THE ILLUSION OF TIME
“...A STUDY OF HETEROTOPIC INTERSTITIAL SPACE AND THE INTERPLAY OF DYNAMIC MOVEMENT SYSTEMS AS AN ARCHITECTURAL STRATEGY TO INVESTIGATE NEW MODES OF SPACE MAKING IN THE AGE OF THE NETWORK” — SUAAD PATEL

DESIGN RESEARCH PROJECT.
APG5079W.

SUBMITTED TO THE SCHOOL OF ARCHITECTURE, PLANNING AND GEOMATICS
THE UNIVERSITY OF CAPE TOWN.

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE
MASTER OF ARCHITECTURE (PROFESSIONAL)

BY SUAAD PATEL

OCTOBER 2015

SUPERVISOR: DR MATTEO FRASCHINI
The copyright of this thesis vests in the author. No quotation from it or information derived from it is to be published without full acknowledgement of the source. The thesis is to be used for private study or non-commercial research purposes only.

Published by the University of Cape Town (UCT) in terms of the non-exclusive license granted to UCT by the author.
THE ILLUSION OF TIME
suaad patel
PLAGIARISM DECLARATION

1. I know that plagiarism is wrong. Plagiarism is to use another's work and pretend that it is one’s own.

2. I have used the VANCOUVER convention for citation and referencing. Each contribution to, and quotation in, this essay/report/project/REPORT from the work(s) of other people has been attributed, and has been cited and referenced.

3. This essay/report/project/REPORT is my own work.

4. I have not allowed, and will not allow, anyone to copy my work with the intention of passing it off as his or her own work.

Signature: **Signed by candidate**

Signature removed
ACKNOWLEDGMENTS

I would like to thank the Almighty, for granting me the, strength, ability and perseverance to complete this final chapter of my studies.

I would also like to thank my parents, for all their patience, love and support.; My friends and family, for their continuous support throughout the year.

A big thank you to my Supervisor, Dr Matteo Fraschini, for all your guidance and constructive feedback throughout this entire project.

Lastly, I would like to express my deepest appreciation to my partner, for your unconditional love and support throughout my final year. Thank you for being with me every step of the way.
ABSTRACT

Within a thriving modern society, nothing is more important than the constant flux of information, communication, transportation and plethora of other activities all moving and intermingling with one another over time and space.

This dissertation is a purely hypothetical project which aims to explore the links and relations between spaces; specifically, the connection between the creations of heterotopic interstitial space within the urban fabric due to the interplay of dynamic movement systems in society.

Within this particular project, the role of architecture will focus on a building typology (the heterotopia), which encompasses the merging of movement and stasis to inhabit the void created by the dynamic movement systems within our cities. It will aim to challenge intense, fast paced networks of flows, by temporarily obstructing and exaggerating the fluidity of communication, information, transportation and technology. An architectural system which has the ability to deal with the complexities, multi-layered and multi-dimensional systems of information, communication and transport, that current society has to deal with on a daily basis.

A gateway to the city, the potential site location sits on the periphery of the Cape Town CBD- a forgotten area in-between an old industrial region and transport route. The chosen site, now completely derelict, used to once function as a manufacturing and repair warehouse for boats many years ago.

This dissertation will focus on an architectural design process which deals with the intertwined existence between people and the datascape/system, within a world of pixelated elements and bits merging together to generate the whole. An architectural revolution brought about by technology, this study of heterotopic interstitial space and the interplay of dynamic movement systems as an architectural strategy, aims to investigate new modes of space making in the age of the network. In so doing, resolve issues of dislocation and disconnection, and ultimately accentuate the importance of ‘place’ as site.
TABLE OF CONTENTS

BACKGROUND: ARTEFACT EXPLORATION ........................................... 13-14

CHAPTER 1: INTRODUCTION .................................................. 16-22
1.1 HETEROTOPIAS AND THE AGE OF THE NETWORK ................. 17
1.2 PROPOSED INTERVENTION ........................................... 18
1.3 THEMES ............................................................... 19-22

CHAPTER 2: RESEARCH METHODOLOGY ............................... 23-30
2.1 THEORY ESSAY/ INVESTIGATION .................................. 25-27
2.2 TECHNOLOGY ESSAY/ INVESTIGATION ................................. 28-30

CHAPTER 3: EXPLORING VARIOUS THEMES THROUGH BUILT
PRECEDENT ............................................................................. 31-50
3.1 BIGNESS, FLOATING PLANES & SPACE MAKING IN THE ELECTRONIC AGE
OMA, SEATTLE LIBRARY
TOYO ITO, SENDAI MEDIATHEQUE
OMA, ZKM
MIES, BARCELONA PAVILION
3.2 EXPERIENTIAL MOVEMENT, THE MENTAL MAP & THE SPACE-TIME
CONTINUUM ......................... .................................. 43-50
OMA, BERLIN EMBASSY
UN STUDIO, MOBIUS HOUSE
TSHUMI, PARC DE LA VILLETT

CHAPTER 4: THE SITE - TESTING THE CONCEPTUAL IDEA ....51-64
4.1 LOCALITY AND CURRENT SITUATION ......................... 53-55
4.2 APPROPRIATE PROGRAMME RESPONSE ....................... 56
4.3 SITE ANALYSIS ..................................................... 57-64
CONTEXT AND VISIBILITY STUDY
DEALING WITH DIFFERENT STREET EDGES
LOWER MAIN ROAD FACADE/STREET ANALYSIS
THE HISTORY BEHIND THE SITE - BEFORE DERELICTION
THE IDEA OF REMEMBERING

CHAPTER 5: CONCEPTUAL TOOLS AND APPROACH ........65-84
5.1 CITY WITHIN THE CITY: UNPACKING THE CITY OF PIXELS........ 67
5.2 CONCEPTUAL APPLICATION IN THE AGE OF THE NETWORK 67-84

EXPLORING THE FOLDING PLANE AND FLUIDITY WITHIN A SPACE
ACCESSIBILITY, CIRCULATION SYSTEMS AND NARRATIVE MOVEMENT
CIRCULATION THAT DEALS WITH A LONG SITE
NARRATIVE MOVEMENT BASED ON ACCESSIBILITY AND CIRCULATION OF A LONG SITE
SPATIAL ORGANISATIONS AND LAYERING SYSTEMS
ICONIC ATTRACTORS IN THE LANDSCAPE
SKETCH PROPOSAL - BUILDING DESIGN

CHAPTER 6: DESIGN DEVELOPMENT ...................................... 85-102
6.1 THE BUILDING AS A CITY: UNPACKING THE MACHINE ........... 87-102
THE IMPORTANCE OF THE GROUND PLANE
THE IDEA OF THE STREET, PULLING ONE INTO THE BUILDING
THE FREE PLAN - EXPRESSING KEY VERTICAL ELEMENTS
THE ORGANIZATION AND CELEBRATION OF ALL MOVEMENT SYSTEMS
THE IDEA OF THE THICK WALL
MULTIPLE NARRATIVES - NON LINEARITY IN ARCHITECTURE
DESIGN DEVELOPMENT - BUILDING PROPOSAL

CHAPTER 7: TECHNICAL DEVELOPMENT ............................ 103-114
7.1 THE BUILDING ENVELOPE ........................................... 105-108
BIGNESS - THE IDEA OF BUILDING MASS
TESTING THE SKIN OVER FLOATING PLANES
7.2 EXPLORING SKIN AS STRUCTURE .................................. 109-112
7.3 EXPRESSING THE BUILDING CONCEPT THROUGH THE TECHNOLOGICAL
MAKE-UP ........................................................................... 113-114

CHAPTER 8: FINAL MOCK-UP ........................................ 115-130
8.1 THE CULMINATION OF BUILT FORM ................................. 117-130
GIVING BACK TO THE STREET
THE CHANGE TO THE SKIN
ALTERING THE STACKING FLOOR SYSTEM
FINAL MOCK-UP - BUILDING PROPOSAL

CHAPTER 9: CONCLUSION/ END STATEMENT ................. 131-132
BIBLIOGRAPHY ............................................................. 133-138
BACKGROUND: ARTEFACT EXPLORATION

Artefact 1 – Energy in Motion
The initial artefact which served as the ‘statement’ piece regarding my interests for this year.

During this age of information and technology we find ourselves in, how do dynamics and the potentiality it possesses aid and transform the way we make and perceive architecture. Ultimately creating a hybridity of science and architecture, to solve the needs of society while simultaneously optimizing the solutions for future needs.

This specific photograph, labelled ‘Energy in Motion’, dealt with the importance of movement and its potential to act as an energy source.

Artefact 2 – Iterative Processing
This was the second artefact produced, through the use of ‘the filter’.

During this process of filter manipulation, the transformation, disappearance and convergence of movement systems in creating one solidified mass movement path became evident. As well as the emergence and expression of time housed within a single image (linked to the idea of montage/series of experienced scenes). Here, the speed of the target was expressed through line thickness – the slower the movement, the more prominent the individual source became. This particular exercise clarified the powerful ability of changing perceptions with the use of the filter.
Figure 3.2: The “filter” in changing perception
“...the objects themselves, emptied of all aesthetic value, become transparent: they are only valuable as markers of the operations carried out on them. Our attention is shifted from the object to the relationships between objects.” Puglisi, Page 39 [1]
HETEROTOPIAS AND THE AGE OF THE NETWORK

"With an increase in movement, communication, transportation, technological systems, new forms of media, and ever increasing expanse of cyberspace, the experience of time, space and place have changed for all individuals. Castells claimed that "we do not see reality as it is, but as our languages are. And our languages are our media. Our media are our metaphors. Our metaphors create the content of our culture (...) Cultures are made up of communication processes and thus there are no separation between 'reality' and symbolic representation" Fahmi [2].

Within the information age, a new city is emerging. One where reality and virtuality are merging to create a unique set of languages and imagery for the digitised age. Now, our physical environments are reduced to both physical forms and urban imagery as a means of representation in the vast expanse of our bustling surrounds. A hybrid architecture, which links built form and electronics, to deal with the frenzy of the information age- a space of 'total flow'. Hence, the creation of an architectural typology which deals with virtual layers, space, distance and time—a juxtapositioning of the mental image as we know it emerges. These ideals are very similar to places which are woven within our urban fabric, yet still manage to exist as 'a place outside other places'—they are called, heterotopias.

In his book, Of Other Spaces, world renowned French philosopher, Michel Foucault notes the various properties that these 'in-between' heterotopic structures encompass within the urban fabric. "I am interested in certain ones (spaces) that have the curious property of being in relation with all the other sites, but in such a way as to suspect, neutralize, or invent the set of relations that they happen to designate, mirror, or reflect. These spaces, as it were, which are linked with all the others, which however contradict all the other sites." Page 178 [3].

The idea of the built city as we know it, is transforming into an imaginary space. Its existence knows no bounds and sits between imagination and fact. Its reality is soft, it is mostly intangible. This very dynamic has affected how we view our own existence, our individual lives. With our sense of self collapsing into a new manner of representation, disintegrating the boundary between the 'self' and 'city' and creating an ultimate fluidity.

The city represents itself through its textures, diversities and complexities. It is the interaction, gathering and constant motion along a multiplicity of trajectories within an era of vibrant visual stimulants, focused along its highways, streets and avenues, and hidden within the buildings envelope. Within the outlying world of the highway, the complexity of the built form is unnoticeable as it fades into a dim image, hardly enduring the space in our memory. The speed of our daily movement creates a cinematographic effect that results in a loss of sensible referents and a deterioration of architectural markers. With the cinematographic experience creating a certain softness on perceived objects, where the urban experience is reduced to a visual spectacle.
PROPOSED INTERVENTION

The progression of ideas from my initial interest in a type of physical movement, towards a transcending amalgamation of various dynamic systems starts emerging. An interest which is no longer purely physical, but much more focused on the virtual movement of information, communication and technology simultaneously – a heterotopia in the age of technology.

The proposed intervention is headed towards a building of information flows—shifting from physical mobility to a multi-layered system which incorporates and focuses on virtual or digitised movement as well.

