University of Cape Town
School of Architecture

Design Dissertation

M (ARCH) THESIS 2012

IMPEDING EFFICIENCY
DESIGN DISSERTATION

"A study of the threshold in architecture as an architectural strategy to enhance the experience of space, through the design of a crematorium for the city of cape town at the glencoe quarry"

ziyaad majiet

Compiled by: Ziyaad Majiet

Supervisors: [illegible] Coetzee, [illegible] Steenkamp + Jo Noero

I'd like to thank my parents...

For their unwavering support, patience, love and financial backing.

I'd like to thank the rest of my family and friends...

Many of which have already moved onto the next phase of their lives in the form of their professional careers and / or marriage whilst I put myself through the ups and downs of architecture school. To my partner, a special thank you for your patience, love and for being my biggest fan.

I'd like to thank my lecturers...

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IMPEDING EFFICIENCY

DESIGN RESEARCH PROJECT.
APG5058S.

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 ZIYAAD MAJIET

OCTOBER 2012

COURSE CODE APG507W

COVER SHEET

STUDENT NAME: ZIYAAD MAJIET

STUDENT NUMBER: MJTZIY001

SUPERVISOR: JO NOERO, NIC COETZER

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2. I have used the Harvard convention for citation and referencing. Each contribution to and quotation in, this essay/report/project/paper ..... from the work(s) of other people has been attributed, and has been cited and referenced.
3. This essay/report/project/paper ..... is my own work.
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This sheet is an overview of the minimum requirements for any essay or written work you submit for all courses in the School. As this is only a brief summary, use the recommended resources for further direction.

Essay Structure

Thesis: No matter the purpose of the essay, you must have a thesis and build your paper so to explicate that thesis.
Outline: Your essay must have a clear and organized structure. Start by developing an outline. Break the essay down into the following categories:

Introduction: At least one paragraph which introduces the essay topic. It includes the thesis statement, usually as the last sentence in the first paragraph.
Body: Develop the themes and points that explicate your thesis in the body of the essay.
Conclusion: A final paragraph(s) that re-states your thesis and contextualizes or summarizes the body of the essay. Never add a new topic or point of explication in your conclusion.

Paragraphs: It is very important that you develop well-structured paragraphs. The rule-of-thumb is that each topic or theme is developed in a single paragraph. However, that rule may be modified if a paragraph becomes too long (which can be tiresome to read) or you have too many brief paragraphs (which are also tiresome). Include transitions at the end and beginning of paragraphs so that they flow together well.
Writing style: Your essay must be clear, concise, and flow smoothly. Academic essays require a certain degree of formality, but do not complicate the writing style or word choice unnecessarily. Utilize punctuation correctly! Check your grammar (pay particular attention that subject and verbs, pronouns and antecedent nouns agree)! Read your essay out loud to yourself to check for flow and clarity! **Proof-read and spell check!**
For further reading or assistance, see:
http://startup.curtin.edu.au/study_skills/writing.html, or http://www.lib.uct.ac.za/infolit/report.htm, or The Humanities Library at UCT has a large collection of writing skills reference books, or visit The UCT Writing Centre (http://www.ched.uct.ac.za/adp/writing/), which offers writing assistance to all students.

Referencing

All academic writing requires you to cite all the sources that you have read and consulted in the preparation of your work. Not citing all of your sources is an act of plagiarism: essentially the stealing of others' words, thoughts and ideas, and is treated as fraud. Students found guilty could at best fail their course, at worst face expulsion. Every single instance of using phrases and ideas that are not your own must be acknowledged.
Quoting: When you quote someone's words directly, you *have to place these words in quotation marks.*
Longer quotations, which you should use sparingly, should be "blocked" to make them stand out clearly. This means indenting and single-spacing the entire quotation, also possibly using a smaller typeface.
Referencing: You must choose one method of referencing (or citation) and use it consistently throughout your essay: either the Harvard system or the footnote (Chicago or Oxford) system. No matter which system you choose to use, the information you must ascertain and include is:

- **Name** of the originator(s) of the document or the part of a document you are using as a source.
- **Date** of publication (some citation styles give the date immediately after the author; otherwise after the name of the publisher). For an electronic resource, look for the date on which the document was produced or updated.
- **Title** of the publication (and, if it is part of a larger work, e.g. an article in a journal, or one paper in an edited collection, also the **title of the whole** publication).
- For an electronic resource only, the **medium**, which may be given as "Online" or "CD-Rom" in square brackets, or you may use "Electronic" if you are not sure whether the source is online or networked CD-Rom.
- **Publication details**: Place of publication and Publisher if the item is a book; Volume and/or issue number if the item is a journal. For an electronic resource give the **uniform resource locator** (URL) which may sometimes be given between angle brackets (< >). If the URL is very long, it may be written on two lines, but try to break a line only where a punctuation mark occurs and do not *add* a hyphen, as this will alter the URL.
- Inclusive **page numbers** if the reference is to an item smaller than a whole book.
- For an electronic resource, the **date** on which the document was last **accessed**, often in square brackets.

Harvard System

In the Harvard system, referencing is done by inserting the author surname and publication date in parenthesis within the main body of the text. For a complete guide to the Harvard system, see http://www.lib.uct.ac.za/infolit/bibharvard.htm.

Footnote System

In the footnote system, a reference in the text to another source is signalled by a numeral giving the number of the citation. This numeral corresponds to a numbered note at the bottom of the page (a footnote), or at the end of the paper. For a complete list and discussion of footnoting, see http://www.lib.uct.ac.za/infolit/bibchicago.htm or Turabian, K. 1996. *A manual for writers of research papers, theses and dissertations*. 6th ed. Revised by John Grossman and Alice Bennet. Chicago: University of Chicago Press.

"The manifestation of the threshold as an ambiguous , vague space which is open for interpretation by the user, encourages active engagement and a deeper, meaningful relationship between visitor and building."

DESIGN DISSERTATION
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Compiled by: Ziyaad Majiet (MJTIY001)

Supervisors: Nick Coetzer, Alla Steenkamp + Jo Noero

DESIGN DISSERTATION
CONTENTS

Compiled by: Ziyaad Majiet (MJTZIY001)

Supervisors: Nick Coetzer, Alta Steenkamp + Jo Noero

"This study seeks to investigate the manner in which people percieve space, with particular emphasis on the threshold as both a seperator and link. The threshold is explored as not merely a region which marks a boundary, but as a celebrated transtion space signifying the start of a new event / atmosphere / environment.

by focusing attention on the threshold spaces (internally and externally) and by allowing for a mulititude of transitions. the sensory experience is enriched as the user becomes conscious of his environment."

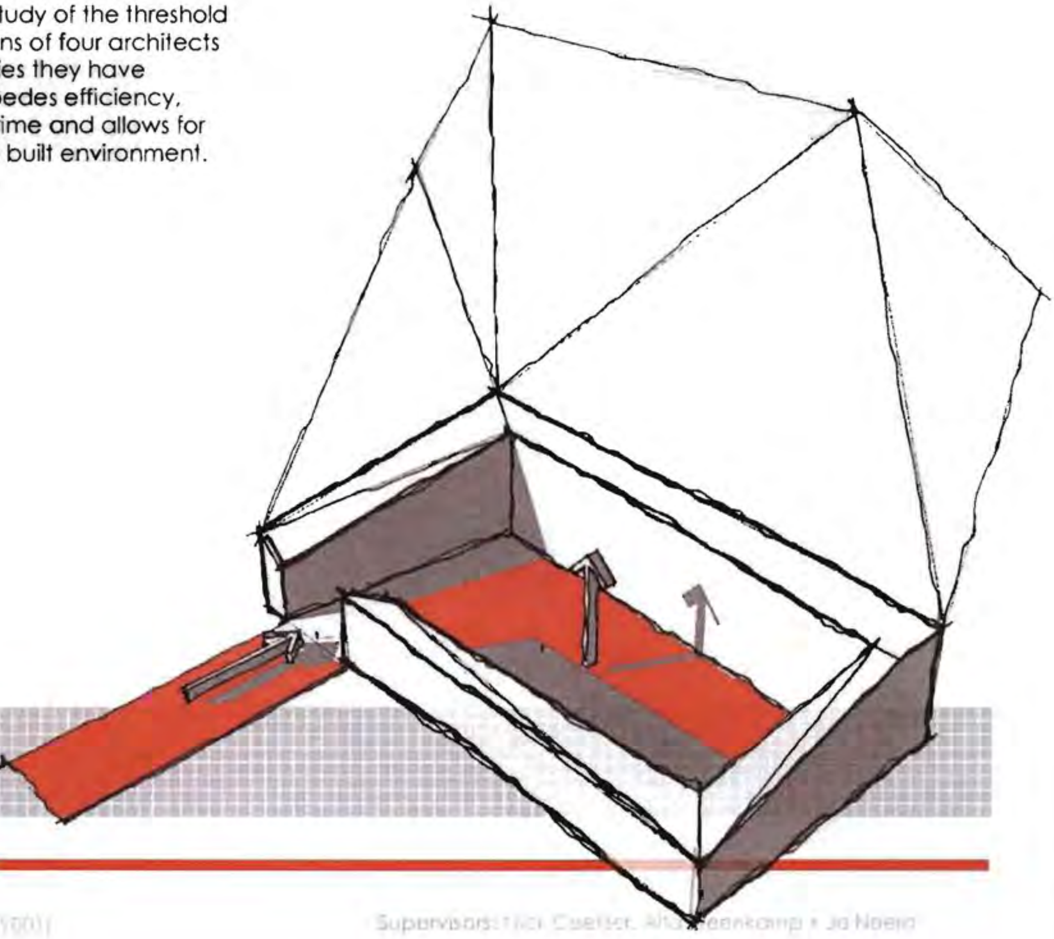
1

INTRODUCTION + PROJECT OUTLINE

Impeding Efficiency is based on my interest in the manner in which we experience space and in particular, the moment we become conscious of our surrounding built environment. The point of change between spaces, the threshold.

Contemporary society lives in fast-forward; everything we do has been streamlined, developed on principles of efficiency. This phenomenon has caused a divide between user and the experience of architecture.

We move rapidly, only with goal in mind, very rarely pausing, to adjust and reflect on our surroundings. This sparked a study of the threshold in architecture through the lens of four architects and the architectural strategies they have applied in a manner that impedes efficiency, hinders mobility, slows down time and allows for personal interpretation of the built environment.



INTRODUCTION
TO IMPEDING EFFICIENCY

Threshold Theory / Program / Ritual / Contemporary Mourning

The architecture of the crematorium celebrates the critical state of transition in the ritual of contemporary mourning, with particular emphasis on the threshold as both a separator and a link, in order to achieve a greater perceptual awareness through conscious engagement with the built environment.

The idea is explored through the following tropes:

A. the Crematorium program

An emotionally charged space which manifests itself as a set of episodes, fractured at the points of change in the process.

A.1 Introduction, transitions to...

A.2 Ceremony, transitions to...

A.3 Departure as final threshold

B. Ritual

The sequential nature of departing with the deceased allows for the exploration of the building as a journey, which makes the bereaved conscious of the state of transformation. Regardless of religious denomination, death is always regarded as merely a transition, from one reality to another.

C. Contemporary Mourning

Convenience is king in contemporary society; this in relation to the spatial dilemma the necropolis poses causes an awkward juxtaposition of life and death. Traditionally, cemeteries were regarded as relief spaces to the city which were accessible and multi-functional. However, over time we have conveniently forgotten, and banished the deceased to the peripheries of suburbia. The appropriateness of an urban crematorium which serves the public and private, results in the concept:

The Maitland Crematorium, Cape Town, South Africa

INTRODUCTION
TO IMPEDING EFFICIENCY

'Between worlds, at the threshold of life and death'

D. Threshold

The threshold is the mediator between polar opposites:

D.1 Life and death (Site selection)

D.2 Natural and man-made (Technology)

D.3 Public and private (Program and function)

D.4 Reality and fantasy (Ritual)

D.5 Above and below (Formal)

E. Perceptual Awareness

Rasmussen, in experiencing architecture says: "If the architect wants the building to be a real experience he must employ forms and combinations of forms which will not let the spectator off easily, but force him to active observation."

The architecture then should heighten the awareness of the changes in environment in order to achieve an enriched experience.

Design And Research Question

The role of the threshold in enriching the perceptual experience of space through the rituals and process of cremation.

The Maitland Crematorium, Cape Town, South Africa

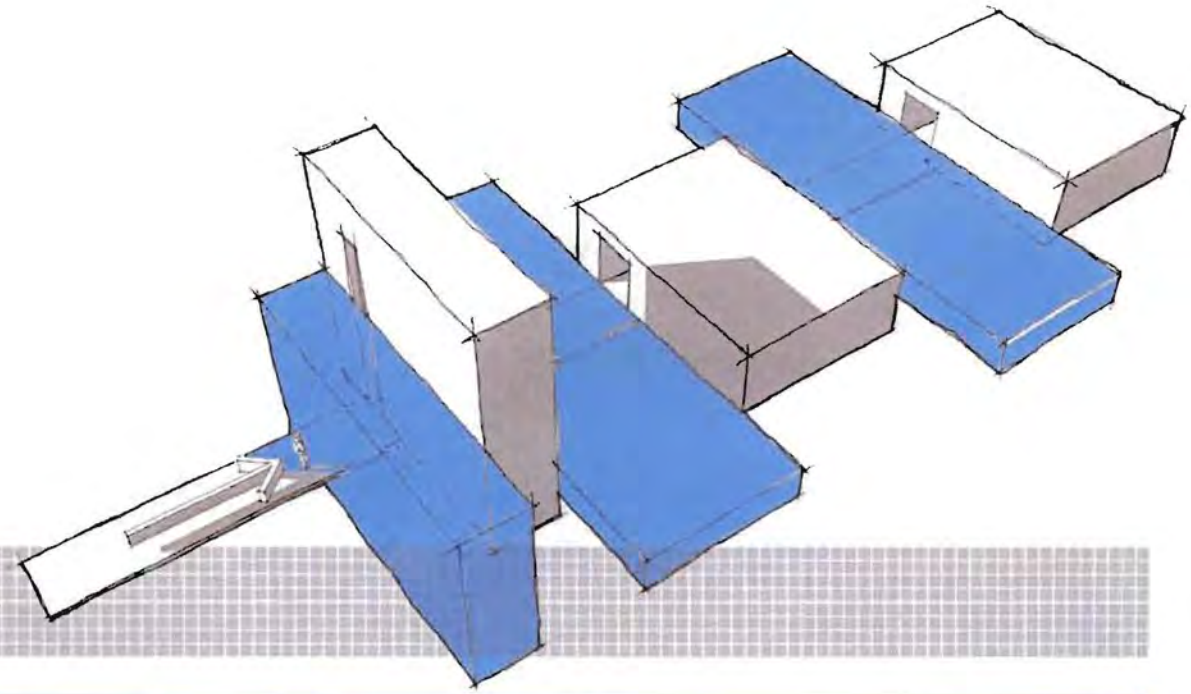
"A study of Aldo Van Eycks three occurrences of the threshold through the coming together of similar, heirarchical or contradictory spaces.

and... The authors threshold manifesto"

THRESHOLD
THEORY SUMMARY

My initial interest in the threshold was born out of my personal experience of our built environment. The theoretical investigation (on the work of Aldo Van Eyck, Herman Hertzberger, Kisho Kurokawa and Fumihiko Maki) was 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 the threshold (see conclusion)



Compiled by: Ziyaad Majiet (MJIZIY001)

Supervisors: Nick Shaffer, Ana Steenkamp + Jo Noero

THRESHOLD THEORY
INTRODUCTION

The modern movement's demise and a new direction through the idea's and work of Aldo Van Eyck, Herman Hertzberger, Kisho Kurokawa and Fumihiko Maki

The analysis of each architects work unpacked ideas relating to the perceptual awareness of space and the effect of allowing 'in-between' space, leading to ideas on how the threshold can be incorporated into buildings as a physical manifestation that forces the user into active engagement with their surroundings.

The hypothesis is centered on the question of human experience in architecture and the role of the transition space in making the user conscious of their environment. We rarely pause to adjust to new environments while moving through them. Rasmussen, in experiencing architecture says:

> "If the architect wants the building to be a real experience he must employ forms and combinations of forms which will not let the spectator off easily, but force him to active observation." Rasmussen (1964:59)

The architectural experience always starts with the eye and because of this we no longer feel the need to explore and engage further as our environment is interpreted from a distance via its surface value. There is a need for an architecture which places emphasis on the human perception, which addresses each of the senses. The study therefore seeks to examine the role of the threshold in enriching the perceptual experience of space through the work and theory of Aldo Van Eyck, Herman Hertzberger, Kisho Kurokawa and Fumihiko Maki.

The idea of 'in-between 'space came about in response to the end of the modernist movement. it was understood by many to be one of the lost qualities of architecture during the time. Modernism sought to create functional space, with strict boundaries between spaces of different hierarchies, forcing people to use it in its prescribed manner leaving little room for personal interpretation.

Four branches of re-consideration were explored through the theories of a number of architects at the time. These included:

1. The dimensions of space

Physical spatial characteristics are understood in a variety of ways including spaces which overlap, introducing an extended threshold and spaces which are pulled apart, introducing a third between

2. The dimension of time

The interpretation of traditional design in contemporary architecture relates to the dimension of time.

3. The dimension of the human

Multi-functional space

4. The dimension of the environment.

The introduction of natural elements into the design of the building

Aldo van Eyck and the 'In-between' theory

The 'in-between' theories of Aldo van Eyck lead to three understandings of the occurrences of in-between spaces:

1. Contradictory spaces coming together:

This type of space relates mostly to the relationship between inside and outside, manmade meets natural, different levels of privacy coming together, and contrasting materials being used together etc.

Van Eyck's Visser Houses explores the man made and nature meeting idea by overlapping the two, introducing wooden columns into the house as a gesture to the forest setting. In Van Eyck's Hubertus House, the relationship between inside and outside is celebrated by employing the idea of the 'vertical gap', a multi storey opening linking the two realms.

The architectural execution of Van Eyck relies on the coming together of two opposites. This awkward meeting presents an obvious tension resulting in the third space, the mediator. In this example, the polar opposite spaces take preference over the threshold.

2. Similar Spaces Coming Together

In this example, the threshold becomes a celebrated space, taken preference over the 2 similar spaces. The user becomes conscious of the transition due to its uniqueness amongst the similar spaces. Two spaces, holding the same importance, can be transformed into a special point in the journey through the introduction of a transition which marks the point of change dramatically. The administration block lends itself to this type of 'in-between'

3. Hierarchical spaces coming together

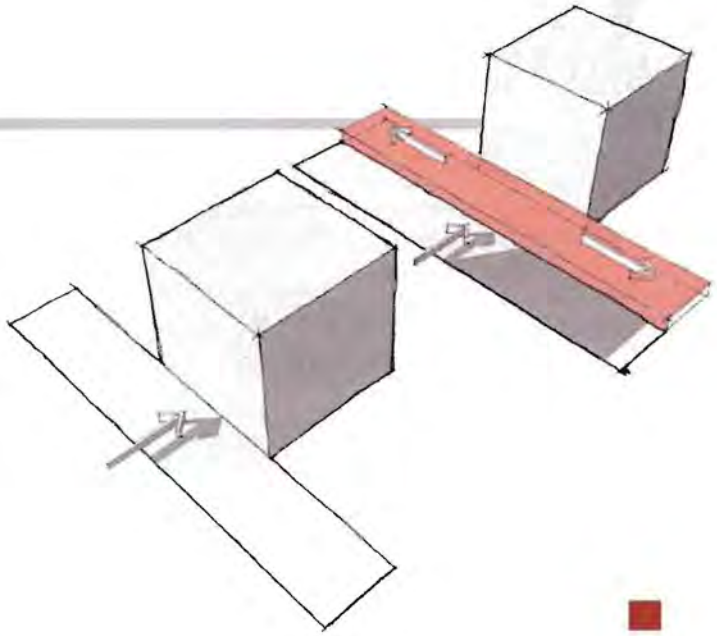
This type of space relates mostly to the views of both Aldo Van Eyck and Kisho Kurokawa on the 'Part and whole relationship' theories:

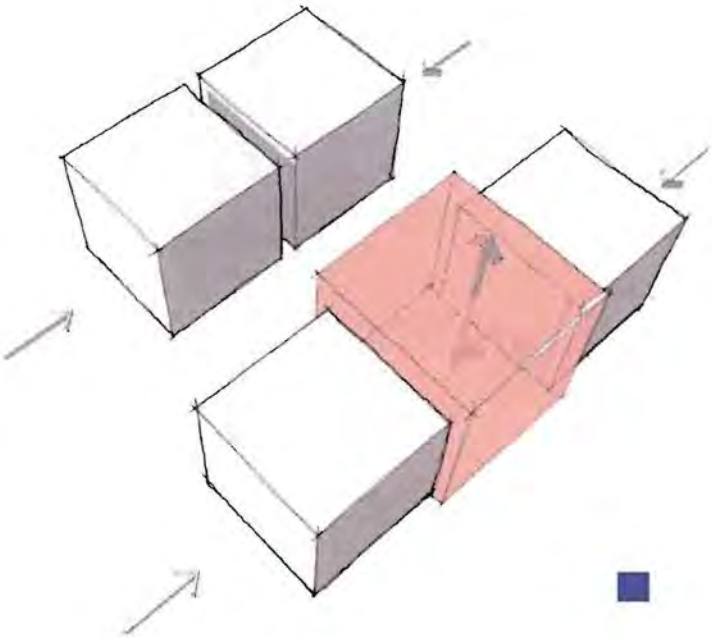
These transitions are important primers as they prepare the user for what's to come.

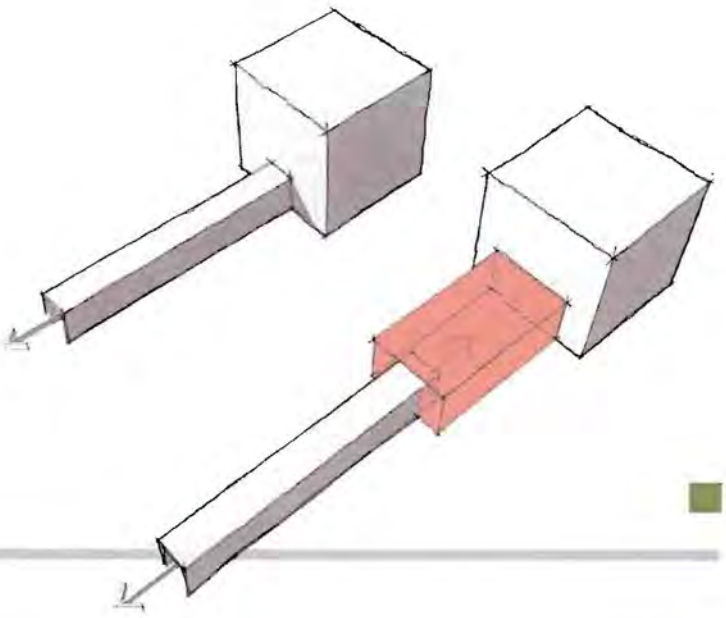
A - Contradictory Spaces

B - Similar Spaces

C - Heirarchical Spaces







THRESHOLD THEORY
ALDO VAN EYCK

Aldo Van Eyck, speaking on the threshold at the CIAM on the 'Philosophy of the door':

"...the world of the house with me inside and you outside, or vice versa. There's also the world of the street - the city - with you inside and me outside or vice versa. Get what I mean? Two worlds clashing, no transition. The individual on one side, the collective on the other. It's terrifying. Between the two, society in general throws up lots of barriers, whilst architects in particular are so poor in spirit that they provide doors two inches thick and six feet high: flat surfaces in a flat surface - of glass as often as not. Just think of it: two inches or a quarter of an inch if it is glass - between such fantastic phenomena - hair-raising, brutal - like a guillotine.

Every time we pass through a door like that we're split in two but we don't take notice any more, and simply walk on, halved.

Is that the reality of a door? What then, I ask, is the greater reality of a door? Well, perhaps the greater reality of a door is the localized setting for a wonderful human gesture: conscious entry and departure. That's what a door is, something that frames your coming and going, for it's a vital experience not only for those that do so, but also for those encountered or left behind. A door is a place made for an occasion. A door is a place made for an act that is repeated millions of times in a life time between the first entry and the last exit. I think that's symbolical. And what is the greater reality of a window?

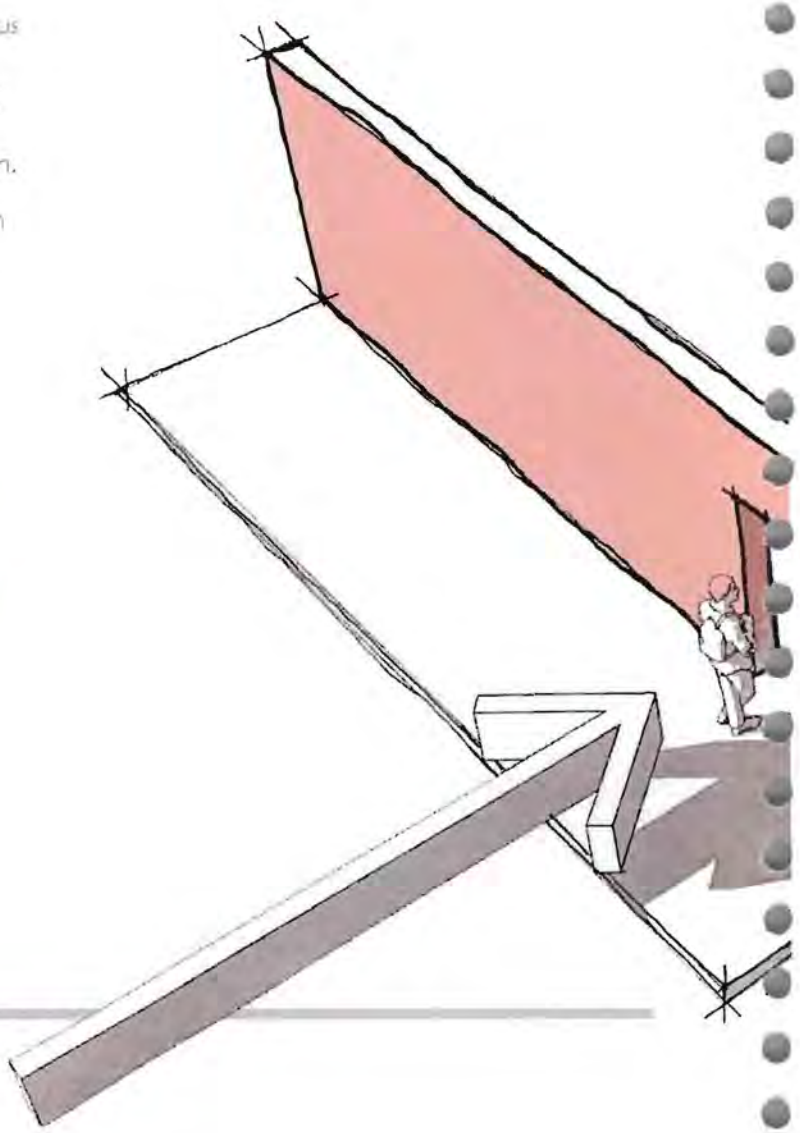
I leave that to you."

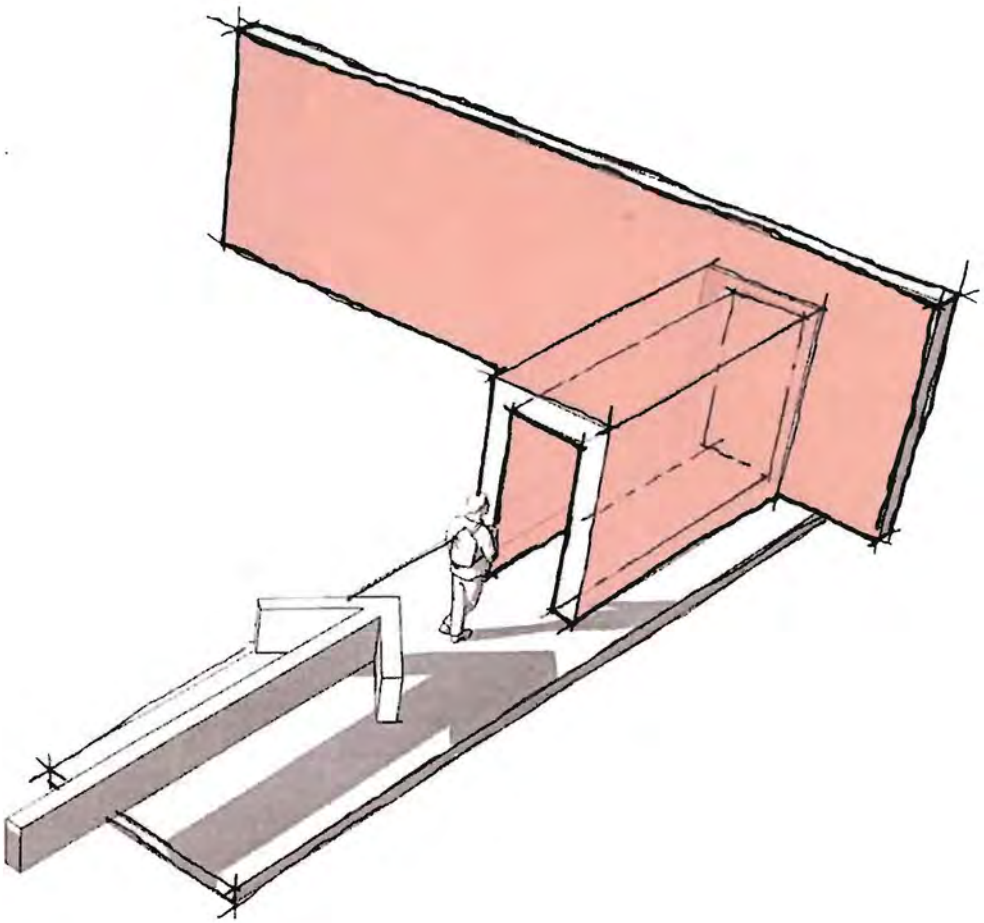
Van Eyck sought to create a physical manifestation of the interplay between public and private space. Connections between the part and the whole became a point of emphasis, allowing the point of contact between the two to become a space itself.

In the Amsterdam Orphanage, the 'in-between' is used in relation to his ideas on the city and his opposition to hierarchical development of it. Many 'in-between' spaces are created to break down the larger components of the program. The plan is arranged around a grid with two diagonal paths as the 'infrastructure', the program is then laid out as an extension of the diagonal grid. This system allowed the architect to create complimentary negative spaces to each positive space, creating an 'in-between'

A - Poorly articulated entrance threshold through door

B - Improved entrance threshold through door (Authors own)





THRESHOLD THEORY
ALDO VAN EYCK

The occupation of space is Zanzibar is contrasted with the occupation of space in New Orleans. The act of purchasing coffee is used by Van Eyck to explain his idea.

The appropriation of a ledge on the edge of the street as a trading area is spontaneous. The ledge has been adapted and in so doing it creates a third space between others. The ledge is no longer a ledge; it has become a point of trade. In contrast, the image on the right indicates a table, at the threshold between inside and outside. The table serves a similar purpose; it allows you to be caught between. In the example of Zanzibar, the threshold is a potent experience, one that allows you to perceive space through its occupation. This is the 'in-between' we should aim to design.

