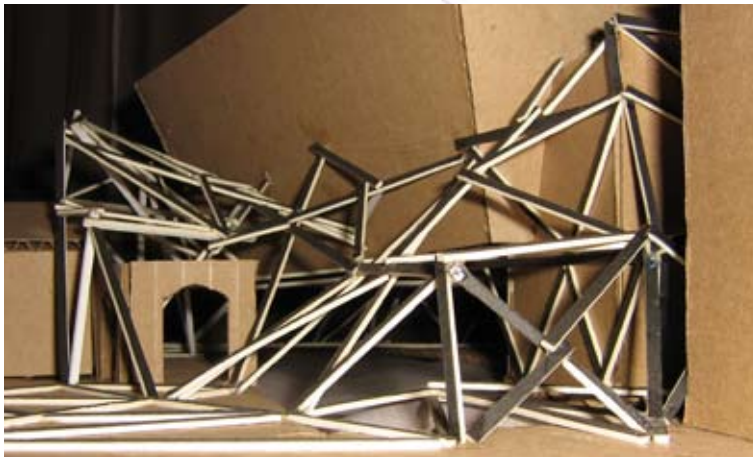


Figure 6.10: Conceptual development of space definition at arch ruins



Figure 6.11: Conceptual development of space definition at main circulation entry



Figure 6.12: Conceptual development of space definition over new public square

6.5 Ventilation

Due to the high energy consumption already present within the space (because of the amount of electronic equipment), where at all possible energy should be conserved. Gomez (2005: 204) states that underground buildings have a more constant temperature, with variations as low as 1°C, in contrast with exterior spaces showing temperature variations of as much as 10 °C. This is due to the massive

solar mass (soil) surrounding the site. A sunken space has one of its 6 sides exposed to the elements while a conventional building (enveloping space) has 5 sides exposed.

However, the sunken Agora needs to have adequate ventilation because of the user population. The site slopes from the eastern side to the lower western side. This poses a problem as the major wind direction is in the

same direction, which means that the wind would typically just blow over the site. Air movement is generated between the buildings that cause a breeze in the opposite direction, but this will not be sufficient to supply the whole Agora of fresh air. For this reason wind catchers were introduced on the eastern side of the space. Wind catchers function with some basic physics. A larger surface area and perpendicular to the prevailing

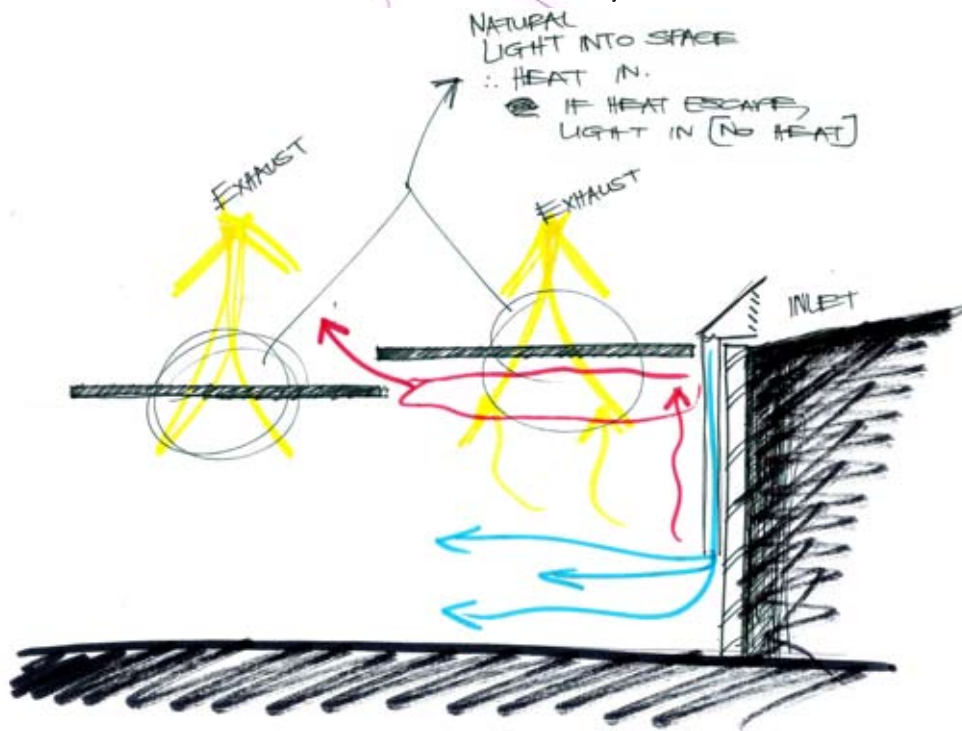


Figure 6.13: Ventilation concept

wind direction funnels the wind into a smaller area, which in turn causes the wind to gain speed. By adding evaporative cooling mechanisms (mist-producing) the air is cooled and forced into the building without additional energy. Pretoria does not have very strong and prevailing winds, thus, the process will be mechanically aided with a low-energy fan. This air

is released into the space at floor level, it will get warmed up and then rise. The level differences of the floor (at ground floor level) provide ideal space to exhaust the warmer stale air (See detail section of exterior stairs).

As a whole, the space is largely open in the centre, which would cause the bulk of the air to rise to the

ceiling above the open-lecture hall (double volume height). This is easily exhausted by the wind flow coming from the Marketing Services Building corridor. To exhaust the rest of the air (not in the way of the passage), the cavity between the ceiling structure and the underside of the slab should be sufficient.