A heterotopia of virtuality, where the physical is dissolved and becomes a field of flows, of digital fragmentation where reality and imagination collide essentially strives to become a machine to represent those things which are immaterial in themselves. With communication platforms of interconnected activities providing users with a range of rentable facilities, this public think tank space where the creation, processing and dissemination of information/data occurs becomes a machine for representation in the age of the network.

In so doing, create a fluid narrative of movement for the user through the building of digitised flows, and ultimately create a sharp juxtaposition between the actual physical city of bricks and this virtual information machine/city of pixels.

Figure 5: Information flow illustrations
The architecture of a heterotopia of virtuality (information machine) deals with issues of layering systems of dynamics and interactions, spatial organization of daily mobility, heteropology, and the experience of narrative movement created over time, with particular emphasis on combining elements of flexibility, reflection and juxtaposition to provide constant connectivity within space in order to achieve a greater perceptual awareness through conscious engagement with the built environment.

These ideas are explored through the following themes:

Transparency and fluidity
The concept of transparent and continuous space has a clear link to aspects of solid and void, it is the basis that makes the spatial organization possible, that the construction of a mass obstructs our progression through space, whereas a void provides accessibility to inhabitants. This idea of transparent space, creates multiple outcomes within a singular space, as it merely acts as a framework of spatial order — a flexibility of space — between physicality and human interpretation. Due to the possibility of transparent space inviting and encouraging various readings, it allows the user to become involved, and actively participates within his surroundings, he is engaged within the space.

Multi-layered systems of patterns
The contemporary city emerged from a dynamic system of chaotic and unpredictable paths, creating an entirely charged system of discontinuity and separations — an ultimately ambiguous one. Entirely constructed of technological advancements and information, its existence is made possible through massive amounts of data flowing through the system. It is speed, constant movement of forces, and layers of information running riot over one another.

In the 21st century urban fabric, the spatial organisation of daily mobility, of simultaneous movement systems, creates a complex multi-layered compilation of patterns derived from various actors over time, in creating some unique semblance of urban order.

“Architecture is no longer the construction of envelopes that enclose space, but the construction of planes, surfaces, or layers across which vectors flow.”

Hauptman, Page 41 [5].
Communicating ones presence within the landscape
Within a society of constant movement, a greater amount of effort was required in order to deflect attention away from the focused linear path of movement, and redirect attention towards an architectural space along the side-lines of its path. Structures needed to establish themselves as the centre of attention, with all other forces radiating from within their surrounds.

Forces of organisation patches
The creation of flow facilitators in response to the activities of movement within the urban fabric. The use of forms to create distinct pathways or a skeletal form of framework system to aid movement. The two most important elements related to the facilitation of flows within the urban fabric, are that of enclave and armature. The enclave is considered a self-organising or regulated system, created by urban forces with a hierarchical arrangement and set limitations. Its purpose is that of concentration and reduction of flows, with the use of gates and walls. Its existence is to form temporary node structures where flows and energies temporarily pause. The armature, defines fluid spaces and those of progressive experience. This linear urban element forms an axial concentration of individuals and creates an assemblage of communal activities. A nervous system of sorts, made up of linear elements in supporting the larger image. It is an operating street, directing attention to a governing enclave, a rigid device for ordering flows, as well as an element of attraction, by illusively providing the images of the city.
Heterotopology
Michel Foucault describes "heterotopology" as a systematic approach that analyzes and describes the features of other spaces. [3].

It is a place that combines the static conditions created by enclaves with the fluid systems of the armature. It enables the stabilization of the city through its capacity to allow change or adaption over time. Much like the modernist ideas of spatial fluidity and transparency, and its ultimate creation of flexible space, the heterotopia is a functioning spatial 'tool' used to create the same effect the free plan did, but within the complexity of an urban landscape.

Time and architectural montage
As society progressed, and the urban landscape became more dynamic and mobile with numerous activities overlapping and interacting with one another, architecture could no longer rely on the subtlety of expression, BUT one of architectural montage. Now/here, architectural movement through a space was proposed through a series of scenes, implying fluidity by directing user attention through space with various mixed media systems. By making use of prominent components in society of today, that of high speed information, communication and media. This new approach to spatial systems, was linked to the way in which people perceive space as a narrative or story of movement through time - an application which, would have never been possible in previous years.
An integration of different research methodologies was used in order to obtain the necessary research needed to fully explore the idea of intense, fast paced networks of flows; of layering systems of dynamics and interactions. The method by which this research was obtained was through two literature studies. These literature studies dealt with the conceptual ideas from both a theoretical, as well as a technological point of view, in order to strengthen the overall outcome of the dissertation.
The theoretical investigation on the concepts of fluidity and transparency over time were undertaken with the intention of gaining an academic base from which to explore the idea further. The following summary of my theory document submission forms the basis for my personal views on this abstract and highly conceptual architectural element.

Title: The in-between - a study of the manifestation and transcendence of fluidity and transparency over time and space

My intention in this paper, and design dissertation project, was to explore the links and relations between spaces, by questioning the modernists' notion of fluidity and transparency in space, and its ultimate transcendence and utilisation in the 21st century- to understand the link between the creation of heterotopic interstitial space within the urban fabric due to the interplay of dynamic movements in society.

Fluid and transparent space has always been linked to the early modernist ideas of the free plan, however, this paper aims to explore, challenge and question the perfect modernist manifestation of fluidity and transparency, through other aspects and ideas which have followed – those which are in fact different to that initiating modernist notion.

Fluidity and transparency in architecture have always dealt with the transcendence of movement, though it has taken some time for us to see the effect it has had within the larger urban fabric. In order to get a holistic understanding of our current predicament, we need to retrace where our interest with fluid space originally emerged. In so doing, help us to understand the link between the old modernist systems of fluid space, and the 21st century utilisation of its aspects, in creating a montage or narrative, where static and dynamic systems merge in providing the resolve.

For the purposes of this essay, I looked at multiple approaches that deal with the manifestation of ideas of fluidity and transparency, commencing chronologically, with the initial modernist ideas, to its transcendence and utilisation in the urban scale, and resultant in-between space within the fluid urban fabric- how it has been thought about through various channels, evolved over time and contributed spatially to the original modernist’ notions of fluidity and transparency and evolved into adapting to the 21st century.

Figure 12: An abstract representation of fluidity and transparency over time and space within an urban context. [6].
CHAPTERS COVERED

The Modernist Notions of Fluid Space
The pioneer of the modernist movement in creating transparent architecture, Mies van der Rohe broke elements down to their most basic form, with the use of simple planar elements and crisp clean lines, to create a continuous spatial flow.

The Openness of Buildings
Focused on where movement through, as opposed to movement to a space was being looked at, where the importance of progression through space was a crucial aspect to the way in which architecture was now made. The viewer was no longer a spectator, but an interactive component within the architectural space.

Building the Connections of Continuity
In order to be seen, the dynamics in architectural form was a determining factor within this mobile landscape. Within a society of constant movement, a greater amount of effort was required in order to deflect attention away from the focused linear path of movement, and redirect attention towards an architectural space along the side-lines of its path.

Fluidity and the Urban Scale
With larger scaled multi-layered dynamic systems occurring within the city, the perfect modernist manifestation of fluidity and transparency were no longer applicable. Now, more intricate approaches towards the way fluid space and transparency were provided for within the city were being implemented.

Enclaves and Armatures
Kevin Lynch, in ‘The Image of the City’ proposed the creation of flow facilitators in response to the activities of movement within the urban fabric. The use of forms to create distinct pathways or skeletal form of framework system to aid movement.

Understanding the Heterotopia
Typically made up of multiple spaces, within a singular place, which are incompatible. The heterotopia is flexible space within an enclosed boundary. Foucault describes six principles typically found within all heterotopias, namely: that they take varied forms; it possesses the ability to change its function or form over time; it juxtaposes multiple incompatible sites within a singular space; they are linked to specific moments in time; they have envelopes which separate as well as make them penetrable at certain points; lastly, they function within urban fabrics either as sites of complete freedom or utter discipline. [3].

Exploring the Complexities of Heterotopias
There are three types of heterotopic structures which need to be examined, namely: the heterotopia of crisis, of deviance, and of illusion.

The Heterotopia of Illusion
Appearing at any position within the city, be it edge or centre, in order to facilitate and enable the storage and processing of technological flows within the urban landscape. A utopia of connectivity, openness and transparency - an assembly of connections across all measures of space and time. They receive and transmit information and provide connections to complex layered fluctuating individuals within the urban landscape.

The Transcendence of Modernist Notions of Creating Fluid Space in the 21st Century
With the use of 21st century advancements in technology, communication and media, where the architectural movement through a space was proposed through a series of scenes, implying fluidity by directing user attention through space with various mixed media systems.
Architecture as a Series of Scenes
the layering of the 21st century urban landscape, is experienced through a series of compilations by the individuals’ movement through space. This narrative notion of spatial flows by individual elements, creates a complex network of systems functioning simultaneously within the urban fabric, which architecture now addresses in the creation of space making

Conclusion
The change in perspective on the way in which transparency and fluidity has developed over time within architectural space is quite evident. From its initial modernist emergence of the free plan, architectural space has evolved into a 21st century techno-inspired montage of static and dynamic systems merging into one single entity – the heterotopia.

In a society of constant fluidity- which was at no point of stopping, the emergence of this new “outcast” amalgamated typology, which resulted from the negative aspects of left behind space into a structure which encompasses the merging of movement and stasis to fill the void, was in fact a blessing. Fortunately for architectural systems of today’s urban fabric, the resolve of these spaces emerged through the initial idea of fluidity and transparency taken from the early modernists’ free plan and its ultimate notion of spatial flexibility. Thus, creating a new system of architecture, which could now deal with the complexities, multi-layered and multi-dimensional systems of information, communication and transport, that current society has to offer. After all, “it is the flows rather than the gears that are the driving force of the 21st century” Puglisi, Page 14 [1].

Figure 13: a 21st century techno-inspired montage of static and dynamic systems merging into one single entity – the heterotopia. [7].
TECHNOLOGY ESSAY/INVESTIGATION

The technical investigation on the concept of a responsive architecture (specifically building envelope) within a society in constant flux, was undertaken with the intention of gaining an academic base from which to explore the idea further. The following summary of my technology document submission forms the basis for my personal views on this emerging independent building element.

TITLE: Exploring the notions of responsive building envelopes in high traffic areas

Transparency in architecture is no longer clarity, but that which is much more ambiguous. Aside from having a material quality of translucency, within architecture, transparency suggests that space is in fact continually fluctuating. This notion of ambiguity is linked to the emergence of the mega structure, or mega architecture, where the envelope becomes a separate entity or element to that of the building structure, for it no longer accurately depicts what is housed within the depth of an intricate compositional internal space.

In his book, SMLXL, world renowned architect Rem Koolhaas notes the evolution of the building façade and its emergence in becoming a new building component to be dealt with, “In Bigness, the distance between core and envelope increases to the point where the facade can no longer reveal what happens inside. The humanist expectation of “honesty” is doomed: interior and exterior architectures become separate projects, one dealing with the instability of programmatic and iconographic needs, the other - agent of disinformation - offering the city the apparent stability of an object.” Koolhaas, Page 500-501 [8].

This being said, the building envelope is now viewed as a separate independent building element, having an obscured attachment to the internal building composition. Fortunately, constant advancements in technology aim to help create a more distinct link once more, by regulating, controlling and adapting the atmospheric conditions of the interior building component - with the building skin ultimately reacting to serve the interior spaces once more.

The growing city, is a constantly mobile system, which requires an architecture of dynamic, adaptive capabilities towards its environment - an interactive, responsive architecture. With the development of intricate buildings, the importance of smart buildings has emerged, due to the more demanding requirements of a certain level of comfort within society and also the growing awareness of resource constraints. In order to meet the needs of current developments, we need to understand the various uses of sensors, actuators and control systems and how they can be incorporated in architecture today.

My intention in this paper, and design dissertation project, was to explore the notion of responsive building envelopes in high traffic areas, in creating environmentally conscious internal building conditions i.e. for ventilation, lighting, energy etc, to understand how architecture can address the problem of transparency from a technological point of view.