A - Condition A in Zanzibar

B - Condition B in New Orleans

Van Eyck, A . (1986) Zanzibar and New Orleans appropriation of space comparison [Photograph] in: Niet Om Het Even. Rotterdam: Stichting Rotterdam-Maaskant

THRESHOLD THEORY
HERMAN HERTZBERGER

Herman Hertzberger and the development of Van Eyck's 'in-between'

In Hertzberger's writings, emphasis is placed on the importance of the interface between inside and outside of the residential dwelling saying:

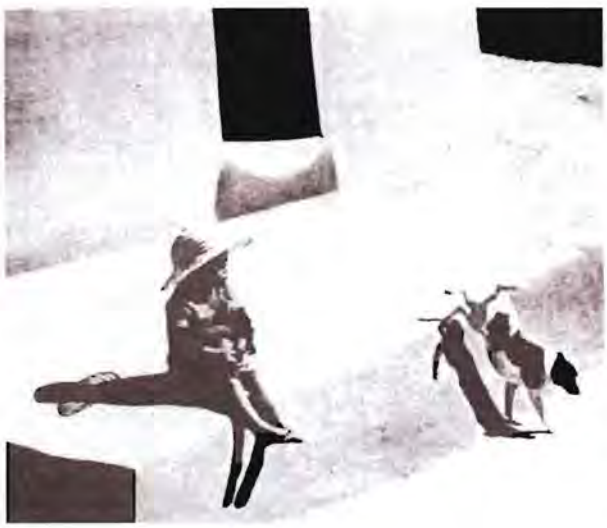
> "We are concerned here with the encounter between the street on the one hand and a private domain on the other."
>
> Hertzberger, H (2009: 15)

The example of a child being caught between worlds while sitting on a step outside the entrance of his home depicts the following scenario. He is caught between the

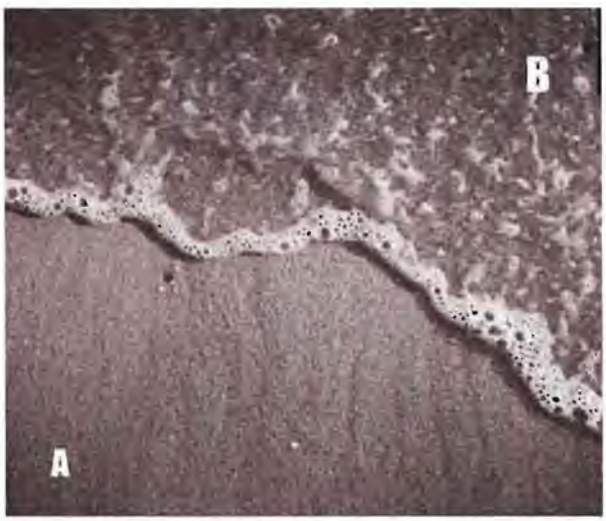
busyness of the street and the solace of his abode, providing enough excitement and thrill, with the comfort of retreat and safety. The step becomes the platform for this duality to play itself out where the two worlds collide. These conditions of 'in-between' bring about an enhanced experience of space.

Aldo Van Eyck explains:

> "Take off your shoes and walk along the beach through the oceans last thin sheet of water gliding landwards and seawards. You feel reconciled in a way you would not feel if there were forced dialogue between you and either one or the other of these great phenomena. For here, in-between land and ocean – in this in-between realm, something happens to you that is quite different from the seaman's alternating nostalgia. No landward yearning from the sea, no seaward yearning from the land. No yearning for the alternative – no escape from one into the other.
>
> " Van Eyck, A (1986:2)



The condition of the stoep as an extension of the home



"Caught between worlds'

Hertzberger, H. (2009) A space between the privacy of the home and the publicness of the street [Photograph] In: Lessons for Students in Architecture. Rotterdam: 010 Publishers

THRESHOLD THEORY
HERTZBERGER THRESHOLD STRATEGIES

2

Montessori School, Delft by
Herman Hertzberger

A thorough understanding of the manner in which the expected user group will occupy and function in the space guided the design to accommodate for a variety of possibilities to play out in the in-between spaces of the school.

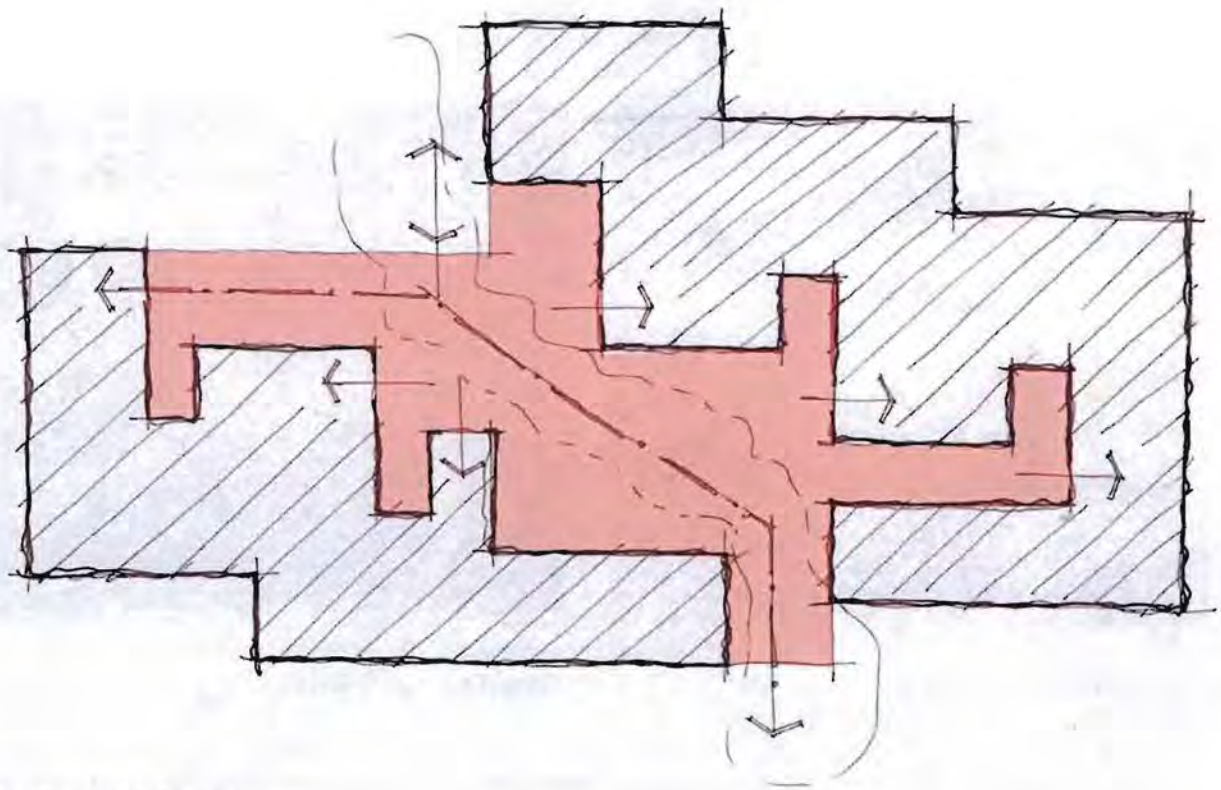
Hertzberger says of the school:

> "Children too, have their meetings and appointments"

The way in which each user group could appropriate the space is taken into account. Children linger, parents drop off and frequent the entrance area and staff watch over this from a distance. All of these scenarios are accommodated for in the threshold domain between inside and out.

An architectural strategy of allowing a small public square before entering, with a low wall perimeter and an elevated platform at once creates a 'sheltered' space which is caught between public and private, yet remains clearly an extension of the school into the street. It becomes a public platform and social condenser allowing people with similar interests to meet spontaneously.

A - Plan threshold diagram showing the two wings of the school held by an intermediate multi-purpose core area and the entrance and departure points. (Authors own)

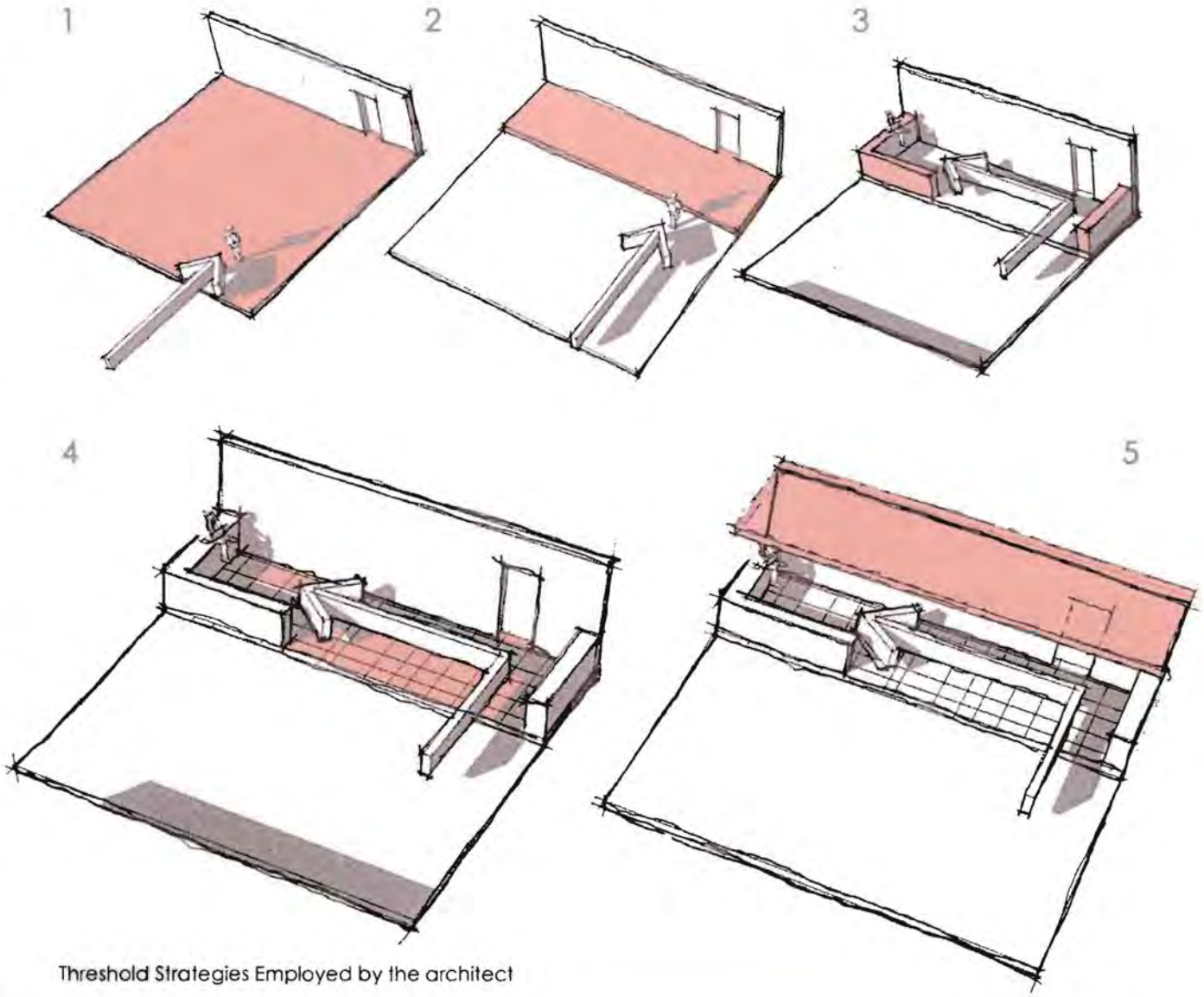


Plan threshold diagram

Herman Hertzbergers Threshold Strategies

Hertzberger employs the following architectural strategies to create the third space between inside and outside:

1. A substantial approach to the building entrance
2. An elevated platform
3. Low walls alluding to a boundary
4. A material change
5. An implied enclosure



Threshold Strategies Employed by the architect

THRESHOLD THEORY
KISHO KUROKAWA INTRODUCTION

Kurokawa's 'engawa' and 'jiga' spaces

In Kurokawa's writings he refers back to two terms constantly:

1. 'Engawa' is the 'in-between' space, halfway between inside and outside

2. 'Jiga' is the 'capsule' space
"The sense of space in traditional Japanese architecture is on in which inside and outside are interpenetrable." Kurokawa, K (1994: 155)

He describes his ideas through the spatial arrangement of the Katsura Detached Palace in Kyoto, Japan. Each space is a 'jiga' connected by an 'engawa' in an overlapping manner. The metabolism group referred to these occurrences in architecture as semi-public space. The space is regarded as an important part of his arrangements because it mitigates the idea of either/or, in or out, instead it allows you the possibility to be caught between in a mediating space.

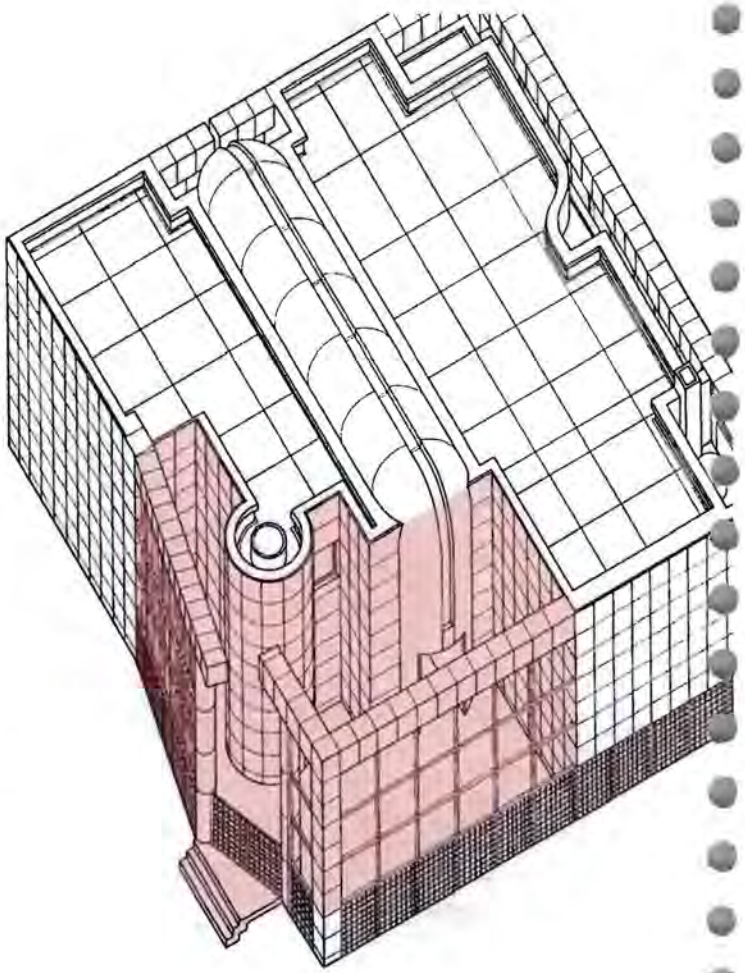
In 'Metabolism in Architecture' Kurokawa describes his concept behind the design of the Fukuoka Bank, "The concept of this building for a bank is engawa – to create some intermediate relation to the environment, where the people can travel into the building because it has this semi-public space (rather like a large covered courtyard). Thus it's good for children, it's a safe street without cars, it's a public roof to avoid the rain. It was not necessary for the client, nor for the function of a bank, but I provided engawa. How can we connect private functions to society?"

The 'engawa' adapts itself to numerous functions , giving back private space (internal corridors) to the public to use as they see fit (exterior corridor), creating multi-functional, spontaneous space.

Kurokawa believes that modernist thinking depended on setting up clear distinctions; this allowed no room for personal interpretation by the user. Strict demarcations between inside and outside, private and public etc. the opportunity to be caught between these are sacrificed to rationality. What the modernist architects failed to achieve, he believed could be found in the architecture of the street, a temporal, transitional zone between greater orders.

In the Shoto Club building the engawa space is manifested in the form of an enclosed veranda. The space as described by Kurokawa:

> ...'is neither interior nor exterior but possesses qualities of both, the nokshita, a roofed, semi-outdoor passageway, and the *ragi*, a narrow alley between houses in the same block.' A lattice fence is employed to create a visual connection through into the engawa and a physical boundary at the same time.



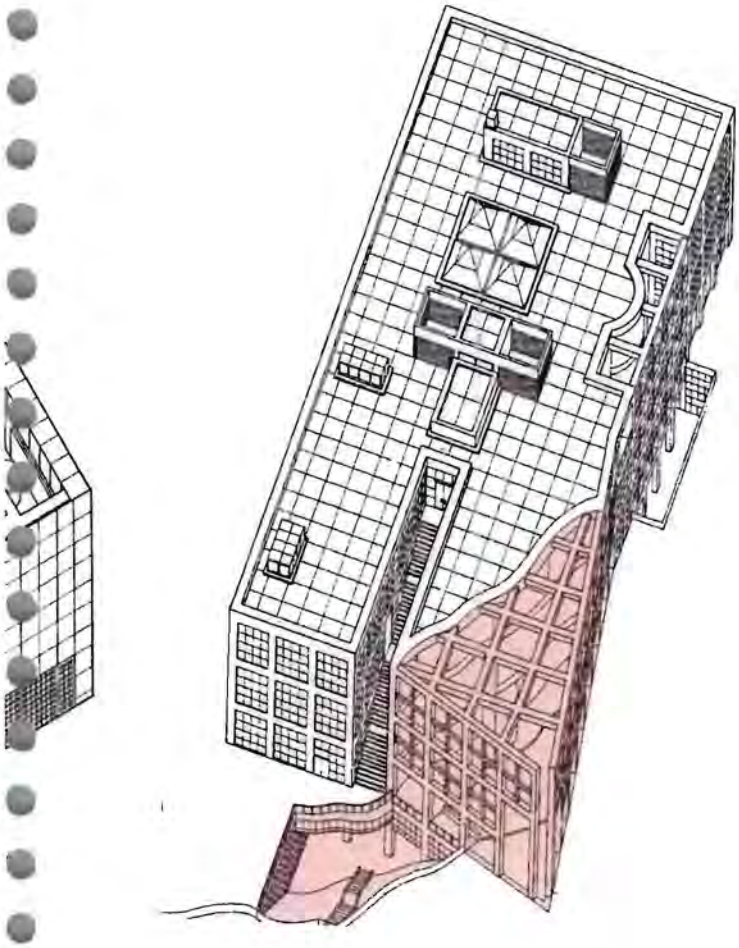
The Shoto Club Building by Kisho Kurokawa
Kurokawa, K. (1987) Image 12 - Kisho Kurokawa Shoto Club Building) [Photograph] In: The Architecture of Symbiosis. France, Milan-Paris: Rizzoli International Publications,

In the Saiatama Prefectural Museum, a recurring trend is noticed in the work of Kurokawa. An extension of the building, in the form of a heavy structural frame continuation protrudes from the entrance area, extending the approach by creating a semi-enclosed entrance courtyard. This permeable element aids movement and helps to slow pedestrian traffic from outside to inside by demarcating a change in privacy level.

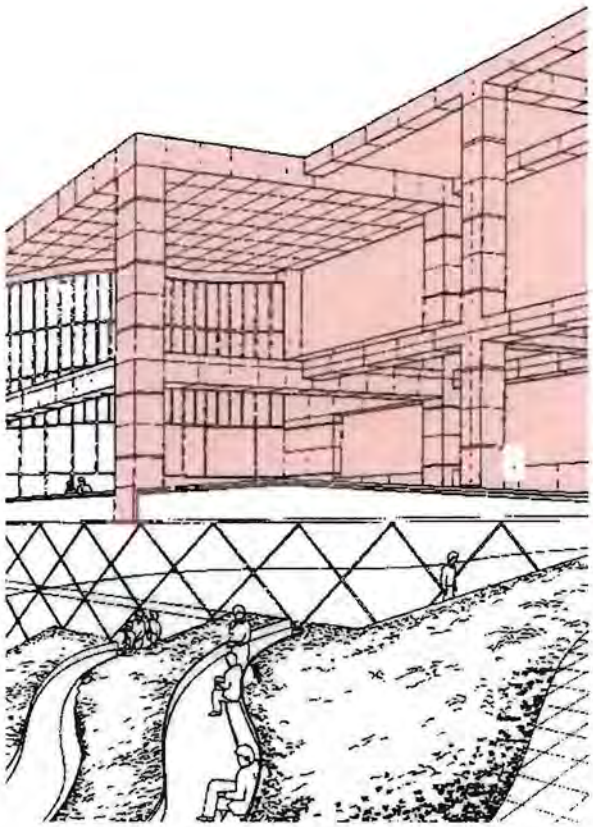
Kurokawas interest in the threshold is predominantly explored through the public / private interface of his buildings. In the Nagaya Municipal Museum of Modern Art, an elaborate extension of the internal affairs juts out forming an intermediate zone which is both internal and external.

The architectural strategy used reinterprets traditional Japanese techniques (engawa) in a contemporary manner. Kurokawa says of the space:

> "An independent architectural structure consisting of posts, beams, and walls stands in front of the building as a symbolic gate and as a site for outdoor exhibitions."
>
> Kurokawa (1987: 36)



Saiatama Prefectural Museum



Nagaya Municipal Museum of Modern Art

THRESHOLD THEORY
FUMIHIKO MAKI INTRODUCTION

Fumihiko Maki and the
Kaze no oka Crematorium

Fumihiko Maki, a member of the Metabolism Group employs the threshold extensively in his design of the Kaze ne oka Crematorium in Kyushu, Japan.

Maki says about the crematorium:

> "All you see is the sky and some clouds - and possibly a dragon."

The space he is referring to is a surreal open air chamber, where the subjects are allowed to pause, in awe of the structure and the light that pours into the space. Maki's ideas of 'the relationship between part and whole' and 'collective and group forms' manifests itself in the formal expression of the crematorium.

Each ceremonial function (funeral hall, cemetery, and waiting lounge) in the building received a unique material palette (brick, corten steel and concrete) and expression to emphasize the process of mourning. The separated functions were spaced apart at distances to allow the bereaved to trace their history, but also contemplate their future.

The brief had 2 major requirements outside of the standard functioning of the building:

1. Integration with the park site / old burial mound it's situated on.

2. Mitigate impact on the neighboring community.

Maki therefore designed the building as a sculpture which has been partially lowered into the ground. The seamless integration of the facility into the park has allowed for the successful co-existence of the public and private functions it serves.

The threshold is used to seamlessly integrate the facility with its surroundings to mitigate its impact on the neighboring residential fabric. Pause spaces between each phase of the mourning process allow for numerous transitions between inside and outside.

The allowance for users to formulate their own readings of the built environment is at the core of creating hospitable space for humans.

THRESHOLD APPLICATION

PHYSICAL MATERIALLITY LIGHT

Fumihiko Maki's Kaze Ne Oka Crematorium

Seto, Y. (2010) Fumihiko Maki's Kaze Ne Oka Crematorium [ONLINE]. Available at: http://www.flickriver.com/photos/y_seto/5501800128/ [Accessed 10 may 2012]

THRESHOLD THEORY
CONCLUSION + MANIFESTO

Conclusion / Threshold Manifesto

The following is necessary for the 'third space' to become evident:

1. A preceding and following space to hold it, which needn't be part of the building's footprint. The street could therefore be the preceding space, followed by the 'third space', followed by the entrance. These spaces do however require a function of some sort for the 'in-between' to function properly as a vague area.

I believe that a 'third space' in architecture, when used correctly can aid the enhancement of spatial experience by adding the following value:

1. Allowing the user room to interpret his surroundings through the correct application of vague, ambiguous space between two functional spaces.

2. Slowing down pedestrian movement through space by impeding efficiency via the correct application of courtyards, approaches, walkways etc.

I believe that the effectiveness of the 'third space' relies on applying the following:

1. The threshold in architecture is a space in its own right, regardless of its physical presence or lack thereof. It should therefore be designed in the same manner as the spaces it separates or links.

2. Varying programs need to be distanced from each other, isolated and re-connected via the threshold in order to slow down the movement through it and therefore the spatial experience. This will allow the user to linger longer and acclimatize to the space.

3. The most potent resultant threshold space lends itself to occurring when spaces similar or opposite in nature are experienced after each other, the opportunity arises here to interrupt the flow of the building by introducing a third 'in-between' space, a vague, pause, reflective area which 'resets' the user, priming them for the next 'event'.

4. The level of efficiency needed in relation to the program impacts highly on the nature and length of the threshold, the emphasis on either the 'space/event' or 'threshold/journey' shifts depending on the preceding and following spaces.

5. Each 'in-between' condition can be assessed according to the nature of its preceding and following spaces, in order to place it in the categories as discussed by Aldo Van Eyck (similar, hierarchical and contradictory spaces coming together):

A. Programmatic differences or similarities

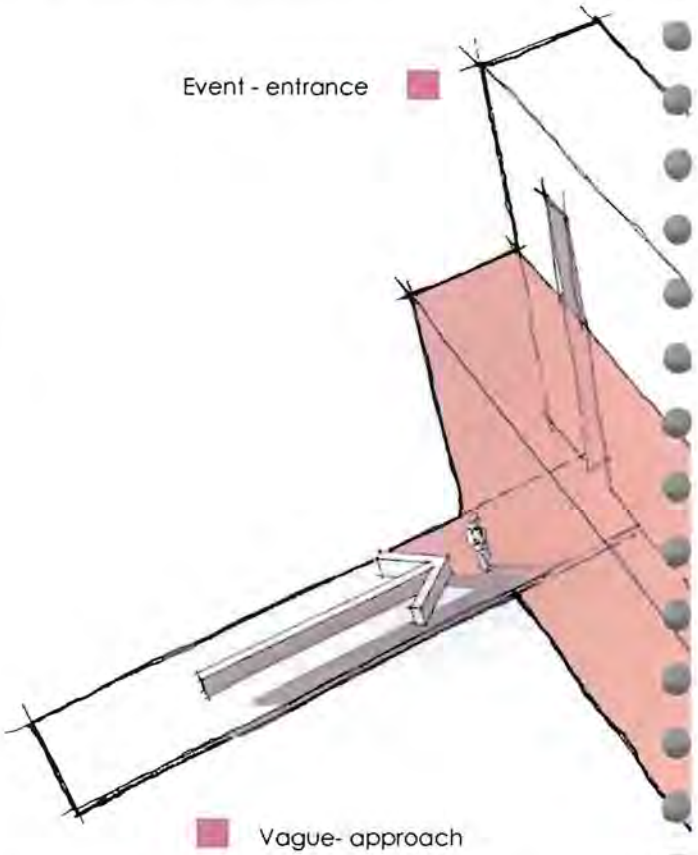
B. Formal expression with regard to scale, texture, light etc. and their differences or similarities

C. Privacy levels and their differences or similarities

The following architectural strategy should be adapted when attempting to create a 'third space':

If the building is scripted as a series of isolated 'events', connected by a series of 'journeys', each space is experienced independently attaching a sense of importance to it. The level of isolation can be varied according to the necessary speed of movement through that is desired or required to enrich the spatial experience. Through the use of the threshold, points in the journey can be emphasized to create spots of intensity.

From Maki's crematorium we learn that if the threshold is explored and expressed through every element of the building, a complete, varied experience is offered to each user.



A - Threshold Manifesto Diagram (Authors own)

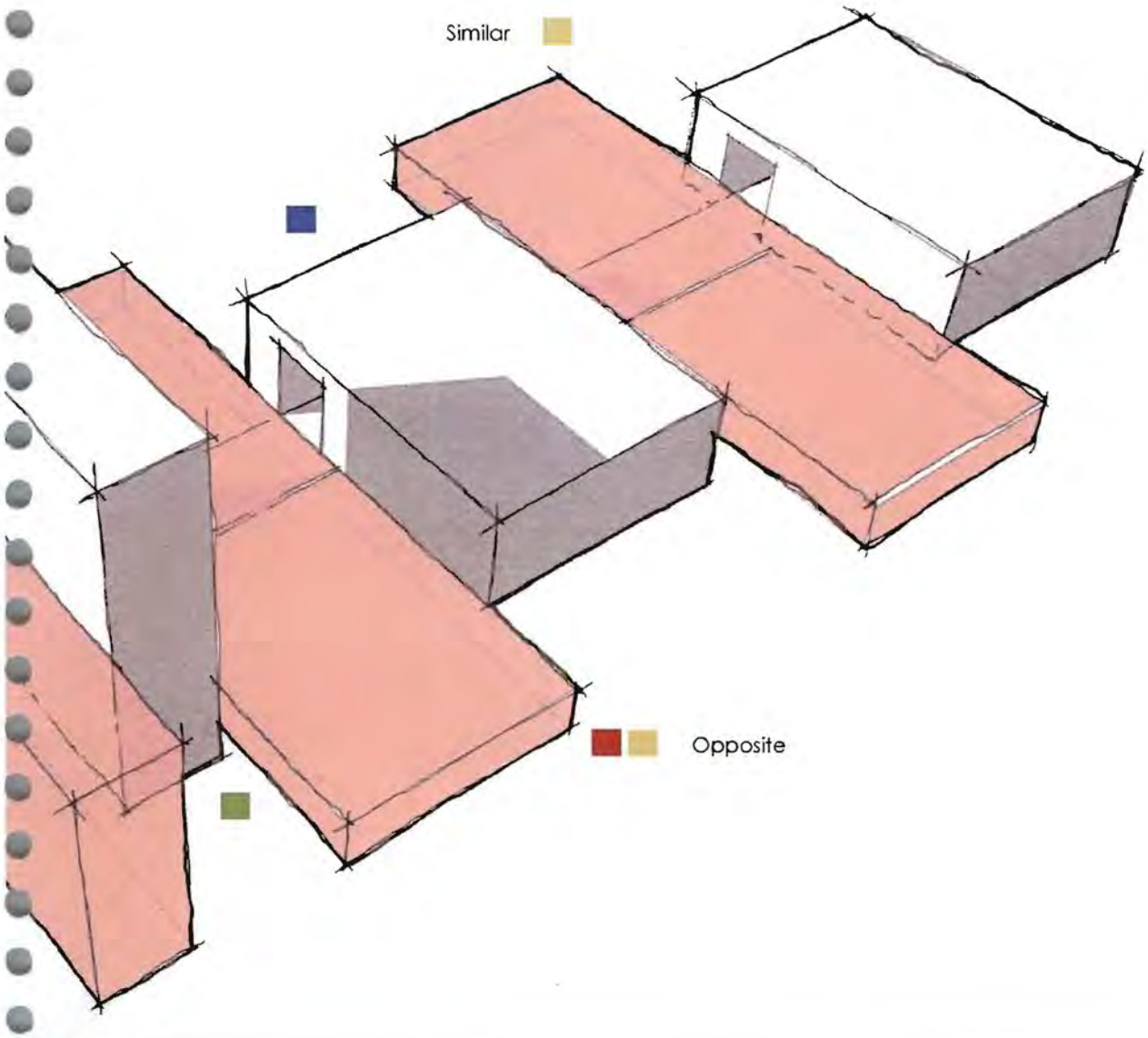
A - A space in its own right

B - Rooms should be disconnected, isolated and re-connected through the use of 'vague' space

C - the nature of the preceding and following' spaces influence heavily the type of threshold eg. a heirarchical or similar combination.

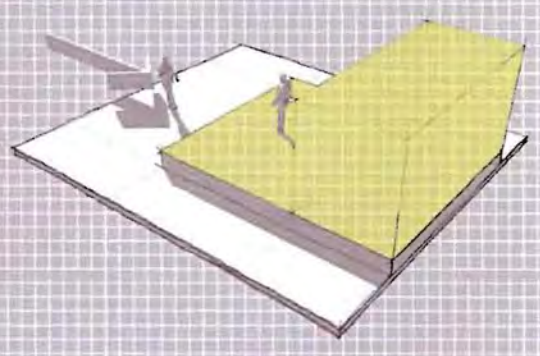
D - The most potent between space occurs when similar or opposite spaces occur on either side of it.

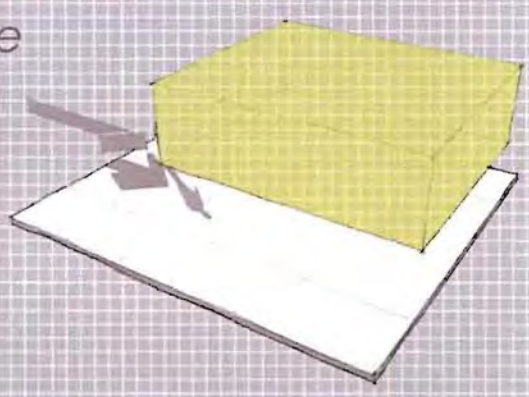
E - The building should consist of both 'event' and 'vague' space

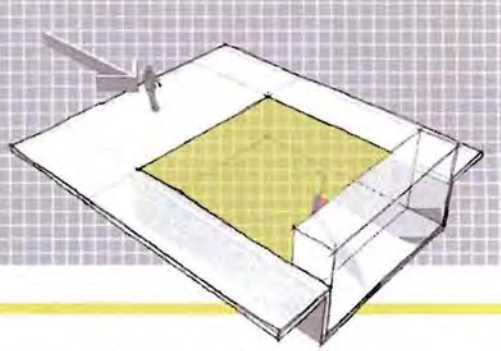


SUBTERRANEAN CONSTRUCTION
TECH SUMMARY

"The investigation into subterranean architecture explores traditional occupation of caves and the contemporary reinterpretation of it through the work and theory of Manfredi Weiss in an attempt to create a set of guiding principles for below ground intervention that will assist in harnessing all of the energy efficient qualities intrinsically linked to caves in a manner that is both cost effective whilst allowing the architect to express form rather than it being structurally dictated."