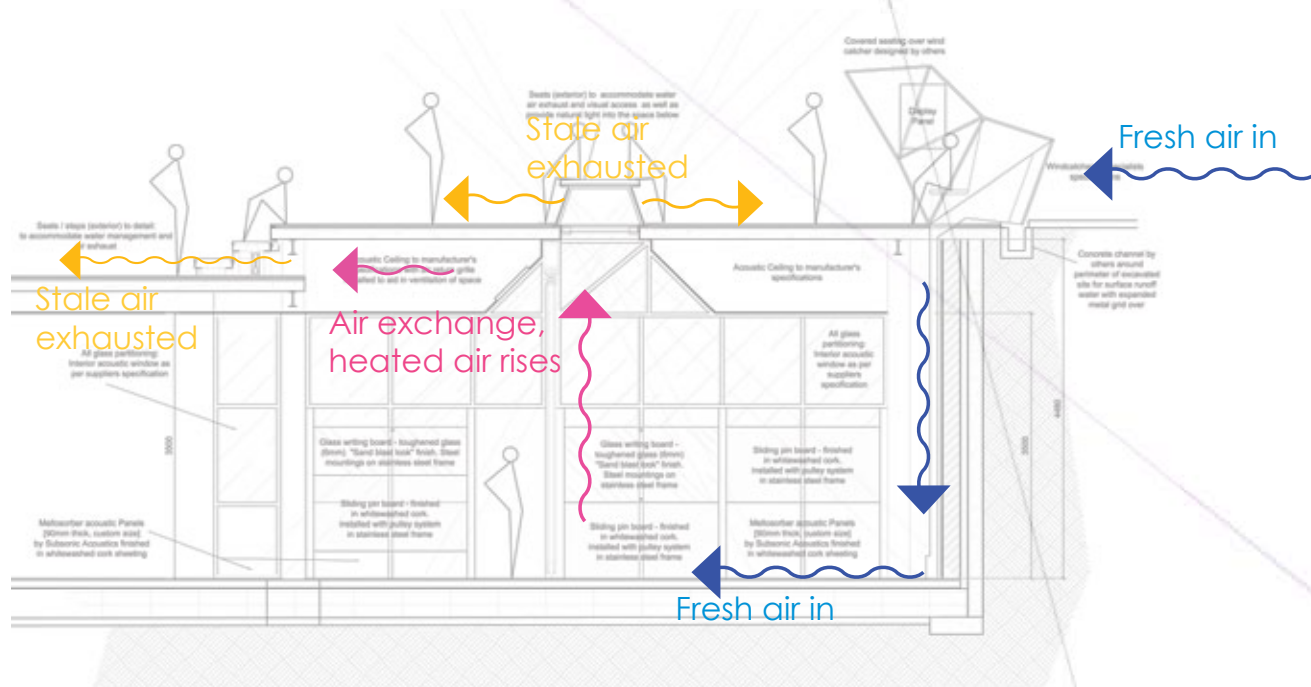


Figure 6.14: Ventilation at Phyx

6.6 Lighting

The overall colour scheme of the project will be light colours, mainly white and warm-grey. Most of the space is below ground level so natural light must be utilised to the maximum, but direct light into the space should be limited. Another consideration is that most of the light directly falling

into the space is northern, southern and western light. To diffuse the light (in addition to the solar-type glass as part of the exterior skin) the surface inside the Agora will reflect most of the light from any source.

6.6.1 Natural light

The orientation of the site in relation to the existing buildings surrounding it allows a significant amount of natural light to enter the space. Covering the excavated site with solid (concrete) surfaces will aid in the thermal stability of the space, and limit unwanted direct sunlight to a minimum. The orientation of the site means that most of the natural sunlight

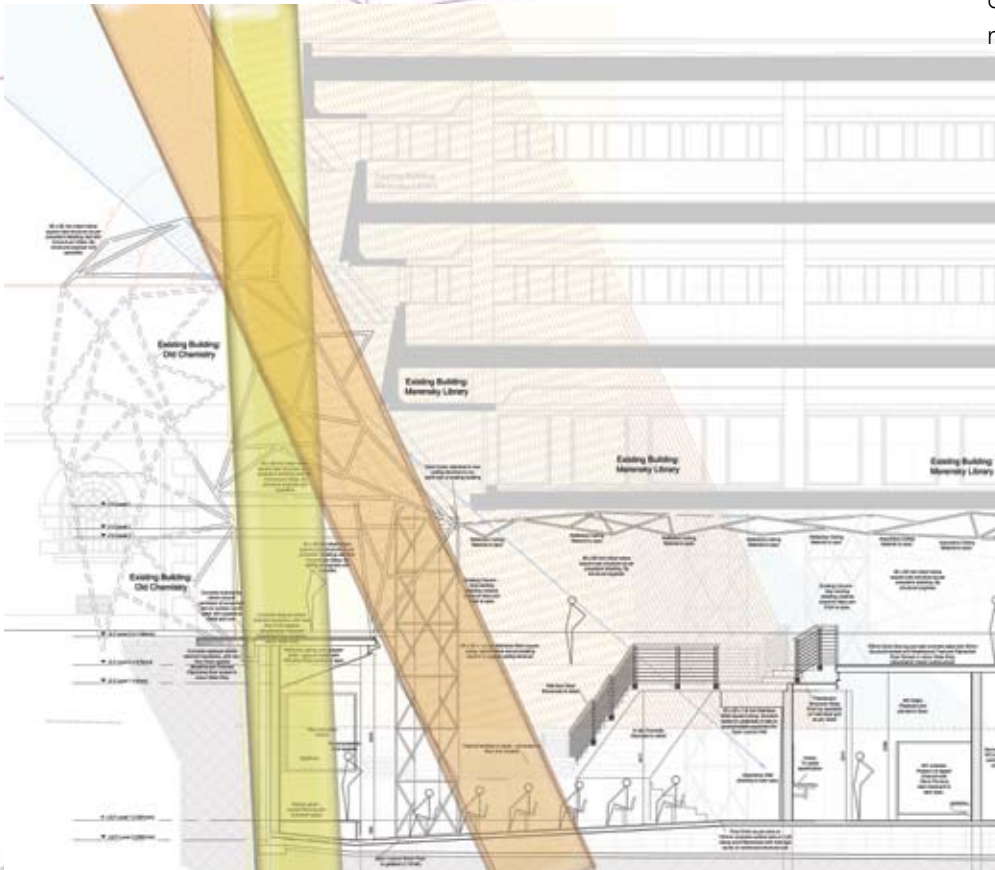


Figure 6.15: Sun penetration into the Agora

6.6.2 Artificial light

Most of the space will be utilised as working areas requiring enough correct lighting to ensure productivity. Two aspects of light are of particular importance when installing artificial lighting to create light as close to natural light as possible. Firstly the CRI measurement is the Colour Rendering Index – determining how natural objects appear under that light and secondly the Correlated Colour Temperature, (CCT) indicating the “warmness” (yellow light – low CCT to blue-white light – high CCT) of the light emitted by the lamp (Website: Lighting Research Centre - How do I choose the right light).

In terms of energy use, light fittings play a significant role in determining the overall energy usage of a building. With new technology answering to most of the energy needs it is a part of the building that can be managed with great success. For the Agora, LED lighting will be implemented. LED Lighting Suppliers is a company in Cape Town which means that by using LED lighting, the Agora is supporting local trade. Also it is even more efficient than fluorescent lighting with LED lights lasting up to 10 times as long as compact fluorescent light bulbs and reducing the electricity usage of the light fittings by as much as 80% (Website: Energy Efficient Lighting).



According to the Lighting Applications Guideline for LED's (PDF document available on the internet: Rensselaer Polytechnic Institute) the requirements for Deli Lighting is a CRI measurement of more than 80, with CCT of 2800 – 3500K. The display area of the Food Outlet would need between 20 000 and 42 000 lumens for optimal efficiency, while the dining area only needs 18 000 to 35 000 lumens.

Applying the same Guidelines to the Open Lecture Auditorium, (using the conference room specifications), it would function at best with luminance levels of 50 000 to 80 000 lumens. It will function with the same CRI (above 80) and CCT (2800 – 3500K) as the Food Outlet area.

Another abbreviation that is of importance is the VDT (Video Display Terminals), especially when looking at lighting requirements for offices. VDT indicates the use of digital screens that will obviously be affected by the lighting. The Meeting Rooms at the Agora will be utilised as working areas, classifying it under the same usage specifications as offices. The adjustable sizes of the rooms (screens, etc) imply the use of dimmers as well as a second system of light fittings. When the smaller rooms are used, the single system (with appropriate dimmers) will be used to achieve luminance of 5 000 to 10 000 lumens. However, when the space is opened up to its full extent, additional light fixtures will be required to reach luminance of 50 000 – 55 000 lumens.

6.7 Circulation

Circulation is a major element in the design of the Agora. The existing nature of the space lends itself solely to circulating students. The Agora functions mainly because of this existing circulation, using it as the backbone for the activation of the site. The newly introduced space will not have the traditional threshold indicating entry into the site; instead

the threshold is expanded into a large foyer with staircases and an elevator bridging the two spaces.

Central to the design is the existing sloping site leading users past the Agora. The existing sewer servitude of 2m wide renders the space closest to the Library unsuitable for excavation. By excavating the rest of the site the remainder of the sloping floor finish will act as a ramp, leading from the lower part of the site (the Marketing

Services Building) to the higher part (the landscaped area).