With the emergence of the mega structure and the ambiguity of the building’s exterior surface, the importance of resolving internal spatial qualities became higher priority - with the building envelope merely being seen as a unifying element to house multiple functions inside one mass built form. However, this paper aims to explore, question and illustrate the immense importance of the building skin, how it can positively contribute to the internal qualities of a building with properly thought through and resolved ideas - illustrated by various ‘active’ technological advancements over the years, those which are in fact different to the passive systems we know so much about.

By unpacking the various technological approaches incorporated within the building envelope, regarding responsive building components, we hope to better understand the link between the “architectronic” building envelope and its effect on the interior building condition.
For the purposes of this essay, I explored a number of examples which dealt with the execution of interactive building envelopes, commencing with the initial understanding and importance of the stereotypical building envelope and the various weather conditions it would need to address within various localities, the basic principles of a responsive building envelopes capabilities, and ultimately the unpacking of various case studies which deal with different types of interactive building facades which have emerged over the years – illustrating the importance the exterior surface has on the interior spatial mass.

**CHAPTERS COVERED**

**The Importance of the Building Envelope**
Acting as the primary mediator between interior and exterior buildings conditions, the building envelope’s most important aspect, is to protect its inhabitants from climatic extremes. Its purpose is to moderate those extreme conditions experienced externally, in order to create a more comfortable and acceptable interior condition for its occupants.

**Effects of Climatic Conditions on the Building Envelope**
a certain understanding of specific weather conditions is pertinent in order get a grasp of the sort of outer environmental systems which the building envelope needs to counteract to instil the longevity of ideal internal occupant space. Therefore, those environmental conditions which play dominant roles in directly affecting a buildings envelope and subsequent internal performance become critical information

**Defining a Responsive Envelope**
The responsive building facade is one which focuses on the relationship between a buildings inhabitants and the “skin” itself. A building facade of dynamic engagement with its urban environment and inhabitants, as opposed to a static building element. A building envelope which has the ability to react, adapt and learn as time progresses in order to control internal environmental conditions.

**Interactive Facades: Sensory Responses to Change**
buildings internal environmental conditions are controlled through the movement and manipulation of its external elements. The use of sensors, mechanical actuators, membranes, control devices, smart materials, etc, are all in charge of altering the envelopes geometric structure due to their impulses – in order to create a desirable response for the buildings occupants.
Interactive Facades: Sensory Responses to Change
buildings internal environmental conditions are controlled through the movement and manipulation of its external elements. The use of sensors, mechanical actuators, membranes, control devices, smart materials, etc, are all in charge of altering the envelopes geometric structure due to their impulses – in order to create a desirable response for the buildings occupants. [10].

Interactive Facades: Mechanical Responses to Change
the movement of building envelope elements triggered directly through a manual switch i.e. providing complete user control. An interactive system which essentially requires occupant input in order to initiate a response

Interactive Facades: “Smart” Material Responses to Change
those materials which possess certain properties of changeability in form or colour, With the ability to adapt, react and change its physical or chemical make-up, due to external climatic conditions such as temperatures, solar sensitivity and movement.

Conclusion
As stated in the article Perfect Skin,”skin, whether generated by the human body or wrapped around buildings, is a complex and crucial barrier. Our largest organ, it defines appearance, shapes character, maintains body temperature and fluid balance, synthesises growth factors and vitamins and helps clean up cellular waste.” Carter, Page 42 [11].

With the aid of technology, the utilisation of the building skins capabilities in regulating, adapting and controlling internal environmental conditions has immensely contributed in creating ideal comfort levels for its inhabitants.

Without the advancements in technology, specifically within the engineering sectors, these forms of responsive building envelopes, which found a large amount of information through analysing biological organisms and their successful response to climatic conditions, would have never been possible. These various systems which have been illustrated and unpacked, with their incredible degree of user control, perfectly fit within a society where urgency and immediate response, are just what the built environment needs. In order to see to it that its users and inhabitants are satisfied, while trying to utilise the availabilities of the surrounding environment in a sustainable manner, buildings are simultaneously able to reduce their energy usage and make the people within them happy.
The analysis of each architect's work within the following chapter relates to multiple themes which have been incorporated into the conceptual idea. The unpacking of ideas relating to fluidity, transparency, heterotopias, layering, narration and the space/time continuum in architecture, all ultimately contributed, in some manner, towards the manifestation of the final building design.
OMA, Seattle Library
The Seattle Central Library by OMA redefines the concept of the library. Here, the focus is shifted from being exclusively linked to printed media, and is invested in all forms of information. An information store where all potent forms of media—new and old—are presented equally and legibly. [13]
The programme includes 33,700 sqm of hq, reading room, book spiral, mixing chamber, meeting platform, living room, staff floor, children’s collection, and auditorium, and 4,600 sqm of parking.

“This is-by far- one of the most inspiring projects I know. And it’s not just the skin or the structure. It’s the new program relations that make of this more than a mere library, but an enhanced public space around knowledge” [13].

The strong visual form of the Seattle Public Library began with the simple concept of wrapping the entire building in a continuous layer of glass and metal — a completely transparent skin. This transparent layer with its faceted planes, outlines internalised platforms of program spaces, on the exterior, while creating a variety of interconnected public spaces in between on the interior. — a resultant condition due to bigness.
The building is divided into eight horizontal platforms of program space, each varying in size to fit its function, with the stack of platforms/layers all arranged along a continuous spiral ramp, emphasizing the idea of a world organized with machine-like precision or perfection.

This new library is seen as a podium for new information, a place for thought, discussion and reflection, strengthening the concept that the entirety of a typical library of books may now be stored on a single microchip— that one building has the ability to store the digitised contents of all the libraries in the world. Ultimately, creating new ideals and thoughts of space making in the electronic age.

With five uniquely identifiable platforms, each having their own programmatic assemblage that is equipped for maximum, dedicated performance. These five major programmes, coupled with the enveloping of the building skin create the in-between public space. These in-between spaces which are created, become public realms and are used to inform and stimulate. A clear distinction is created where the interface between the different platforms is meticulously organized—spaces for work, interaction, play and reading are the emergent result.

By genetically modifying the superposition of floors in the typical American high rise, a building emerges that is at the same time sensitive (the geometry provides shade or unusual quantities of daylight where desirable), contextual (each side reacts differently to specific urban conditions or desired views) and lastly, iconic.

The Libraries formal qualities were driven primarily by a highly rationalized understanding of the typology of a typical library, combined with an interest in the application of flexible control of spaces, and how it would translate architecturally as well as socially.
The drive to develop a hyper connective structure that sought to re-imagine the 21st century library, rigorously evaluated the current programming of a typical library and re-organized it. The form was developed using the conceptual diagram as a design tool, while also creating a somewhat unexpected iconic form, all of which are visible in the actual building.

Besides acting as an interface for technology, the buildings current organization would not exist without these technological advancements in the first place – its organization and ultimate development would not have been the same if it was not for technology.

This architectural icon becomes a media interface, where media is used as both as a means of understanding the world, as well as becoming the means by which we experience it in our daily life. There is a fear that architecture would be reduced to a mere canvas for digital media to be broadcast onto, however the goal here was to intertwine them which would ultimately create a new bodily experience.

Koolhaas wanted the individual to be absorbed by the building itself, where the building was the vessel in creating opportunities for individuals to remain connected within a city. [14].

This new typology or re-organization of the typical library which focuses strongly on media, simultaneously emphasizes the power of the media itself. The physical reshaping of the entire building for the incorporation of new technologies gives way to the power of the media, and the ability of the individual to navigate through it.
Toyo Ito, Sendai Mediatheque

The architects conceptual approach was to demolish the conventional ideas of an art museum or library to reconstruct a new idea of architecture called “mediatheque” by making use of state-of-the-art media. This process of reconstructing the architectural concepts not only extended to hardware but to software as well. Conceptual rather than formalistic from the very beginning, it consists of three important elements, namely; "plate", "tube" and "skin".

The Programme consists of an open square, that includes a cafe, retail shop, and community space that is capable of supporting film screenings and other events. The Shimin Library found on the second and third levels include a browsing lounge complete with internet access. The gallery space of the fourth and fifth levels contain a flexible exhibition space with moveable walls, and also a more static space with fixed walls and a rest area with seating. With the sixth level, having a 180 seat cinema and green and white furniture fitting to the audio-visual multimedia library.

The concept behind the building required maximum flexibility in both the buildings plan and section. With the design being simplified into three main elements: floor plate, columns and skin. The architects aim was to design a building as transparent as possible, free from constraint. [17].

The floor plates of the building were designed to resemble thin sheets, which have the appearance of a floating system of planes.
In section, the buildings thin floor plates, almost seeming to float, are tied together with tubular columns which run through the entire structure. These irregular caged tubes are features within the internal space, both structurally, sculpturally and even functionally – housing all the buildings services. They are flexible, in the sense that they act as both structural members line and as the space where energies (light, air, water, sound, etc.) and information all flow through. [17].

These six, thin floating steel-ribbed slabs/plates, are supported by only thirteen vertical steel lattice columns that stretch from ground plane to the roof. The buildings most striking, visual quality that is one of the most identifiable characteristics of the project, comparable to large trees in a forest.

With the intentions of designing a transparent cultural media center that is supported by a unique system to allow complete visibility and transparency to the surrounding community, the Sendai Mediatheque is revolutionary in its engineering and aesthetic. The simplest intentions of focusing on plates (floors), tubes (columns), and skin (facade/exterior walls) allows for a poetic and visually intriguing design, as well as a complex system of activities and informational systems.

Ultimately made up of three simple components, the Sendai Mediatheque offers a space where electronic flow and the physical body, are now integrated within a singular entity.
OMA, ZKM

"Architecturally, ZKM is a manifesto for a new kind of deep/large building where the splintered elements of recent architectures can be reassembled in an organization which is not dependent on compositional or aesthetic criteria- a technologically sophisticated domain where complexity and freedom can be pursued at the same time." [20].

Location: Karlsruhe, Germany (on a long narrow plot between railway lines and ring road at edge of baroque city centre)

Programme:
Sound and video laboratories, media theatre, media museum, contemporary art museum, library, lecture hall (31.000m2)

At the southern entrance to the city, lies this philosophy for a new kind of hybrid building typology. Organizing a large number of different programs with one another, including sound laboratories, a library and museum space, this building prospective integrates with the existing systems of the city, while its public circulation system unfolds the activities internally.

The Zentrum fur Kunst und Medientechnologie (ZKM) is an experiment, where different media forms- classical and futuristic- can compete and influence one another.

The building organizes a large number of different programs in such a way that while their particular needs are respected, their coexistence insures maximum mutual influence; their interface generates hybrid conditions.

The buildings five programmes are as follows:
1. laboratories for sound and (computer and video) image, media theatre
2. media museum
3. museum for contemporary art
4. library
5. lecture hall and other facilities are all stacked in a single 'tower'

A public circulation system snakes around the core, invading it at strategic moments in a continuous unfolding of the centre's activities. [20].

Figure 26: Sectional Model of Proposal [21].
Simplified into a series of spaces, namely; skin, services and programme core, each of these elements wrap around one another entirely - a container and contained arrangement. This organisation creates a maximum amount of central space to be used for the programmes on each floor. Now, a vertically stacked sequence of various unrelated functions are able to sit one on top of the other, creating a vertical movement - similarly found within a high rise.

“Bigness no longer needs the city; it competes with the city; it represents the city; it pre-empts the city; or better still, it is the city.” Koolhaas, Page 515 [8].

The spaces within, are also independent elements within themselves. With each floor housing an entirely separate function, due to the verticality of the building, all held together through a unifying skin.

The scale of a building of this proportion, situated in a small village becomes quite an icon within the urban landscape. Easily overshadowing the surrounding context, it would serve as the iconic landmark within the area. This approach is linked to Rem Koolhaas’ idea of “Bigness.”
The buildings intent was not to house art or sculpture, but rather to be a place of tranquillity and escape from the exposition, in effect transforming the pavilion into an inhabitable sculpture – a display of architecture’s modern movement to the world.