Compiled by: Ziyaad Majiet (MJTZIY001)

Supervisors: Nick Coetzer, Alta Steenkamp + Jo Noero

TECHNOLOGY SUMMARY
MANFREDI WEISS

Contemporary Subterranean architectural types
Land forming and the work of Manfredi Weiss

We unconsciously attach characteristics such as dark, mouldy, dangerous and claustrophobic to below ground space. However, thanks to the efforts of a number of architects we see numerous examples of contemporary, desirable subterranean interventions. Few architectural practices manage to seamlessly weave together landscape and architecture as well as Manfredi Weiss.

An approach of fusion dictates the design thinking, as opposed to the modernist traditions of 'an object in the landscape', 'an object with the landscape' approach is preferred, a defining trait in their work. The landscapes in their work however, are all manufactured. The site is prepared, moulded, cut into and excavated in preparation to accept the built intervention in a manner that allows them to work symbiotically.

> "The external topography itself becomes a form of clearing – a gigantic receptacle, or an outdoor room of sorts – that receives the building and in the process not only accommodates and shapes it but also is shaped by it. "
>
> Thompson (2008:7)

Museum of the Earth Design Analysis
Project: Museum of the earth
Location: Ithaca, New York
Architect: Manfredi Weiss
Client: Commissioned by the paleontological research institution

The analysis consists of an introductory component in relation to the overall design and spatial organization of the project. Thereafter, specific components of the building will be analysed with specific emphasis on the implications of building below ground, namely:

Lighting, Drainage, Ventilation and Structural concerns

The site has a rich geographical history, being formed and shaped by a receding ice sheet twenty thousand years ago. The gradual 12m slope of the site and the natural landforms of the Finger Lakes area in Ithaca are fundamental to the design of the museum. The architects sought to bring clarity to the dynamic relationship between biology and geology which is central to the facilities mission.

Staying true to their approach of land forming the site in preparation for the built intervention, 3m high earth berms were created to conceal four separate parking areas creating a lengthy pedestrian approach to the facility. Each parking area has been resolved thoroughly in both plan and section to manage storm water runoff.

Manufactured terraces and landforms are used to construct the spatial organization of the facility. The museum is split into two forms (an education wing and an exhibition wing) held together by a courtyard space which acts as a continuation of the landscape. The two components of the building are connected below ground, underneath the courtyard.

Sketches by Manfredi Weiss Architects
Weiss/Manfredi (2008) The Museum of The Earth [Sketch].
In: Weiss/Manfredi: surface/subsurface. New York: Princeton Architectural Press.

TECHNOLOGY SUMMARY
ANALYSIS

3

The work of Manfredi Weiss Architects has been analyzed under the following themes:
Natural Lighting
Stormwater Management
Ventilation
Structural Concerns

Natural Lighting Introduction

Numerous architectural strategies are employed to allow daylight to penetrate into below ground space. A combination of techniques usually reaps the optimum results. Four commonly used strategies exist as shown below:

1. A centrally located courtyard around which the spatial organization of the building is designed. The courtyard is exposed to natural light which is then reflected into the internal spaces. E.g. Fumihiko Maki's Kaze No Oka Crematorium in Japan and Tadao Ando's Naoshima Contemporary Art Museum.

2. Roof lighting is commonly employed for below ground structures as it offers maximum light gains with constant visual connections to the world outside. Roof lighting also has little implications on the spatial organization of the building. Heat gains through roof lights need to be accounted for through the use of retractable screens or louvers. E.g. Enric Miralles / Carme pinos Igualada Cemetery and SANAA's Multimedia Workshop in Japan.

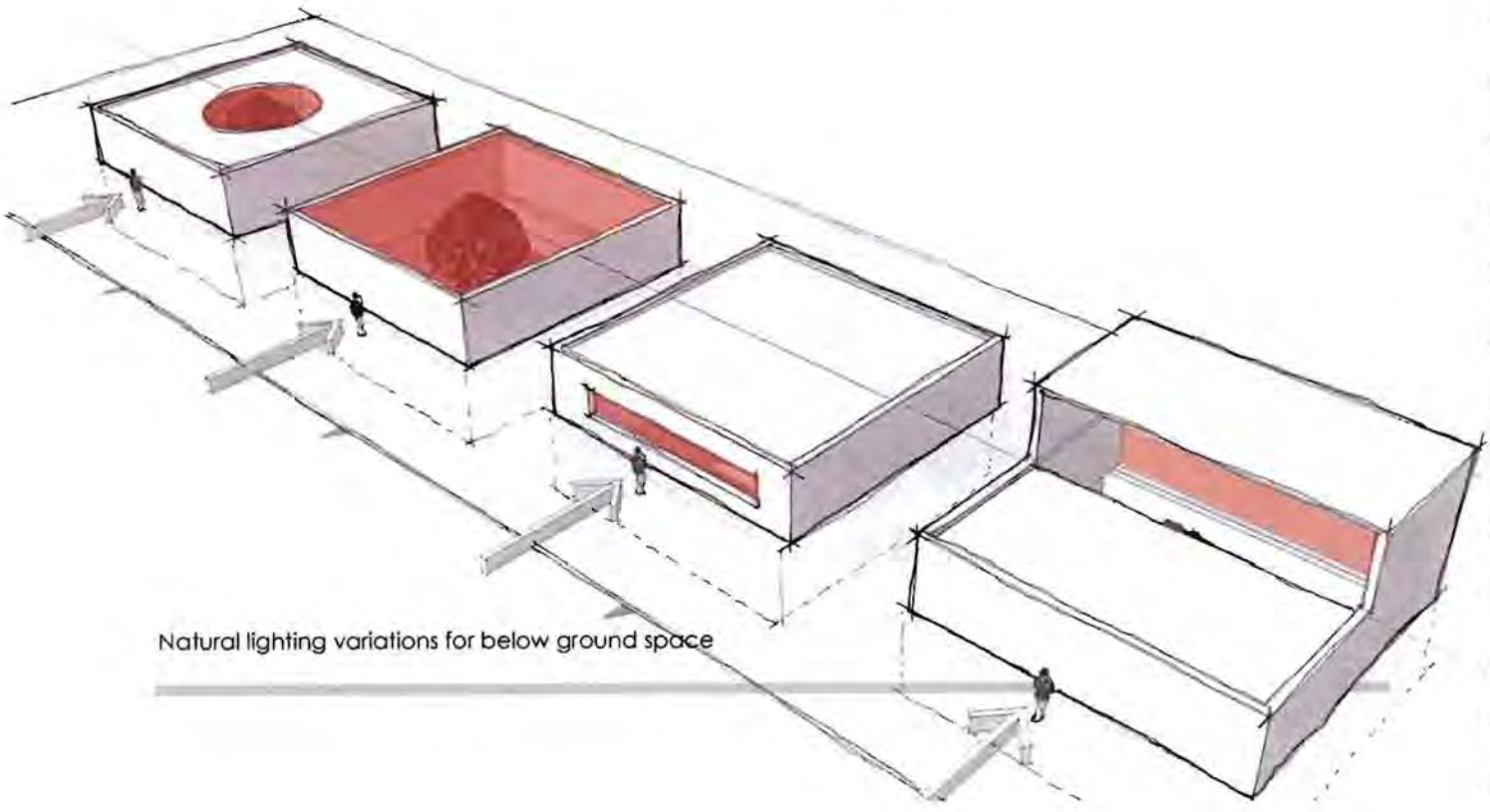
3. Partially sunken buildings can employ large scale conventional windows to allow natural light in. This method works well only in narrow spaces like corridors or internal walkways.

4. A variation of the skylight can be used for deep spaces. Light is received through a vertical face and hits directly onto a lightly coloured wall which reflects and bounces the light inwards.

Natural Lighting Precedent

Fumihiko Maki's Crematorium design utilizes the courtyard to feed light into the surrounding spaces. A harsh light is achieved in contrast to the low lit spaces adjacent to it. In Tadao Ando's Art Museum the courtyard is the core of the design with the spatial arrangement being dictated by it.

At the Igualada Cemetery of Enric Miralles, the walkways receive an even, balanced light courtesy of the frosted glazing to the skylight. Peter Zumthor pulls apart vertical and horizontal planes to achieve a thin slit of light which pours down onto the textured stone. Double volume spaces in SANAA's Multimedia Worshop use large expanses of glazing to introduce daylight. Steven Holl's expansion to the Nelson Atkins Museum of Art reads as a series of light boxes which emerge from the ground. A connected set of isolated experiences each marked with an above ground skylight structure. Supplementing the skylights is the introduction of 'light walls', the vertical equivalent of a 'light shelf' which bounces light into the interior.

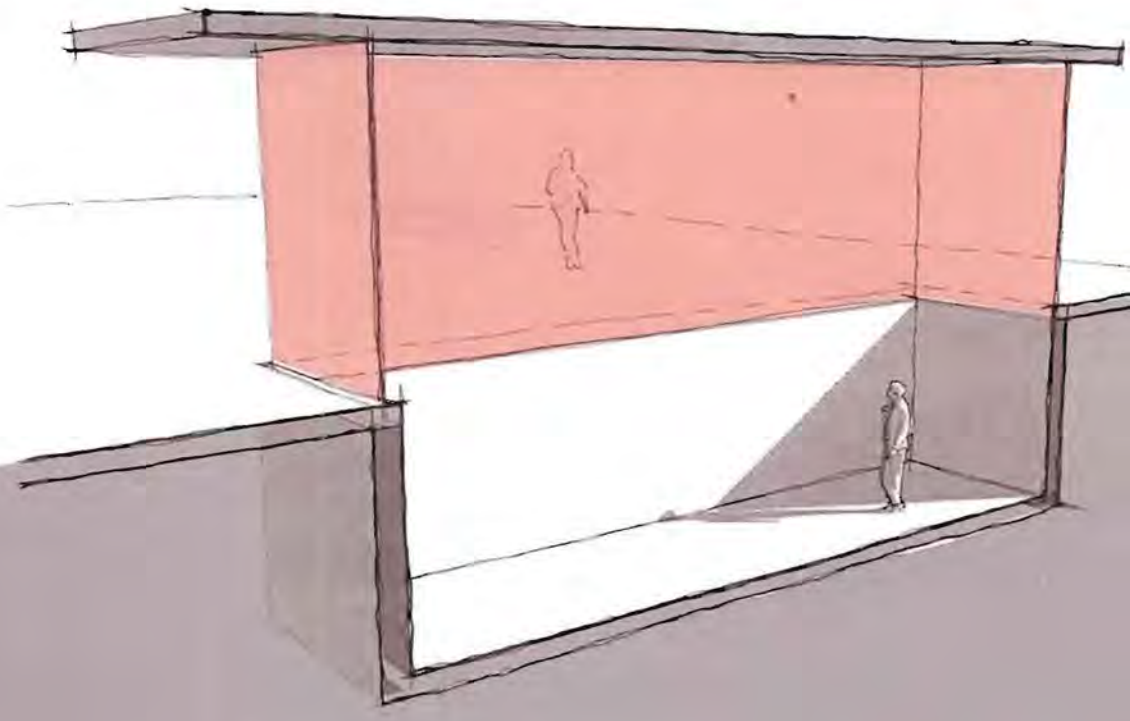


Natural lighting variations for below ground space

Natural Lighting in the Museum of the Earth

The double volume space combined with high level windows ensures that the user is aware they are below ground by maintaining a constant visual connection with the outside world. These high level windows however serve the bigger purpose of introducing natural light to the space and aiding ventilation. The space could therefore be considered a half-basement type construction, partially sunken below ground.

In similar fashion to the Multimedia Workshop by SANAA, the above ground components of the building consist of large glazed areas. The two wings of the building required different types of lighting according to their program. The exhibition wing received a soft, controlled, even light across the entire space through careful fenestration, orientation and overhangs. The education wing is flooded with light via large vertical glazing expanses.



Diagrammatic analysis of natural light entry from vertical glazing above ground into double volume space below

TECHNOLOGY SUMMARY
ANALYSIS

3

Stormwater Management

Storm water run-off systems are carefully articulated and managed. The landscape has been manipulated to form natural channelling systems which guide storm water to a collection point for recycling. All collected storm water is first channelled through the centre of the facility into the courtyard area, becoming a feature which follows you on your journey towards the entrance.

Energy efficiency and the land forming process are thought out and executed concurrently, immediately integrating green sustainable systems into the design.

The main concern for the designer was ensuring that storm water landing on hard landscaped areas are channelled away from the sunken structures. The strategy therefore relied on the extensive use of sloped gradients to all external walkways in conjunction with the allowance for soft landscaped areas to allow water to seep away and diverted through below surface agricultural drains.

1. The initial land forming process to create landscaped storm water channels

2. All storm water is collected and stored

3. Recycling and purification

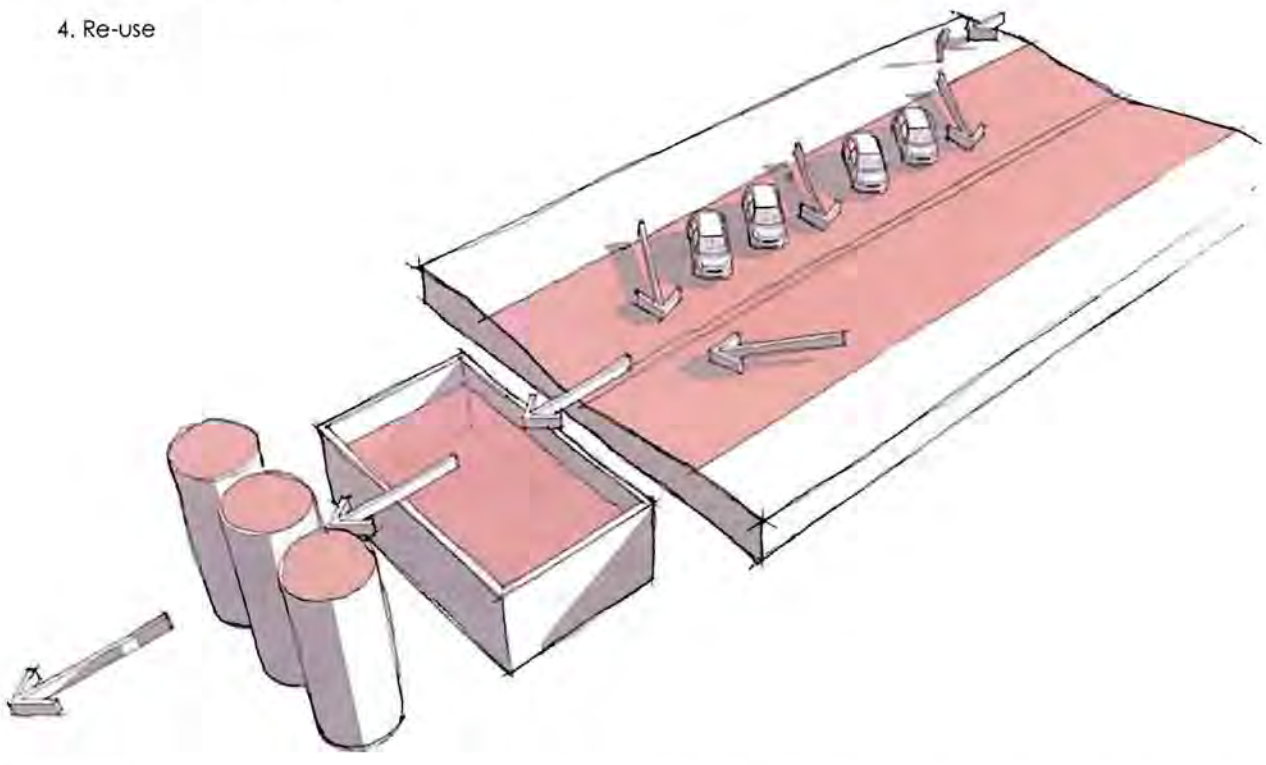
4. Re-use

Ventilation

Ventilation and light form the basis for the negative connotations we attach to below ground space. We associate all below ground space automatically with ancient caves which sheltered people in its darkness. Through the use of heating, ventilation and air conditioning systems (HVAC) many of these issues we attach to subterranean space can be rectified.

A major benefit with below ground buildings is that a constant internal temperature is achieved all year round regardless of the climate outside. This effect is enhanced the further below ground the building goes. The problem however occurs when parts of the building are exposed above ground causing heat loss or gain dependant on the material makeup of the external skin. The result is fluctuations in internal air temperature and humidity.

The psychological impact of knowing you are occupying a below ground space immediately makes us conscious of the air quality. The lack of fresh air entering most underground spaces usually results in dampness, leading to stuffiness and colder temperatures. Successful passive ventilation in completely sunken buildings is difficult to achieve, as it requires a certain degree of cross ventilation. Most contemporary below ground structures therefore receive HVAC systems to alleviate these problems.



Diagrammatic indication of storm water management system

Ventilation (Continued)

Passive strategies employed by the Chinese in the design of ancient cave dwellings incorporated a system of inlets and outlets. An active inlet and passive outlet system draws air into the space and allows it to exit at the opposite end of the room. This is the result of the temperature difference between the below ground space and the external above ground space. Similar approaches can be adopted in contemporary design utilizing a wind scoop or chimney flue on one end and an openable section on the other.

These should however be supplemented by the following construction strategies:

1. Issues with humidity can be countered by ensuring that the external below ground retaining walls are thoroughly sealed and protected from moisture in the surrounding earth fill.

2. To counter heat loss, the internal faces of the below ground space should receive an insulation layer, impeding the entry of colder temperatures from the ground below.

Heat gain and heat loss in subterranean buildings can easily be understood through the following two principles:

1. The earth stores heat and can either diffuse it or transfer it

2. The earth is an insulator against both harsh heat and cold, allowing for a constant internal below ground temperature.

Structural Concerns

To determine the strength of the required structural members, the following lateral stability determinants should be investigated:

1. The type of subsoil

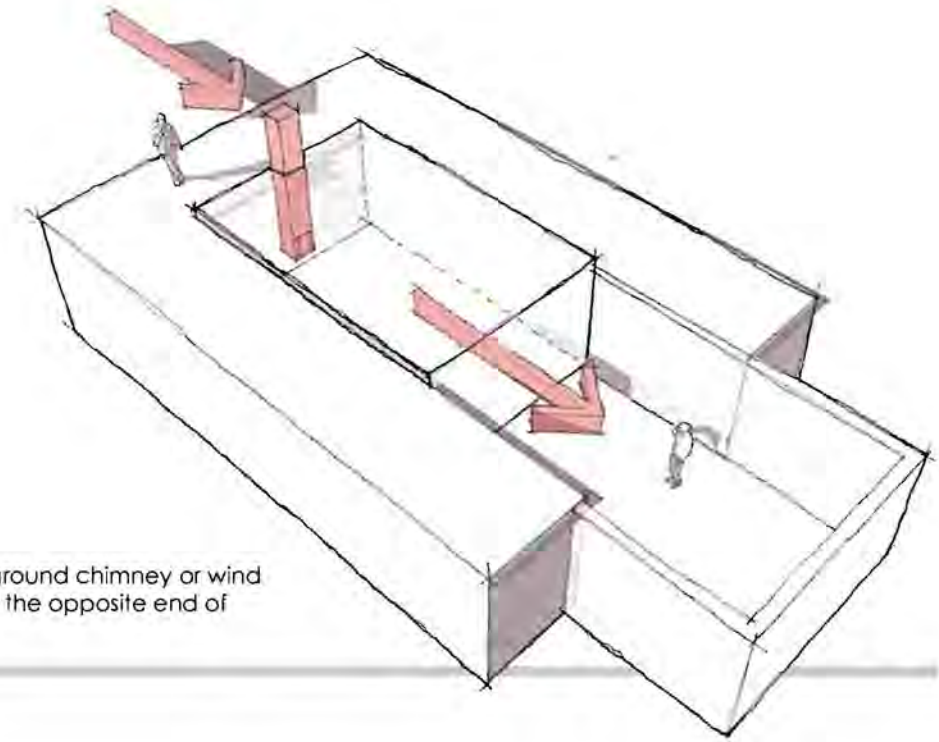
2. Subsoil water

3. The angle of repose

Structural considerations

1. The first necessity for a waterproof basement is a structurally sound wall and floor that can resist both vertical load and horizontal earth and water pressures. The concrete should be as dense as possible and curing should be done carefully to avoid shrinkage cracks. The major problem however resides with larger basement constructions which require construction joints in the concrete walls and floors. These breaks in the structure are weak points and potential sources of leaks. The engineer's details should be followed strictly, and checked for the allowance of rubber water bar installations.

2. Backfilling should be carefully carried out in layers not exceeding 150mm in height; it should be lightly watered and compacted. In instances where subsoil drains have been used, compaction should be well executed to the sides of the drain to prevent unwanted movement.



the active inlet via above ground chimney or wind scoop, 2 = passive outlet at the opposite end of the room

TECHNOLOGY SUMMARY
CONCLUSION

Conclusion

Three streams of thought for new subterranean architecture are discussed in the conclusion and are presented as tensions between elements, followed by the manner in which they should be dealt with. The first concern raises issues on the psychological effects of being below ground, which is discussed in relation to the need for a connection to the world above ground. The second poses a tension between architectural expression and structural requirements. The last highlights problems relating to the over emphasis which is placed on energy efficiency in relation to exorbitant cost implications.

1. Maintaining a connection with the outside world

A feasible strategy is to maintain a constant connection to the world outside. This connection may manifest itself physically or visually in an attempt to put users at ease.

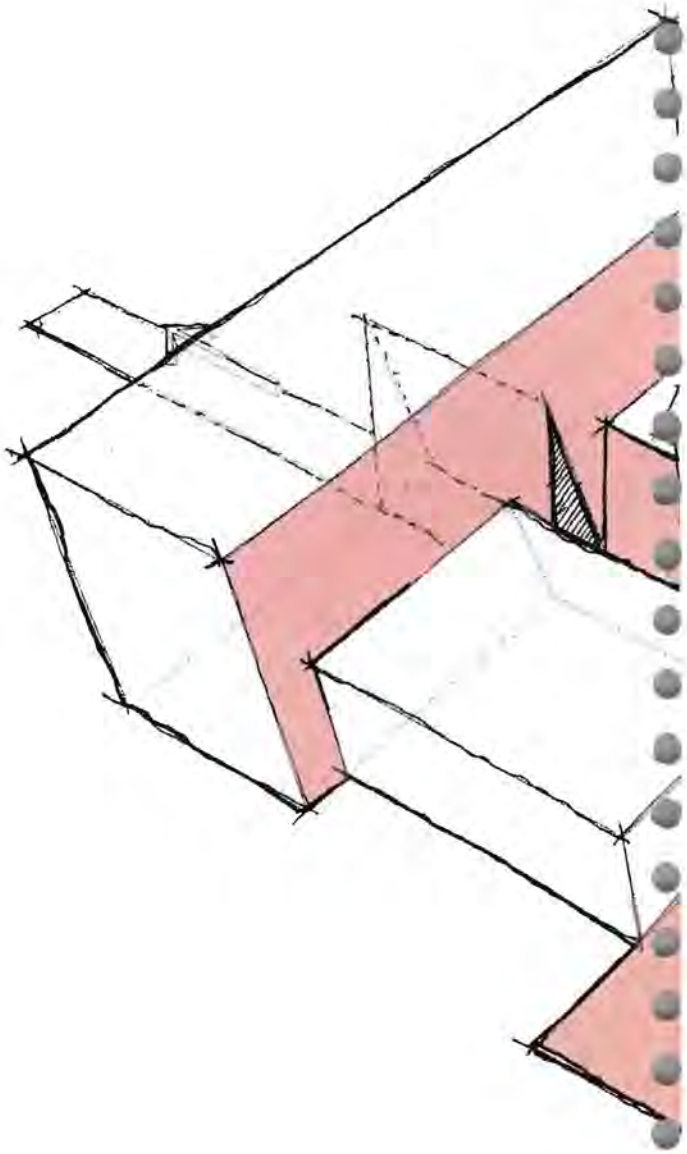
2. Structure and formal expression

A secondary design problem is posed by the relationship between formal expression and structural requirements. The physical manifestation should preferably be driven by the desired spatial qualities; the structural concerns can then be tailored to fit. This approach allows for both the expression of form and the exploration of new structural solutions to subterranean construction.

3. Energy efficiency and cost implications

If the designers concerns are geared towards energy conservation, then the most important denominator when designing below ground space is to monitor and keep a close relationship between the potential energy savings and the constructions costs. The result of that equation then needs to be assessed against the desired spatial qualities.

These three streams of thought lean towards an architecture that is both above and below ground. An architecture that captures the solace and recluse associated with caves while maintaining a connection to the rest of the world. An architecture that harnesses the thermal qualities of the earth, in an attempt to improve its energy efficiency. A feasible design strategy for new subterranean architecture would therefore be to mediate between each of the three.



Diagrammatic conclusion

1. Completely confined space

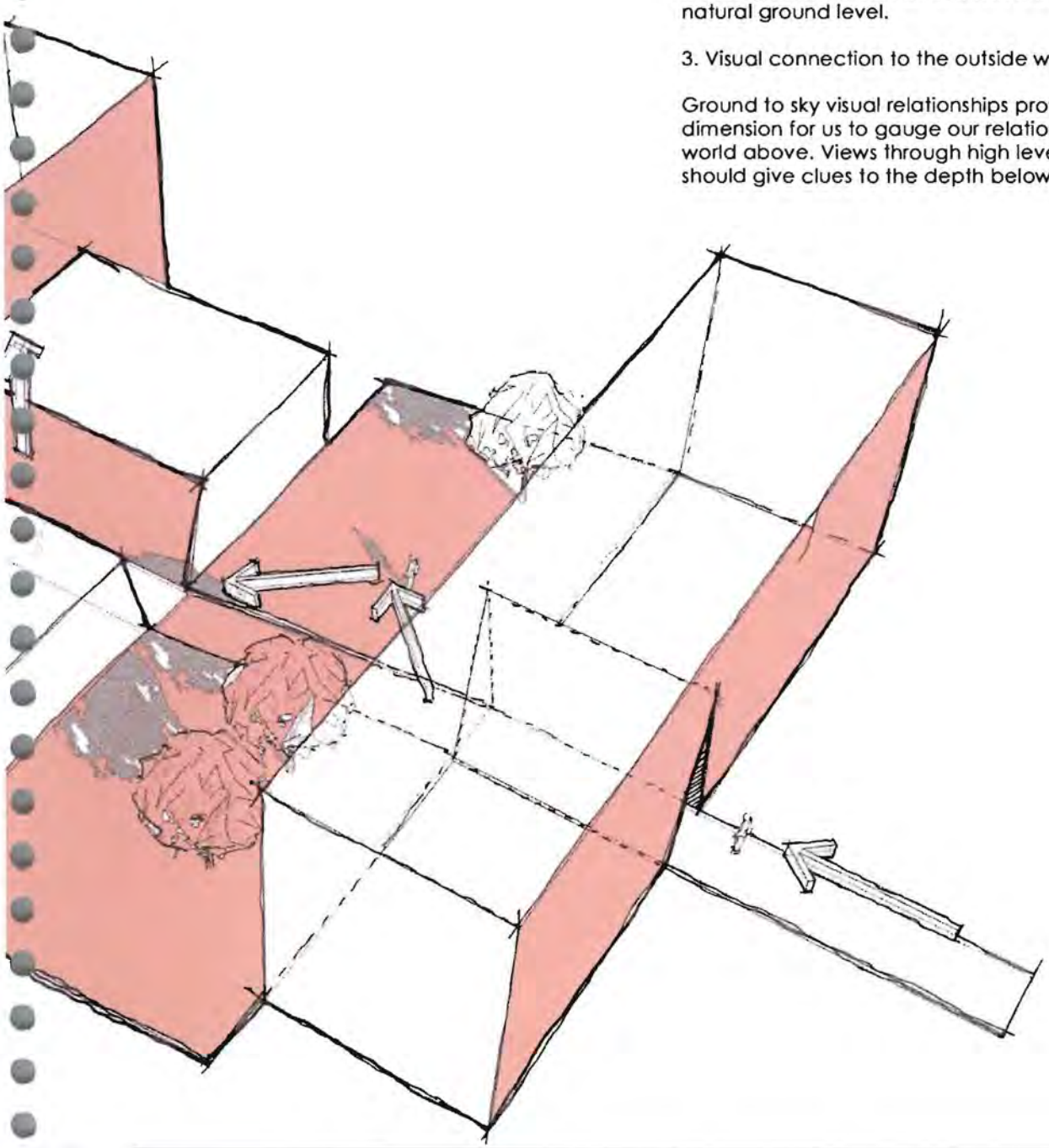
No physical connection and little visual connection provided by the outlet at the exit point. These types of spaces should be accompanied by space '2' as shown. Completely submerged spaces should ideally be accompanied by an open air space which reconnects the user.

2. Physical connection to the outside world

A return to grade allows the user to reset while ensuring them of their location in relation the natural ground level.

3. Visual connection to the outside world

Ground to sky visual relationships provide little dimension for us to gauge our relationship to the world above. Views through high level glazing should give clues to the depth below surface.



"The crematorium in nature, is a series of isolated events that guide the bereaved through the grieving process.

The program therefore suits the theoretical investigation into the threshold."

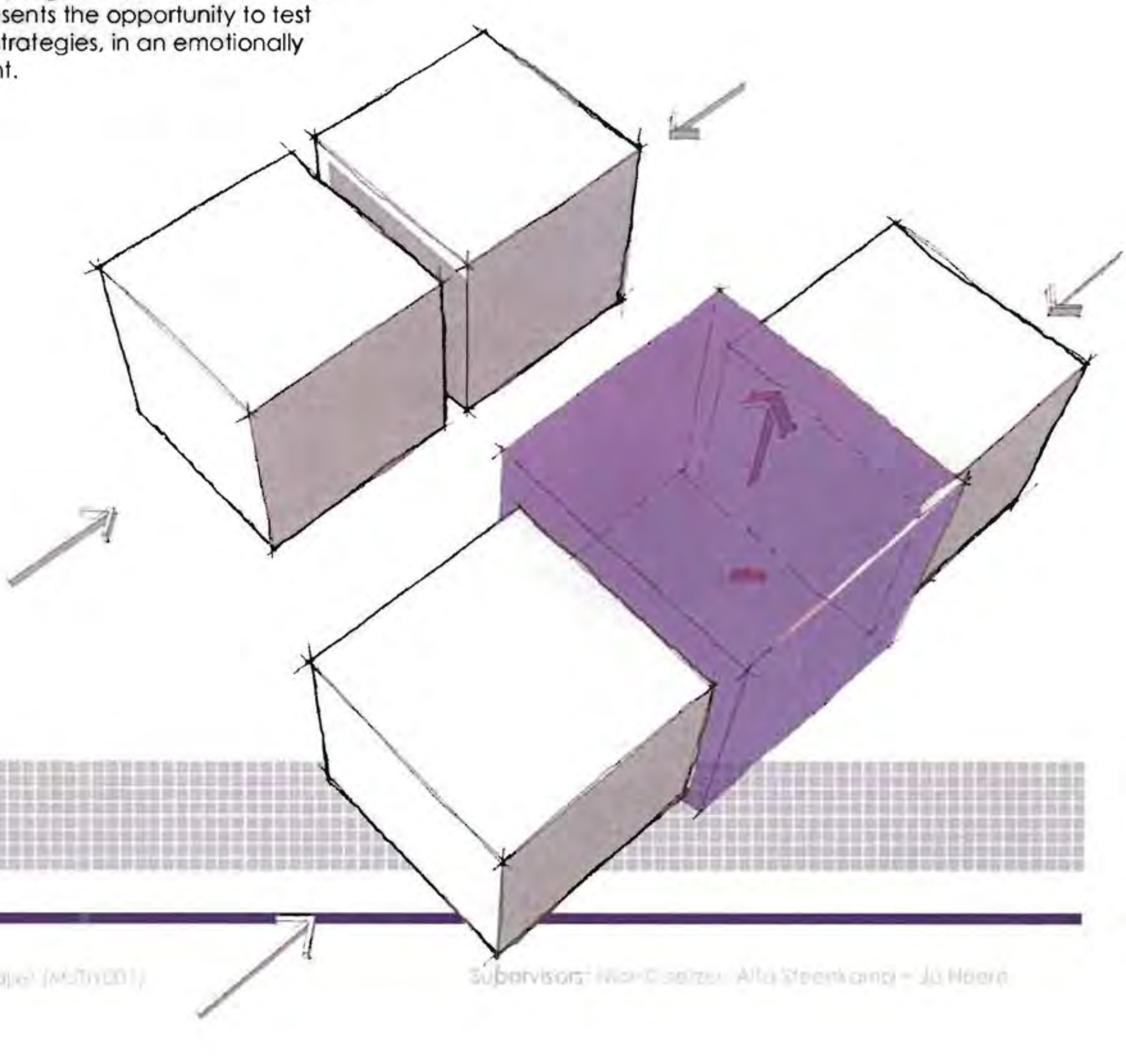
4

CREMATORIUM
PROGRAMMATIC ANALYSIS

I then sought out a suitable program that could be used to test my principles and formal strategies of the threshold as an architectural tool that can improve the relationship between built intervention and user. The theory highlighted the nature of the required program through three tropes:

User consciousness
Impeding Efficiency
Personal interpretation and engagement

The crematorium in nature is a series of isolated events that guides the bereaved through the grieving process. The program suits the theoretical investigation as it presents the opportunity to test numerous threshold strategies, in an emotionally charged environment.