The main circulation element into the space is a staircase leading from the aforementioned circulation space down into the Agora. The staircase is the first element in the space reflecting the grid which the rest of the space adheres to. Acoustic properties of the staircase are the main consideration because it frames the back of the Open Lecture Auditorium and for

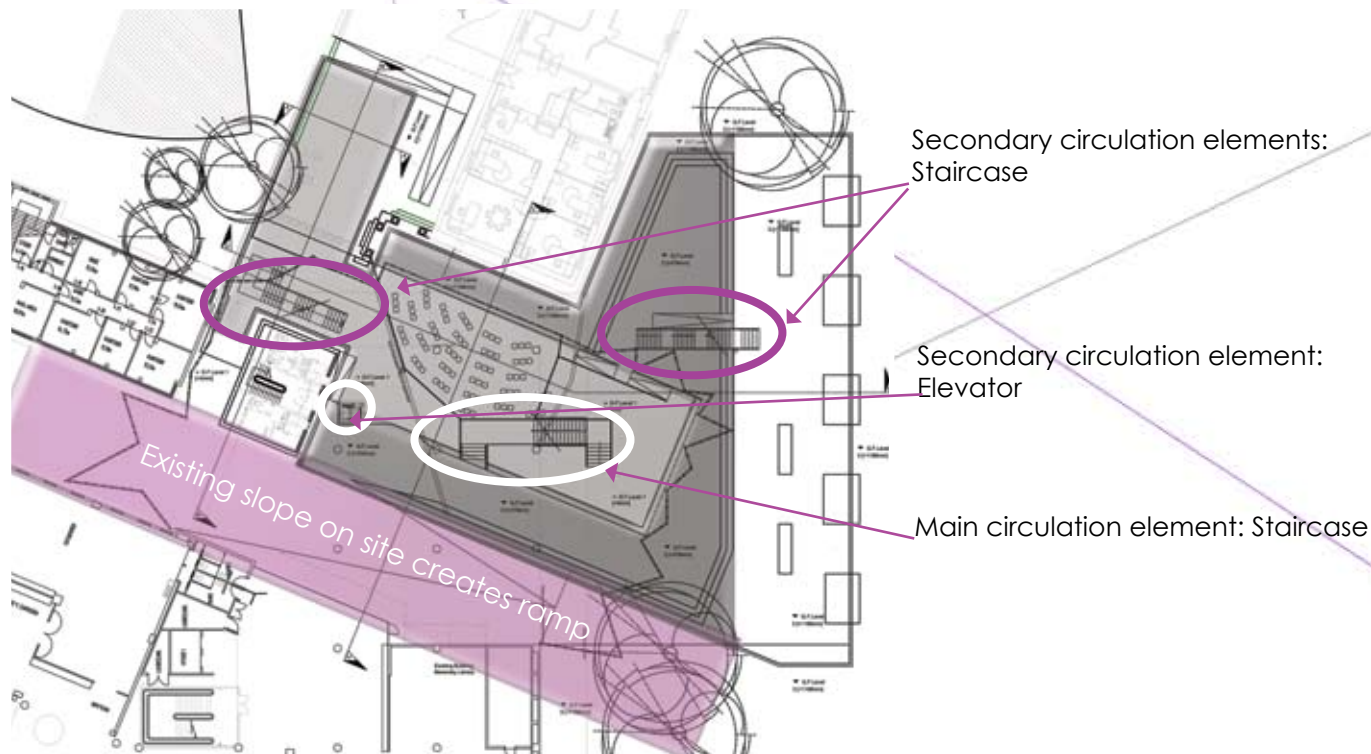


Figure 6.19: New levels on site

that reason a solid staircase would work best. However, the pouring of concrete on site will be difficult. Any component made up of loose parts has a smaller ecological footprint as it can be demolished and re-used more easily than a solid fixed structure. Therefore, a metal structure with precast concrete lintels and a screed cast over that will form the structure of the staircase. As seen on the drawing, the risers are acoustically absorptive to lessen noise. The design of all of

the staircases is the same throughout the space, with the staircase at the Meeting Rooms hosting an additional feature. This staircase penetrates the ground floor surface and is covered by a structure closely resembling the Fractal skin of the rest of the space.

6.8 Fire

6.8.1 Design Population

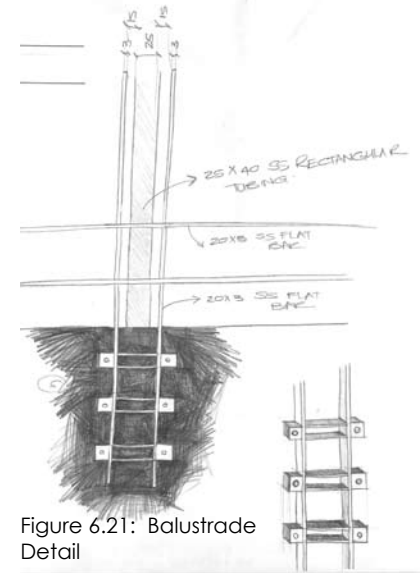


Figure 6.21: Balustrade Detail

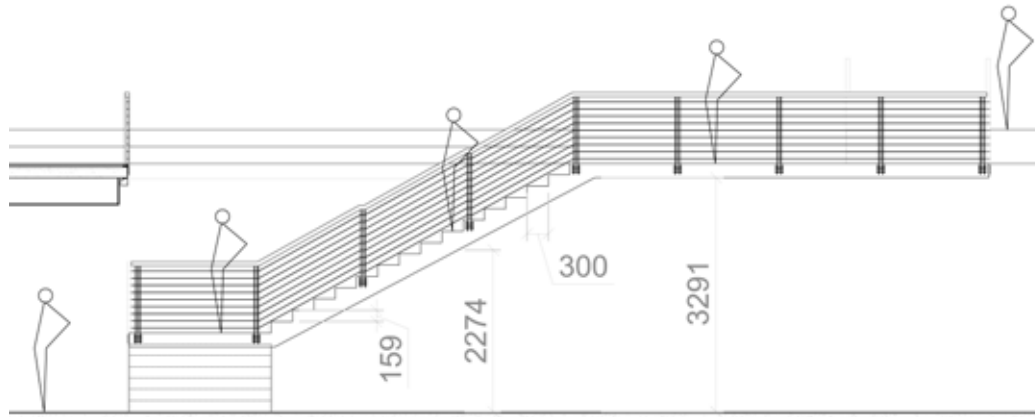


Figure 6.20: Main Circulation Staircase Elevation

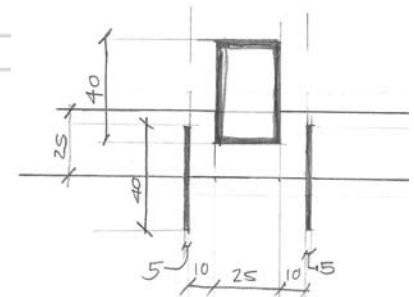


Figure 6.22: Balustrade Detail (Plan)

Area	Occupation Class		Design Population (SABS 0400-1990)	Area	Total
Lecture Hall	Theatre (Peak usage)	A2	1 person / 1m ² or seat	90 seats 30 m ² open space	120 people
Meeting Rooms	Educational Facilities (lecture/study)	A3	1 person / 5m ²	600m ²	120 people
Food outlet	Public Meeting Area (eat/drink)	A1	1 person / 1m ² or seat	48 seats 123m ²	50 people

(See SABS 0400-1990 pg 34&35)

Table 6.5: Design Population

In the case of an emergency the proximity of the staircases will probably encourage the users of the site to evacuate as follows:

- The Food Outlet Area and half of the Open Lecture Auditorium users using the Food Outlet Staircase

(50 users from the Food outlet area and 60 users from the Lecture Hall = total of **110 users**).