On a narrow site, in a tucked away corner, secluded from the bustling city streets of Barcelona, the pavilion sits on a raised plinth. Separating itself from its context, it creates a complete separation from the intensity of the surrounding bustling city – isolating itself entirely. With the narrow profile of the site, coupled with the raised platform that the pavilion rests on, the building’s horizontality is accentuated even further with the addition of seemingly floating flat roof.

The building’s design is based on a grid-like system, serving as the framework for both wall/vertical elements, as well as material elements i.e. pavers, to work within.

With no central point and spaces being defined through independent vertical planes, rather than entirely enclosed rooms, the plan for the Barcelona Pavilion is one of complete openness. Here, the wall is considered as a completely free standing element, no longer structural due to the presence of columns, but used as a visual divider to separate different spaces internally.

“The free plan, as it relates to architecture refers to an open plan with non load-bearing walls dividing interior space.” [25].

Instead of creating an entirely open space to represent absolute freedom, Mies Van der Rohe approached the idea of the free plan in a slightly different manner.

His ideas were more focused on things such as:
- Elementalist design of the plan (similar to Destijl and Theo Van Doesburg)
- The center is abolished
- The room as a plan organizer is dissolved.
- Plans are not organized by the taxonomy of functions but represent many possible compositions.
- Interplay between column and wall is a major theme. [26][27].
This means the open plan is used as a tool for spaces to flow through, rather than create absolute freedom.

With the use of the least amount of elements, the creation of multiple fluid organizational patterns and functions was possible within the space, providing an extensively flexible structure.

![Figure 30: designing the structure around the notion of “less is more”. [28]](image)

These simple planar elements and crisp clean lines together, succeed in creating a continuous spatial flow, which transcends the boundaries between interior and exterior space altogether.

![Figure 31: Conceptual idea of fluidity and transparency expressed through the building plan [29].](image)

The interior of the pavilion consists of offset walls based on the grid-like system, working in conjunction with the low roof plane, to aid movement through the spaces as well as activate the buildings ‘architectural promenade’- where framed views would induce movement through the narrow passage that would open into a larger volume.

The low roof plane, an important contributing element in the experience of the building, appears in elevation as a floating plane above the interior volume. Supported by eight columns, which allows it to effortlessly float above the exterior walls, the floating roof creates both an open interior floor plan, as well as creating a sense of weightless enclosure and shading.

With the low roof projecting outwards over the building’s exterior, coupled with the overall openness of the pavilion, a blurred spatial demarcation between the interior and exterior is created.
This recurring process of moving throughout the pavilion sets in motion a process of discovery and rediscovery during one’s experience; multiple narratives taking place within a singular place, always offering up new perspectives and details that were previously unseen.

The building, an exhibit in itself, defines space with orthogonal sets of offset planar elements. Typically a simple floor plan, with its use of strategically placed vertical planes, the visitor progresses naturally through the structure without any forceful direction from building elements. Creating walls which generate an absolute spatial fluidity internally, coupled with an extensive glazed outer boundary, declaring ultimate transparency of space.
EXPERIENTIAL MOVEMENT, THE MENTAL MAP & THE SPACE-TIME CONTINUUM

OMA, Berlin Embassy

The building’s design was based on the creation of spaces for overlapping varying functions, where a single building has the potential for multiple use of specific areas, while being focused on the installation of technology as well. Located on the banks of the Spree River, on a plot that seems to float along the water channel - a typical landscape of the Netherlands, this building is based on the experience of the narrative, where the visuals from the building were an important aspect considered in the design.

This internal spiral movement is possibly the most important aspect within the building. Sitting completely separate from the structural façade, the travelling ramp is used as an organisational component, with all sections inside the cube running along the route of the ramp. The spiral movement called “Das Trajekt” penetrates the box and passes through the eight floors up and down, defining the internal communications happening within. [32].

The spiral movement as it unravels, brings the visitor to relate to the context: the Spree River, the famous TV tower Fernsehturm, the park and the walls of the embassy – all contributing to the narrative of the space.

Programme: The ride reaches all sections of the embassy and lets you enjoy the landscape of the city. From the entrance, through the library, meeting rooms, auditorium, gym and restaurant, to the terrace. With a loop at the end of its movement, framing the tower Fernsehturm through a window.

The total program is 8,500m², distributed follows: 4,800m² for offices, 1,500m² and 2,200m² for parking. [32].

The building itself, an enclosed cube on a plinth, is positioned on the southeast corner of the site. Inside, a continuous spiral movement encompasses eight floors of the embassy and shapes the internal connectivity of the building.

Figure 34: Berlin Embassy, Site Location [32].

Figure 35 Exterior view of the building [33].
Koolhaas’ buildings are easily understood in cinematic terms. Following a rhythm of action and cut, the walkways in the Berlin embassy provide an interesting experience as one wonders through the building. Individuals are allowed to scope out the surrounding city, with windows used as frames to focus attention onto urban landmarks—setting up a transitional experience as one moves onto the next ‘scene.’ Their unusual boxy shapes, which rebel typical categorization, make for striking additions to any urban landscape. They are visually striking, memorable, and inspire curiosity in all those who pass by. [34].

The approach taken for this heterotopia of illusion, was neither one of adaption or monumentalism, but in fact one of composed fragmentation. This fragmentation provided a flexibility and transparency of spatial interpretation, with the building seen as a contradiction in itself, regarding the required restrictions within the area—a structure which exploits the relationship with its context.

The design of the building is based on the overlapping of multiple functions, the flexibility of areas for multiple use, as well as the use of media and technology systems. The ‘image’ of the building was an important aspect to the design process, with the visitor presented, on approach, with multiple choices in his experiential journey through an urban landscape. Its intent was not to function as mere façade, but as openness, with access points for both vehicular and pedestrian movements on both sides.

Internally, the creation of free circulation is provided by a continuous spiral path which swerves through the various storeys of the embassy, determining the spatial arrangements, as well as the internal communication systems of the building. On entry, the course of the continuous path leads one through to the library, meeting rooms, offices, gym area, and ultimately the roof-top restaurant—a series of scenes set up for the viewer to experience as he journeys through the space.

Figure 36: Conceptual Diagram of building form and voids – creating visual links from the park to the Television Tower, through the building itself. [35].

Figure 37: Architecture as Montage—a narrative of scenes experienced by movement through space and time. [36].
UN Studio, Mobius House

An entirely unheard of concept for a typically residential building. “The organization and formal structure of this private house is based on a double-locked torus - the Mobius loop.

A Mobius band or loop is created by taking a rectangular strip, twisting it once, and joining its ends together again. This results in a ‘single sided surface’ of a continuous curve. [38].

This intertwining looping trajectory relates to the 24-hour living and working cycle of the family that the house was intended for, where individual working spaces and bedrooms are aligned with one another, but communal areas are situated at intersecting points of the looping pathway.

The strong looping trajectory of unfolding lines are further emphasized through the use of materiality within the building. Here, both glass and concrete swap roles within the spaces, and break conventional methods of their use. [37].

The Mobius loop, having the ability to be present in both plan and section, translates the interior of the building into a 24-hour cycle of sleeping, working and living.

As the loop turns inside out the buildings materiality changes as well; where glazed panels and concrete elements swap roles, dividing walls are made of glass and furniture such as tables and stairs are made of concrete, all contributing to strengthening the visual, structural and conceptual ideas of the Mobius loop further.

The diagram for the Mobius house consists of two interlocking lines. The double-locked torus integrates programme, circulation and structure seamlessly. It clearly conveys the organization of two intertwining paths, which trace how two people can live together, yet apart, meeting at certain points, which become shared spaces.
Essentially a graphic representation of daily family life expressed through 24 hours, The unfolding of time, coupled with the internal regulation of the program relates to the concept of the double-locked torus and attains a time-space dimension, which results in the “Mobius loop”.

The spatial quality of a Mobius band, a curving single sided surface, integrates the internalised program seamlessly – both in terms of circulation, as well as structure. The motion of the loop traces an individual’s daily activities. Expressed through three levels within the residence, the loop includes two study spaces on opposite ends of house, three bedrooms, a meeting room and kitchen, storage and living room, and a greenhouse at the top – entangled in the journey of everyday life and time. [38].

Figure 40: a diagrammatic representation of the programmatic layout in relation to one another. [37].

Figure 41: Incorporation of Mobius strip Twists of house [38].

Figure 42: Floor Plans [38].
Bernard Tschumi, Parc De La Villette

Part of a competition process in France, where the objective was to create a design which marked the image of an era, which related to the future economic and cultural development of a key area in Paris. For Bernard Tschumi, Parc de la Villette was not meant to be a picturesque park reminiscent of what once was; it was more of an open expanse that was meant to be explored and discovered by those that visited the site. An “urban park for the 21st century” with a developed complex program of cultural and entertainment facilities, which did not dwell or rely upon history as precedent, but rather looked into the contemporary issues as well as the future. [40].

The parks programme looks at a multitude of activities, namely: workshops, gymnasium and bath facilities, playgrounds, exhibitions, concerts, science experiments, games and competitions, in addition to the Museum of Science and Technology and the City of Music on the site.

Parc de La Villette could be considered as one of the largest “buildings” ever constructed. Essentially a discontinuous building which overlaps the site’s existing features and articulates new activities, it is still understood as a single structure nevertheless.

The Parc de La Villette proposes a park with a plethora of activities, both socially as well as culturally orientated. With a system of dispersed markers (red follies) all housing various cultural and leisure activities—these key points are then superimposed on a system of lines that emphasize movement through the park. [41].

Figure 43: abstract imagery of the intended park system [42].
Tschumi’s design was in partial response to the philosophies of Jacques Derrida, acting as an architectural experiment in space, form, and how those relate a person’s ability to recognize and interact. [43].

Tschumi, wanted the park to be a space for activity and interaction that would evoke a sense of freedom within a superimposed organization that would give the visitors points of reference. As part of his overall goal to induce exploration, movement, and interaction, three principles of organization which Tschumi classifies as points, lines, and surfaces are used throughout the scheme. [40]. These categories of spatial relation and formulation are used to act as a means of deconstructing the traditional views of how a park is conventionally meant to exist. [43].

These lines of organization are essentially the main demarcated movement paths across the park. Unlike the points/ red follies, the movement paths do not follow any organizational layout; instead, they overlap with one another and even lead to various points of interest within the park and surrounding urban area. It is said that the park exist within a vacuum, as it does not take the history of the site or the surrounding context into consideration. However, the approach was considered more as a replication of urban life where man is caught in the relentlessly overwhelming environment, devoid of humanistic sensibility to accommodate for larger numbers of people.

“a critical manifestation of urban life and activity where space, event, and movement all converge into a larger system.” [40].
With its collection of museums, theatres, architectural follies, themed gardens, and open spaces for exploration and activity, the park has created an area that relates to both adults and children. Thirty-five follies are placed on a grid and offer a distinct organization to the park. Architecturally, the follies are meant to act as points of reference to help visitors gain a sense of direction and navigate throughout the space. While the follies are meant to exist in a deconstructive vacuum without historical relation, many have found connections between the steel structures and the previous buildings that were part of the old industrial fabric of the area. Today, the follies remain as cues to organization and direction for park visitors.

“The park strives to strip down the signage and conventional representations that have infiltrated architectural design and allow for the existence of a “non-place.” This non-place, envisioned by Tschumi, is the most appropriate example of space and provides a truly honest relationship between the subject and the object.” [43].

By allowing visitors to experience the architecture of the park within this constructed vacuum, this ‘non-place’ coupled with the experience of time, appreciations, and activities that take place within this particular space begin to acquire a more rich and layered experience of place. Here, the park is not acting as a spectacle; it is not of any typical park typology, it is merely striving to act as a frame for other cultural interactions to take place. [43].
For me, design is not how it looks, but the process itself. The appearance is not important. I am not depending on single methodology, but rather always trying to find several paths, possibilities, even though sometimes, I cannot get exactly what I want to see.... The process depends on the relativity of each situation.- Ito, Page 7 [46].
Figure 47: Locality of the site: illustrating site dimensions, street names, heritage areas, surrounding functions etc.
A gateway to the city, the site location sits on the periphery of the Cape Town CBD, within the Woodstock area - a forgotten site in-between an old industrial region and transport route. This abandoned Boat House, now completely derelict, is located between a railway route and a busy mobile main road, running towards the city.