PROGRAM
CAPE TOWN CITY BURIAL BACKGROUND

Cape Town City Spatial Concerns

Places of burial are predominantly located on the fringes of residential suburbs, this stems from the cities initial health and overcrowding concerns regarding these types of spaces in the city. The first burial grounds in the city were on the slopes of Signal Hill and along Somerst Street at Prestwich. The proximity of the necropolis to the land of the living brought about problems due to overcrowding. The growh of the city required new burial grounds to be coupled with new suburbias,

It became normal practice to push these spaces out to the periphery, isolating them. This constant push cannot be sustained as a feasible strategy, as it further isolates it making it inaccesible to the poor.

The return of cremation as a feasible method of laying our loved ones to rest is due to a number of reasons:

1. Cost,

2. Spatial constraints,

3. Cleaner form of burial,

4.No fear of overcrowding.

The selected site is a discarded piece of land on the edge of the cities residential edge. It is a site with little economic viability which can help add life to the urban edge of Cape Town. It is a threshold space caught between larger orders.

A - Site Location

B - The Maitland Crematorium

C - The Durbanville Crematorium

D - Active Cemetery

E - Dormant Cemetery

CAPE TOWN CEMETERIES

OPERATIONAL

DORMANT

38 total

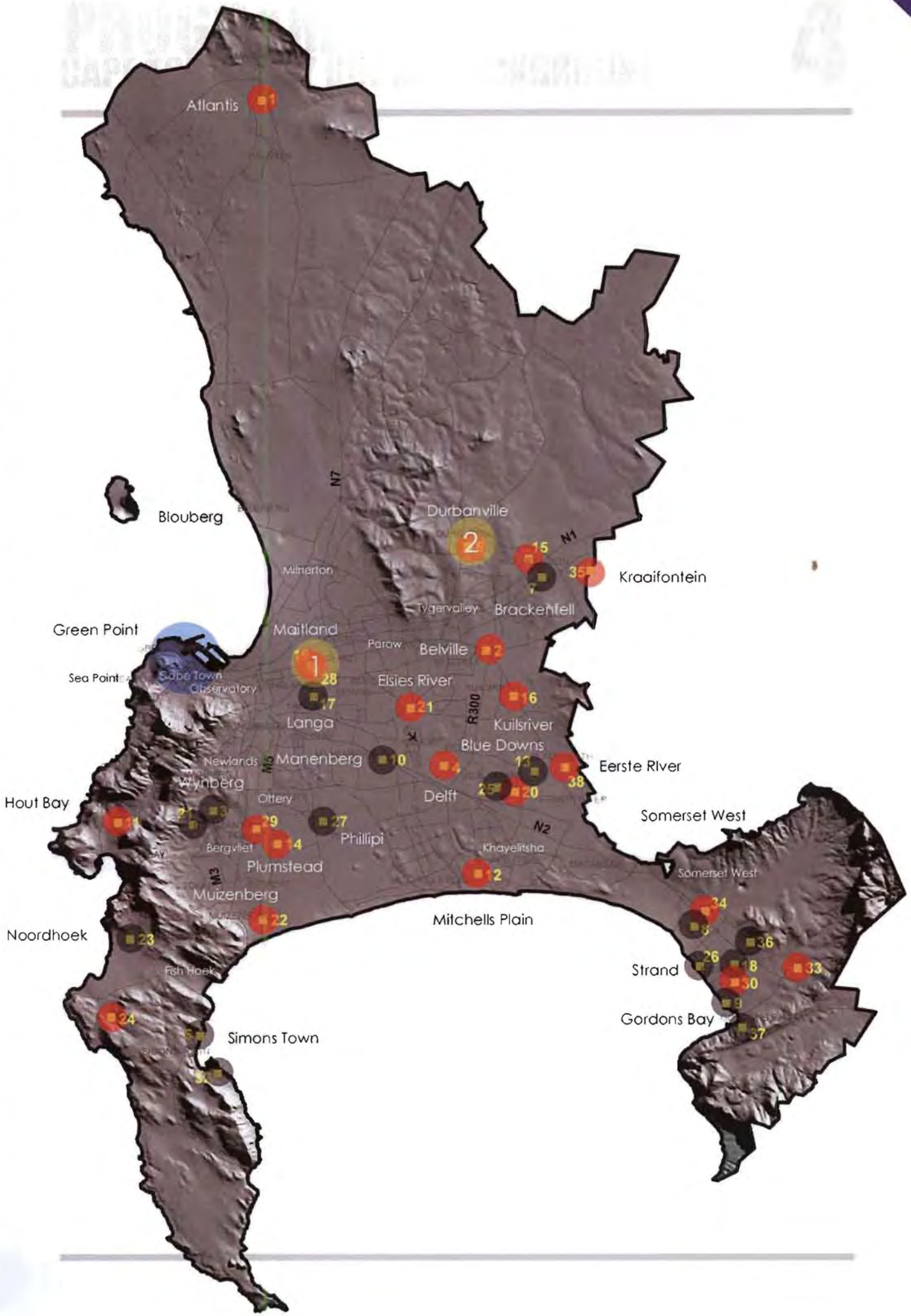
21 total

17 total

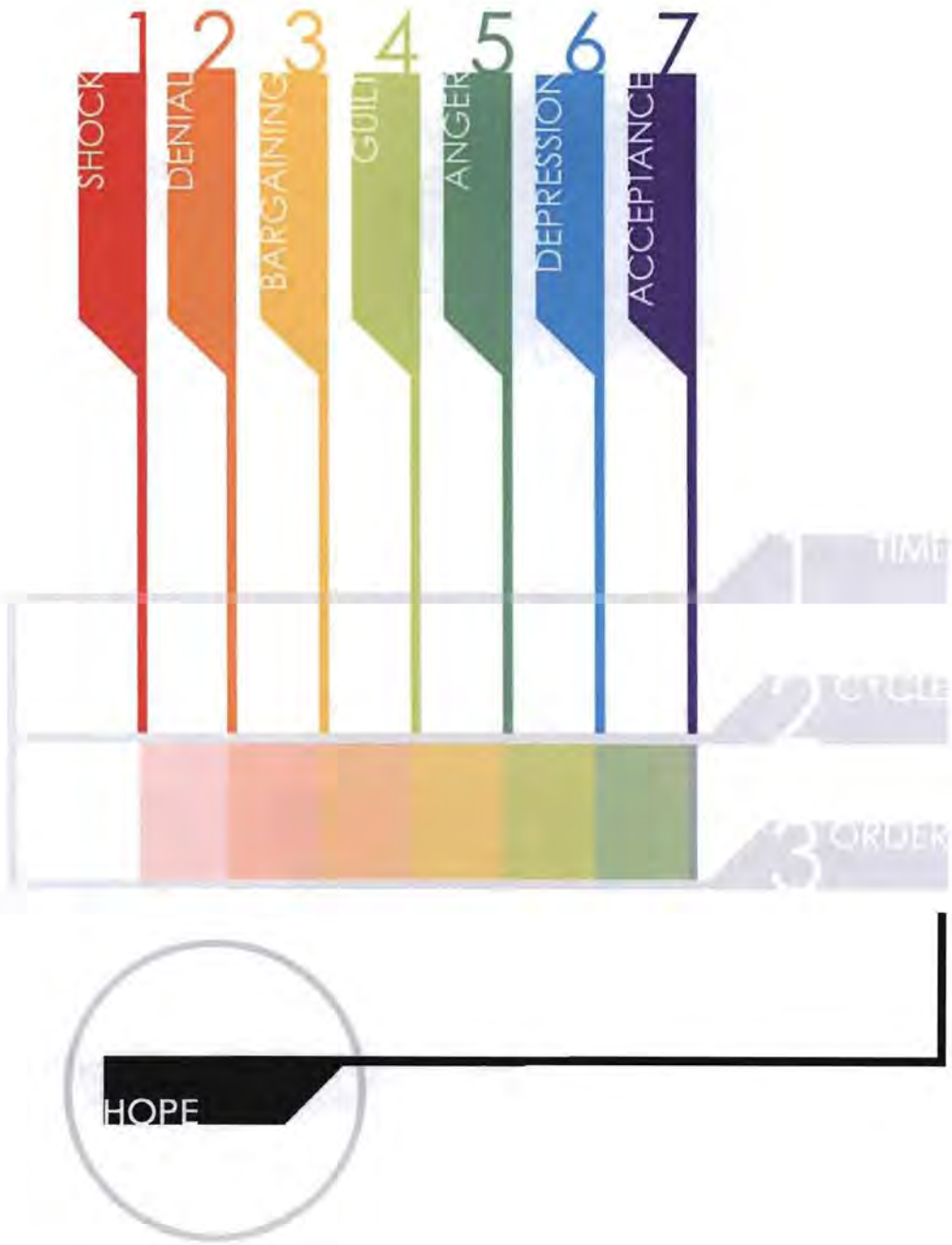
CREMATORIUMS

02 total

City Cemetery Statistics


Atlantis
Blouberg
Durbanville
Milnerton
Kraaifontein
Tygervalley
Brackenfell
Green Point
Maitland
Parow
Belville
Sea Point
Cape Town Observatory
Elsies River
Langa
Kuilsriver
Blue Downs
Newlands
Manenberg
Eerste River
Wynberg
Hout Bay
Ottery
Delft
Somerset West
Bergvliet
Phillipi
Khayelitsha
Plumstead
Muizenberg
Mitchells Plain
Noordhoek
Fish Hoek
Strand
Gordons Bay
Simons Town
N7
N1
N2
R300
M3
M5

PROGRAM
UNDERSTANDING GRIEF



Understanding Grief

Based on Elisabet Kubler-Ross' MD in her 1969 book:
'On Death and Dying'

The grieving process is unique for each individual but is typically based on a set of emotive stages. It is generally understood that the stages represented in the graphic above need to be experienced, in no particular order, before full emotional recovery is achieved.

The buildings route adapts the idea of sequential mourning, allowing for a series of recluse spaces which can be accessed if the user requires it. the journey is negotiated by the individual.

Diagrammatic Analysis of 'The Grief Cycle'

PROGRAM
ACTORS ON THE STAGE OF DEATH

Actors on the Stage of Death

As architects, we create the 'set' for the 'actors' to play out the scenes of life.

In the instance of thecrematorium, we design the stage for the celebration of death to unfold. The actors are numerous and each plays out a specific role in the 'script'.

ACTORS:

Berieved family

Administration staff

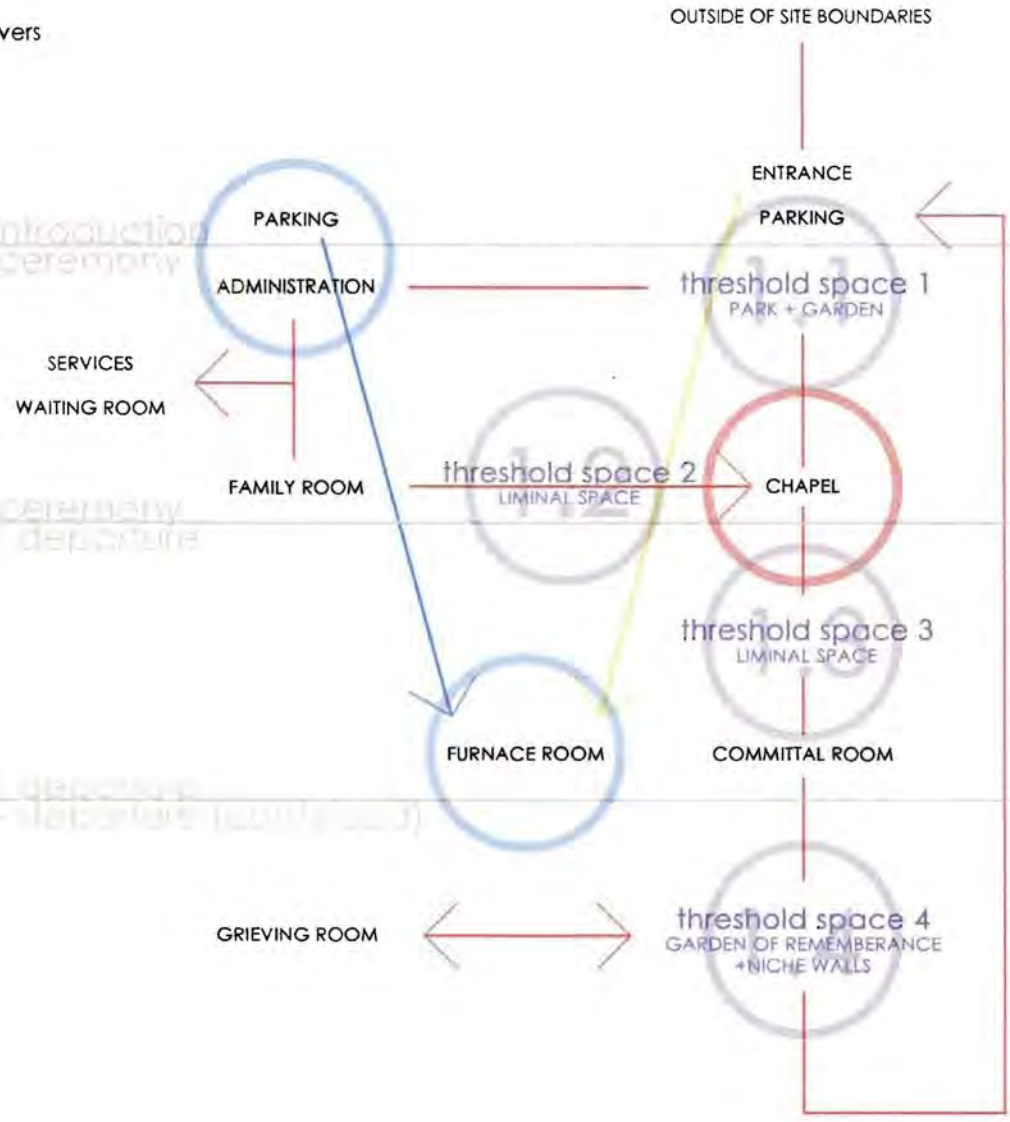
Cremation staff

Funeral company drivers

A - Bereaved Family

B - Administration Staff

C - Hearse Driver, Note: only if the ceremony has been held elsewhere, in which case the hearse will deliver the body directly to the furnace room via a seperate entrance



Diagrammatic Flow Chart Tracking Different Users Movement

PROGRAM
ACTORS ON THE STAGE OF DEATH

Sequence of Events

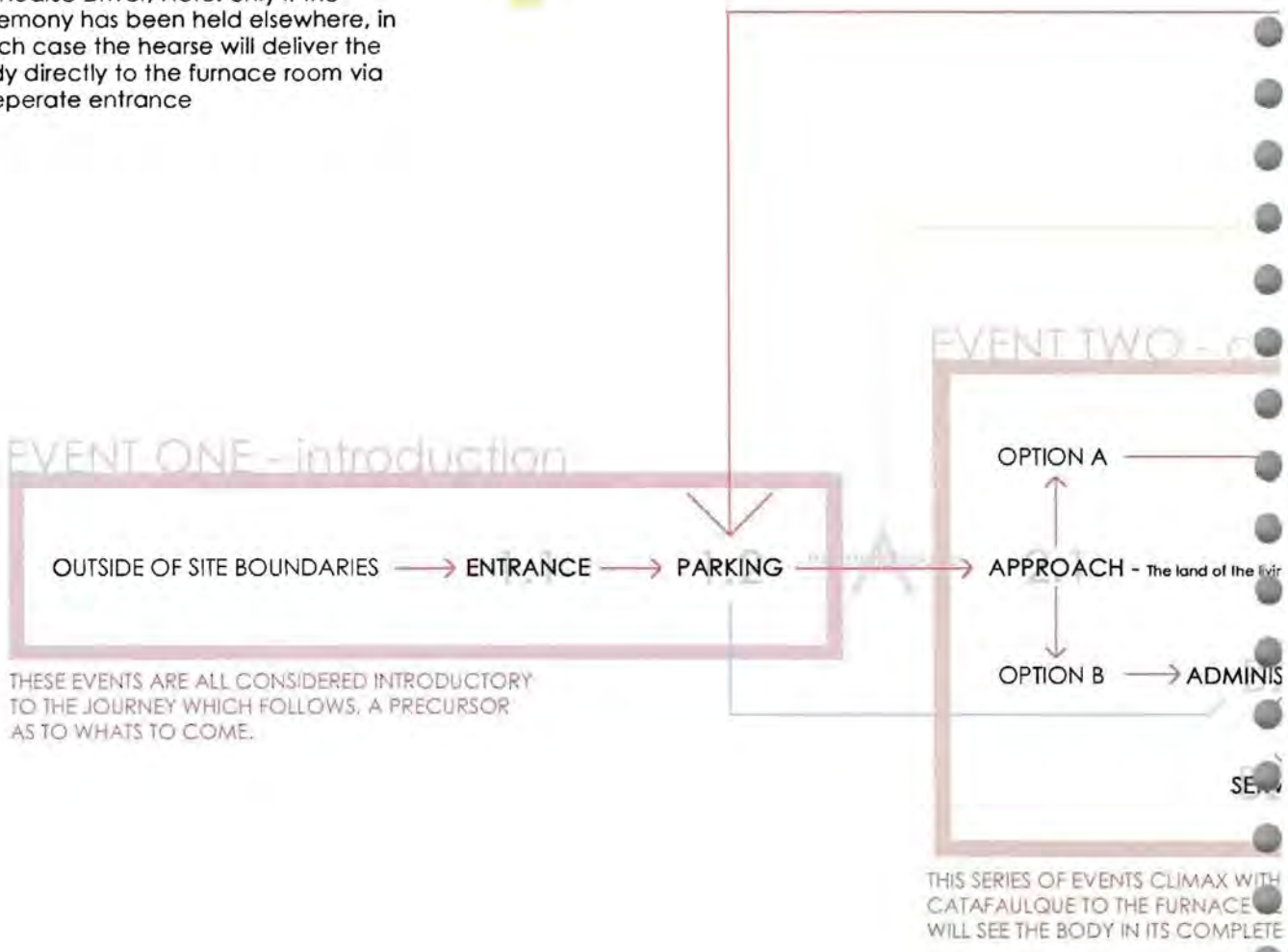
The Maitland and Durbanville Crematoriums have a set procedure for ceremonies. Both allow for the families to dictate to some degree the route they wish to take, although all the paths lead to the chapel as the climax of the journey.

The flow chart tracks the movement through a typical crematorium.

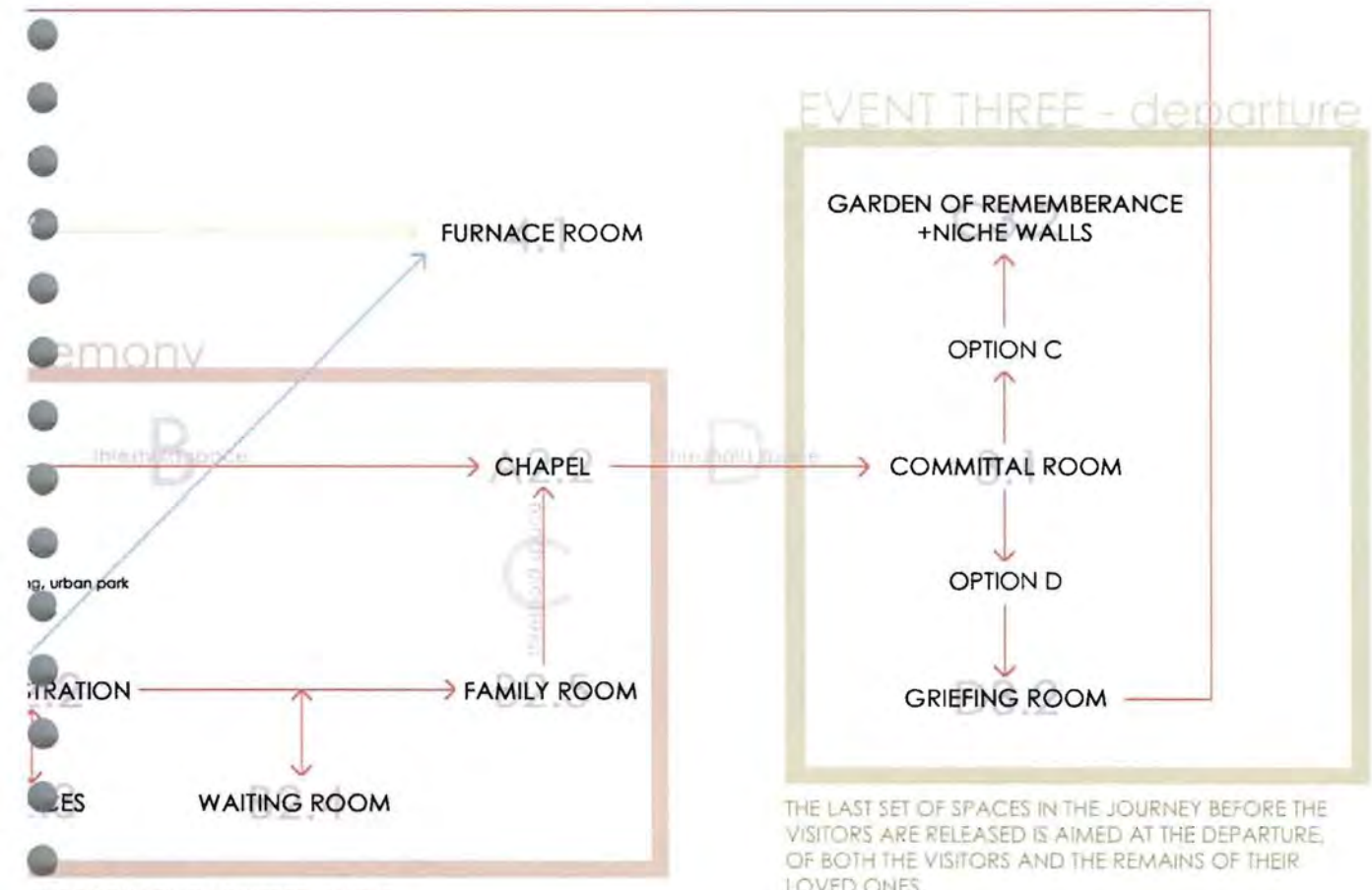
A - Bereaved Family

B - Administration Staff

C - Hearse Driver, Note: only if the ceremony has been held elsewhere, in which case the hearse will deliver the body directly to the furnace room via a seperate entrance



Diagrammatic Flow Chart Tracking Different Users Movement



THE BODY BEING LOWERED ON THE
M. IT IS THE LAST TIME THE FAMILY
STATE BEFORE INCINERATION.

THE LAST SET OF SPACES IN THE JOURNEY BEFORE THE VISITORS ARE RELEASED IS AIMED AT THE DEPARTURE, OF BOTH THE VISITORS AND THE REMAINS OF THEIR LOVED ONES.

"The site is a discarded piece of land on the edge of the cities residential periphery. It has little economic viability for the city and can be used to add life to the urban edge of Cape Town.

It is a threshold space, caught between larger orders."

5

THE GLENCOE QUARRY SITE ANALYSIS

The necropolis poses many spatial concerns for the city. Cape Town currently has 17 dormant and 21 operational cemeteries, of which most are nearing capacity. The cities first burial grounds on the slopes of Signal Hill and along Somerset Street as Prestwich initially prompted me to search for a city site. The growth of the city, coupled with the introduction of new suburbia meant that cemeteries were being introduced to the fringes of the new residential districts. Today, many of these are inaccessible or overcrowded. A city crematorium would create an easily accessible, cleaner form of burial with minimal spatial impact as well as being a cheaper alternative to traditional cemeteries.

The initial site selection strategy was based on the following guidelines:

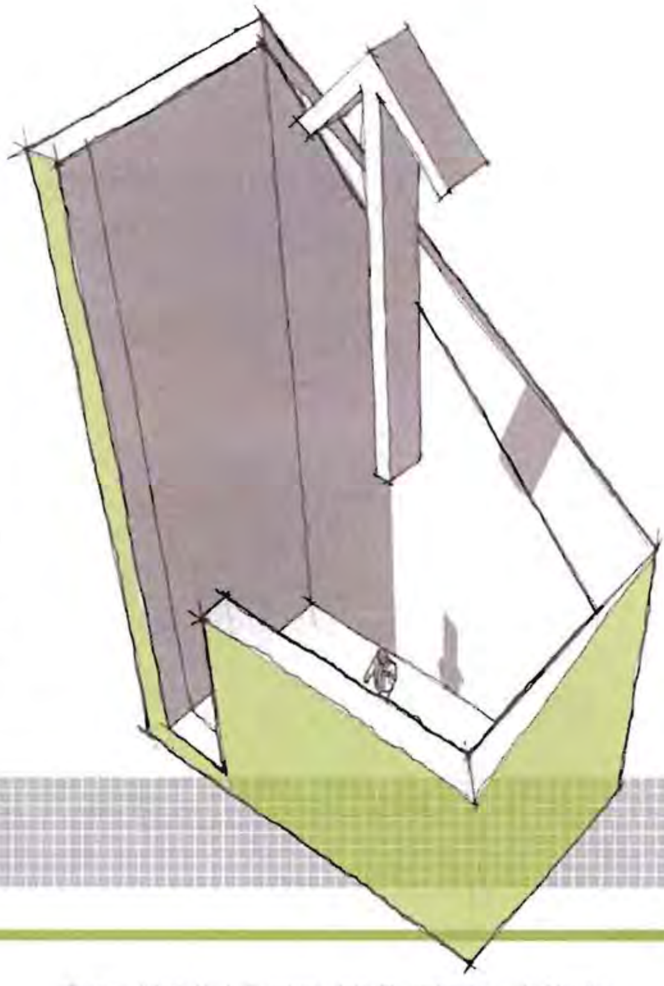
A discarded piece of land

With little economic viability for the city

Which could possibly add new life and vibrancy to the periphery of the Cape Town.

The major deterrent for a crematorium intervention in the city is noise. The program required a sense of seclusion and solitude.

The outskirts of the cities surrounding residential districts lay claim to a sprawl of abandoned quarries. The opportunity to re-use an abandoned space and give it new life through the proposed intervention presented itself, along with having the aforementioned qualities for site selection. The site also provided a strong sense of seclusion and removal from the everyday.



SITE INTRODUCTION
AS THRESHOLD

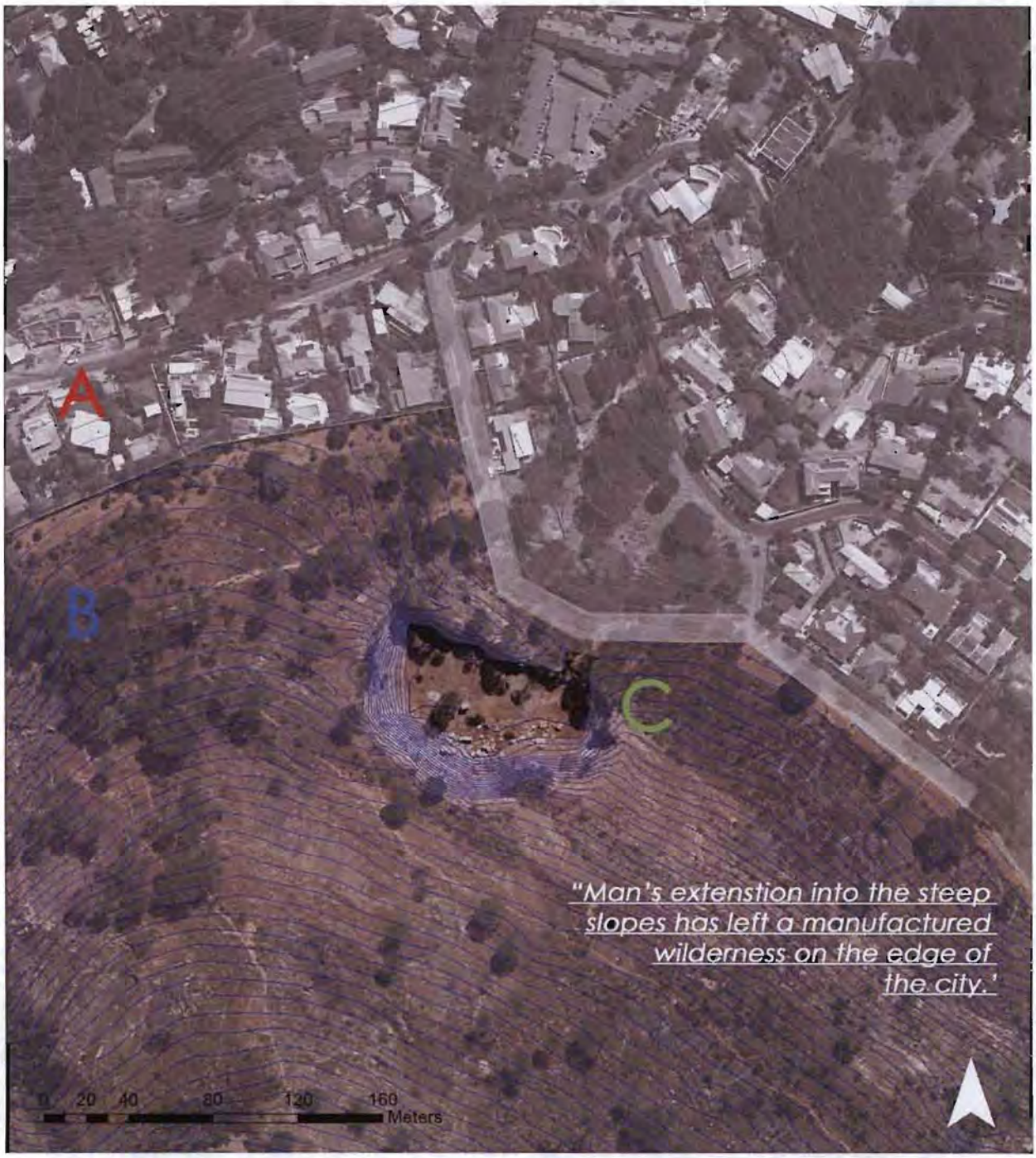
The Glencoe Quarry as the threshold between man and nature

The Glencoe Quarry site sits at the threshold between the residential edge of oranjezicht and the slopes of Table Mountain. Residences abutt the steep slopes of the mountains, terminating at the quarry.