- The rest of the Open Lecture Auditorium users and about a third of the users of the Meeting Rooms (including the staff members from the

reception Area) using the main (Lecture Hall) staircase. (40 users from the Meeting Rooms and 60 users from the Lecture Hall = total of **100 users**).

- The remainder of the users from the Meeting rooms using the staircase on the northern side of the space (80 users)

The National Building Regulations (SABS 0400 – 1990) Part T (page 185) indicate the width of escape routes for the above mentioned population: the minimum width for a maximum of 120 people is 1100mm. The main staircase at the Auditorium is 2m wide as a design decision. The other two staircases are secondary routes of access (1500mm wide).



6.9 Services

The WC's are situated along the wall parallel the existing sewer servitude. There are WC facilities on the second level of the Merensky Library (1 level below ground), which connect to the servitude thereby indicating the depth of the servitude. A service duct is also supplied behind the WC's to accommodate service access. The sumps are also situated at the side of the Servitude, but it will be emptied periodically by means of

mechanical pumping.

Deliveries to site are limited to paper, some office supplies, and the prepared food (with some groceries to accommodate the coffee preparation). This will take place after hours (early mornings or late afternoons) so as to not cause additional traffic. If however, delivery during the day is necessary, the elevator can carry bigger trolleys and

allow access.

Defined bins will be situated throughout the site to accommodate the separate disposal of waste. The main types of waste generated within the Food Outlet area are packaging materials and some organic waste. These will be cleared out on a daily basis.

6.10 Acoustics

To ensure the effective transmission of information from the Open Lecture Auditorium the acoustic design / considerations plays a significant role.

The Food Outlet area needs to absorb as much of the noise it produces as possible, while at the same time maintaining the typical welcoming ambience of the space, thus a completely subdued space will not

suffice. Therefore the circulation space separating the Food Outlet from the Lecture Hall will need to absorb a considerable larger amount of sound, through the use of available technologies such as Mellosorber acoustic Panels (various dimensions, mostly custom made for the Agora) by Subsonic Acoustics finished in cork sheeting. The food outlet area will have some reflective surfaces between absorbing panels (see

detail). The Bamboo flooring will be installed on top of a Cork backing to enhance the acoustic properties of the floor.

The Lecture Hall needs to have an absorbing surface directly behind the speaker to avoid echoes. The ceiling needs to reflect the sound as projected from the stage, and absorb most of the ambient noises created by the passers-by (on the ground level

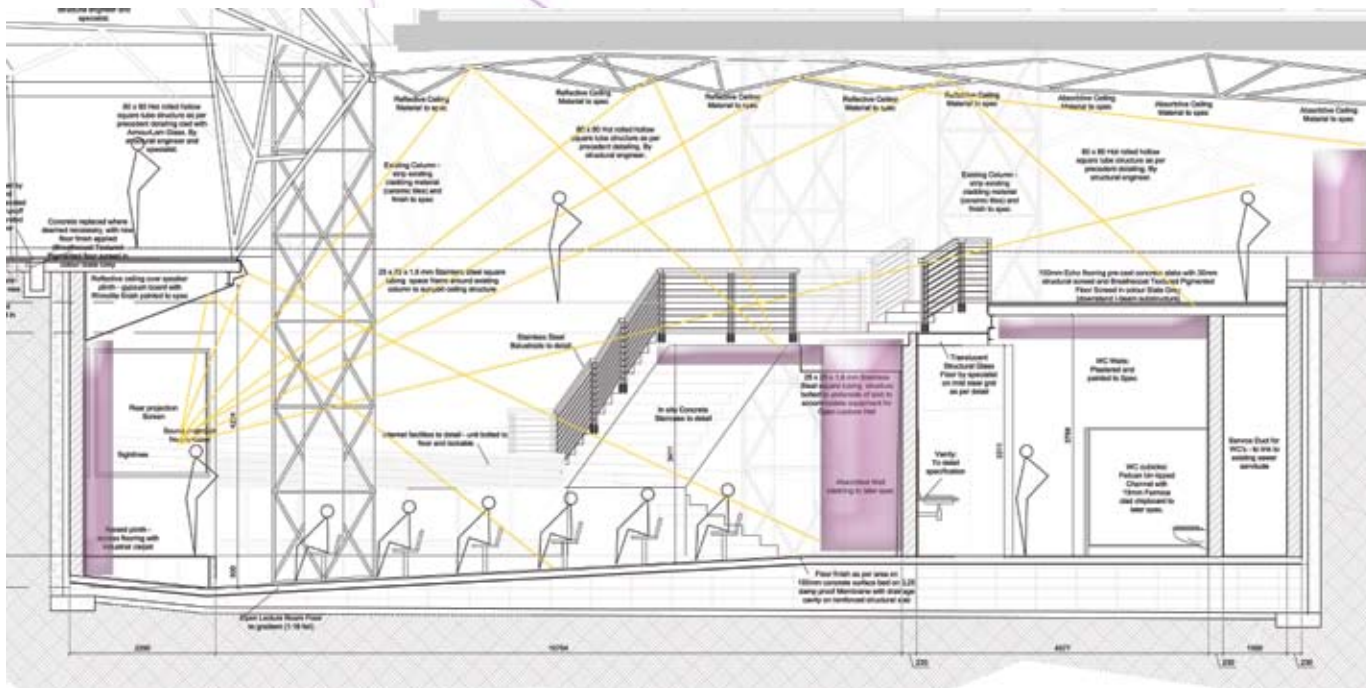


Figure 6.23: Acoustic reflection (lines) and absorption (purple areas) needed in the Agora

above the Agora). The back wall (at the WC's) need to absorb any noise to avoid distracting the audience in the Lecture Hall by passers-by (the circulation within the Agora happens at the back of the Lecture Hall).

The back wall of the Auditorium will be treated with Corrugated Sound Panels by Barrier Acoustics (600 x 600 x 70mm Absorbing foam material BA70CP). Sound absorption is best

when this product is placed in the direct path of the sound, ideally in the Agora where the back wall is parallel to the stage's wall. This material will be applied as needed throughout the Agora.

Most of the surfaces in the Meeting Rooms are reflective (to accommodate writing), and will be alternated by softer surfaces (soft board pin-up boards finished

in whitewashed cork) to enhance the sound quality of the space. The Bamboo flooring will be a repeat of the specification as mentioned at the Food Outlet. Suspended ceilings will aid with the absorption of some of the generated noise. Due to the use of PC's and the accompanying sound, the exact acoustic design needs to be designed by a specialist installer.