Based on the heterotopic characteristics described within the theory paper, this specific site fits my interests regarding location as well as quality, i.e. It responds to my interest of multiple surrounding movement systems and its resultant creation of forgotten interstitial/void space.

This derelict, abandoned and completely abused site is considered a problem building within the Woodstock area. With years of vagrancy, vandalism, drug dealing and drug abuse occurring on the property, the building is barely standing. The roof, windows and door frames are all removed, while the walls are either crumbling or covered with graffiti. The floor, possibly the most disturbing aspect, is littered with all sorts of debris, asbestos, waste, refuse and faeces, while discarded boat hulls scatter the yard surrounding the building.

With vagrants invading the site, and using it as a shelter, health risk issues are occurring due to no running water and functioning electrical system. Even the risk of a fire hazard seems to be an issue as vagrants have commenced to start fires inside the space. [47].
Site images illustrate the abandonment of the site - a dead space between a constantly moving railway route and busy vehicular surrounds. Carcasses of old boats strewn all over the place, crumbling walls and exposed metal frames express a forgotten place.
With the proposed building intervention focused on the experience of time, space, mobility and communications i.e. a multi-layered system which focuses on digitised information flows, this machine to represent the immaterial, of digital fragments where reality and imagination collide, would need to address multiple platforms of data flowage.

The intended buildings programme looks at spaces such as rentable think tank space, film and recording studios, auditoriums, exhibition areas, screening rooms, and a media library or what is collectively known as a “Mediatheque.”
The design priorities are relatively simple, create three main spaces or facilities for the creation, processing and dissemination of digitised information flow. Around these three anchor points, create a continuum of fluidity, of mobile circulatory space, to act as the public realm and connector between the separate “events” within the building.

A place that defines itself without predefining everything, that enables encounters in fusion and breaks down barriers between the digital world and the physical realm - that challenge new modes of space making in this technological age.

This new “hybrid building” or heterotopia of virtuality interweaves a fluid public realm with two vertical towers of facilities on either end of the building. With the vertical towers relating to the other surrounding iconic building heights within the area, the horizontal weaving planes sew themselves into the everyday urban fabric of the space.

A dialogue between viewer and architecture would be established within this building, where passers-by engage in the connectivity of the building. The potentiality of intelligent, dynamic systems running through the building, offers the possibility of evolving, real-time, client-driven content. Graphic and typographic spectacles for special events, news flashes, and temporary cultural installations may all be incorporated into the buildings constantly transforming the outward façade.

Each stacked floor or function maximizes space-planning flexibility to best accommodate the unique identity and programmatic needs of specific functions. The horizontal ground planes, of free movement, would allow for various open platforms with optimal lighting and views.

SITE ANALYSIS

Since this project deals with testing a conceptual idea, the applied programme housed within the intended building would be one which disregards the existing surrounding fabric/context of the area, and intends to create a heterotopia of illusion within the confines of the building walls. Therefore typical Woodstock vernacular and surrounding functions were entirely disregarded when analysing the site.

However, it cannot be said that anything exists entirely in a vacuum, and therefore certain aspects were relevant to analyse within the surrounding context which would ultimately affect the building and inform the way it would be implemented within a real world scenario.

Context and visibility study

“with its large-scale voids, landscape elements, isolated pavilions, highways, and shopping centres” Vigano, Page 158 [48], buildings were now faced with the problem of participating with this continuous flow of movement, or being submerged by the void entirely. Within a society of constant movement, a greater amount of effort was required in order to deflect attention away from the focused linear path of movement, and redirect attention towards an architectural space along the side-lines of its path.
Two responses emerged as to how I would then need to begin approaching the design of a building on this particular site: the urban and architectural response. The first scale of rapid movement would then need to draw people from a distance away (urban) and possess some ‘iconic’ attracting signifier. The second scale of movement (architectural), would be much slower and need to engage with the ground plane and the individual on the street.

I began exploring the existing building heights through basic sections, finding the average heights, and those heights required to be noticeable within the surrounding built fabric.

Existing building heights and density study observations:
- Street edge and average building height of 3 storeys
- Maximum building height of 6 storeys
Existing Building Heights/ Density: Promoting Site Visibility within the Urban Fabric

Average building height within the area meeting street fronts - 3 storeys
Maximum building height in surrounding vacinity - 6 storeys

Possible Design Proportions for Structure

Figure 54: Urban/ Architectural responses to speed
Movement Systems and Nodes

Figure 55: Highlighted in the images above are all the main public transport routes affecting the site, with lower main road clearly being quite a popular bus route (due to all the functioning factories in the area).

Due to the site, as well as the surrounding areas severity, it was important for me to understand the various types of movement systems occurring around this incredibly dead space. Ironically enough, there were quite a bit of activities within the surrounding area which were functioning on a daily basis (much to my surprise).

Unfortunately, all of these surrounding activities took place within themselves, and did not disperse their energies out into the surrounding Woodstock area, which is why dead spots easily began to develop.

However, what was incredibly important to note, was that the area surrounding the site was definitely a transport route through, not towards. With countless numbers of people moving all over the place, the challenge, which would later need to be addressed, was how one would make people stop and pause in a place where they would not usually do so.

Figure 56: Major movement systems and attractor nodes in close proximity.
Dealing with very different Street Edges

The proposed site has three definitive edges which the intended building would need to address. All with completely different conditions entirely...the first, lengthiest and possibly most difficult to interact with would be that of the railway edge. This sector looks onto an incredibly harsh industrial landscape, and only at a certain point, one of great height, is one able to see the ocean and harbour. However, before such beauty can be experienced, the problem of daily and frequent bustling trains and noises, industrial factories and open barren spaces are what is to be viewed in this direction. Unfortunately for us, this is also the buildings north façade, where heat gain is usually achieved for internal spacing’s, a condition which needs to be addressed when dealing with internal spatial design later on.

The second façade is the one along Newmarket street or “lower main road” in Woodstock. This bustling congested street is a direct link into cape town CBD, and is a regular traffic zone, both mornings and evenings, as people commence to and from work daily. It is not a particularly friendly street edge, as none of the other surrounding buildings rarely open up to the street for the road is merely a route to greater things beyond, and even when they do, securing the entrance i.e gates, bars and barbed wiring take preference to a more welcoming approach to

The last façade, a slow “pedestrian traffic” edge is a side street which links all the way to busy Woodstock station. Incredibly quiet and somewhat dingy, it currently has a mechanic’s workshop on the corner facing my site, with dense industrial style buildings further down the road, and old rundown housing units with crumbling brickwork for lower income citizens.
Lower main road façade/street Analysis

Un-inviting street facades
Buildings not setback from property edge
Roller shutter door fronts and barred window treatments found throughout (clearly criminal activity is ripe in the area)
Roof profiles inconsistent with parapet edges mostly greeting the street edge
Average building height on street front +/- 3 storey or 9 metres
Presence of pavement area to allow pedestrian movement within the bustling vehicular area
Service alleys between buildings
Building façade is used as an advertising wall as well

Figure 58: New Market street analysis
The history behind the site - before dereliction

Formerly known as Andy’s Boat House, this property was once a functioning business enterprise which dealt in the repair and manufacturing of boats and boating equipment. [47]. Unfortunately, over the years, the site has been abandoned and nothing but traces of its former life were left behind, along with other questionable items which are now strewn all over the property. Registered to the South African National Roads Agency Limited (Sanral), the building has now been declared a problem building under the Problem Building By-law 2010. It is unclear as to what the City’s future plans for this chaotic mess of a site entails in the future.
The idea of remembering
Within the ruins of this derelict factory of discarded boat carcasses, crumbling roof structures and graffiti laced brick walls, our experience of what was to what now remains, is incredibly astonishing.

With time, memories begin to fade, and all history and knowledge become mere tales to the youth. The difficulty in doing justice to the memory of a place, to the remembrance of what once was, becomes an issue when one deals with the representation of memory within a space.

However, the past is not only there in memory, but may be articulated to become memory. The gap between actually experiencing an event and remembering it in its representation is bound to occur. Therefore, in order to create a more powerful, properly articulated response, a connection between experience and remembrance should be a more appropriate way of designing.

Though all memory in some way is dependent on some past event or experience, the temporality of any act of memory is always in the present and not in the past. It is this exact tension between the past and present that creates a new articulation of memory, bringing it once more to life, and makes it memorable.

Due to the abstract nature of the concept itself, I intended to approach the idea of the site's memory in a very different manner. Instead of re-making what the building once was, or mourning it in some solemn memorial shrine, my intent is to celebrate its memory of the ship. Based on my theory research, Foucault spoke about the ship being the perfect example of a heterotopic building "The ship is seen as the heterotopia 'par excellence'...It is an instrument of economic development, a floating piece of space, a place without a place, that exists by itself, that is closed in on itself and at the same time given over the infinity of the sea..." Foucault, Page 236 [48]." This being said, due to my building's existence as a heterotopia in itself, it is somewhat an expression, be it an obscure one, of the remembrance of the place as it was before; of the boat reincarnate in the 21st century in the age of technology. How this heterotopia then interacts with the ground plane, with the site and its context, would make this new conceptual understanding of a boat house in the age of technology, belong to the site once more.

Figure 60: An outside view of the tattered exterior façade, with graffiti, posters, and removed window frames. [50].

As Joan Didion once said, "A place belongs forever to whoever claims it hardest, remembers it most obsessively, wrenches it from itself, shapes it, renders it, loves it so radically that he remakes it in his own image." [51].
"The innovative architect is not afraid of new technologies, but plays with the unheard of potential of the new media invading the built environment."

Oosterhuis, Page 6 [52].
CITY WITHIN THE CITY:
UNPACKING THE CITY OF PIXELS

Figure 61: conceptual imagery of the datascape [53].

Based on a design process which deals with the intertwined existence between people and the datascape/digitised age. This sector deals with the numerous conceptual applications the design process has undergone, which tackles space making in the age of the network.

CONCEPTUAL APPLICATION IN THE AGE OF THE NETWORK

Society is on the verge of a major shift. As technological explorations throughout all aspects of society grow, be it biologically or mechanically, ultimately, our knowledge of architectural space and its explorations will be reassessed as well. With advanced technologies dealing with cyberspace, genetics, molecular engineering and a whole host of other complex systems, our environments are being re-evaluated and progressing forward. So too will our understanding of space and architecture – its use, effectiveness, scale of operation and aesthetic content will no doubt shift with the ever expanding technological times.

The idea of flow in the age of the network, is something completely different to our previous understanding of space making. It is understood that the state of flow psychologically, has no boundaries in time. Typically in architecture, however, the architect proceeds to stop the state of flow, for architecture cannot exist without being built solidly – the art of making static objects. Now, architecture is seen as dynamic. With architects designing from a new paradigm of a more time-based architecture, no longer preventing the flow of connection.

"...information flow is like a warm, deep sea of data engulfing your body and brain. You will learn how to swim, you will learn how to enjoy the abundance and redundancy of the multitude of data flowing through the built environments." Oosterhuis, Page 43 [52].

Power resides in the network, for no place exists outside of the interconnected web of information, people, goods, and transactions. The new concept of “place” in the age of the network, is one of virtual diffusion, of being absorbed into it entirely.
Cyberspace is established as this new conceptual space, an "other" place where the deconstructed self of virtual bits, of multiplicity and ambiguity, is created in this dematerialised world of the technological age. Here, the individual becomes an interface to express all forms of information, directly from their private space, at any time.

These new communication systems created through technology radically transforms space and time, with functioning networks and their constant spatial flow or existence, substituting a plethora of places into a single space.

Today, technologies of communication, computation and overall information, represent an ever progressing world, where the 'virtual city', the network, begins to challenge the solidity of permanent structures. How these virtual representations then transgress from an abstract system of post-physicality, and attempts to merge and weave itself into the concrete urban city as we know it today is a challenge for architecture within the technological age.

"Architecture must become a fulcrum around which the technology that liberates the body and the biology that sustains it are reconciled....this exploration has to encompass the real city, the unreal city, and the visceral and mental spaces of the body – and the blurred spaces in between" Spiller, Page 9 [54].