A - Higgovale Residential precicnt

B - Table Mountain Natural precicnt

C - The Glencoe Quarry



Locating the site (No scale)

5

Diagrammatic Site Section (Not to scale)

SITE THEMES
1. THE NATURAL AMPHITHEATRE

Surreal Amphitheatre

The natural rehabilitation of the site, without any human intervention has created within the quarry a closed ecosystem. This has allowed only vegetation which is capable of surviving within this very specific environment to grow, accompanied by wildlife suited to it. The site has developed into a space which has intrinsic to it, the qualities one would associate to a dream like space, a fantasy world. A space which has grown onto, over and into its once abused surface.

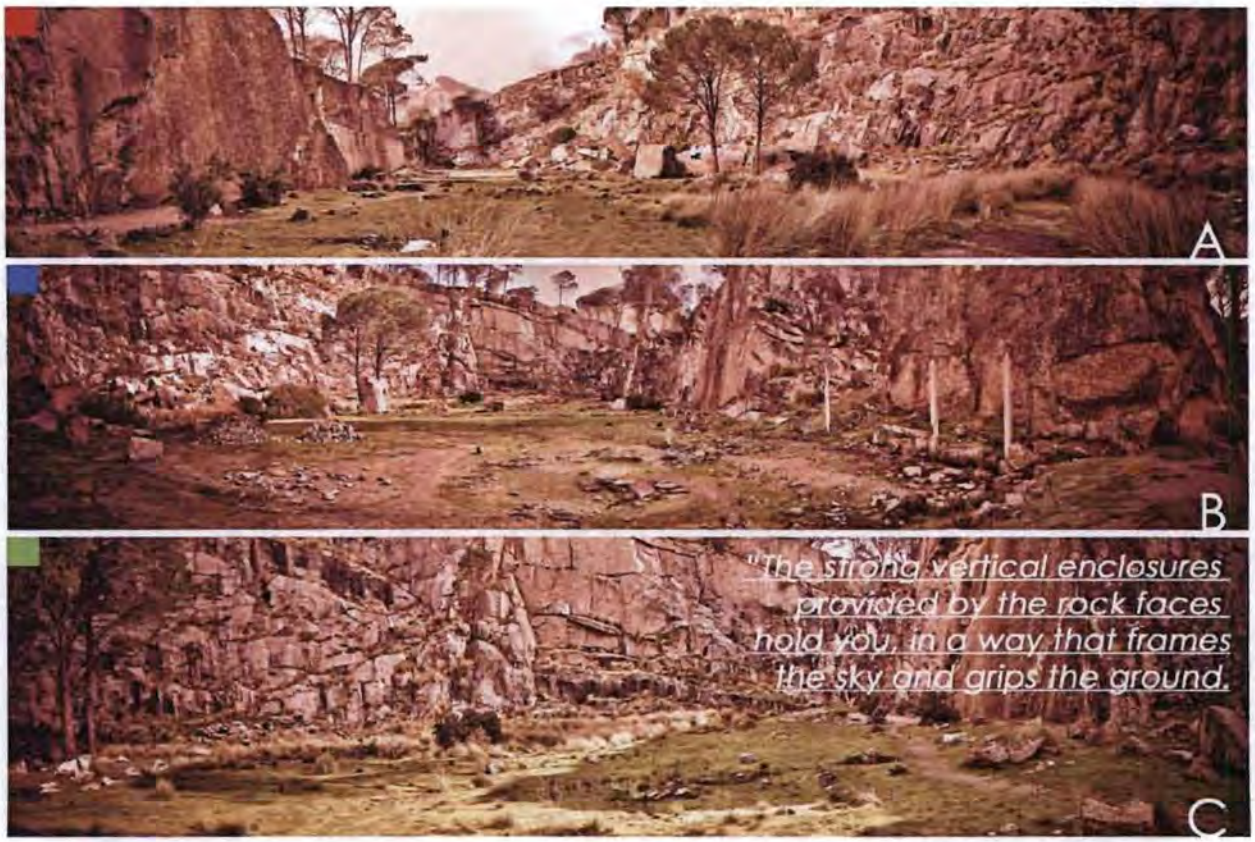
The site itself is a ruin, one which tells the story of mans selfishness towards the treatment of this earth.

Photography legend

A - Taken from the West end of the site looking towards the entrance

B - Taken from the East end of the site, standing at the entrance

C - Rock face striations



Site Form

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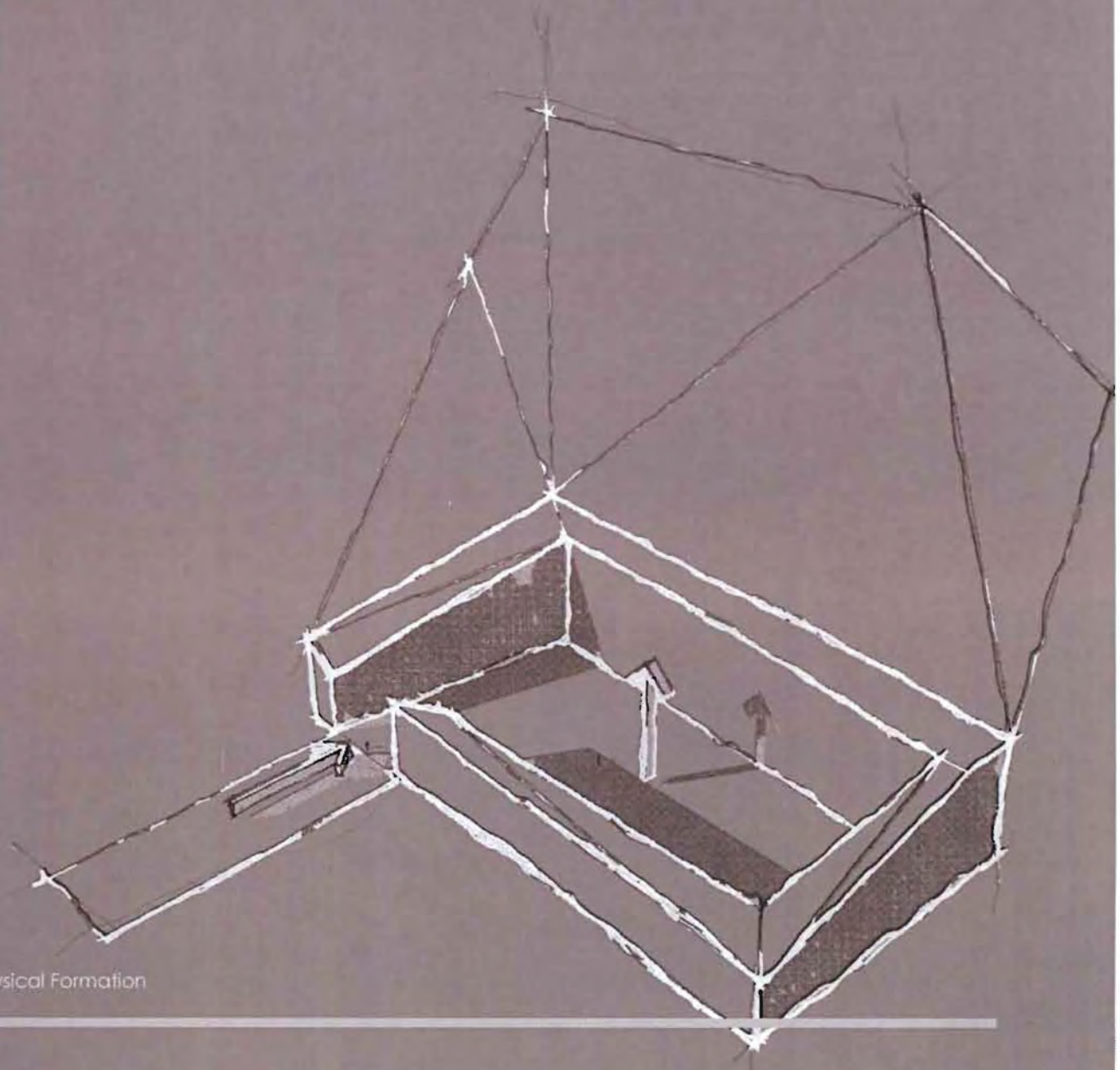


Site Physical Formation

SITE THEMES
2. ROCK FORMATIONS

Sculpted Rock Formation

The space takes the form of an enclave, tucked into the steep slopes. The Natural rock formations were sculpted by the Higgo family. A family of skilled stone masons who arrived in South Africa in 1850. By the mid 1850's, they began quarrying on the slopes of Table Mountain and Kloofnek.

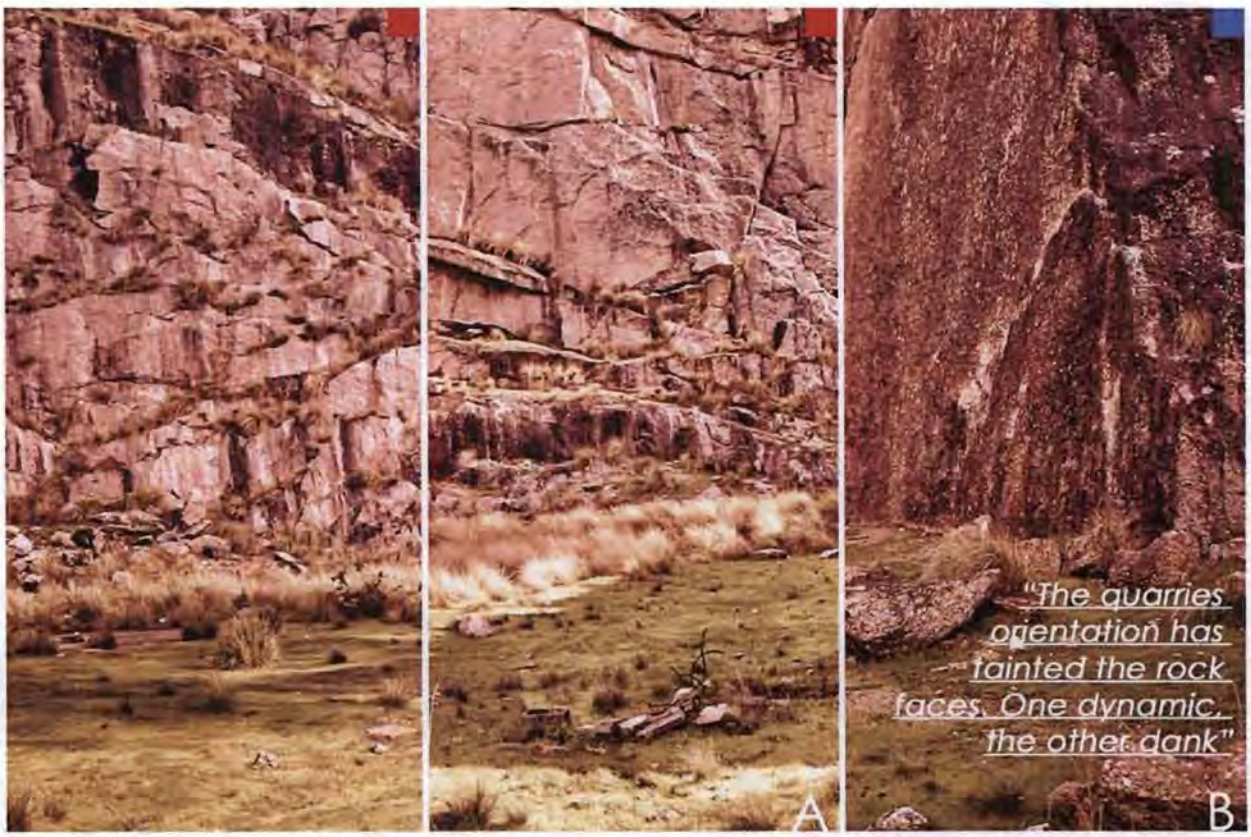
Two distinctly different types of rock faces exist at the quarry. The broader categorizations could be described as a type which has been 'handled', and the other as 'virgin' rock:

A. A 'scarred' face is dramatic, with strong striations cutting across its face horizontally. This face recieves daylight throughout the day, casting dynamic, harsh shadows. Nature has more easily adapted to this face, as strips of green latch onto its ledges.

B. The natural face is a single large boulder, with lighter cracks visible on its surface. This face is permanently in shadow due to its orientation, leaving it damp, discoloured and stained with natural growth of a different kind, moss.

A - North facing 'live' rock

B - South facing 'dead' rock



Rock typologies ('Virgin' and 'handled' rock)

5

Rock Typologies

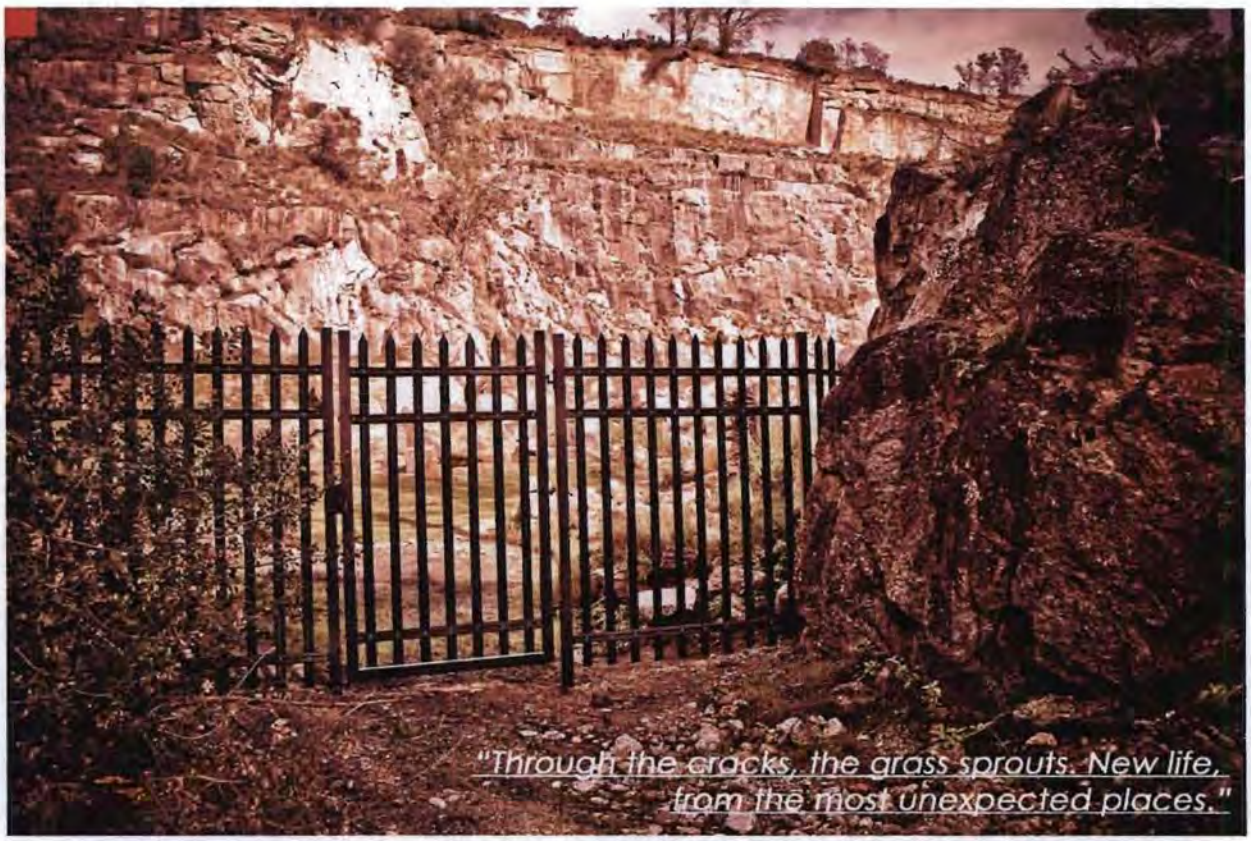
SITE THEMES
3. ABANDONMENT

Abandonment and natures ability to adapt

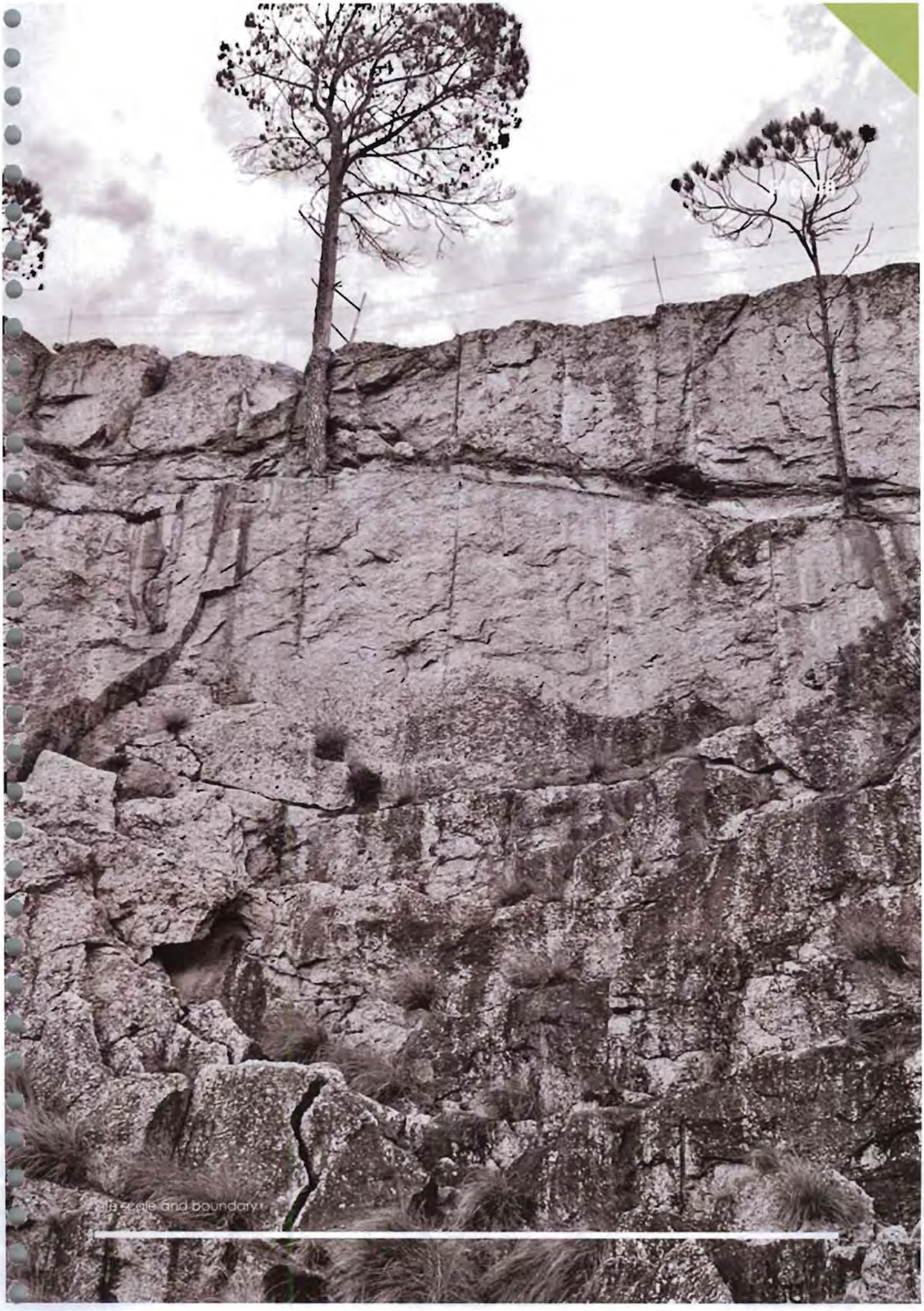
The quarry officially closed in 1930, leaving it abandoned for the last 80 plus years. This has allowed nature to take over, naturally revitalizing itself into a surreal 'amphitheatre'. Nature has found ways to adapt to this 'scarred land':

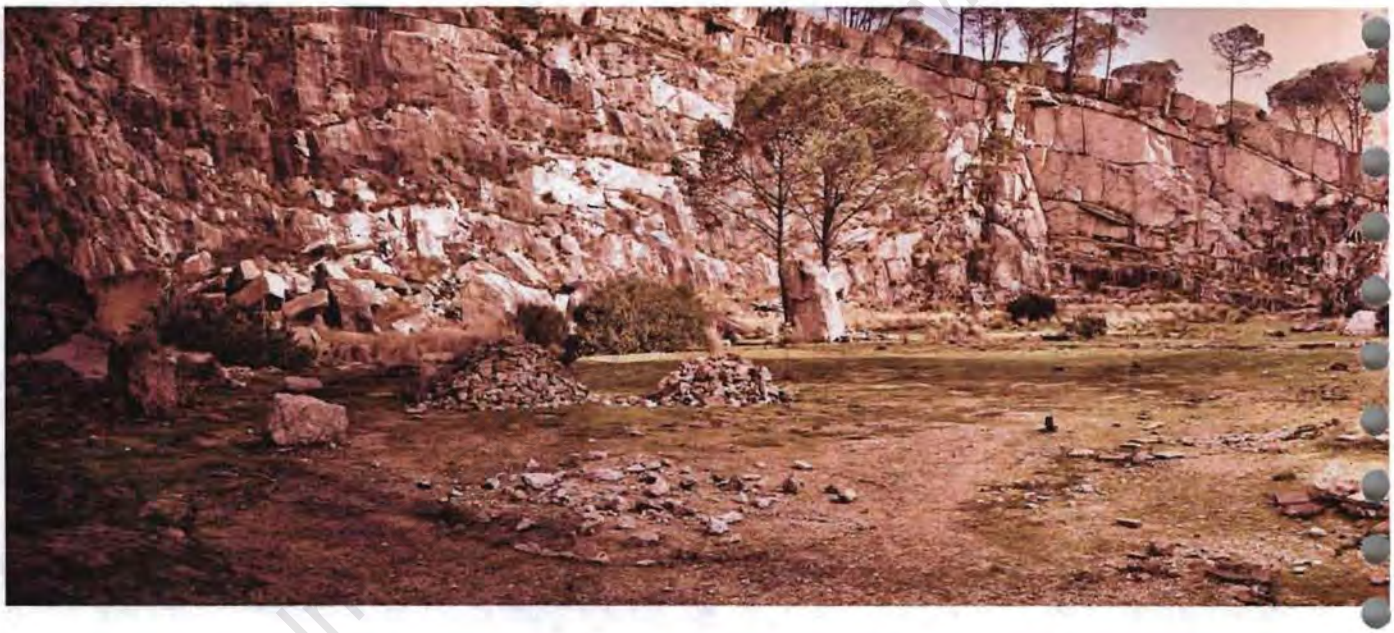
1. Through cracks in the rock grass sprouts

2. Ledges have become occupied by trees which precariously perch themselves on thin slivers of rock

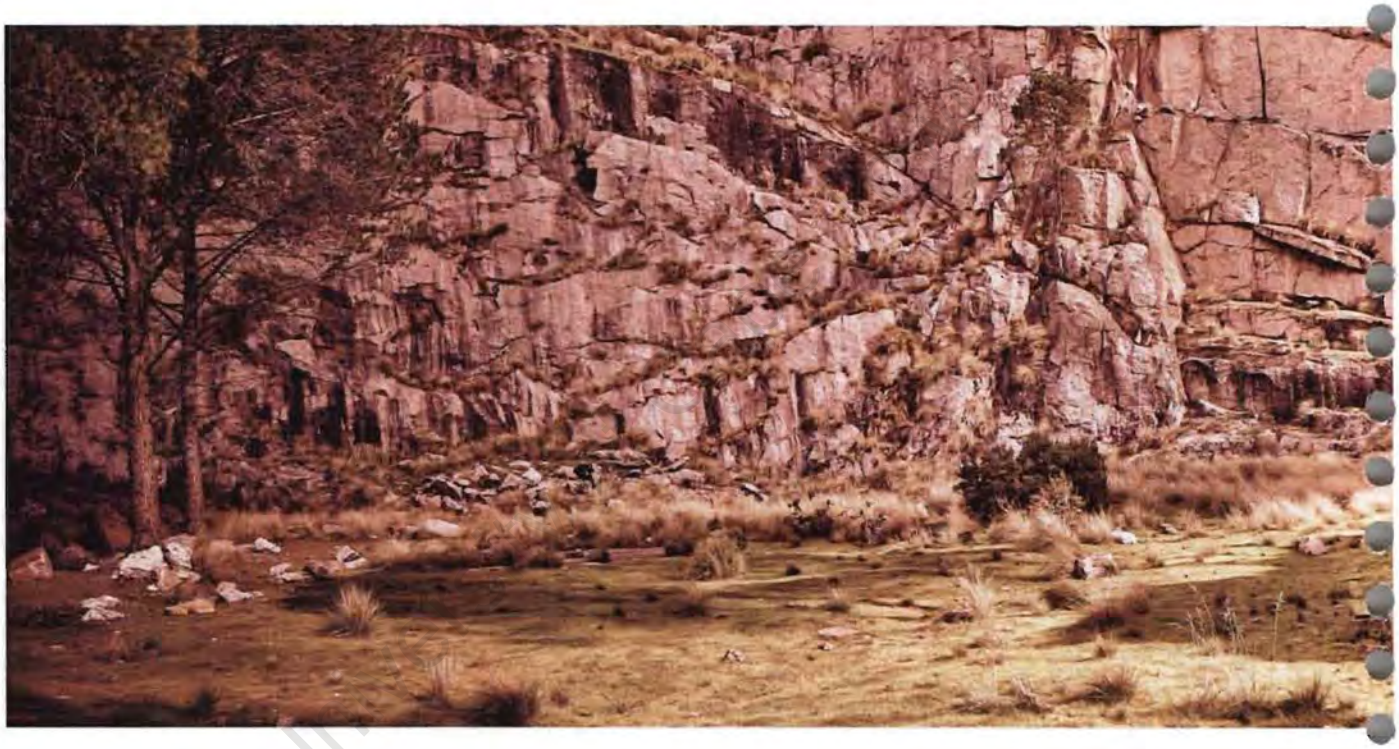


Fenced in (Due to the cities safety concerns)


scale and boundary



The Glencoe Quarry Elevations (Left hand side is North Facing 'live rock')



The Glencoe Quarry Elevations (Left hand side is North Facing 'live rock')

The Glencoe Quarry Elevations (Left hand side is South Facing 'dead rock')

SITE JUSTIFICATION
RE-USE + RECLUSE + REMOVED

Recluse, Seclusion and temporary disillusion

Contemporary society relies heavily on efficiency, we spread ourselfs thin by taking on lots of tasks at on single time. Life easily becomes chaotic and we constantly have to be thinking of more than one thing at a time. We experience life faster than is necesary to appreciate it all.

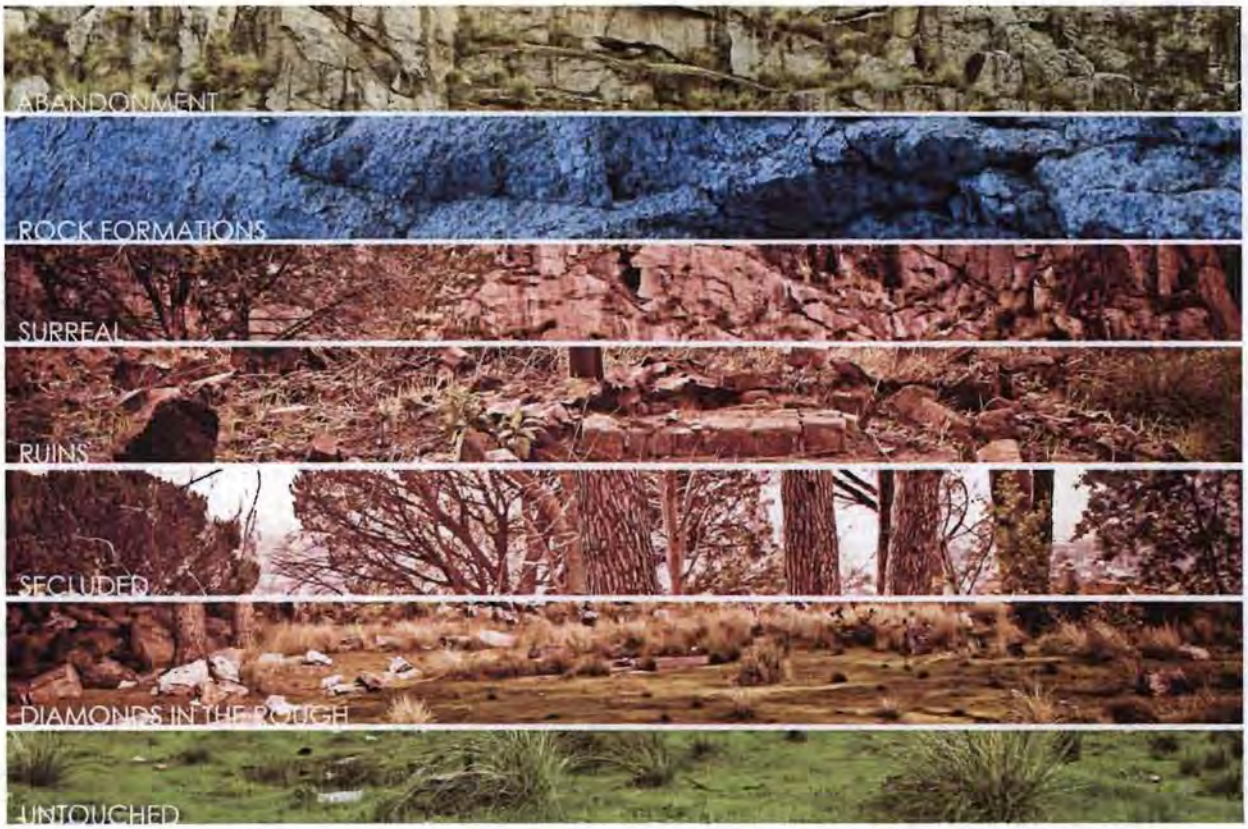
The quarry site removes all the chaos, allowing users to focus solely on their current state.

A place so serene it removes you from your daily life.

It slows down time, forcing you to engage with it.

It holds you, demanding your attention and respect.

The site has inherent in it, the qualities needed to allow the user to be aware only oh his current experience.



Site Characteristics

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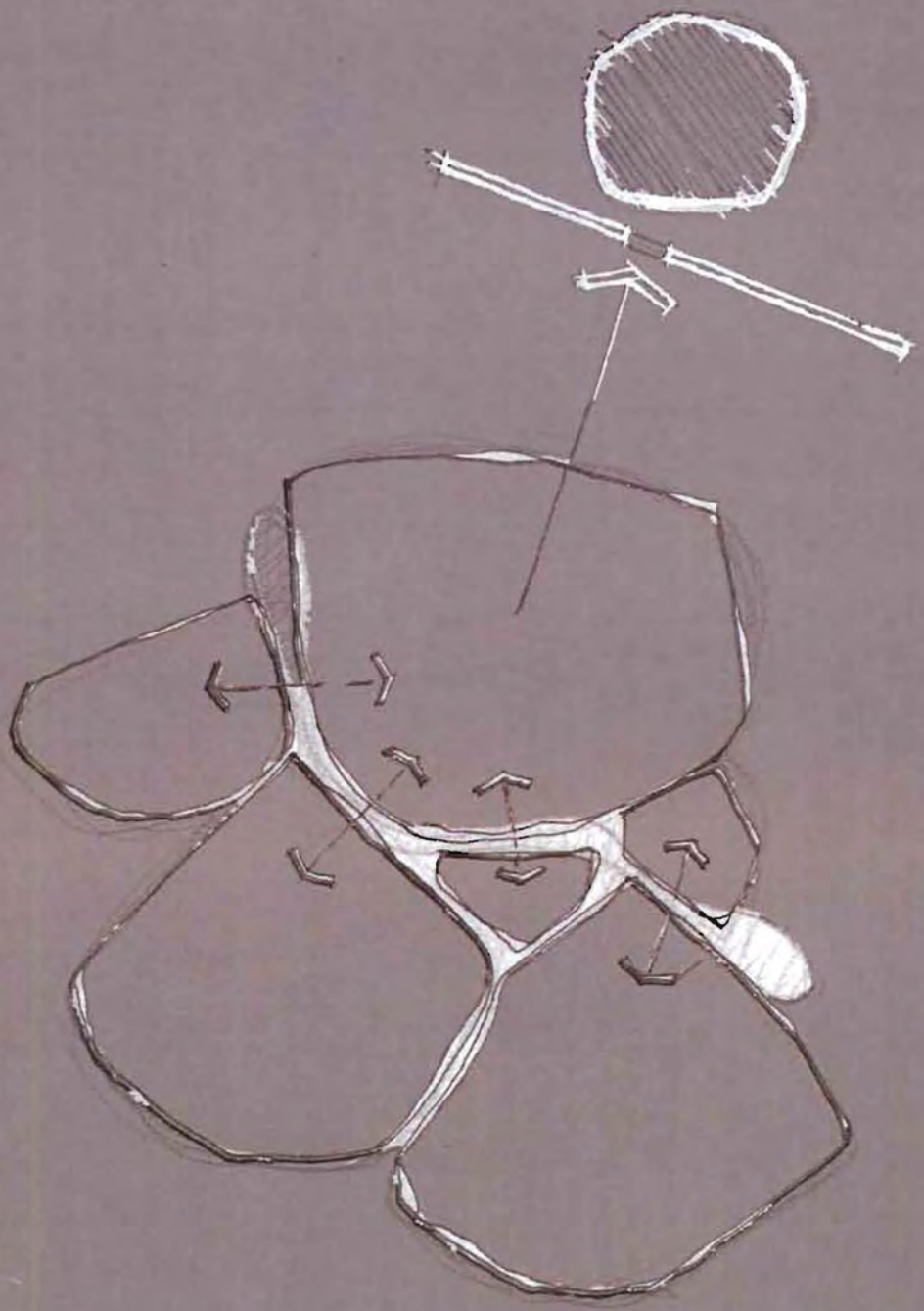


Site Seclusion

SITE ANALYSIS
DIAGRAMMATIC

Glencoe Quarry Diagrammatic Analysis

Threshold - The site sits on the boundary between man made intervention and nature, merging the two to create the manufactured pit, which has been overcome by nature since its abandonment.