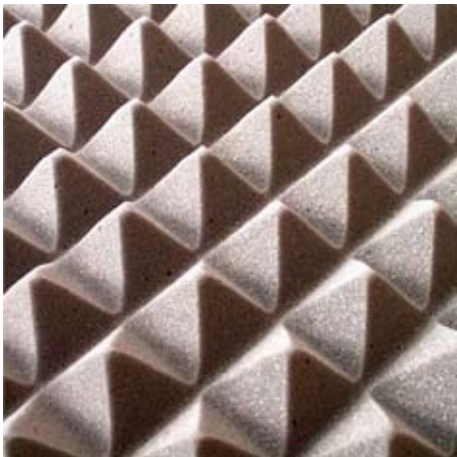


Figure 6.24: Barrier Acoustics: Absorptive Material (BA70PP or Pyramid sound panels)

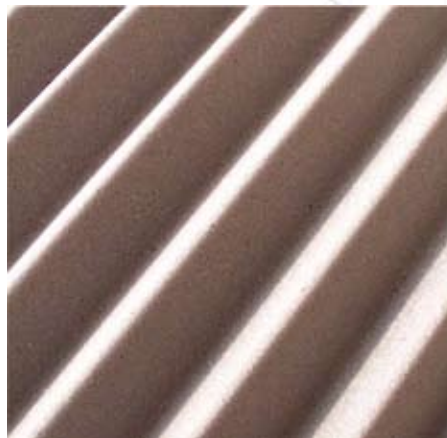


Figure 6.25: Barrier Acoustics: Absorptive Material (BA70WP or Wedge sound panels)

6.11 Inclusive Design

The physical constraints of the site are not favourable for easy access by all. The main access point is the elevator situated close to the main staircase. The ground level hosts a series of ramps that will aid a person in a wheelchair to circulate to any place on the site and ultimately to reach the elevator with ease.

The internet facilities were designed

for a person standing while using it, excluding some users. To accommodate this, 6 units were designed to be accessible by users at a seated height.

The Lecture hall has a sloping floor with 1:18 fall ensuring comfortable use by persons in a wheelchair. The floor finish (rubber cork mix) is also non-slippery (ensuring safety for all users).

The digital wall in the Meeting Rooms is designed with most of the user interfaces as wireless fittings. These include the keyboard, the mouse and a digital pen that can be used at the desk. The fact that a person in a wheelchair can reach up to 1200mm in height was taken into consideration throughout the design of the unit (see detail)

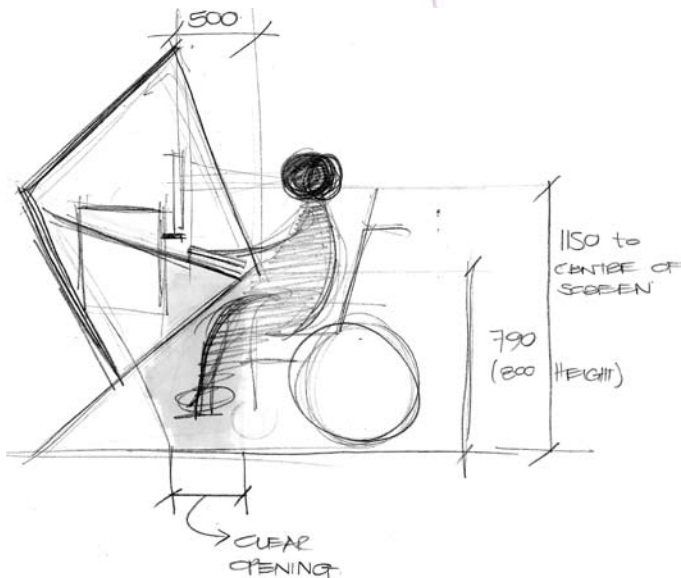


Figure 6.26: Wheelchair accessibility of units

6.12 Material

The material finish ultimately determines the success of the interior space to a large extent and impacts the acoustics, lighting, aesthetics and use of the space. The Agora serves to remind one of a public square with the added benefit of being "inside" (protected from the elements, comfortable smaller spaces and technology to aid the thought processes).

6.12.1 Flooring

Traditionally the floor materials that would be considered for a public space would be limited to tiles and commercial carpeting. However the Agora has very specific acoustic requirements that will not be met by tiles, and carpeting in a high traffic space such as this will need constant maintenance and replacement. (See Appendix – Flooring)

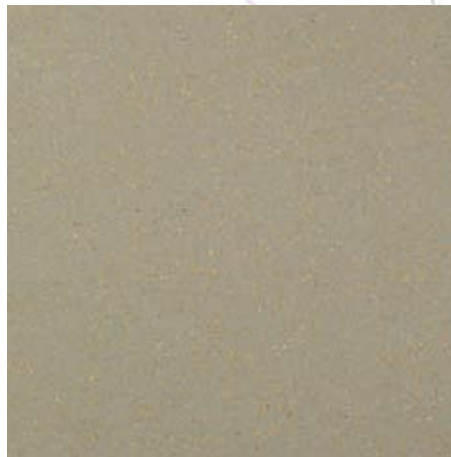


Figure 6.27: XCR Cork Rubber flooring in Steel Gray

Cork Rubber Flooring

The largest part of the Agora is treated with rubber/cork flooring; the specified Product: XCR4 Cork Rubber Flooring in colour Steel Gray, by Expanko Resilient Flooring, installed to manufacturer specifications.

"XCR⁴ flooring is made from a unique blend of recycled cork and rubber. It combines the benefits of these two components creating a colorful, water resistant, hardwearing floor. Benefits of XCR⁴ include resilience, comfort, sound reducing qualities and slip-resistance.." – (Website PDF Document: Expanko Flooring)

The use of this product relies mainly on its acoustic properties combined with the hard-wearing properties of rubber. The colour will reflect light, without the glare that would be associated with a white floor. The usual smell that accompanies rubber flooring will be offset by the cork, while the cork's softness is supplemented by the rubber.



Bamboo

Bamboo flooring was chosen as complimentary to the cork flooring. The public space can become a cold and impersonal space due to its proportions. "Warming" the space by means of timber relies on the memory of timber flooring at home, while bringing warmer colours to an otherwise very cold space. Specified Product: Solid Bamboo [cross-laminated] Flooring (Oriental

Bamboo Flooring: Long Plank 1860 x 158 x 15mm in Natural (Blonde).

According to GreenSage (a website focusing on green building practices) Bamboo has the following characteristics:

"In regular flat grain or vertical

grain 3-ply laminate. Available in natural (blond) color or warm amber. Unfinished or prefinished with aluminum-oxide enhanced UV-cured acrylated urethane with anti-scratch hardened acrylic top-coats (the most durable finish technology currently available). 30 year warranty available for residential applications. LEED eligible: MR Credit 6 (Rapidly Renewable Materials)." (Greensage: <http://www.greensage.com/09649-bamboofl.html>)



Figure 6.28: Oriental Bamboo Flooring in colour Blonde (natural)



Figure 6.29: Oriental Bamboo Strandwoven Flooring in colour Blonde (natural)



Figure 6.30: Oriental Bamboo Flooring structure

6.13 Finishes and Fixtures

6.13.1 Basins

The basins were purposely designed as a feature of the WC space, not utilising traditional basins, but instead supplying a surface over which one can wash hands. This provides an element linking the WC facility to the rest of the site through the visual representation on the triangles.