That being said, due to the complexity and abstract nature of the idea in itself, I have chosen to break the building and conceptual ideas down into sub-categories, which I have addressed both diagrammatically and through text, with the hope of providing some potential clarity in the construct of such a complex idea.
Exploring the folding plane and fluidity within a space
In 1993, Greg Lynn introduced a new approach to design which considered a “more fluid logic of connectivity.” The idea of connected, continuous fluidity was brought to life through the concept of folding – which looks at continuous geometry of curves and surfaces through its expression.

Deleuze, a French philosopher, spoke of the fold as an ambiguous spatial construct, of smooth surfaces and transitional spaces between interior and exterior, between the building and its site – all ultimately aiding in the notion of free fluid movement within a building’s design approach.

“The Fold, posits a post-structural notion of space “made up of platforms, fissures, folds, infills, surfaces and depths that completely dislocate our spatial experience.” [55].

With these ideas in mind, my attempt at proceeding to create my own sense of fluidity upon the site was an important aspect which I addressed quite vigorously. Below are diagrammatic understandings and explorations of the steps taken towards a fluid planar building design.

Sequential fluid movement diagrams illustrating the thought process and development of my exploration into fluidity and the folding plane.
Figure 65: Applied movement onto site itself: free movement applied within the confines of a particular site, and ultimately building

Figure 66: The division of the site into sectors of movement: segregating the extent of the site into various sectors to be manipulated into aiding the movement through the space itself, over an extended period of time

Figure 67: The folding/pushing and pulling of levels: how these sections are then put under certain influential pushing and pulling factors, to ultimately aid the user's movement through the space.

Figure 68: The result: The initial free movement through created from a single surface and ultimately reflected/into various multi-surfaces to reflect the user's potential movement path over a building's internal expanse.
Below are a series of images of models I have built throughout the design process. All of which illustrate my exploration of folding planes within the confines of my chosen site (based on the hierarchical levels established within the confines of the internal building space).

Figure 69: Folding plates disregarding the triangular shape of the site (model not to scale)

Figure 70: Exploring the fluid movement of the ground (public) realm

Figure 71: Exploring connecting the public realm to the stacking tower. The journey from beginning to end

Figure 72: Two stacked towers with a fluid triple volume ground (public) realm
Figure 73: Exploring the reflection of the interior movement on the exterior building shell

Figure 74: Expressing movement through the roof planes themselves, intersecting and crashing into one another

Figure 75: Internal movement ramps undergoing further progression, movement is very much visible to the external viewer

Figure 76: Exploring the use of structural elements internally and externally to hold the elaborate floor system up and possibly create the structure for the building envelope
Accessibility, Circulation systems and Narrative Movement

“When architects refer to design they cast it as a mental activity that is concerned with arranging forms, spaces, programme and materials. When they speak about a building they often describe it as a narrative invoking a hypothetical viewer and a journey through hspace. Thus while design is portrayed as an activity of the mind, a building is seen as something to be experienced. This experience follows a route and unfolds in time...to achieve spatial drama and heighten suspense.” [56].

Based on the length and irregular shape of the site, the next steps I took within the project, were to explore other aspects which aided in sequential fluid movement through a space. Things such as site accessibility, circulation (internally and externally), the idea of narrative movement and ultimately the ability to combine an outside circulation route with an internal narrative route, were all issues I addressed.

Below are a series of illustrations used to explain the process of accessibility, circulation and narration in architecture when dealing with a long, irregular shaped site.

Accessibility that deals with a long site

Figure 77: Expressing the basics of building accessibility

Figure 78: describes singular typical & easily secured way of accessing a building

Figure 79: two entrance approach from either end of the site. Securing of two access points, results in two entrance lobby’s
Figure 80: Due to bigness and strange length, shape and size of site, you have numerous entrances coming from all angles penetrating the space. The difficulty resides in securing so many access points and having multiple entrance lobby’s.

Figure 81: In conclusion, the easiest way to deal with multiple accessibilities, is to have them all arrive at the same central space & then disperse from there. One entrance lobby, securing mainly the space all visitors arrive at, only if it is not diverted anywhere else along the route toward the lobby.
Circulation that deals with a long site

Based on the length & shape of the site, coupled with the surrounding motions, typical round about core circulation, as one would usually do with a multi-programmed stacked space, will not work in this particular situation.

Here, a more linear movement, coupled with the chaos of accessing from all sides of the site would be much more appropriate.

Figure 82: Typical round about core circulation

Figure 83: desired site circulation runs along the long axis of the intended structure.

Resulting in a meandering type motion which ultimately creates a journey through the building. Here, the folding plane system, with its winding movement through the spaces, due to the multiple levels created, creates a much more interesting experience for the user of the building.

Figure 84: Meandered site movement
Narrative movement based on accessibility and circulation of a long site

Based on the resultant multiple accessibility points and folded circulation routes due to the length of the site, as illustrated in the previous section, the idea of the journey or narrative through the internal spatial structure, as well as immediate external surrounds, was explored. This meandering movement through the site/building would begin to relate to the idea of time, and the experience of the user through this dimension. What one would see along the journey approaching by foot, by car, and coming from Woodstock Station, were aspects looked at in elaborating the spatial drama/experience of the buildings surrounds. How different accessibilities would result in the experience of varying spatial dimensions, how they would merge together, and ultimately sew an array of images for the user, through its spatial qualities and unravelling, the process of change.

Once inside the building, the meandering of the user from the entrance point to the 'end' of the building (the highest level in the media library) creates a strong visual link towards Cape Town CBD. Here, on the uppermost floor, the juxtapositioning between the physical city of bricks, and the conceptual city of pixels and virtual information is experienced and sub-consciously brought to the users attention. the link between what was, and what is, is evident.
Spatial organisations and Layering systems

Internal spatial organisation, along with the layering of multiple internal systems of information and virtuality were addressed to create an interconnected network where the merging of movement, mass and skin was explored.

This building is essentially made up of two major systems of organisation, public and semi-private space. With the ground plane mostly becoming an entirely public realm, an extensive horizontal planar area of functions and events, running through the entire site is accessible to all. The more private areas, found at either end of the building/site, have a more vertical stacked organisation of different functions, all taking place on different floors.

The layering of multiple elements to make up the whole was an important aspect within the aspect of a heterotopia, with various functions, elements and ideas layered one on top of the other, merging together under one unified roof. The diagram below indicates this initial exploration of elemental spatial and structural layering within my design, breaking important components into their most basic representation.
Iconic attractor in the landscape

Lastly, the importance of the ability to be seen, with all the constantly fluid movement systems surrounding the site, was an issue which needed to be addressed through boldness. Based on the site location, the unwelcoming surrounding buildings, and the ‘passing through’ regularity of the area, something iconic and eye-catching within the landscape was crucial for the buildings survival. Below are illustrations of my attempt at redirecting focus towards my building. An obscure abstract concept, coupled with an obscure/abstract iconic structure.
Sketch Proposal – Building Design

Based on the initial conceptual ideas unpacked, the first set of sketch plans, sections and elevations were produced.

Figure 91.1: Plan Exploration - Accessibility, folding surfaces & sequential movement
Figure 9.2: Initial floor plan layout
Figure 92: Initial elevation and section layout
Figure 93: Initial Internal Perspective sketches
“Whilst a non-local trans-urbanism is in the making, freed from a fixed geometry, the virtual city will not be the post-physical city, but a transmutation and a transgression of the known, interwoven into real urban life.”

Fahmi [2].
Chapter 5, the conceptual approach, set up the basic components that stitched together the complexity that this building would need to express, both internally and externally. This chapter aims to unpack those previously mentioned conceptual ideas in a more in-depth manner, address issues which were initially overlooked, and tackle areas which were not being expressed architecturally within the building itself, namely: Ideas of fluidity & transparency; The free plan; Continuous space to move through; Transcending boundaries between internal and external spatial flow; lastly, the creation of a building which mirrors its surrounding context motion & redirects attention towards it from the side lines. In so doing, create an extensively layered, richer understanding of the concept applied to the built form.

The importance of The Ground Plane
Since this is a building which functions within itself, the way in which the structure touches the ground and interacts with the surrounding area, is important. Also as to how it deals with the memory of the place.

"the trajectory that translates a conceptual design in a built, structurally stable and properly placed architecture in space, finds a crucial moment in the way in which the building touches the ground" Berlanda, Page [58].

The idea of the term ground can be thought of in two ways: the first, is that of the physical layer of the earth's surface on which one would begin to build; the second, is a symbolic one which looks at it as a mere starting point of an idea or concept, which will be added to or built up over time—a layered system of memory of the building over a period.

That being said, in this particular project the ground floor becomes a crucial, almost sculptural, element within the building and evolves into a triple layered system of movement, in order to link all three building components to one another.

The manipulation of the ground, for this particular project, is inseparable from the entirety of the building, and holds quite a strong presence in comparison to other elements. With the use of folding surfaces and elements, the ground floor was able to become much more extensive and provided more public space to be utilised on a relatively lengthy but narrow site. Here, the ground is considered the primary intervention within this design approach.

Folding the Ground Plane
CREATING AN INTERLINKED 3 LAYERED PUBLIC REALM

Figure 94: Looks at folding the ground plane—how it extends the public realm by becoming 3 layers which sweep one into the building, with its folding towers on either end. Ultimately connecting to the memory of the space.
The idea of the “street”, pulling one into the building

“Francesco Careri believes that there is no distinction between walking and designing, and that walking is an “esthetic tool” simultaneously an act of perception and creativity, of reading and writing the territory.” Berlanda, Page 67 [58].

In order create a more inviting and welcoming building, one which was not incredibly stark and over-bearing to the average passer-by, certain steps needed to be taken to make the building more “open”. The first, was the setting back of the building from the sites edge, in so doing, create a much less intimidating façade for the man in the street. The second, and most important, was to subconsciously avert attention from the pavement along the site, and gradually sweep the individual into the building.

This was where the idea of an internalised “street” was born. Now, a pathway which ran from the outside pavement area along the site, extended to become a pathway which cut directly through the building itself. This path, which essentially connects two streets with one another, allowing access from either side, is magnified with a light roof-scape floating above the route. All allowing the individual to arrive at the entrance/lobby area of the building.

Figure 95: Exploring the idea of the pedestrian street
Exploring the Idea

- What happened here?
- What happened here?

Currently does exist, per interpretation.
The free plan – expressing key vertical elements

“Le Corbusier in a passage from his Precisions: I was walking and suddenly stopped. Between my eyes and the horizon a sensational event has occurred: a vertical rock, in granite, is there, upright, like a menhir: its vertical makes a right angle with the horizon...this is a place to stop...the vertical gives the meaning of the horizontal. One is alive because of the other.” Berlanda, Chapter 5 [58].

With the ground/ horizontal plane, comes the inevitable vertical one. The presence of “the wall” is more than a mere support within architecture, it is an aid in expressing conceptual ideas. It signifies a place to rest, stop or amaze within the design. For this particular project, it is used to promote transparency and fluidity. Within this particular building design, minimal structural elements and signature vertical walls were used in order to transcend the boundaries between internal and external space, while also promoting free movement within.

However, due to the irregular shape of the site, typical orthogonal orientation usually associated with the free plan becomes distorted. Now, based on the surrounding flows and site shape, the free plan becomes somewhat compressed and ordered in its own unique manner. Creating an orientation of movement towards the tip of the site or building.

KEY WALLS AND COLUMNS PROVIDING STRUCTURE AND MINIMAL VERTICAL ELEMENTS TO PROMOTE FREE INDIVIDUALISED MOVEMENT THROUGHOUT

Figure 96: Compressing the vertical elements
TYPICAL ORTHOGONAL NATURE OF A FREE PLAN RUNNING ALONG 90 DEGREE AXIS

TAPERING AND COMpressING OF SITE RESULTING IN COMPACT / SKewed ORGANISATION OF FREE PLAN CONCEPT

DIAGRAMATIC PLAN OF SPACE TRANSCENDING BOUNDARIES BETWEEN INTERNAL AND EXTERNAL SPACE

SURROUNDING MOVEMENT RAILWAY PATH
The organization and celebration of all movement systems

In order to express the idea and importance of movement within the buildings internal spatial construct, the shifting forward of all public and semi-public stairwells and lift shafts were now outwardly expressed on the buildings main façade. Along with the triple ground ramp system sweeping in viewers from the outside, these two primary layers of circulation would activate both the street and internalised layers within the building. With most public circulation located along the triple ground ramp; semi-public circulation of stairs and lift shafts located within the stacked towers found on either end of the building/site, a continuous flow of internalised movement throughout the building would now be celebrated and visible to even those driving by.