Access - Glencoe Road West and Glencoe Avenue terminate about 200m from each other and merge via a dirt road at the entry point to the quarry. City plans indicate the road as a formal intervention, it is however yet to be constructed.

Pinch Point - Natural earth berms close off the 'amphitheatre' in a pinch point where access is currently controlled via a permanently locked pallisade fence.

Landscaping - Two rock formations exist on the site as previously discussed. 'Handled' and 'virgin' rock. Tall trees line the approach to the building.

A - Residential

B - Rock Formation 1

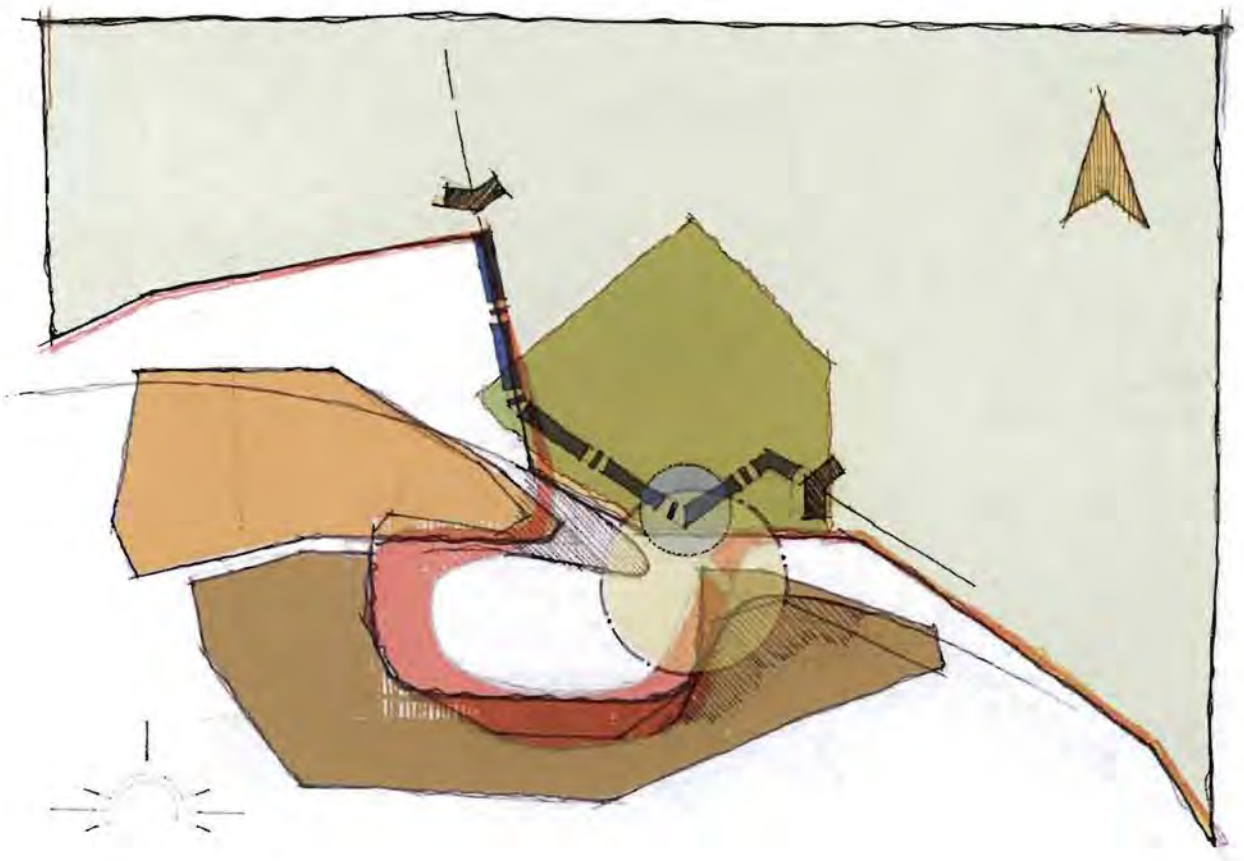
C - Threshold Extension

D - Pinch Point

E - Dense Trees

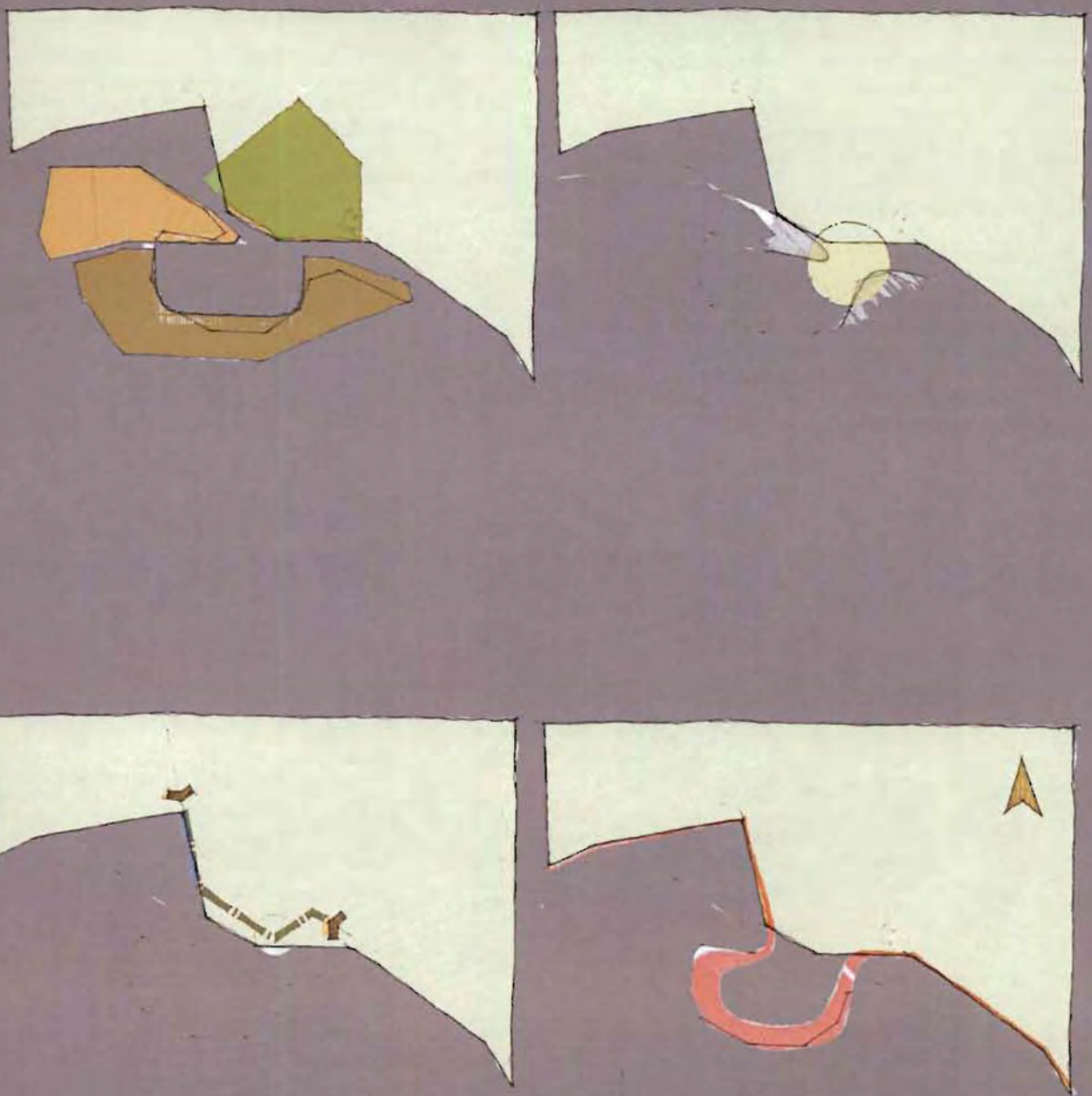
F - Rock Formation 2

G - Access + Routing



Site Diagrammatic Analysis

5



Site Diagrams (No scale)

SITE ANALYSIS
PHYSICAL CHARACTERISTICS

Manufactured Enclave

The site is essentially a space dug into the slopes of Table Mountain. Stone masons dug into the earth to access the valuable granite below ground. On abandonment of the quarry, it was left to recover from mans violent intrusion naturally.

The space encloses you with rock faces ranging from 12 - 20m tall, cutting you off from the world outside. A ground sky connection is created, with a single constant horizontal enclosure.

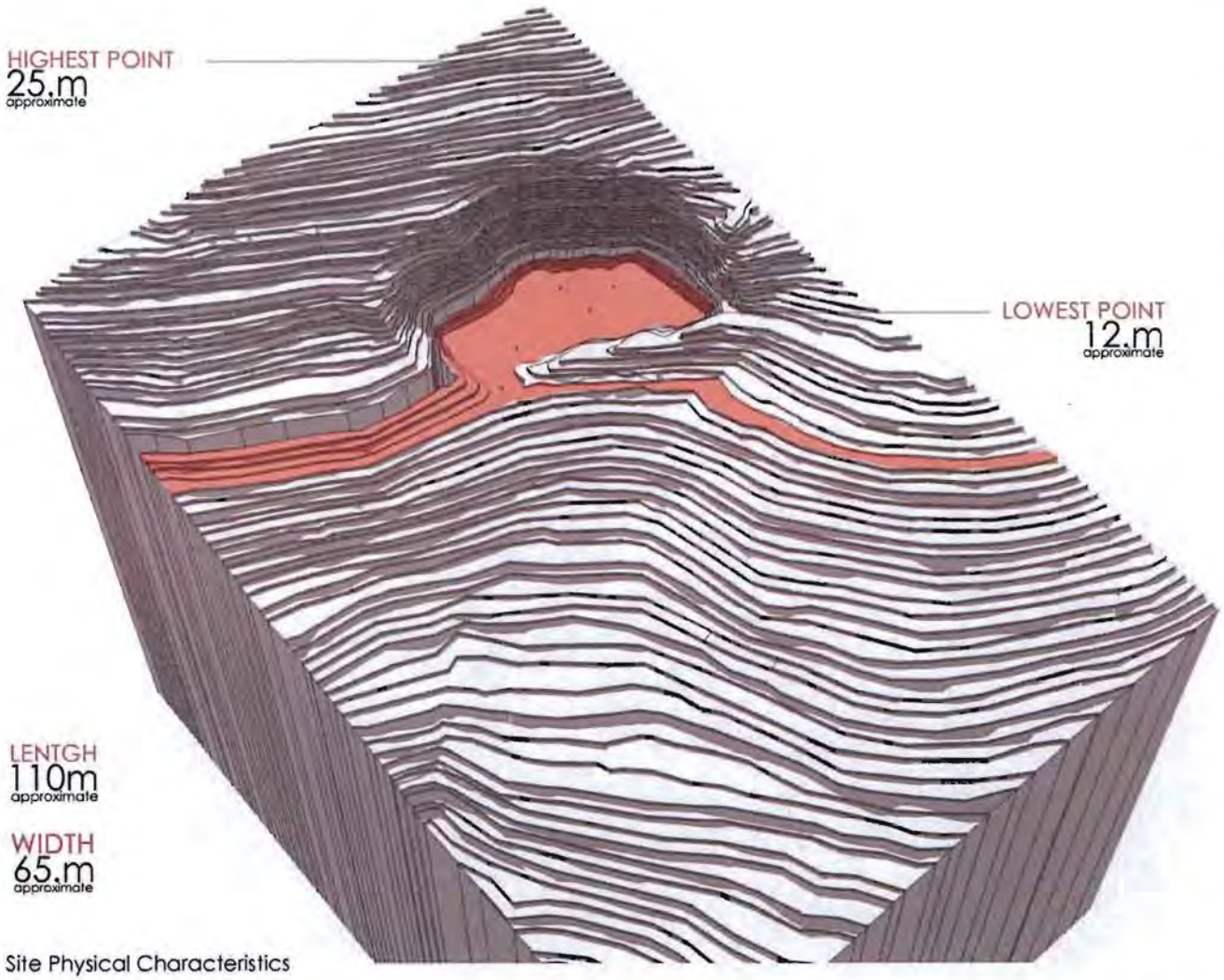
The Ground Sky Relationship

When considering the norms in construction, it can be agreed upon that we most often build on the eartths surface and rarely venture below or above it. Below ground space is considered to be undesirable, damp and claustrophobic with connotations of death, decay and darkness.

The sky on the other hand is considered to be mystical, a space we can't easily access.

By opposing the 2 opposites, we block out what we consider to be the norms of everyday life. By focusing on the ground below and the sky above, we nullify the thought of the urban.

A - Quarry extents



Site Physical Characteristics

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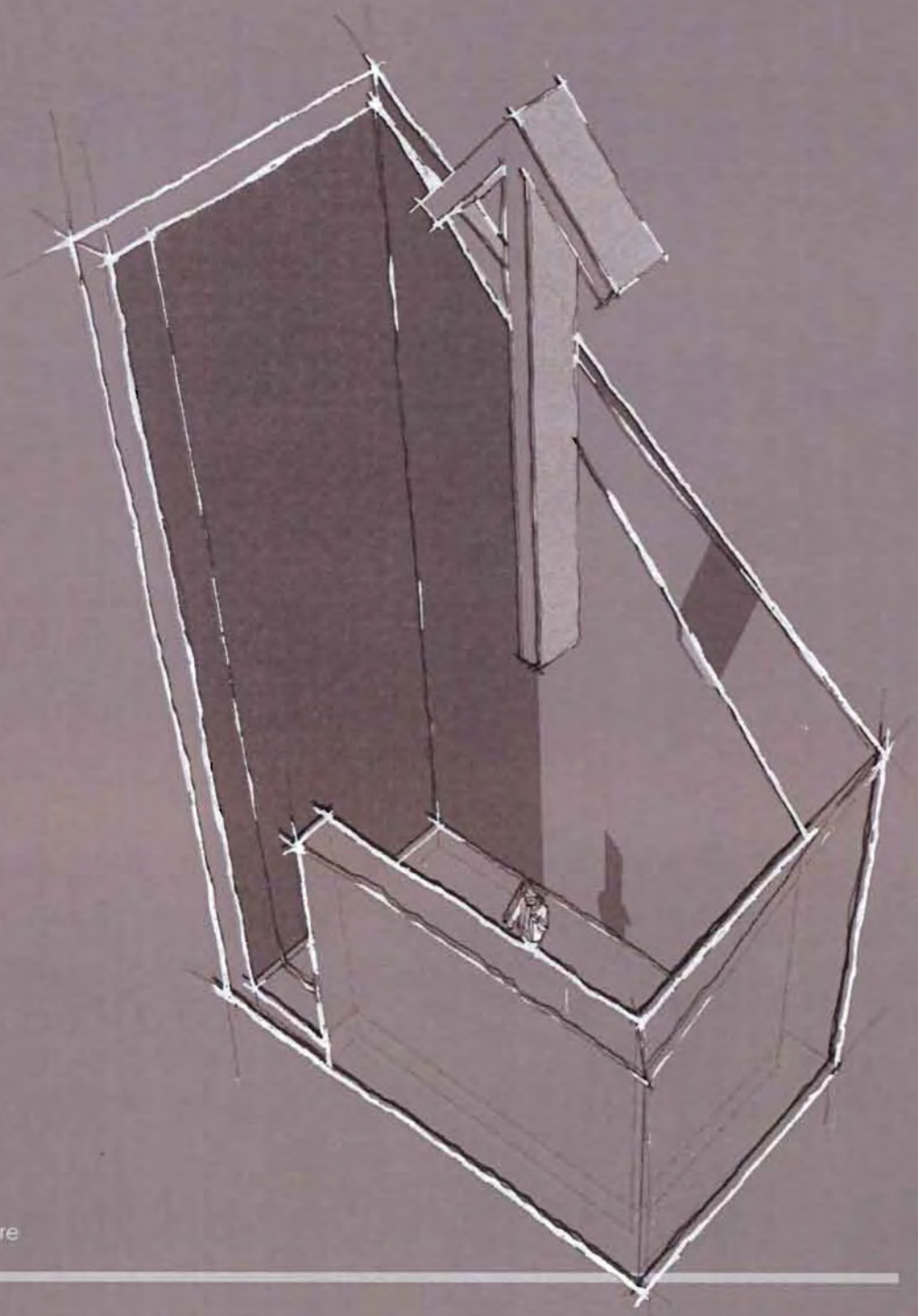


Strong Vertical Enclosure

SITE STRATEGY
LARGER ORDERING PRINCIPLES

1. Parking

The current approach to the building begins at the end of the formal tarred road, from that point on an earth/gravel pedestrian route continues to the entrance. The extension of these roads terminates in the proposed parking area.

1. Glencoe Road West

2. Glencoe Avenue

2. Dead (In-between) + Living Space

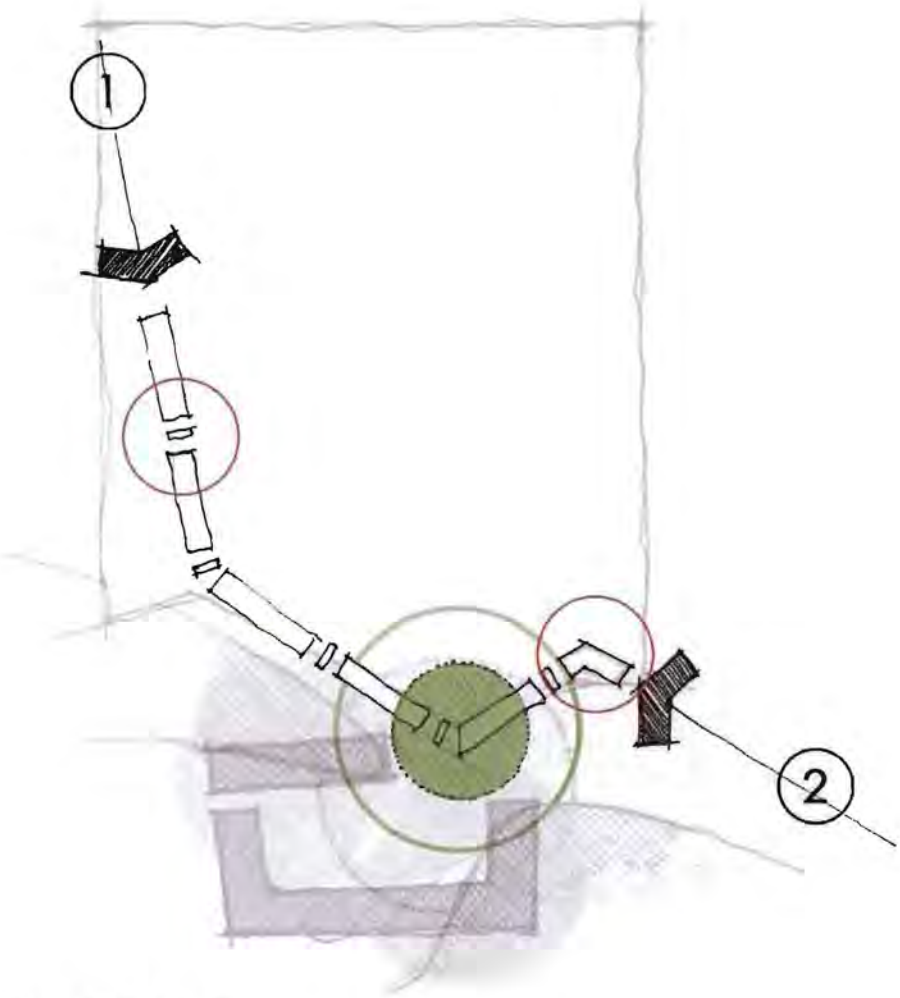
The earlier mentioned differences between the two rock formations highlighted the contrast between the 'living' and 'dead' rock. One full of life and light, the other dank and dark. The processing component is therefore best suited to the 'dead' rock area, while the ceremony spaces occupy the 'living' rock area.

3. Sense of Seclusion

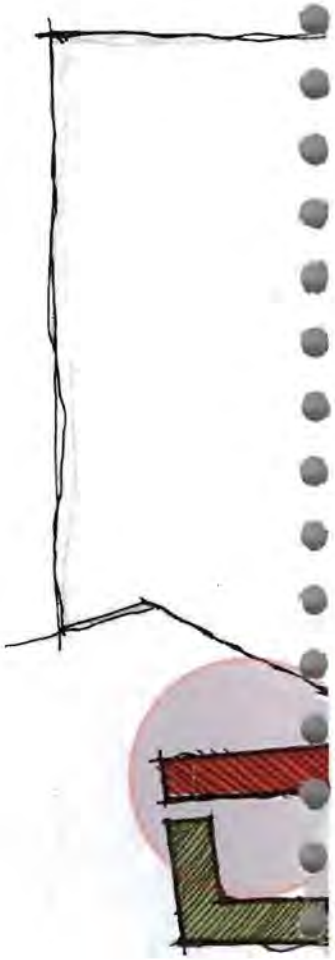
The physical characteristics of the site create a feeling of seclusion, a powerful break from the surrounding residential fabric and the nearby urban centre.

A - Condition A

B - Condition B

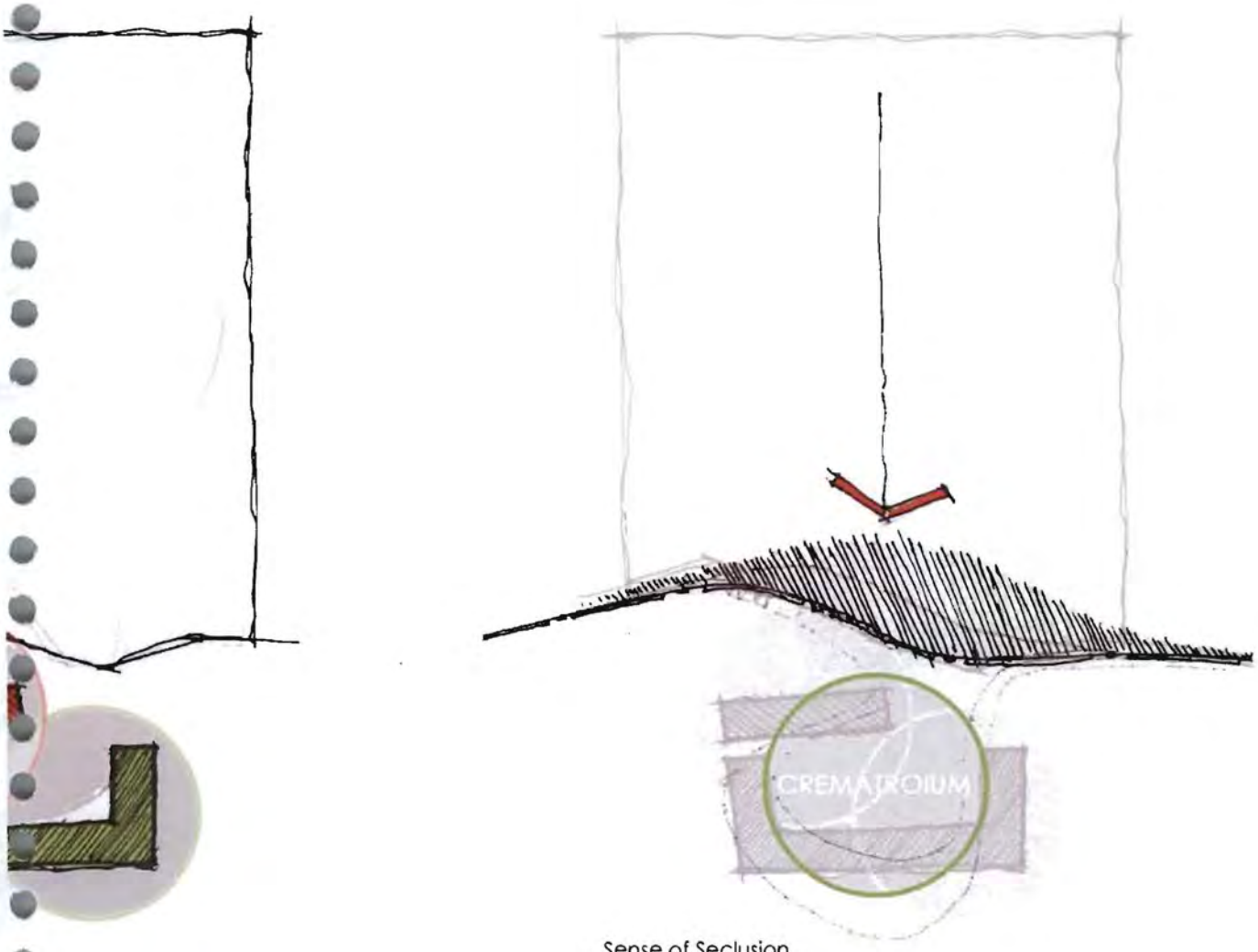


Initial Parking Strategy



Spatial Arrangement

SITE STRATEGY
LARGER ORDERING PRINCIPLES



Sense of Seclusion

SITE STRATEGY
LOCAL ORDERING PRINCIPLES

1. Merging Landscape + Architecture

The ground plane of the quarry, in its existing form provides the platform from which to view the rock faces. By creating a number of changes in level, emphasis is placed on the change in environment between scenes in the building.

2. The Most Potent Threshold

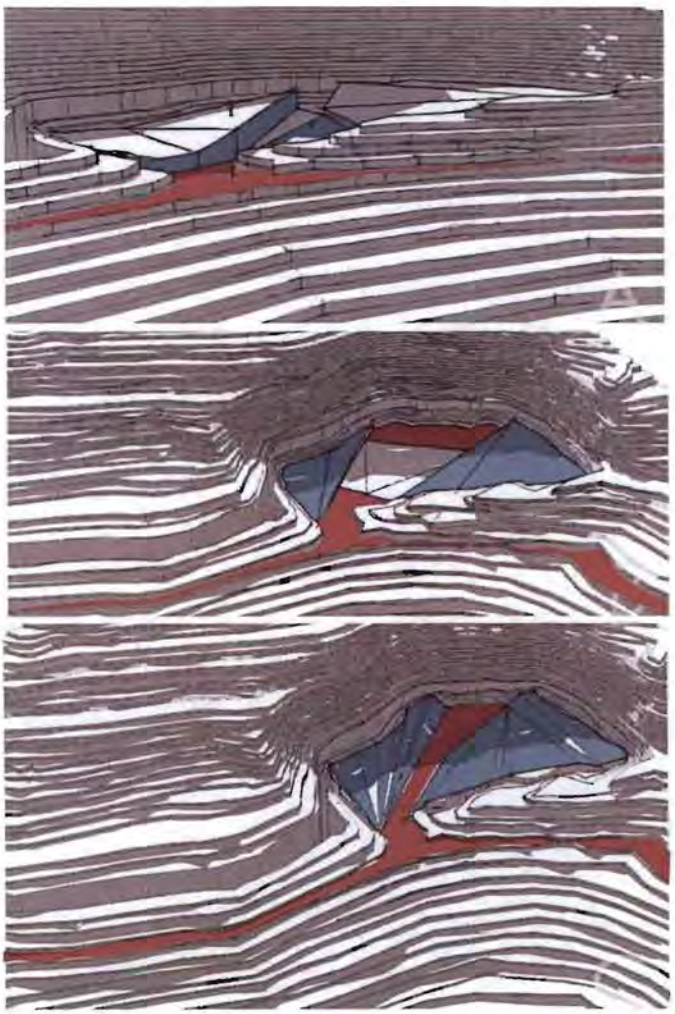
Van Eyck says that the most potent threshold space is set up in the dialogue between inside and outside. By creating mutliple relationships like this, the event is repeated, enriching the user experience.

3. Cave recluse (Mourning) + Open Threshold (Journey)

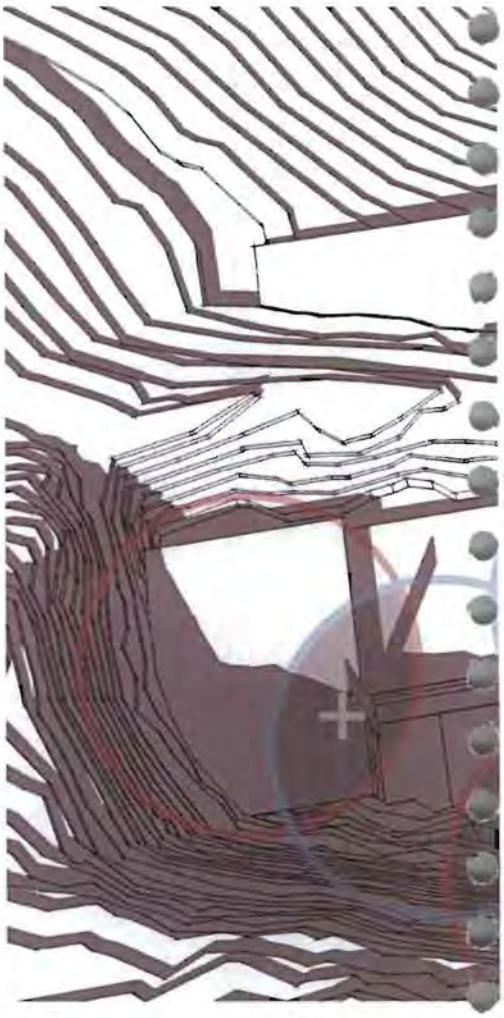
By allowing the building to push into and above the ground and the rock face, two spatila typologies are created with relation to the type of enclosure.