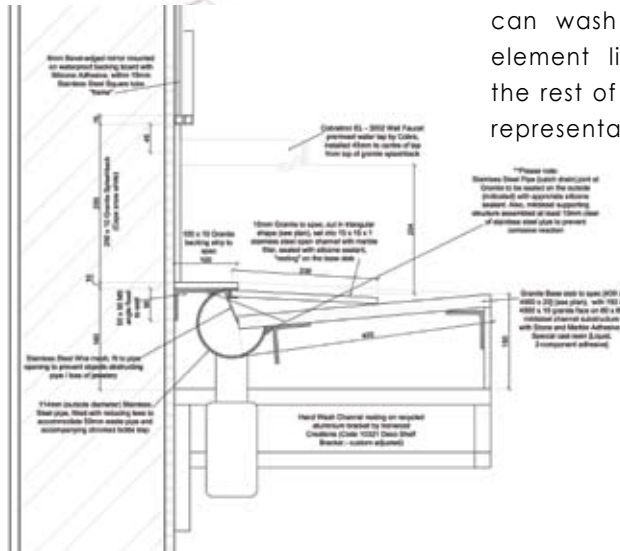


Figure 6.31: Section through Hand wash trough

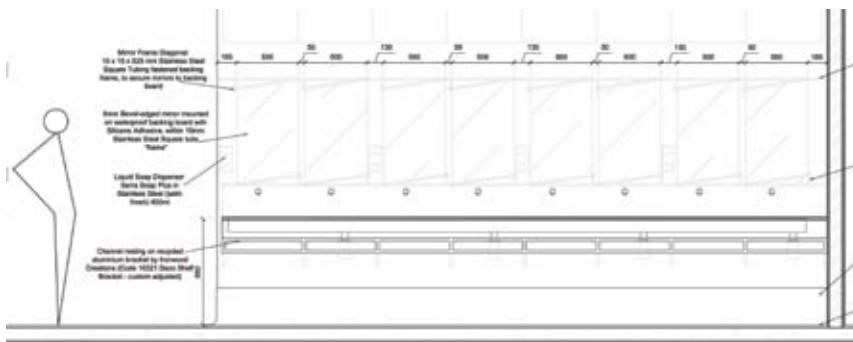


Figure 6.32: Elevation of WC wall with window detail

Specification

Material

Cape Snow white Granite 10mm cut to detail with 2mm bevelled edges. This granite (pictured on the right is a South African Granite)

Sub-structure

Channel resting on recycled aluminium bracket by Ironwood Creations (Code 10321 Deco Shelf Bracket - custom adjusted)

Taps

Cobratron EL – 3002 Wall Faucet premixed water tap by Cobra. This is a hands free tap (operating through sensors). With Cobra chromed bottle trap fixed to collaborative draining pipe.

Mirrors

6mm Bevel-edged mirror mounted on waterproof backing board with mirror screws, set in Aluminium T-section frame as per detailed drawings (approximate size 530mm wide by 825mm high). See drawing)

6.13.2 Food Outlet Wall detail

The wall detail at the Food Outlet was designed as a “random” pattern of triangles reminding of the exterior structure, however, to eliminate wastage, a standard mirror (1500 x 1500) will be cut up as indicated, and these panels will be fastened to the substructure with the appropriate mirror screws.

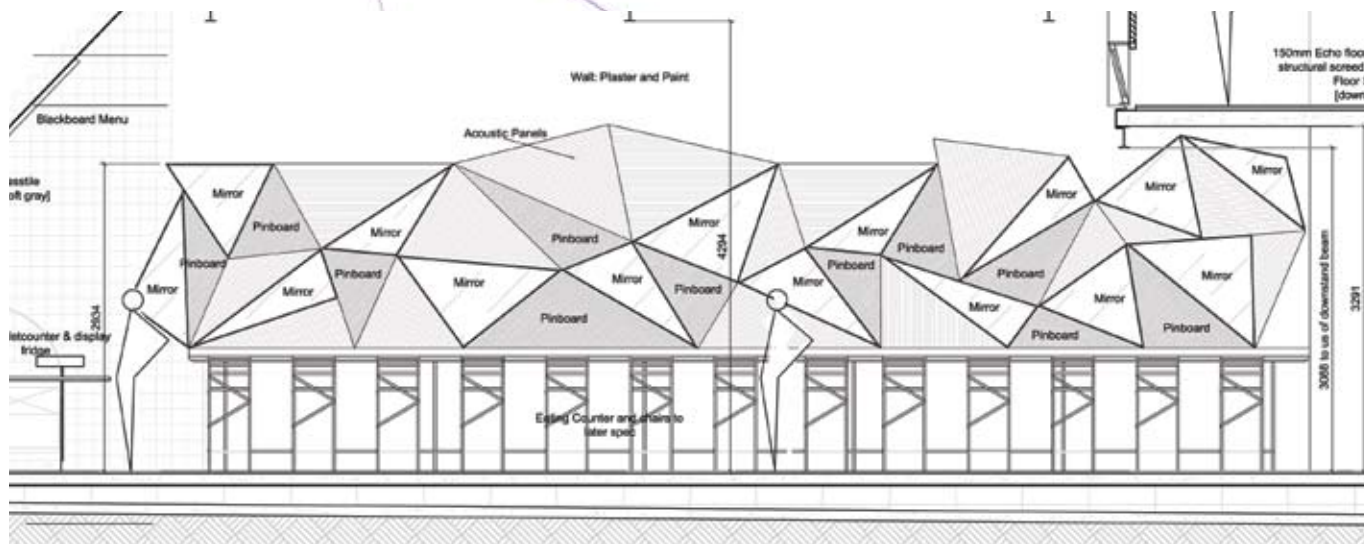


Figure 6.33: Elevation of fractal wall detail in Food Outlet Area

6.13.3 Digital Wall Unit

The units designed to host the electronic equipment will be bolted to the ground to provide additional security. Internet facilities, printers) as well as PC workstations are supplied in the Meeting Room Area. These comprise of a 30 x 30

mm stainless steel square hollow section framework, with appropriate infill materials (see detail). The security of the equipment is a major consideration as most of the site is open to the public for the larger part of the day.