Coupled with the mere expression of movement systems within the building, another layer of movement expression was also established. The idea of user movement happening at different paces was also applied onto the idea of fluidity and movement. Now, public space is associated with gradual wondering movement which naturally flows, whereas semi-public/private space has stepped or vertical core movement accessibility which is direct, faster and much more focused. This notion of moving through the internal spaces within the building at different paces adds another intended element of time towards the construct of the multi-narrative sequence of events, which will be explained later.

Figure 97: Movement systems
Diagrammatic Plan of Initial Movement Systems

- Stacked Stairwell
- Vertical Lift Shaft
- 3 Layered Interconnected Ground Floor Plane Ramps

Narrative Movement

Outer Circulation

Hybrid Circulation
The idea of the thick wall
Essentially considered the backdrop of the building, this infrastructural element became a crucial organisational component that contributes to the entire structure. This solid, four to five metre deep box or “thick wall”, acts as the data centre/core of the machine, where all servicing points and connections are housed within its depths. As well as also performing solar, acoustic, spatial and functional properties toward providing the perfect environment for the internal spatial experience of the user.
With all servicing pipes, HVAC systems, electrical conduits, lighting and other elements masked behind its uniform façade, the “thick wall” even houses furniture elements within its depth. With boxes being pushed in and protruded outwards, it becomes a functional component to organise internal spatial built in units.
A giant servicing box, where all radiates from within.

Figure 98: The plug-in wall
Exploration of the Thick Wall as an Organisational Component

3D illustration showing elements attaching themselves to the 'backdrop' of the building.
Multiple narratives – non-linearity in architecture

Kenneth Frampton said that “the ground is kinetically experienced through the gait, that is to say through the locomotion of the body and the sensuous impact of the movement.” Berlanda, Page [58].

Simply put, through the experience of the landscape, gained by physically moving through it, architectural experience is established as well.

The narrative approach in architecture, is one of creating a journey for the user to experience through space and time. It is typically used to create spatial drama and heighten suspense within the internal construct of the building.

The idea of a non-linear sequential movement through space, however, opens up the user to multiple interpretations or journeys within the building. Here, overlapping layers of multiple systems change one's perception of the space as you venture through the irregular sequence of events.

In non-linear patterns, the movement and its direction relate to disassociated sequences. Sequence draws upon devices shared by non-linear narrative: paths fragment and become disconnected, overlaps sever an expected continuation of movement, and abrupt endings fracture the connection of one place to another. While individual portions of path may be linear, through the use of these devices the sequence as a whole becomes non-linear.

When referring to the programmatic connectors happening within the building, multiple narratives or a non-linear sequence of procession is created. As one moves and interacts with all these different functions and facilities housed under one roof (typically contrasting programs as one would find within a heterotopia) this movement of digital information is based on an interconnected constant 24 hour linkage of elements interacting with one another. A constant intertwined trajectory of movement routes happening within the building, relating to the 24 hour, 7 days a week cycle of digitized flow – making a never ending loop of digitised activities.

The Tower of creation, processing platforms and dissemination beacon, all run independently but whose activities are interlinked through raps of time and movement running throughout the building – creating links, shared moments and spaces within the building – integrating the programmes, circulation & structure, all ultimately contributing to the spatial experience & mental map of the place.
Figure 101: Programmatic connectors within the building- creating multiple narratives at a time.
Design Development - Building Proposal

Based on the design development ideas unpacked previously, these intermediate diagrams, plans, sections and elevations were produced.

I approached the design in such a manner where I started to unpack many important elements within the building. In so doing, hopefully provide some form of clarity as to what was occurring within the building and how they’ve been translated architecturally and make up the spaces.

Accessibility (now all essentially in one place) with workers receiving a different entrance, pedestrian strip as it drags one into the building, important structural elements and roof segments which create strong directional axis/lines that intersect and interact with one another to play with internal lighting qualities. Ultimately, how all the elements are broken down and make up the entirety of the building.
Figure 102: A compilation of how the building works in its entirety through simple elements.
Figure 103: Plans, sections, elevations
Figure 104: Exterior building renders
“At a time when the plan and section of buildings are frequently determined by the logistics of fast construction, the skin that envelopes those spaces, whether revealing or concealing, dynamic or static, plain or patterned, not only affirms the physical appearance of architecture, but is also key to its character, performance and environmental behaviour.” Carter, Page 42 [11].
THE BUILDING ENVELOPE

Acting as the primary mediator between the interior and exterior building conditions, the building envelope’s most important aspect, is to protect its inhabitants from climatic extremes. Its purpose is to moderate those extreme conditions experienced externally, in order to create a more comfortable and acceptable interior condition for its occupants.

As architecture has progressed over the years, with the aid of Technology, the building envelope now has the ability to contribute so much more towards the improvement and performance of the building, both structurally, as well as environmentally. It is no longer just seen as a mere façade, but a contributing element, amongst the various other elements all working together to form a space which is seemingly together, and at the same time completely separate.

For this particular section of the project, however, I have chosen to explore and focus my attention towards the structural implications and freedom that the building envelope allows towards the internal make-up of the programmatic functions within. All of which is strongly linked to new modes of space making in the age of the network, based on the concept of layering systems which work independently with one another i.e. ideas of skin, mass and flow, and how they interact within an entirety.

Bigness - the ideas of building mass

“By randomizing circulation, short-circuiting distance, artificializing interiors, reducing mass, stretching dimensions, and accelerating construction, the elevator, electricity, airconditioning, steel, and finally, the new infrastructures formed a cluster of mutations that induced another species of architecture. The combined effects of these inventions were structures taller and deeper-Bigger-than ever before conceived, with a parallel potential for the reorganization of the social world- a vastly richer programation.” Koolhaas, Page 498 [8].

With the emergence of gigantic building structures, certain theorems have been established which are typically associated with large scale buildings or “Bigness”, some of these ideas include:

Once a structure reaches a certain mass, due to its large scale, it is no longer able to be guided by a single architectural idea, but a combination of architectural components or parts which ultimately make up the whole.

Figure 105: Parts of a whole
Due to the sheer size of the building mass, the distance between the building skin and its centre become so far that the façade is unable to accurately portray the multitude of activities taking place within the building internally. Now, the buildings skin is seen as a separate entity to the internal structure itself, each dealing with separate issues. The skin offers outward stability, whereas the interior deals with the functioning and programatics of the spaces.

The buildings disregard for all existing acceptable architectural traditions, create a complete break with its surrounding context. In fact, it is seen as an ambiguous component within the urban fabric, merely co-existing, using its magnitude as a way to relate to the people as an attractor.
Testing the skin over floating planes – the looping, unifying, continuous retaining element

Despite the ideas of Bigness completely separating the interior from the building skin, and dealing with them independently, my attempts at creating more of a link between these elements have been expressed through various conceptual tests. By draping, interlocking, looping and weaving the building skin, in response to the interior floor system, these various illustrations to follow, show the possibility of a connection from interior to exterior. Therefore, even though they may not be structurally dependent, for each system does in fact stand structurally independent, they do in fact still relate on a conceptual level.

Figure 108: Test 1 - trying to create a continuous loop through the building

Figure 109: Test 2 - introducing a secondary material or element to provide closure

Figure 110: Test 3 - using two material/ elements – both looped to create an enclosed mass
Figure 111: Test 4 - adding the additions of a third component (glazing) to add lighting within the space.

Figure 112: Test 5, 6 & 7 - Various options which use the three elements, looped, to create a uniform building mass.
EXPLORING SKIN AS STRUCTURE

For a building to have an entirely independent skin/envelope, the floor system needs to be able to stand independently without any support from the outer walls (which is typical of all regular building structures). As indicated in the conceptual diagrams below, within this particular building, floor plates are held up by strategically placed concrete cores, loadbearing walls and columns.

Once the floor system is able to stand independently, the rhomboid steel frame, which is the primary element making up the free-standing building envelope, can be installed. This independent element envelopes the entirety of the free standing floor plate system to create an outwardly appearing uniform structure.

Figure 113: Conceptual diagrams of internal structure - concrete cores, loadbearing walls and columns work independently to hold up the floor plate system.

Figure 114: Conceptual diagrams of external structure
Rhomboid Steel Frame, works as an independent element and envelopes the entirety of the free standing floor plate system to create a uniform structure.

Figure 115: Building skin

The Detailed strip section to follow, illustrates an entire portion of the building edge, from basement to roof. With the 1:50 strip section, 1:10 details, and three dimensional representations showcasing exactly how the general structure of the building, as well as its skin, are put together over the entire form.

Three important skin details which deal with very distinct junction connections throughout the building envelope: floor, wall & roof are unpacked with notes.
EXPLORING SKIN AS STRUCTURE
THREE IMPORTANT SKIN DETAILS WHICH DEAL WITH VERY DISTINCT JUNCTION CONNECTIONS THROUGHOUT THE BUILDING ENVELOPE: FLOOR, WALL & ROOF

POLYSULPHIDE SEAL BETWEEN PANELS TO ALLOW FOR MOVEMENT

CONCRETE PANELS SLIGHTLY CANTILEVER FROM SUBFRAME TO PROVIDE TOLERANCE AGAINST AWKWARD JUNCTION POINTS

SEALANT WITH CAPping CHANNEL TO CONNECT 2 SEPARATE PANELS AND ALLOW SPACING FOR POSSIBLE ROPE LIGHTING INSTALLATION

STRUCTURALLY INSULATED PANELS TO SIT BETWEEN COLD ROLLED STEEL CHANNEL PIECES

STEEL SECTION/ANGLE USED TO ATTACH SEPARATE STRUCTURAL STEEL RHOMBID FRAME TO ONE ANOTHER

COLD ROLLED STEEL RUNNER USED TO ATTACH CEILING BOARD

CONCRETE PANELS FIXED FROM BEHIND, TO SUB-FRAME CHANNELS WITH CLIPS. HIDDEN CONNECTIONS CREATE A MORE SEEMLESS UNIFORM FLUID SKIN/FACADE

SUB-FRAME CONNECTORS WELDED ONTO STRUCTURAL STEEL RHOMBID FRAME

Figure 116: Detailed diagrams with notes
SCREW LAYER WITH FINISHED FLOORING

STRUCTURAL SLAB: CONCRETE FILL REINFORCED WITH PROFILED METAL DECKING TO CREATE DIAPHRAGM ACTION

ROOF JUNCTION DETAIL

TINTED DOUBLE GLAZING PANEL

PLANAR BOLT FIXING SYSTEM USED FOR DOUBLE GLAZING PANELS

POLYURETHANE SEALER BETWEEN PANELS TO ALLOW FOR MOVEMENT

SUB-FRAME CONNECTORS WELDED ONTO STRUCTURAL STEEL RHOMBUS FRAME

COLD ROLLED STEEL CHANNEL PIECES ATTACHED TO WELDED CONNECTORS TO ACT AS SUB-FRAME FOR GLAZING PANELS

HOLLOW STRUCTURAL STEEL RHOMBUS FRAME

STRUCTURALLY INSULATED PANELS TO SIT BETWEEN COLD ROLLED STEEL CHANNEL PIECES

SCREW LAYER WITH FINISHED FLOORING

CONCRETE PANELS FIXED WITH SUB-FRAME CHANNELED WITH CLIP HOLLOW CONNECTORS TO CREATE A TAPERED UNIFORM FLUID LAMINATE

CONDUCTS TO BE THREADED THROUGH FLOORS TO CREATE SUPER INTERIOR SPACING

DROPPED CEILING ACOUSTIC PANELS WITH LIMITS FIXED TO STRUCTURAL STEEL MEMBER EX-SECTION

METAL FLASHING TO SIT OVER TOP STRUCTURAL CONCRETE WALL WITH STEEL BRACKET AND RUBBER BEAD TO HOLD BOTTOM WALL PANEL

C-CHANNEL WITH ROOF LIGHTING RUNNING ALONG EDGE OF FLOOR

FLOOR WALL JUNCTION DETAIL

FLOOR/WALL JUNCTION 3D DETAIL

WALL PANEL 3D DETAIL

WALL PANEL DETAIL

NOT TO SCALE
EXPRESSING THE BUILDING CONCEPT THROUGH THE TECHNOLOGICAL MAKE-UP OF THE STRUCTURE ITSELF

There are two ways of dealing with the building service elements, unfortunately due to the limited time constraints I have chosen to only invest in delving into one of these.