1. Heavy set and secluded

2. Light and open

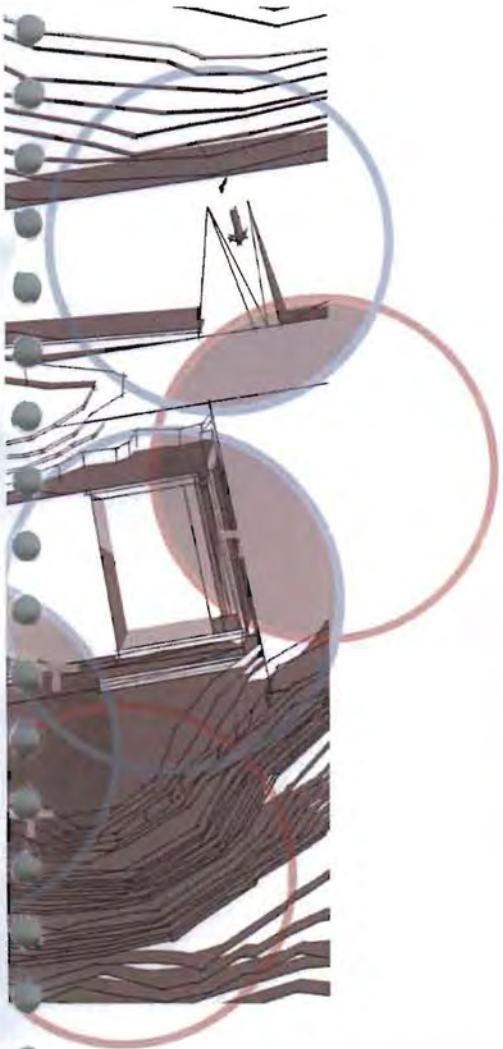


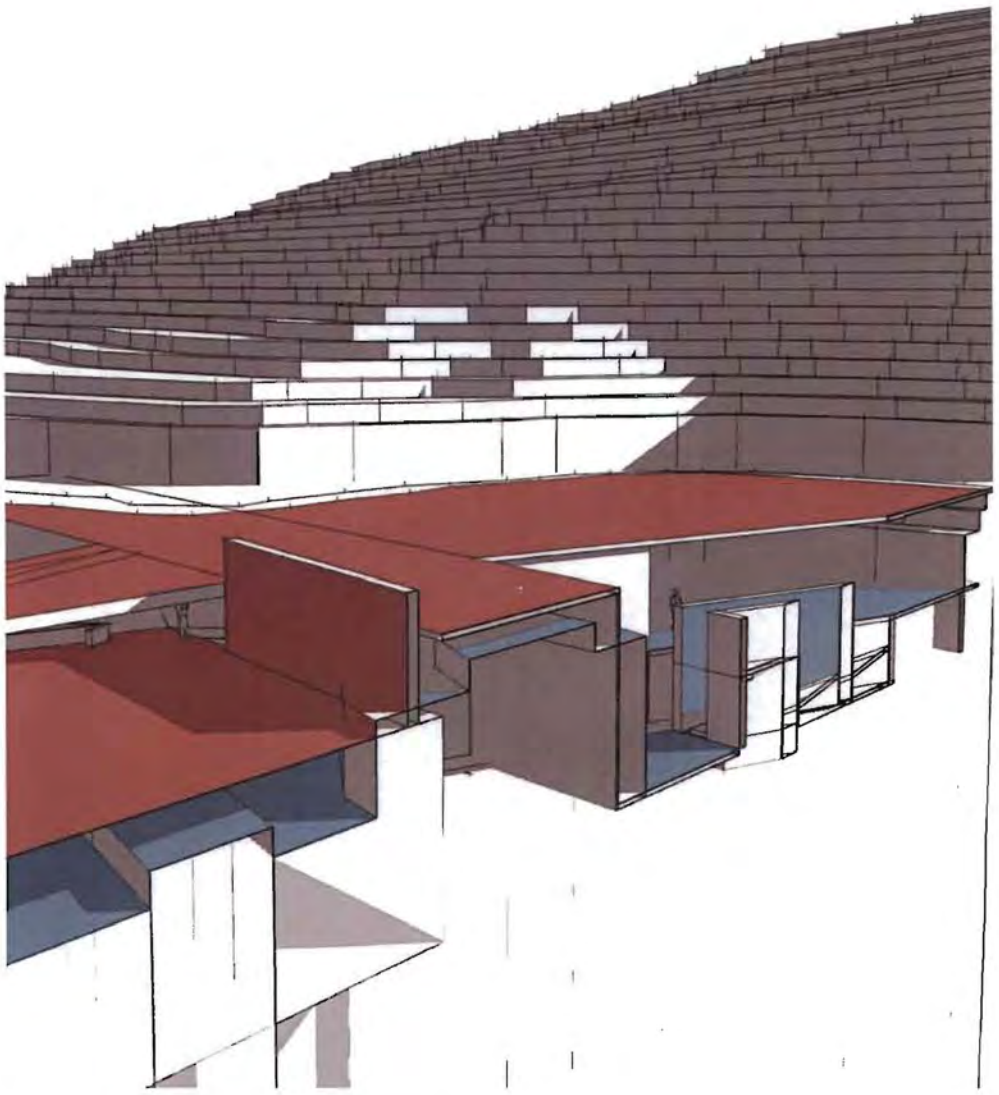
Land Forming



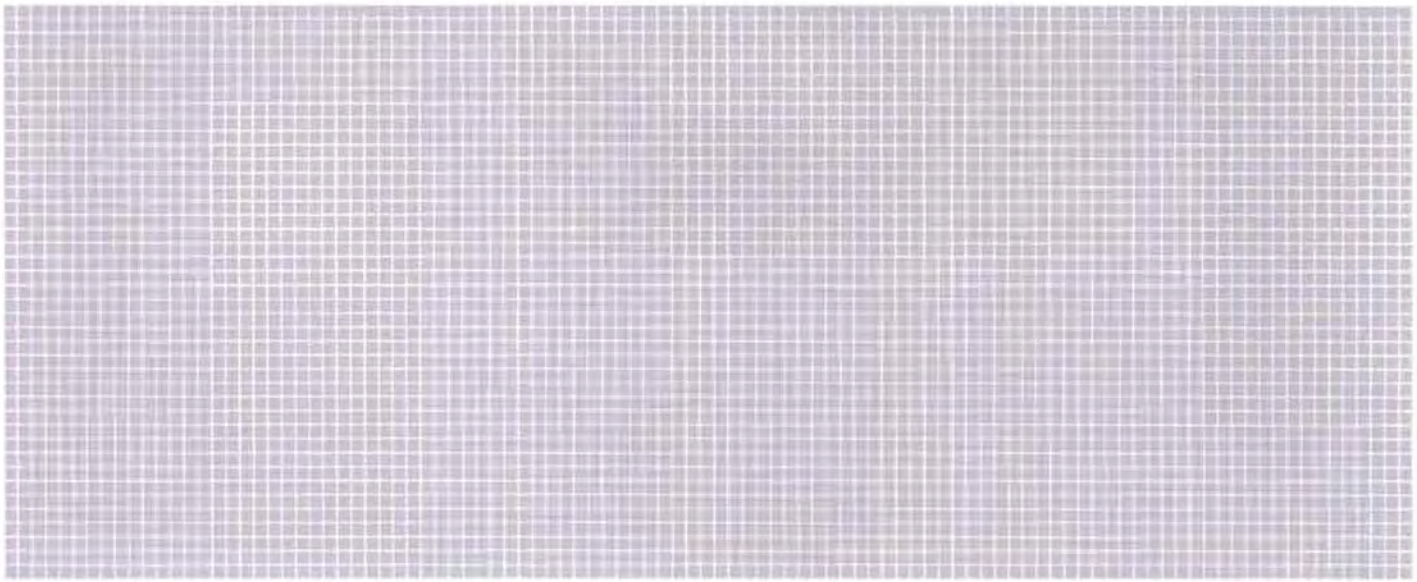
Multiple Inside Outside Relationships

SITE STRATEGY
LOCAL ORDERING PRINCIPLES





Open + Closed Space



"The most potent threshold space comes about when polar opposites come together...

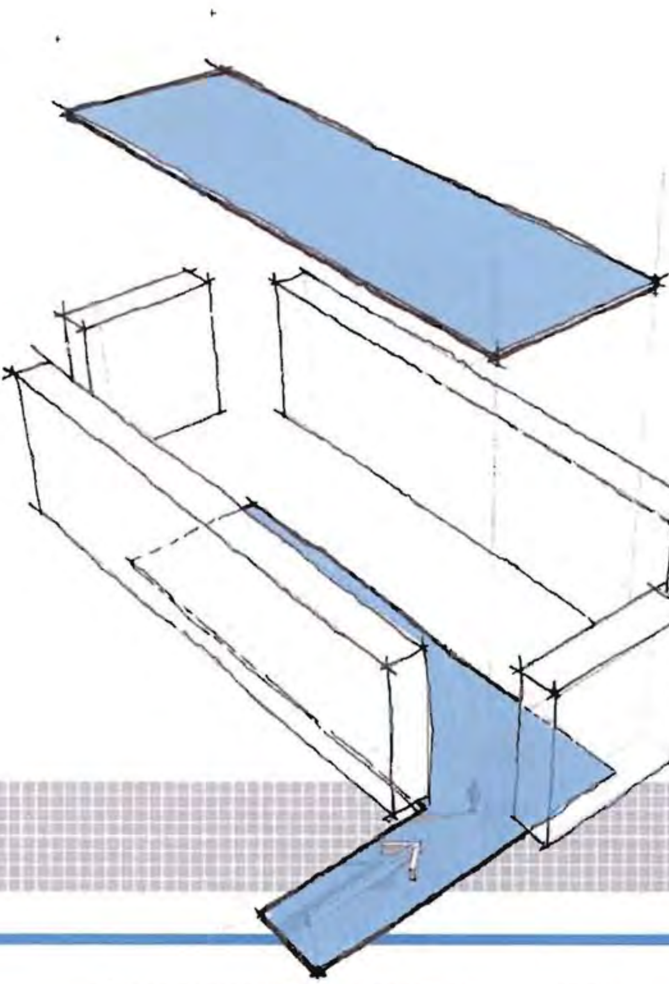
resulting in a third space, a vague area, an opportunity to pause, adjust, interpret."

6

CONCEPT DEVELOPMENT

The initial conceptual base revolved around clues given by the quarry site. Numerous themes were extracted from a spatial analysis of the site. The heaviness of the vertical enclosures, contrasting against the sky's above, the material and structural make up, the textures, climate and spatial characteristics sparked numerous avenues of thought. This resulted in a set of underlying concepts.

These concepts formed the foundation for the formal expression of the building moving forward.



CONCEPT
THE POLAR OPPOSITES, THRESHOLD CONCEPTS

Authors Interpretation

My interpretation of the threshold as a potent space comes about when polar opposites are brought together to result in a third in-between. This concept helps to create a set of guiding principles for the project according to the following themes:

1. Life and Death

Program [The living visiting the deceased]

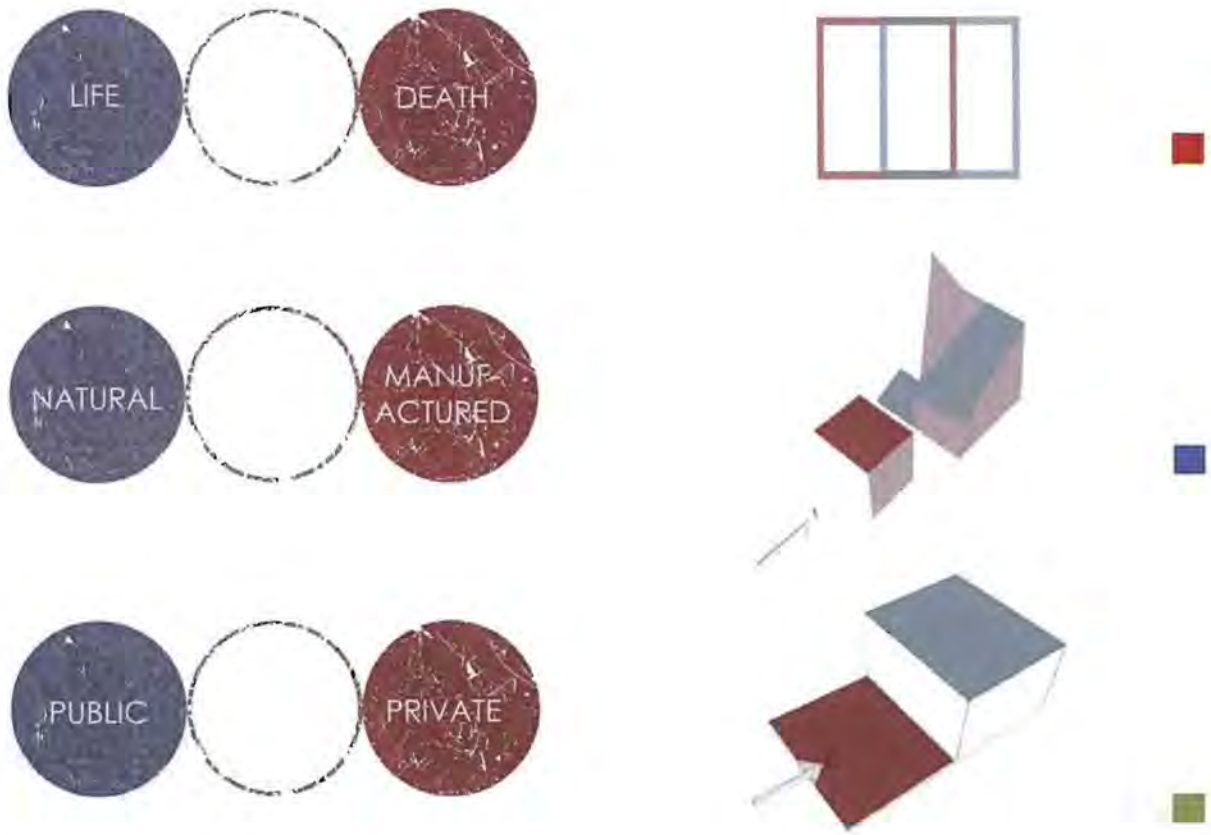
2. Natural and Manufactured

Site selection [Mans invasion into the quarry for resources, creating a manufactured wilderness]

Technology [Adapting a combination of both the natural features on site + manufactured materials]

3. Public and Private

Program [Rehabilitating the quarry in a manner that will attract more visitors more frequently, this presents a tension between public access and the cremation process]



Conceptual Basis for the threshold

CONCEPT
THE POLAR OPPOSITES, THRESHOLD CONCEPTS

4. Reality and Fantasy

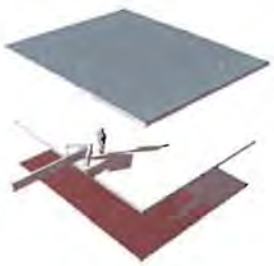
Ritual [Everything about death will remain a mystery. It is widely believed that death is merely a transition from one reality to another, a jump between reality and fantasy]

5. Above and Below

Formal gesture [Recluse in the rock in the form of a faux cave vs the open niche wall areas for visiting]

6. Event and Journey

Program [The nature of a crematorium is that it functions as a series of spaces which are passed through in a sequential manner]



CONCEPT
THROUGH THE CRACKS

Secondary Concepts
1. Through The Cracks, Life Emerges

The natural rehabilitation of the site has meant that nature has had to find ways to adapt to the abused void space. Out of the cracks in the rock, grass has sprouted, softening the striations of the rock. Trees have perched themselfs precariously on thin rock ledges, sending their roots into the smallest of openings to find a footing.

The fissures in the rock, have proved to be efficient breeding grounds for a new generation life on the site. The site is given its surreal qualities through the coming together of the 'scarred rockface' and the 'new life' of vegetation. The stark contrast between the cold, hard rock and the soft, lush grass seems too contradictory to be real. The fact that it has managed to grow in such circumstances leaves you in awe.

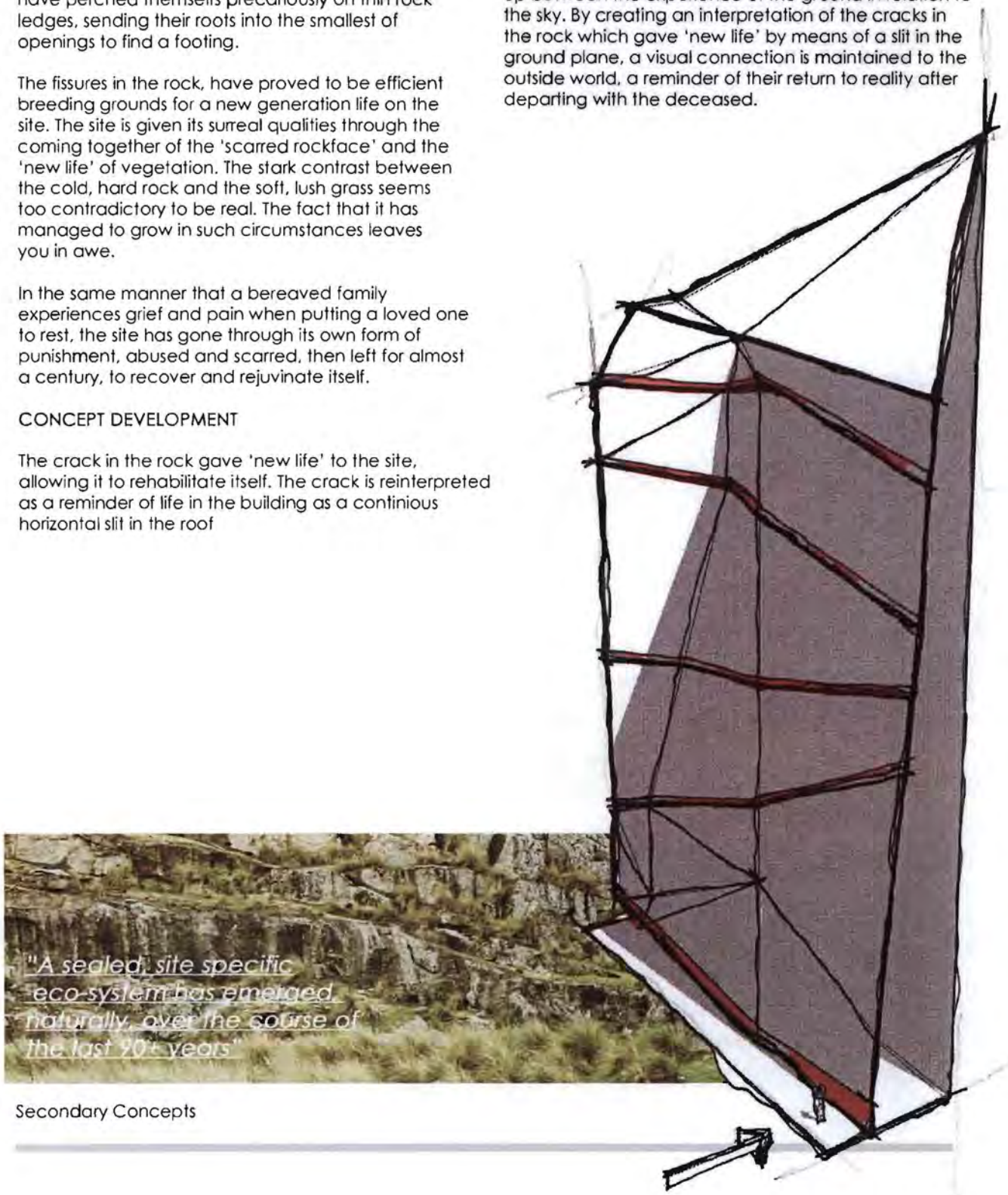
In the same manner that a bereaved family experiences grief and pain when putting a loved one to rest, the site has gone through its own form of punishment, abused and scarred, then left for almost a century, to recover and rejuvinate itself.

CONCEPT DEVELOPMENT

The crack in the rock gave 'new life' to the site, allowing it to rehabilitate itself. The crack is reinterpreted as a reminder of life in the building as a continious horizontal slit in the roof

Architectural Strategy

In order to disclocate the user from the living realm, they are taken below ground where a relationship is set up between the experience of the ground in relation to the sky. By creating an interpretation of the cracks in the rock which gave 'new life' by means of a slit in the ground plane, a visual connection is maintained to the outside world, a reminder of their return to reality after departing with the deceased.



CONCEPT
THE GROUND SKY RELATIONSHIP

Secondary Concepts
2. Setting up a Vertical Relationship

The powerful horizontal enclosure provided by the rock faces provides a strong sense of isolation and seclusion. The walls tell the story of a space which has endured lots of pain at the hands of man. It instills in us a sense of awe and amazement because of the scale and make up of it. The strong striations remind us of the violent act of quarrying which it has endured and recovered from.

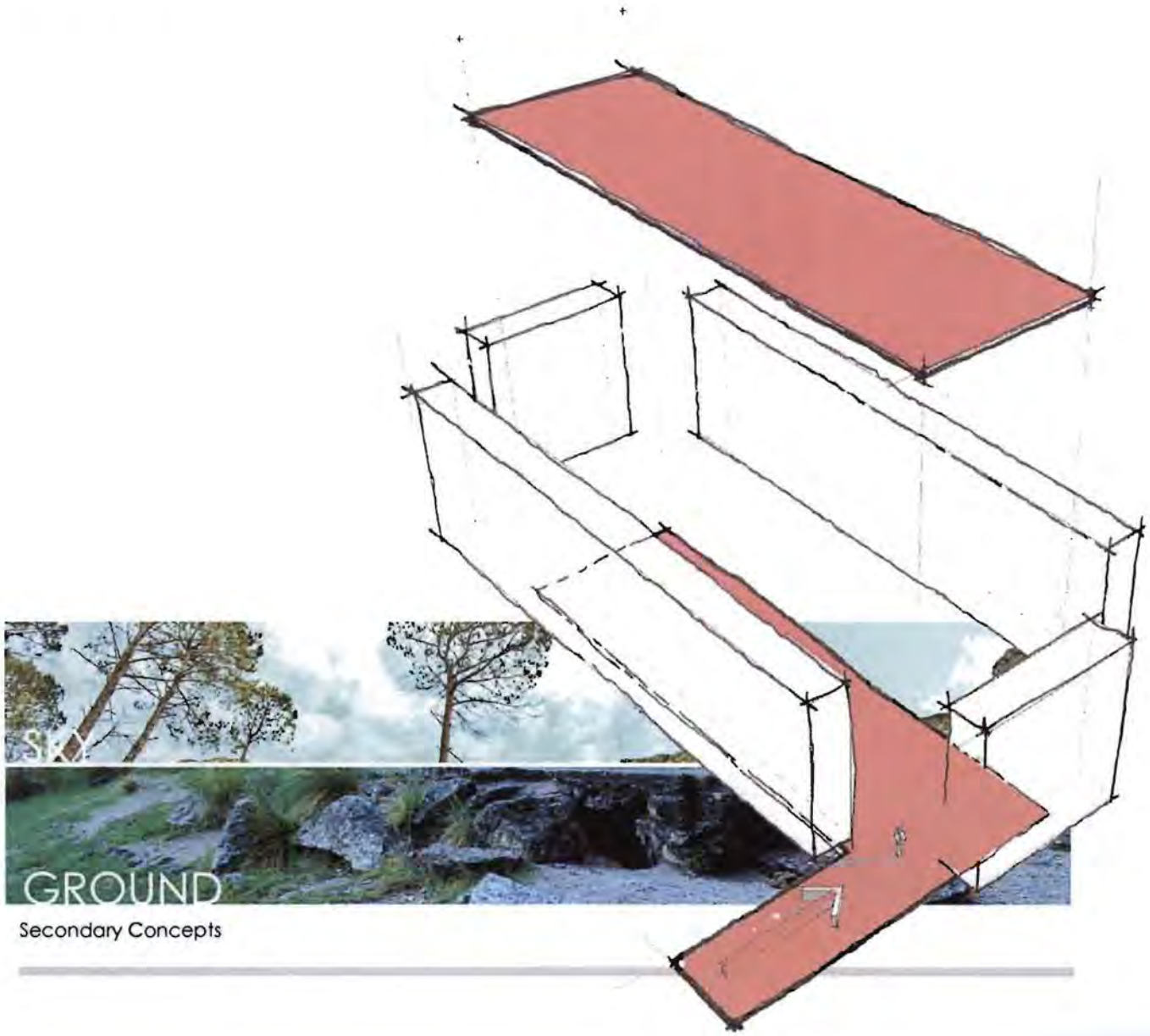
Concept Development

The rock faces provide us with the vertical enclosure for the intervention. They represent a story similar in nature to the celebration of death. The walls experienced pain and suffering in the same manner that the family is, and has rehabiltated itself to carry on after the loss.

Architectural Strategy

By placing emphasis on the design of the ground and roof plane, a ground to sky relationship is set up. We rarely venture with built intervention into the sky, unless rooted to the ground. The same can be said for the ground plane, the idea of moulding the earth to merge it with the built intervention is rarely applied in contemporary architecture.

It is considered the norm, to root our buildings on top of the earths surface. We have becomeaccustomed to mostly experiencing architecture in the horizontal plane. By cancelling outthe vertical enclosure, a surreal connection is made between the ground which we return to and the mystical nature of the skies.



CONCEPT
THE STAGE [ARCH] + THE SCRIPT [PROGRAM]

Secondary Concepts
3. As Architects we provide the stage for the actors to act out life

1. Aristotle, 'The poetics'

Aristotle, in his book, the poetics he states the following regarding the plot in traditional plays:

The plot adds drama, it helps to bring meaning to a story, introducing the topic, building suspense, allowing for a meaningful climax, followed by a conclusion.

The plot has the following characteristics:

1.It is a sequence of events

2. To be a potent story, it needs to be more than just the telling of a series of events one after the other, it needs a motivating purpose. [Reflection + Celebration on + of death]

3. A connection between each of the events, linking the scenes toegther into a coherent whole.

Frytag's Analysis of 'Plot Structure'

His analysis consists of 5 stages:

A. Exposition - an introduction which provides background information on the plot.

B. Rising action

C. Climax

D. Falling action

E. Denouement - the outcome or resolution of a doubtful series of events

2. Concept Development

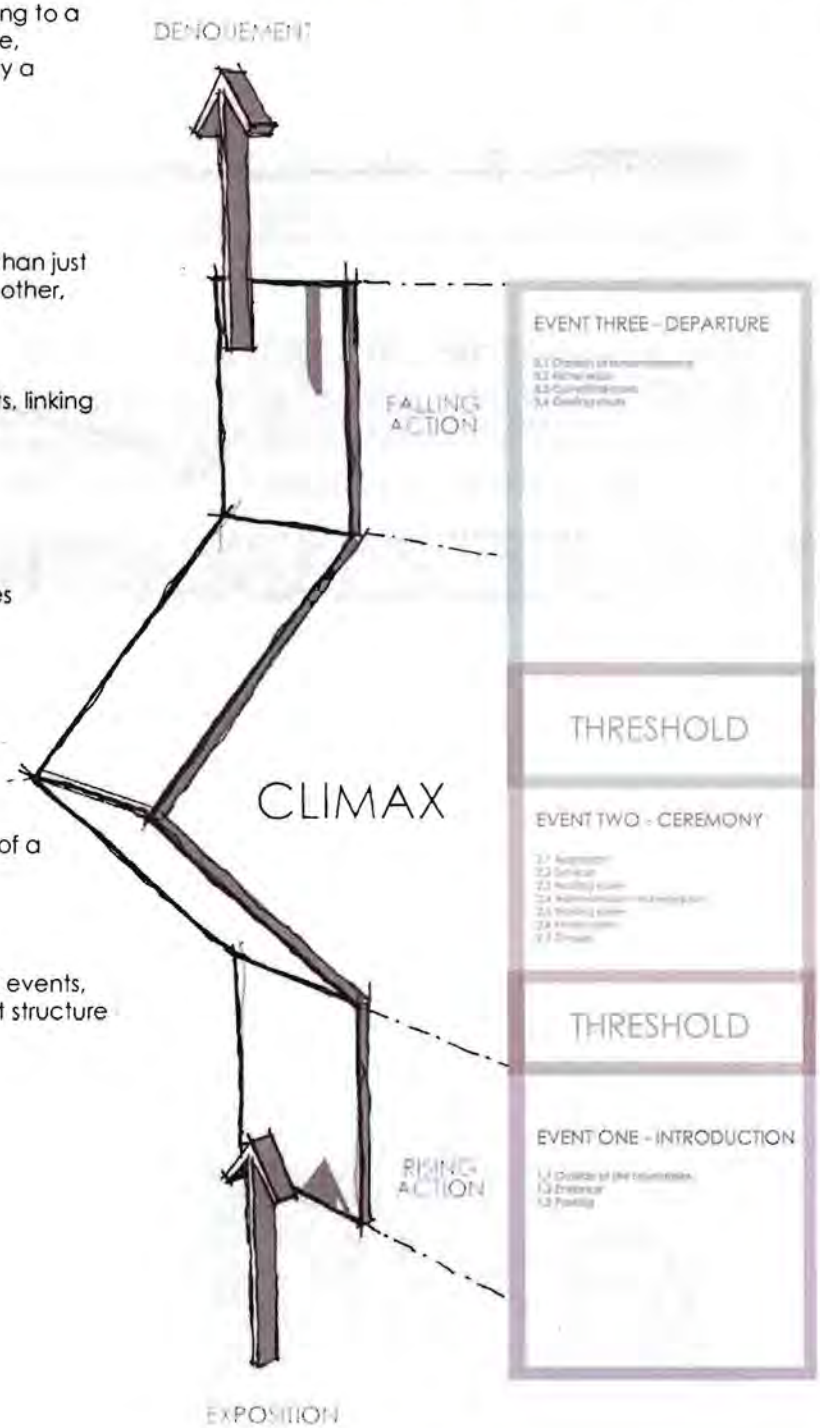
By considering the the building as a series of events, linked together by the threshold. Frytags plot structure can be applied, to aid user conciousness.

3. Architectural Strategy

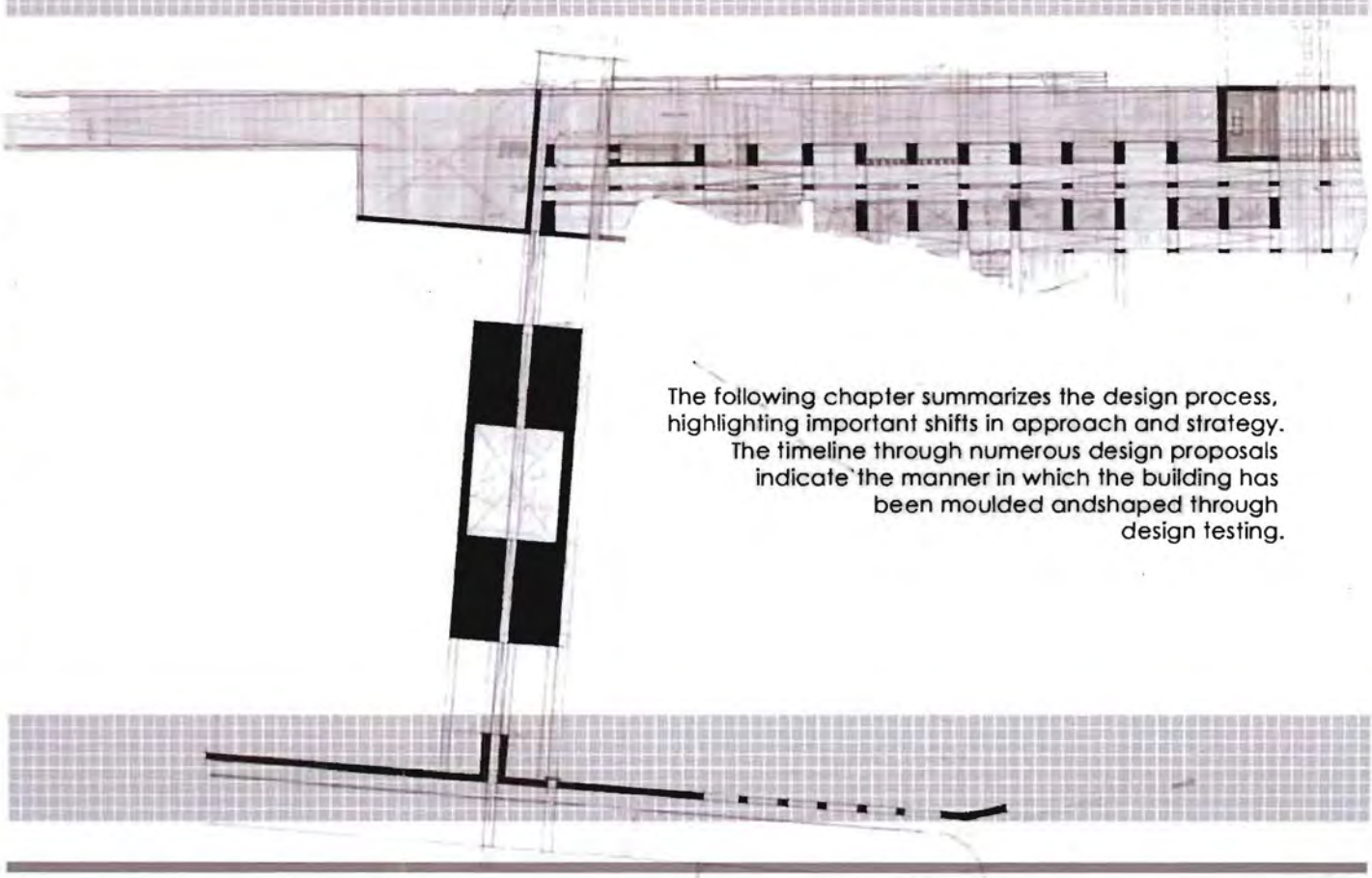
Highlighting the 3 events in the program:

1. Introduction -
2. Threshold -
3. Ceremony -
4. Threshold -
5. Departure

The program provides the 'stage', the script is embedded in the prescriptive method of cremation. By providing these two, the basis i laid for the 'actors' to play it out, leaving room for personal expression.