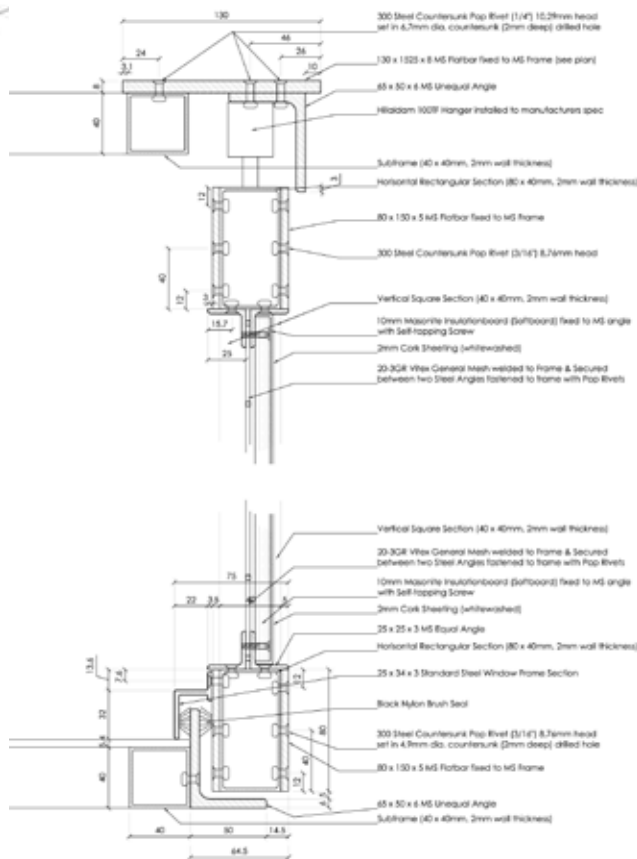


Figure 6.34: Digital Wall Unit Door Detail

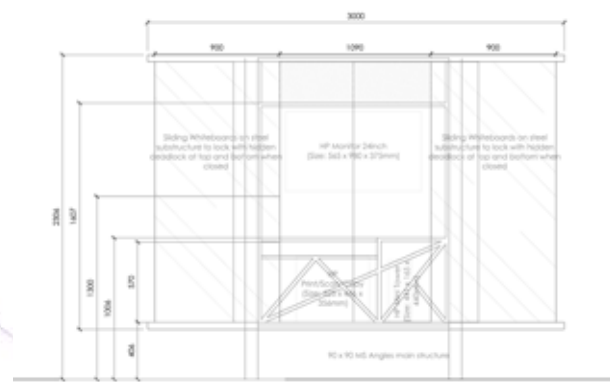


Figure 6.35: Digital Wall Unit Elevation

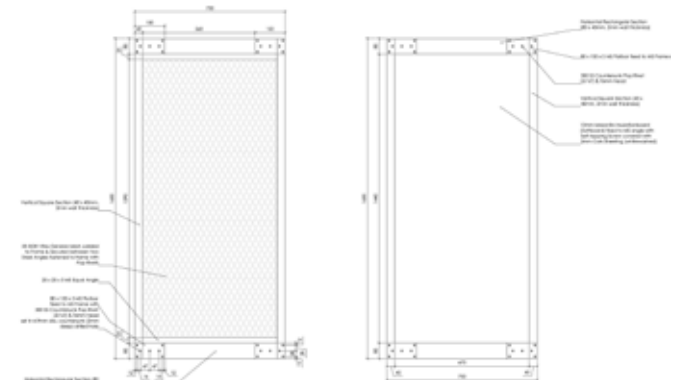


Figure 6.36: Digital Wall Unit Door Detail

6.13.4 Partitioning

Within the Meeting Rooms the vertical surfaces were designed to accommodate and invite information sharing. This is achieved through the supply of glass (one of the best writing surfaces) in its different finishes. The sliding panels (by Dorma) are designed to ensure visibility of the interior space when

closed, but includes the adequate writing surface. These panels are part of the Moveo Design Line (sealed lightweight sandwich composite door with acoustic foam. The fixed panels consist of an aluminium frame (ceiling to floor), with double glazing (with a "sandblasted" finish on the inside of the panel) to provide legible writing surfaces.

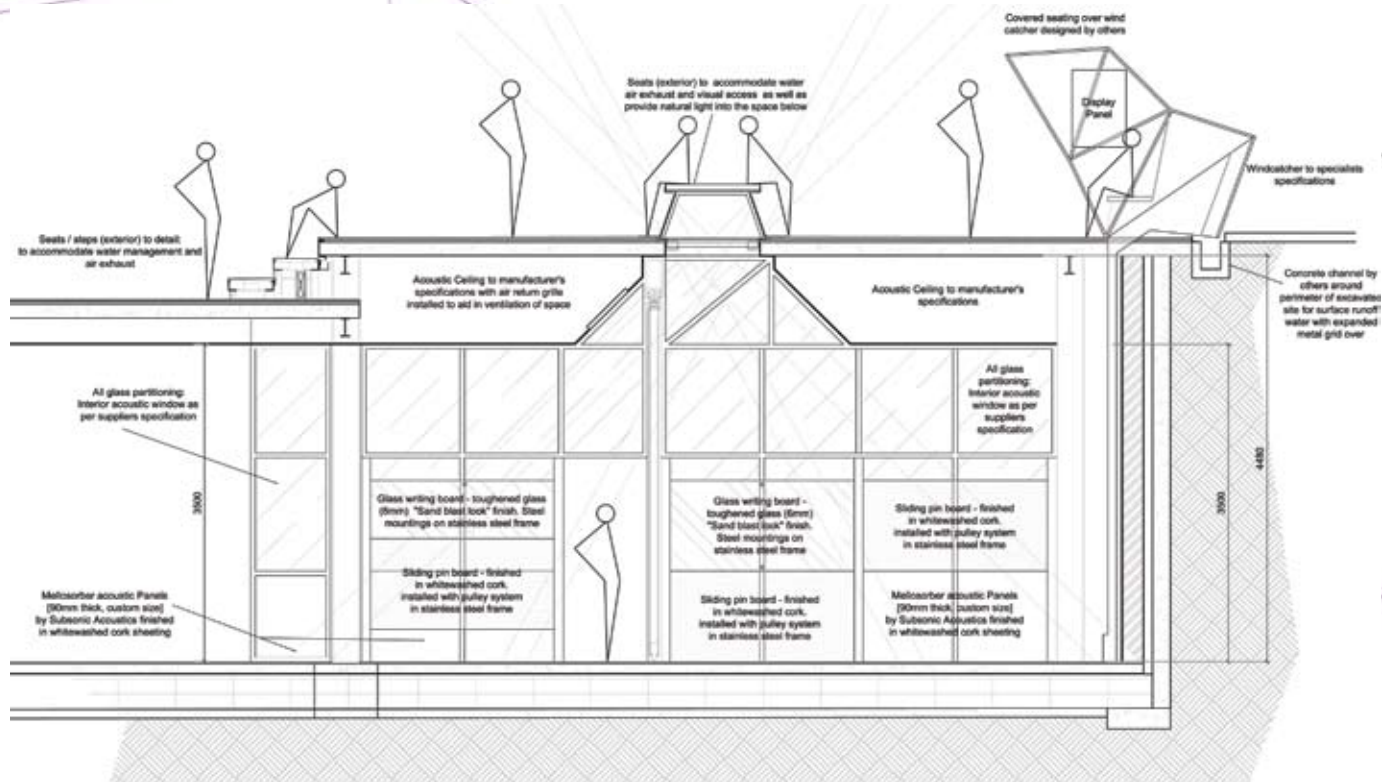


Figure 6.37: Elevation of wall detail in Pnyx Meeting Rooms



Information acquired to form knowledge that will generate memory seems purely theoretical and conceptual. However, this project aims to crystallise the concept of information which forms the backbone of any university. Applying the recognised interior design principles to an exterior room creates a space out of the ordinary, to host information out of the box of traditional buildings.