The first approach, the one which I have chosen to illustrate in the detailed section and images previously shown, is that of concealing. Here, the creation of an internal environment which is smooth, seamless and continually fluid is expressed. Something which is not only expressed through the external façade, but the internal space as well. Here dropped floor/ceiling elements hide HVAC systems and conduits with grid like removable acoustic panelling, which make up the dropped ceiling, and allow the building to be internally flexible, in an industry which is constantly changing and upgrading itself.

The second option is one of exposure and revelation (information overload). Here, the floor slab is much less elaborate, (no need for dropped ceiling or floor panels), and all the information flow becomes visible to the user of the building. The possibility of a simple (triangulated) waffle slab could be used, with HVACs and conduits going in any direction they are needed, expressing the chaos and celebrating the service elements. All ultimately tied together by a beautiful uniform façade on the outside of the building. This system would be used in conjunction with the buildings plug-in backdrop wall. An infrastructural wall (4m thick) which houses all connection points within its depth. Becoming a giant sculpture of service elements where everything is set loose off the wall where light, water and air servicing radiate from within.

To the right, is a precedent example of a floor slab system which expresses services within a buildings structure, and what it could potentially look like if incorporated into my building.

Figure 117: Thick wall service plug in
Figure 118.1: The sponge slab system [60].

Figure 118.2: Image showing holedeck slab type solution [60].

Figure 118.3: The various stages of the framework building process [60].
By splashing virtuality onto the real world, representation of digital culture has put people into a space of 'total flow', with juxtaposition of their mental images calling to attention the nature of those other (unconscious) and (hidden) spaces within post modern cities Fahmi [2].
THE CULMINATION OF BUILT FORM

The final chapter in concluding the design projects progression throughout the year, aims to deal with and showcase the final plans, sections, elevations and all relevant imagery which contributed towards the complete formation and presentation of the intended building. Certain ideas which have emerged towards the end of the process will briefly be elaborated on in order to create a succinct understanding of the building's final form, before the relevant panels are revealed.

**Giving back to the street**

By stepping the building back significantly from the site's edge, specifically the corner, the creation of a covered bus terminal and outside stepped terraced landscape, which sits directly outside of the building's main entrance becomes a hub of activity throughout the day. On a road which is continually immersed in commuter movement, this sector gives back to the street by providing seating and coverage for those individuals bustling back and forth on a daily basis, and also provides a constant influx of people towards the building and its surrounding area.

Figure 119: Illustrating the intended activity along the building's edge.
The change to the skin
Based on the varying surrounding conditions, the buildings skin, which envelops the built form together, needed to respond accordingly. Now, the continuous looping skin changes its materiality when dealing with the railways edge, as opposed to the busy mobile street edge. The railways edge, with its direct north light, receives an additional layer of vertical slats to block out the light and create an additional sound barrier between the building and the passing trains. Whereas the street edge, is typically draped in mostly glass with a rhomboid frame, with slivers of typical storefront glazing tying these varying elements together to form a continuous looping band.

Altering the stacking floor system:
A building of this particular size means it requires a certain amount of provisional parking bays, with the required area calculated based on the 100m² ratio found in the City of Cape Town Zoning Scheme Regulations, 160 parking bays needed to be allocated. With this in mind, an additional floor slab, which sits below the auditorium level and is accessible from the corner point of the site, was added. In so doing, provide the required bays, while still maintaining the ideals of the building without it being overtaken by any vehicular requirements.

Figure 120: The looping skin
Figure 121: Concept models illustrating floor plate system
Figure 124: Elevations NOT TO SCALE
Figure 125: Sections

NOT TO SCALE
LAYERING SYSTEM
A BREAKDOWN OF VARIOUS
ELEMENTS WHICH MAKE UP
THE BUILDING STRUCTURE

THE SWOOPING ROOF

VERTICAL SHADING SLATS

THE WRAPPING SKIN

THE PLUG-IN SERVICES WALL

FLOOR PLATES/ STACKED TOWERS

Figure 126: Exploded Axo
With the emergence of the invisible networks of new information technologies, urban space has lost its physical barriers and become a field of subjectivities, flows, pulses and intensities. Everyday experiences are mirrored in another reality, between the virtual realm of the information machine and the actual physicality of the city. An architecture capable of addressing and creating a link between these two worlds; the physical urban city and the virtual realm of technological bits is beginning to present itself. A new architectural environment where the physical and the virtual meet, creating the possibility of a dialectic merging of very real city of bricks and a conceptually experienced city of pixels.
BIBLIOGRAPHY


28. http://www.slideshare.net/its_just_bm/presedence-study. Figure 30 - Designing the structure around the notion “less is more”. Retrieved March 30, 2015.
39. https://m2.behance.net/rendition/pb/17268155/disp/f7fa64f239de93e56fe3af74bed783. Figure 39 the change in materiality expressed through the Mobius loop. Retrieved September 25, 2015.
45. https://gonsamaria.files.wordpress.com/2014/03/cri_2621.jpg. Figure 46 sketch diagrams of red follies found throughout the park. Retrieved July 20, 2015


92. Tatyana Pankratov Yekutieli and Yasha Jacob Groberman, 2014. CONTROLLING KINETIC CLADDING COMPONENTS IN BUILDING FAÇADES: A CASE FOR AUTONOMOUS MOVEMENT. Faculty of Architecture and Town Planning, Technion – Israel Institute of Technology, Haifa, Israel.
93. Przemyslaw Kołodziej and Jozef RAK, 2013. RESPONSIVE BUILDING ENVELOPE AS A MATERIAL SYSTEM OF AUTONOMOUS AGENTS. Wrocław University of Technology, Wrocław, Poland
ALL IMAGES, DIAGRAMS, PHOTOGRAPHS AND/OR ILLUSTRATIONS NOT REFERENCED WITHIN THE DISSERTATION REPORT ARE THAT OF THE AUTHOR, SUAAD PATEL
THE ILLUSION OF TIME
suaad patel

"A STUDY OF HETEROGENEOUS INTERSTICIAL SPACE AND THE INTERPLAY OF DYNAMIC SUPPORT SYSTEMS AS AN ARCHITECTURAL STRATEGY TO INVESTIGATE NEW IDEAS OF SPACE MACHINES.
IN THE END OF THE PATHWAYS."
BUILDING SECTIONS
ILLUSTRATING INTERIOR LIGHT QUALITY AND ATMOSPHERE
BUILDING ELEVATIONS
ILLUSTRATING EXTERIOR QUALITY AND ATMOSPHERE
LAYERING SYSTEM
A BREAKDOWN OF VARIOUS ELEMENTS WHICH MAKE UP THE BUILDING STRUCTURE

THE SWOOPING ROOF
folded roof system expressing building interior qualities, externally.

VERTICAL SHADING SLATS
vertical metal slats creating dappled interior light quality & obscuring views toward harsh railway yard.

THE WRAPPING SKIN
a continuous looping envelope unifying the internal stacked floor system & responding to street edge conditions, through changing materiality, to create links between interior and exterior.

THE PLUG-IN SERVICES WALL
the building "tablet case" where all servicing points & connections are housed within.

FLOOR PLATES/STACKED TOWERS
layered floor plate systems, used to create opportunity for multiple & varying activities to happen simultaneously.
STRUCTURAL VERTICAL ELEMENTS
Concrete cores, loadbearing walls and columns working independently to hold up floor systems.

UNIFIED MOVEMENT RAMP SYSTEM
A compilation of movement layers, ramps and stairs, which make up the entirety of the public ground system.

GROUND TRIPLE RAMP SYSTEM
Triple layered system of movement linking various ends of the building to one another, while creating an extended public realm to move through.

OUTSIDE LANDSCAPING
Outdoor area engaging with street edges, promoting activity & leading one into the building.

BASEMENT LEVEL
Submerged floor used due to its noise cancellation properties.
EXPLOREING SKIN AS STRUCTURE
THREE IMPORTANT SKIN DETAILS WHICH DEAL WITH VERY DISTINCT JUNCTION CONNECTIONS THROUGHOUT THE BUILDING ENVELOPE: FLOOR, WALL & ROOF WITH A LAYERING SYSTEM OF INDIVIDUAL ELEMENTS FLOATING PAST ONE ANOTHER, INTERACTING AT CERTAIN POINTS

ROOF JUNCTION 3D DETAIL

POLYSULPHIDE SEAL BETWEEN PANELS TO ALLOW FOR MOVEMENT

CONCRETE PANELS SLIGHTLY CANTILEVER FROM SUBFRAME TO PROVIDE TOLERANCE AGAINST AWKWARD JUNCTION POINTS

STEEL SECTION/ANGLE USED TO ATTACH SEPARATE STRUCTURAL STEEL RHOMBHID FRAME TO ONE ANOTHER

COLD ROLLED STEEL RUNNER USED TO ATTACH CEILING BOARD

SUB-FRAME CONNECTORS WELDED ONTO STRUCTURAL STEEL RHOMBHID FRAME

CONCRETE PANELS FIXED FROM BEHIND TO SUB-FRAME CHANNELS WITH CLIPS. HIDDEN CONNECTIONS CREATE A MORE SEEMLESS UNIFORM FLUID SKIN/FACADE

STRUCTUALLY INSULATED PANELS SIT BETWEEN COLD ROLLED STEEL CHANNEL PIECES

SEALANT WITH CAPPING CHANNEL TO CONNECT 2 SEPARATE PANELS AND ALLOW SPACING FOR POSSIBLE ROPE LIGHTING INSTALLATION

HOLLOW STRUCTURAL STEEL RHOMBHID FRAME

TINTED DOUBLE GLAZING PANEL

PLANAR BOLT FIXING SYSTEM USED FOR DOUBLE GLAZING PANELS

POLYSULPHIDE SEALER PANELS TO ALLOW FOR MOVEMENT

SUB-FRAME CONNECTORS WELDED ONTO STRUCTURAL STEEL RHOMBHID FRAME

COLD ROLLED STEEL CHANNEL PIECE ATTACHED TO WELDED CONNECTORS ACT AS SUB-FRAME FOR GLAZING PANELS

ROOF JUNCTION DETAIL
SCALE 1:10
STRUCTURALLY INSULATED PANELS TO SIT BETWEEN COLD ROLLED STEEL CHANNEL PIECES

SCREED LAYER WITH FINISHED FLOORING

CONCRETE FILL RE-INFORCED WITH PROFILED METAL DECKING TO CREATE DIAPHRAGM ACTION

C-CHANNEL WITH ROPE LIGHTING RUNNING ALONG EDGE OF FLOOR

SUB-FRAME CONNECTORS WELDED ONTO STRUCTURAL STEEL RHMBOID FRAME

CONCRETE PANELS FIXED FROM BEHIND TO SUB-FRAME CHANNELS WITH CLIPS. HIDDEN CONNECTIONS CREATE A MORE SEEMLESS UNIFORM FLUID SKIN/FACADE

METAL FLASHING TO SIT OVER OUTER STRUCTURAL CONCRETE WALL WITH STEEL BRACKET AND RUBBER SEALANT TO HOLD BOTTOM WALL PANEL

L-BRACKET FIXED TO WALL WITH LIPPED CHANNEL AND METAL FLASHING OVER TO STOP WATER PENETRATION FROM ENTERING THE BUILDING
UNFOLDING NARRATIVE
EXPERIENTIAL MOVEMENT THROUGH
THE BUILDING