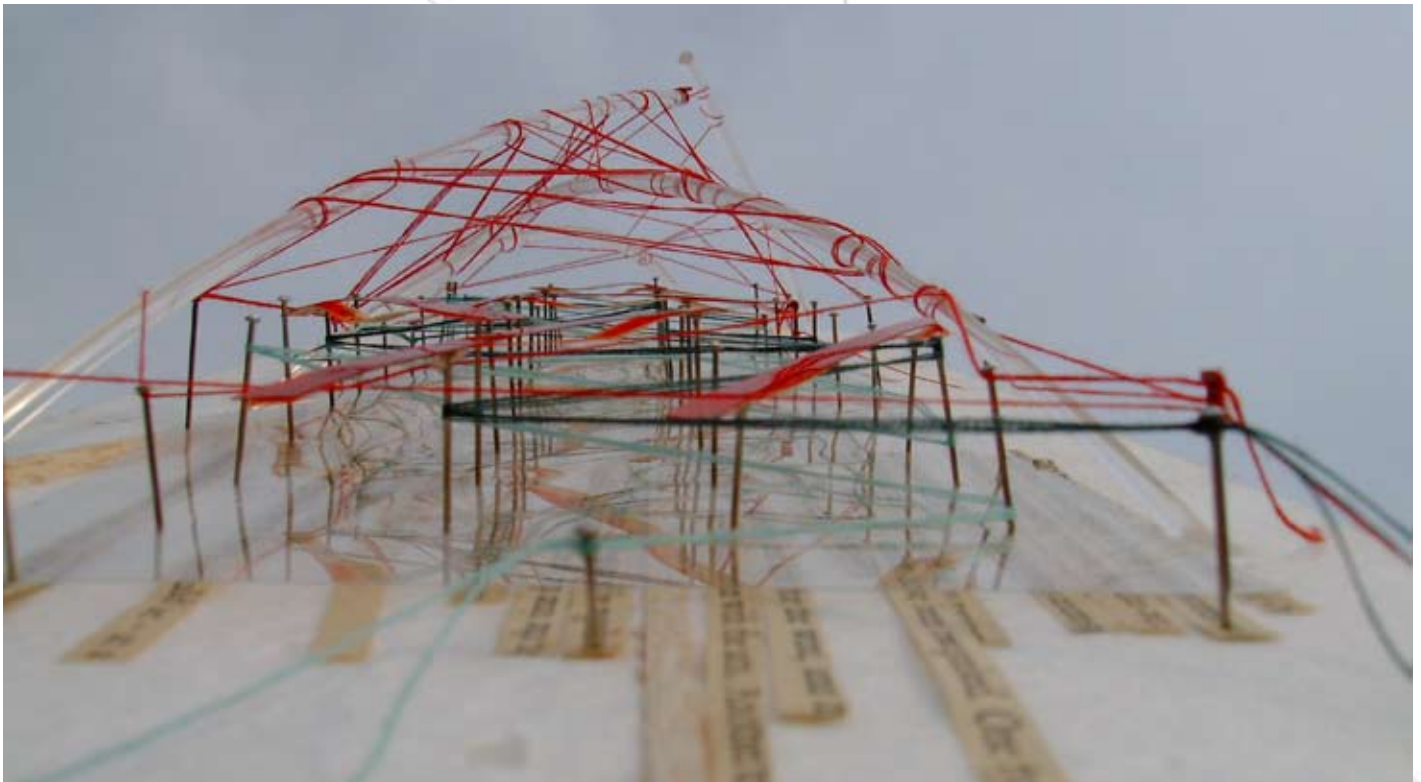


Figure 6.38: The meta-physical nature of information exchange



Bibliography

M van der Merwe 22 160 788 MProf(int)

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Bibliography

Bibliography

- **Basement Waterproofing.** Wikipedia: The Free encyclopaedia. http://en.wikipedia.org/wiki/Basement_waterproofing. Published on 28 July 2008. Accessed on 02/10/2008.
- Bloomer, K.C. Moore, C.W. 1977. Body, Memory, and Architecture. London: Yale University Press.
- Bornstein, E. 1997. Memory and Progress. Structurist. Volume 98/37/38. Nr: 19970000. Pages: 52 – 61.
- Boulanger, R.W. **Geotechnical Engineering Photo Album.** Excavations: Excavation Support Systems. http://cee.engr.ucdavis.edu/faculty/boulanger/geo_photo_album/Excavations/Excavation%20support%20systems/Excavation%20support%20systems%20-%20main.html#Anchor-Excavatio-60253 . Accessed on 02/10/2008.
- Brett, L. 1970. Parameters and Images: Architecture in a crowded world. Great Britain, London: Weidenfeld and Nicolson.
- Camp, J.McK. Mauzy, C.A. 2003. The Athenian Agora. Picyure Book No.16. American School of Classical Studies. Athens.
- **Energy Efficient Lighting.** 2000 – 2008. Eartheasy. http://www.eartheasy.com/live_energyeff_lighting.htm. Accessed on 16/10/08.
- Expanko Flooring. XCR4 Cork Rubber Flooring. General Description. <http://www.expanko.com/XCR4/docs/pdf/203%20XCR4%20General%20Description.pdf>. Accessed on 06/10/2008.
- **Federation Square.** 2008. Site Construction/Design. <http://www.federationsquare.com.au/index.cfm?pageID=28>. Accessed on 23/08/2008.
- **Federation Square.** 2008. Venue/Building Design. <http://www.federationsquare.com.au/index.cfm?pageID=29>. Accessed on 15/10/2008.
- Glowacki, K.t. The Pnyx. The Ancient City of Athens. <http://www.stoa.org/athens/sites/pnyx.html>. Accessed on 02/10/2008.
- Gomez, M.M. 2005. **Thermal Performance of an underground museum in Turkey.** International Conference "Passive and Low Energy Cooling for the Built Environment", May 2005, Santorini, Greece. Pg 203 – 206.
- Greene, H. 1976. Mind & Image: An Essay on Art & Architecture. Kentucy: The University Press of Kentucky
- **GreenSage Directory.** 09649 – Bamboo Flooring. <http://www.greensage.com/09649-bamboofl.html> . Accessed on 05/10/2008.



- Greensage Directory. Source. Flooring. 09649 – Bamboo. <http://www.greensage.com/09649-bamboofi.html>. Accessed on 06/10/2008.
- Gregotti, V. 1996. Inside Architecture. Translated by Peter Wong and Francesca Zaccheo. Chicago: The MIT Press
- Gregotti, V. 1996. Inside Architecture. United States of America, Massachusetts: MIT Press.
- Hall, L. **Lee Hall's Homepage**. 701 Forest Chronology. http://www.leehall.com/temporary/Forest_Chronological/09-15%20Basement%20Floor%20with%20Drain%20Cavity.JPG. Accessed on 02/10/2008.
- Hall, R. 2002. **Save that Mature Tree**. Landscape Management. <http://www.landscapemanagement.net/landscape/Grounds+Management/Save-that-mature-tree/ArticleBrief/Article/detail/13896?contextCategoryId=460>. Accessed on 05/10/2008.
- Lang, J. et al. 1973. Fundamental Processes of Environmental Behaviour. In Designing for human behaviour: Architecture and the Behavioural Sciences. Edited by J Lang, C Burnette, W Moleski, D Vachon. 1974. USA: Dowden, Hutchinson & Ross, Inc.
- Lighting Research Centre. 1995 – 2008. How do I choose the right light? Rensselaer Polytechnic Institute, Troy, NY 12180 USA. <http://www.lrc.rpi.edu/programs/lightHealth/AARP/designers/lightingOlderAdults/choosingSources.asp>. Accessed on 16/10/2008.
- Lynch, K. 1960. The Image of the City. Cambridge Massachusetts: The MIT Press
- Parrot Products. 2007. Product: Glass Whiteboard. [http://www.parrot.co.za/\(\\$s35liyqydo2ixb55ubm42j3l\)/GlassBoards.aspx](http://www.parrot.co.za/($s35liyqydo2ixb55ubm42j3l)/GlassBoards.aspx). Accessed on 09/10/2008.
- Rensselaer Polytechnic Institute. 2002. Lighting Applications Guideline for LED's. The Lighting Research Centre. <http://www.lrc.rpi.edu/programs/solidstate/assist/pdf/LED-lighting-apps-guide-2002.pdf>. Accessed on 16/10/2008.
- Robertson, D.S. 1929. Greek and Roman Architecture. Cambridge: The Cambridge University Press
- The Mini Oxford Thesaurus. Compiled by A. Spooner. 1991. Oxford: University Press.
- Worldwide Tree Moving. <http://www.treemoving.com/index.htm>. Accessed on 05/10/2008.
- Subsonic Acoustics. http://acousticpanels.co.za/acoustic_absorbers.htm. Accessed on 05/10/2008
- Robor Steel. <http://www.robor.co.za>. Accessed on 05/10/2008
- Steel Mecca. <http://www.meccaholdings.co.za>. Accessed on 05/10/2008