DESIGN PROCESS



The following chapter summarizes the design process, highlighting important shifts in approach and strategy. The timeline through numerous design proposals indicate the manner in which the building has been moulded andshaped through design testing.

Compiled by: Ziyaad Majiet [MJTZIY001]

Supervisors: Nick Coetzer, Alta Steenkamp + Jo Noero

DESIGN
PROCESS + DEVELOPMENT

At this point in the project, my palette consisted of a powerful site in the Glencoe Quarry, and a powerful program. Merging the two in a manner that maintained the potency of the quarry and the strength of the built intervention became the early design problem.

1. Site Strategy

The site strategy consisted of a set of urban and local ordering principles which looked to address firstly, the approach to it and then the spatial arrangement of the intervention within it.

The design of the intervention was approached as a parcel of isolated events which were designed along a set of movement patterns dictated by the crematorium program.

The program is fleshed out and separated into three distinct events, connected by a route / journey:

The introduction / Approach

Ceremony

Departure

This step in the process brought about two types of s patial categories:

Event and journey, which is further developed and translated into event and threshold.

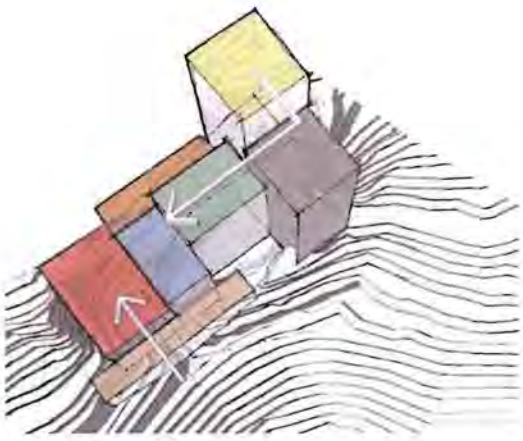
(See program flow diagrams in 'Program" chapter)

2. Scaling

A major challenge the program poses is scale. Crematoriums are generally made up of 2 components:

A processing and mourning component, which are designed in a manner that the bereaved family is oblivious to the clinical nature in which their loved one is going to be laid to rest. The architectural strategy places the two routes parallel to each other, divided by a thickened wall. The wall adopts two faces; one allows for recluse and mourning while the other is linear and allows for efficiency. The wall becomes the threshold between life and death, public and private, reality and fantasy.

Program flow diagram (see chapter on program for full scale image)



Intial spatial organiztion, trimmed down after gaining a better understanding of the size of the required spaces

DESIGN
PROCESS + DEVELOPMENT

3. Planning / Planning Principles

The issue of scale was dealt with through design investigation. Numerous spatial arrangements and massing studies were undertaken in order to achieve the appropriate fit into the quarry. The initial layout was based on two strong axis running perpendicular to each other. One represents the linear process of cremation while the other contrasts it, a less formal meandering route which guides visitors through the process.

The overall planning issues remained fairly constant throughout the design. The design focus shifted to issues around the sites steep level changes, the formal manifestation of the threshold, routing and flow for each of the user groups and an overall architectural language.

Numerous proposals were brought forward, none quite finding the right fit within the site. The question posed at this point in time begins to address the issue of scale:

What is the minimum amount of building that can be put onto the site, in order to prove the threshold theories and have a functional crematorium?

Upon reflecting, the proposal seemed convoluted and forced. The strategy was then to peel away at the intervention, leaving the bare minimum. In so doing, the program was revised and the architectural intention immediately became clearer.

4. Site Arrangement

The earlier intention of isolating the intervention and the site as experiences of their own had also been challenged. The site arrangement is based on the analysis of the rock typologies as being 'living' and 'dead' according to their orientation and appearance.

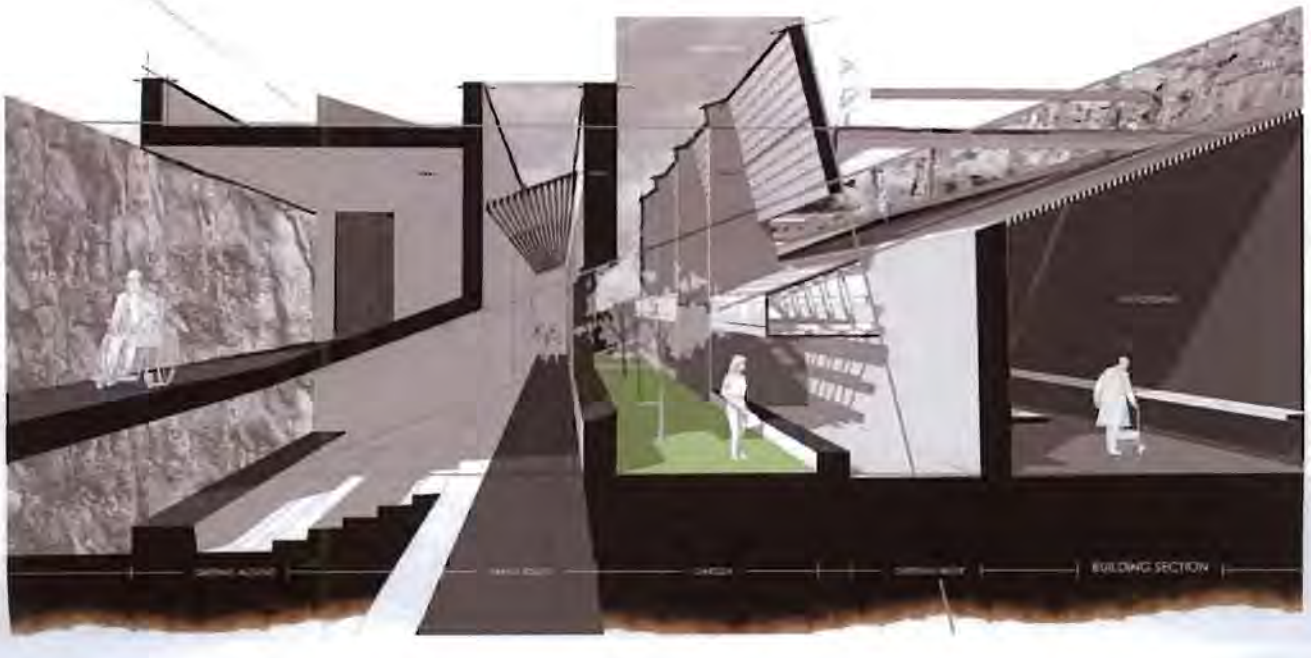
The living face has a golden glow, receiving natural light throughout the day allowing for the growth and establishment of both fauna and flora.

The dead face, in contrasting fashion receives no light, is dark and dank and accommodates for an alternative form of life in moss etc.

The overarching principle was that the bulk of the site would be maintained and receives the intervention in a subtle manner. The building attaches itself to the South facing rock face, leaving the North facing face untouched, as the final chapter of the mourning journey.

The concept of the 'live' and 'dead' rock as analogies of two different worlds is translated through eh constant visual connection between the two. A connection to the outside world, which can only be reached on completion of the mourning ritual. It's a window to the world outside of the 'world of the dead' which you have entered, a reminder of the fragility of life.

Visual Connecton between the 2 rock faces



DESIGN
PROCESS + DEVELOPMENT

5. Negotiating Level Change

An unhurried route, from entry through to the chapel is presented to the user in stages. A set of 8 ramps, spread along the entire journey slowly lifts the bereaved out of the ground, onto the quarry floor. Each landing offers a new event which can be accessed and occupied if the family wishes to. The route however is open for interpretation and can be used as each individual sees fit.

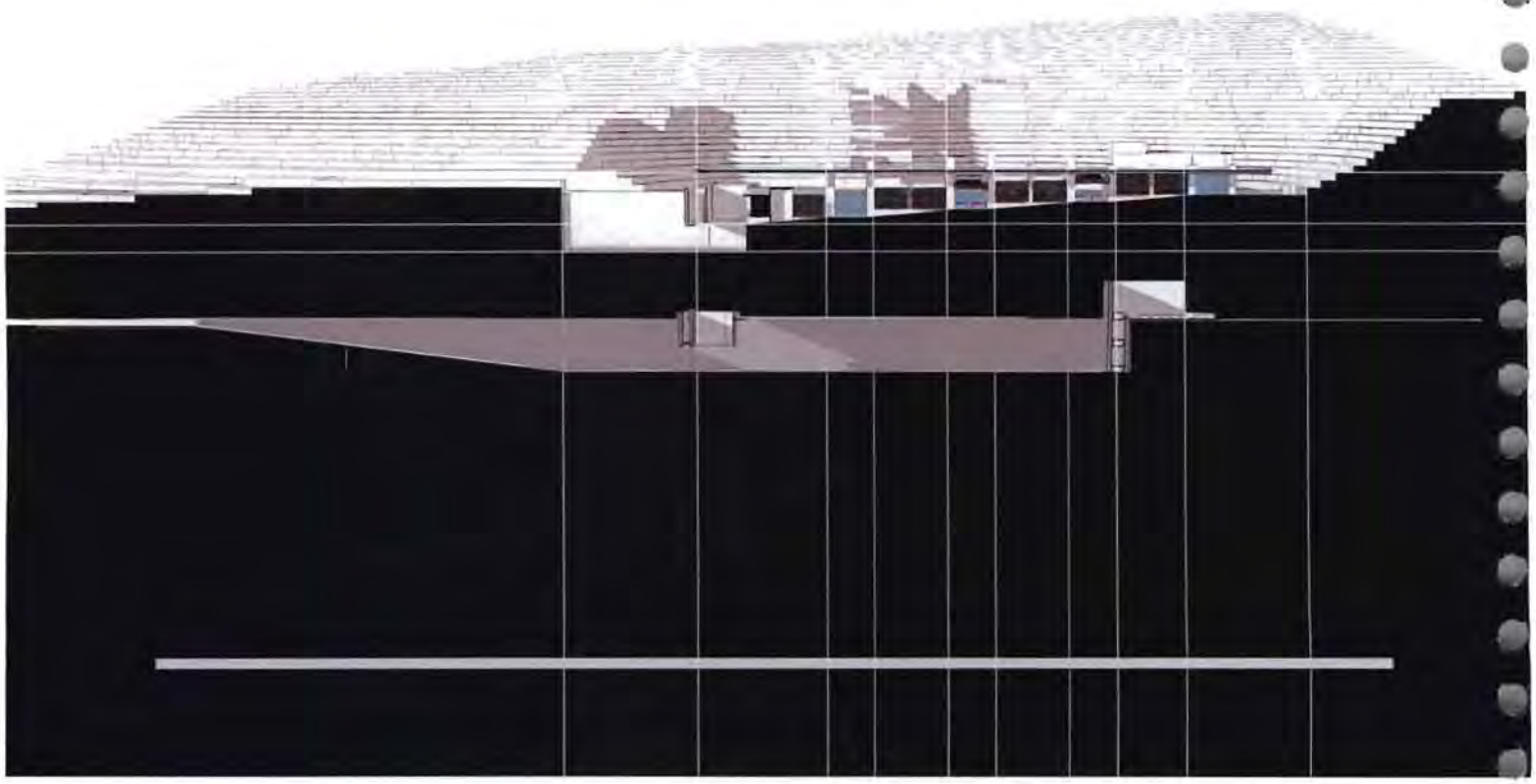
6. Massing

The exact massing at this point was yet to be resolved and the intervention rested on the quarry floor, with only the processing component being placed below grade.

An early formal strategy looked to express an aesthetic reminiscent of a field of gravestones, in the form of columns which pierce out of the ground. The gravestones were translated as skylights which light the processing area below. The meeting of the ground with the building was clarified through site a set of site sections which revealed an 8m difference in level between the proposed car park and the quarry floor.

Longitudanal Section - not to scale

Landing = Event



DESIGN
THRESHOLD MANIFESTATIONS

Threshold Manifestations

The exploration into the threshold and its ability to aid user consciousness is explored formally through the following formal strategies:

1. Reinterpreting the 'gateway'

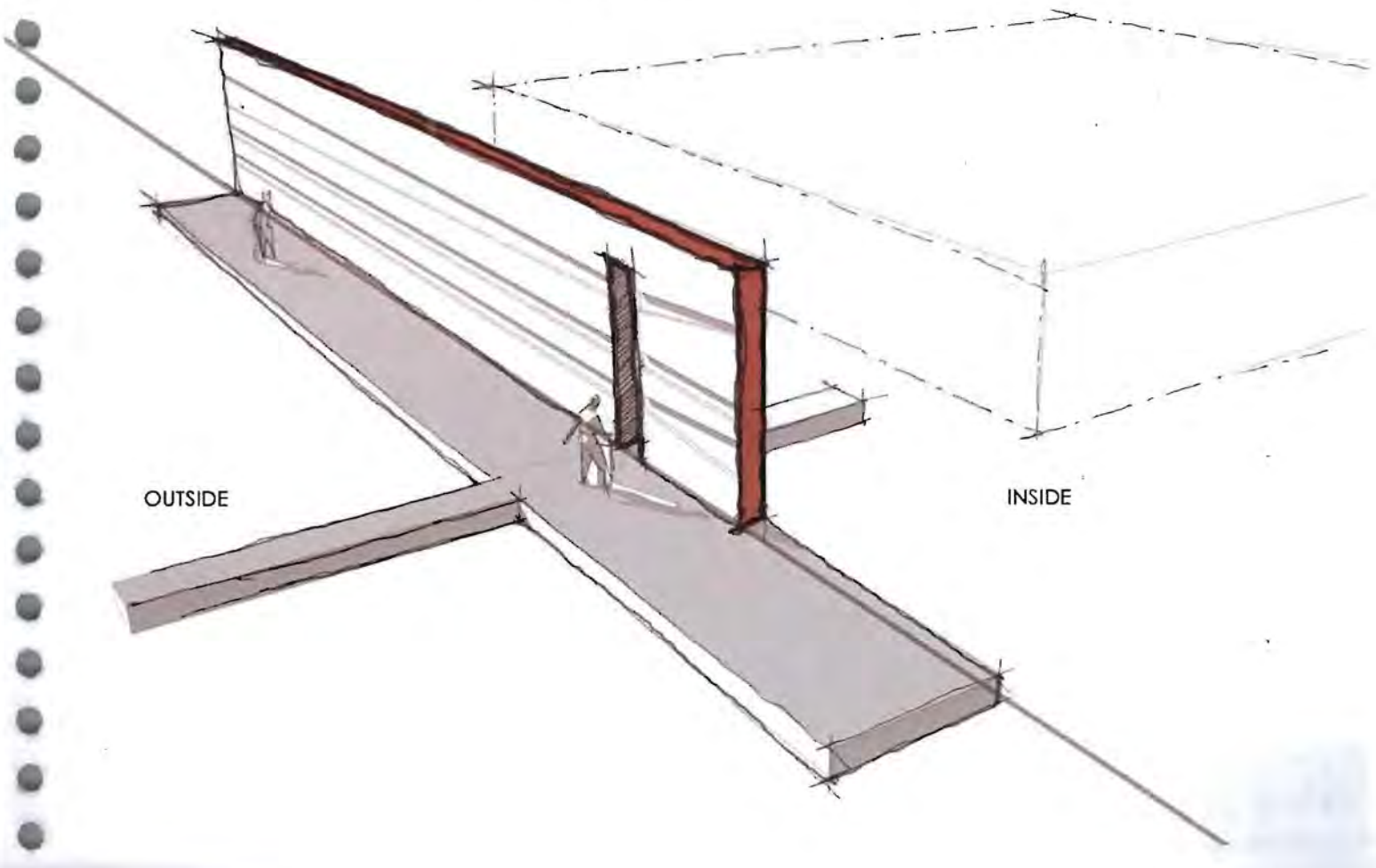
Gateways are generally associated with entry points and are understood to be the physical object that allows entry (a gate, opening, door). The work of Alvaro Siza displays the theme in a number of ways, marking the point of entry through the use of a frame which transports you between inside and outside.

The gateway is implemented by creating a negative space. The entry point is marked by a thin cutout along the length of the concrete vertical enclosure. A small crack in the seemingly impenetrable wall, allowing you to slip in the world behind it.

The gateway holds a sense of mystery, giving no clue of the happenings behind its bland surface. It tempts you to enter, investigate, and experience for yourself.

..."to me, architecture without a touch of mystery is not genuine; the same holds true for women."

Ricard Legorreta



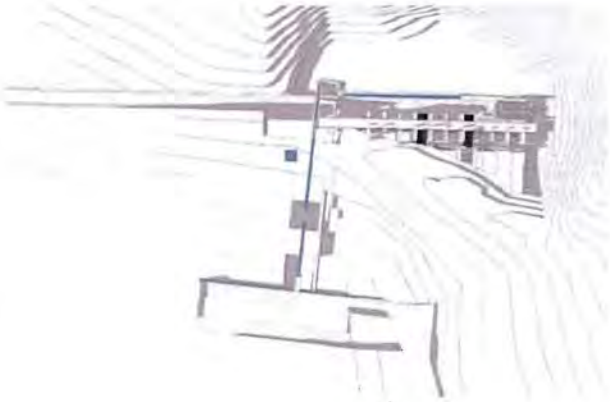
DESIGN
THRESHOLD MANIFESTATIONS

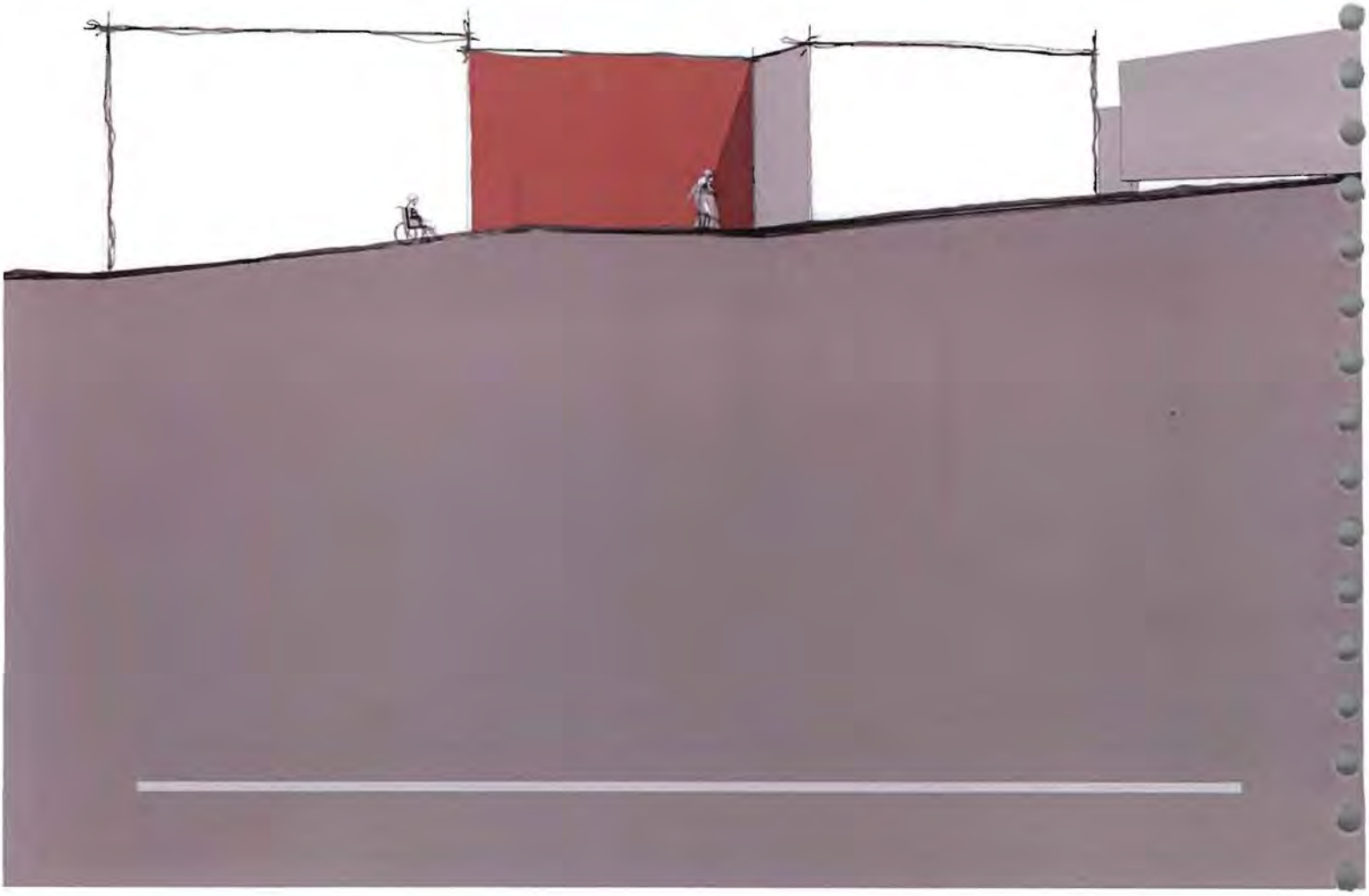
2. Ramps and landings

The crematorium program has two organizing components, journeys and events. Ramps help to structure movement and flow while at the same time bringing together both the journeys (ramps) and events (landings). A rhythm is put in place that aids user consciousness by making them aware of the planning principle at work.

The ramps negotiate level change and transport you between events which occur at each landing. The landing each time offers a different experience as well as the opportunity to pause.

It isn't an easy route to navigate, much like the act of mourning. A series of events slowly unfold, to help you understand your loss.



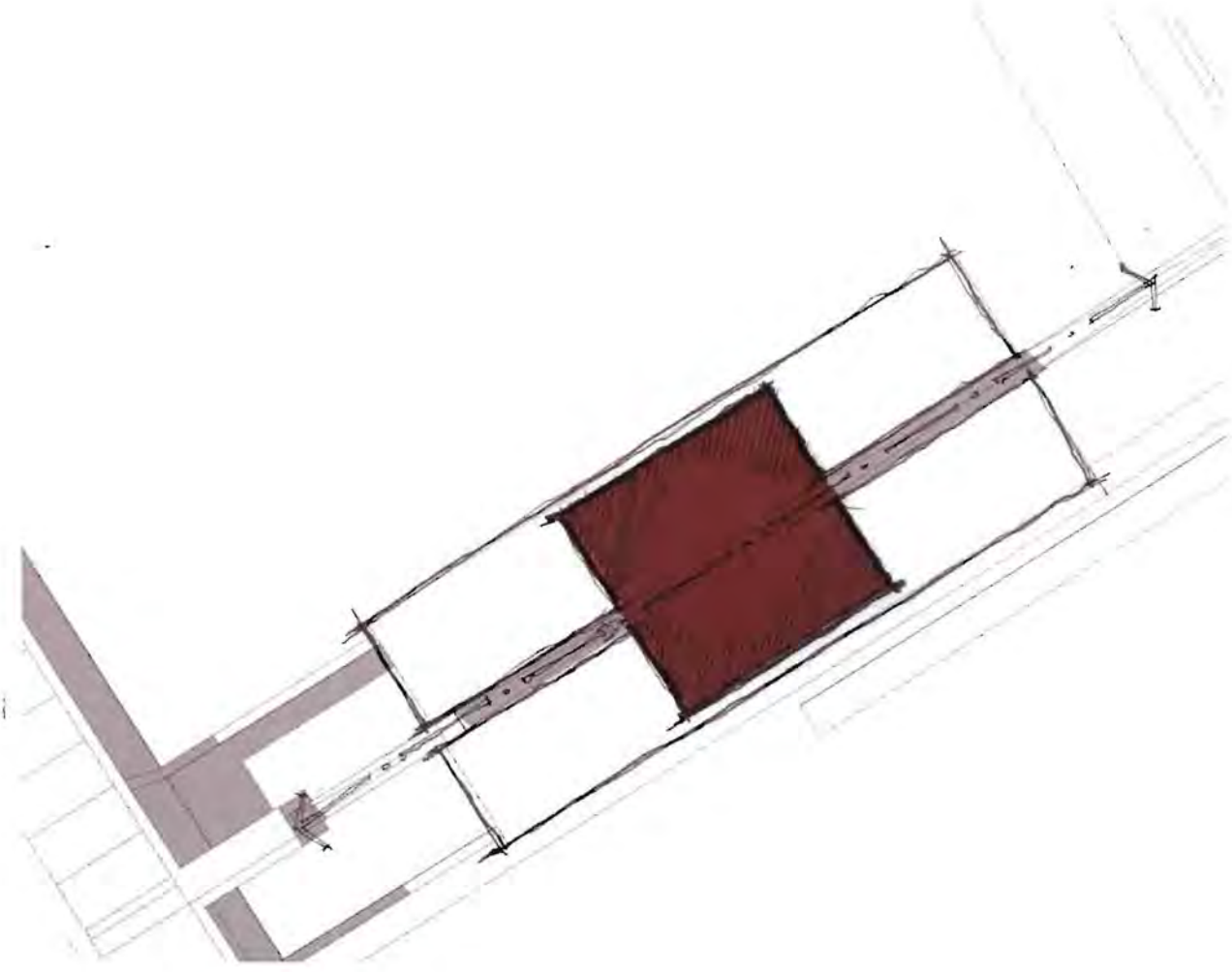


DESIGN
THRESHOLD MANIFESTATIONS

3. Ambiguous Space

Functionally driven spaces have placed a wedge between us and our built environment. Efficiency based architecture all too easily moves us sub-consciously between spaces leaving little room for personal interpretation. The opportunity to create a void which holds no set function forces users into active engagement, prompting them to interpret their surroundings in a manner they see fit.

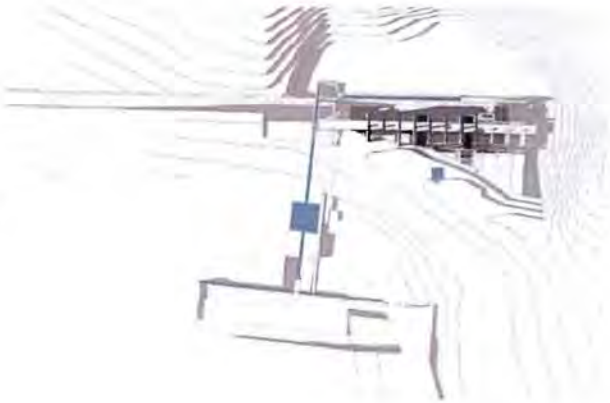
The emptiness is something we rarely come across in contemporary architecture. Whether users pause to reflect or pass by it normally, the strategy remains. The space adopts a function according to the user group.



DESIGN
THRESHOLD MANIFESTATIONS

4. The portal (column and beam frame) as spatial organizer

The initial design of the route relied heavily on strong vertical enclosures which guided movement. This resulted in a dictatorial type journey, which hindered free movement and exploration by the user. The vertical enclosures are replaced with spatial organizers in the form of portals which hint at the building flow, whilst allowing for personal investigation.

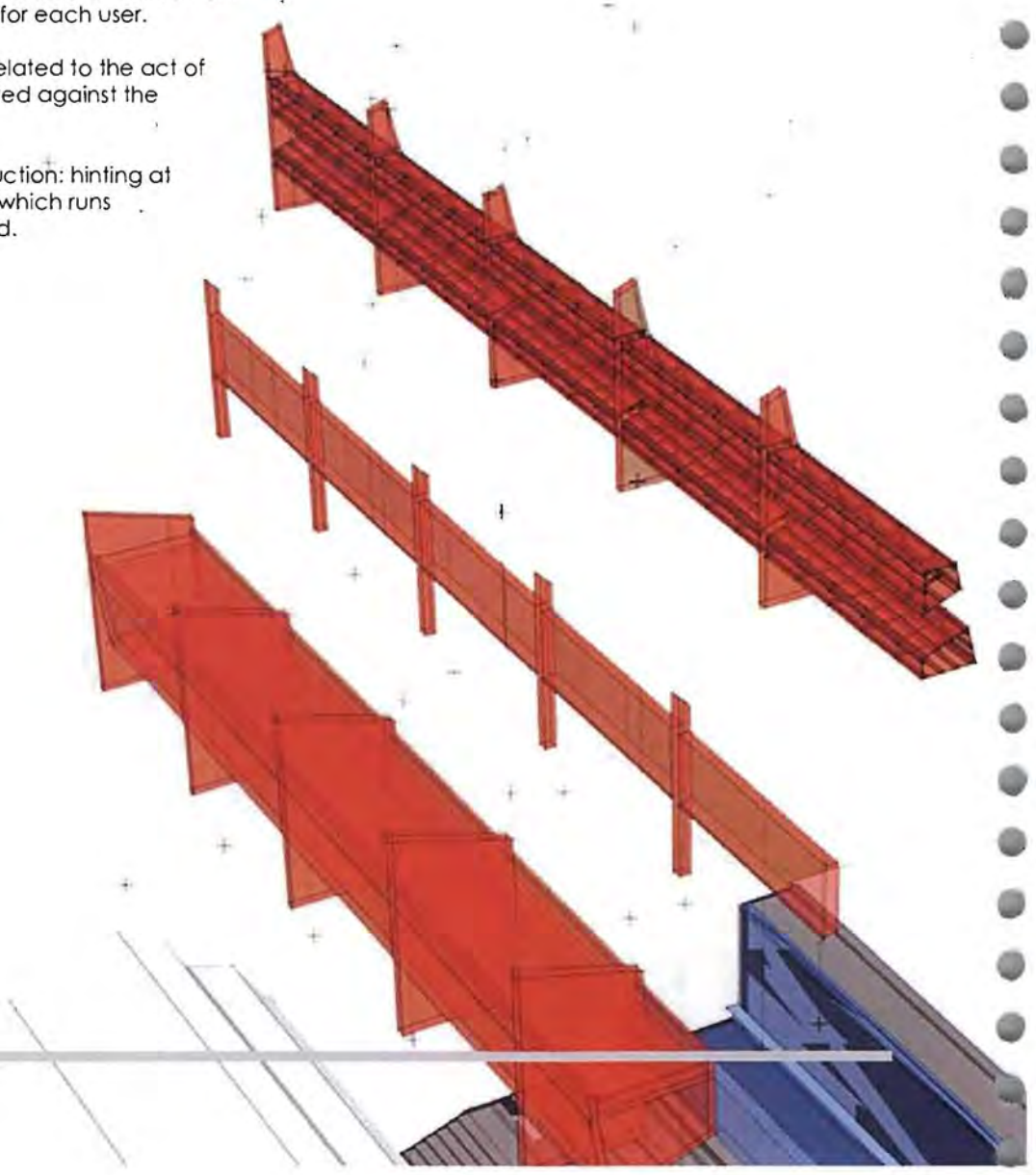


Architectural Strategy

By placing the parallel frames into the earth, a linear route is implied which guides movement towards the chapel. The intervention allows for free movement and personal interpretation for each user.

A - Heavy Concret Frame: related to the act of mourning. This frame is located against the 'dead rock' formation

B - Light Steel Frame Construction: hinting at the processing component which runs constantly in thebackground.

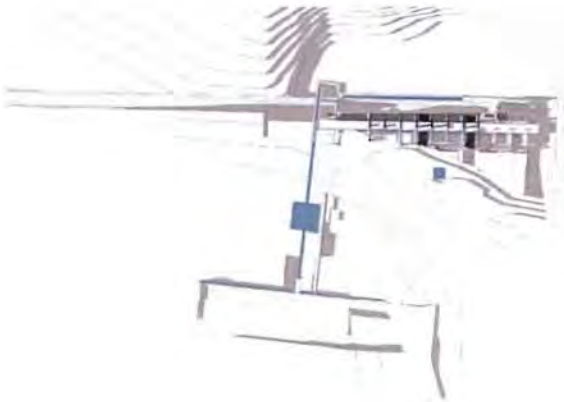


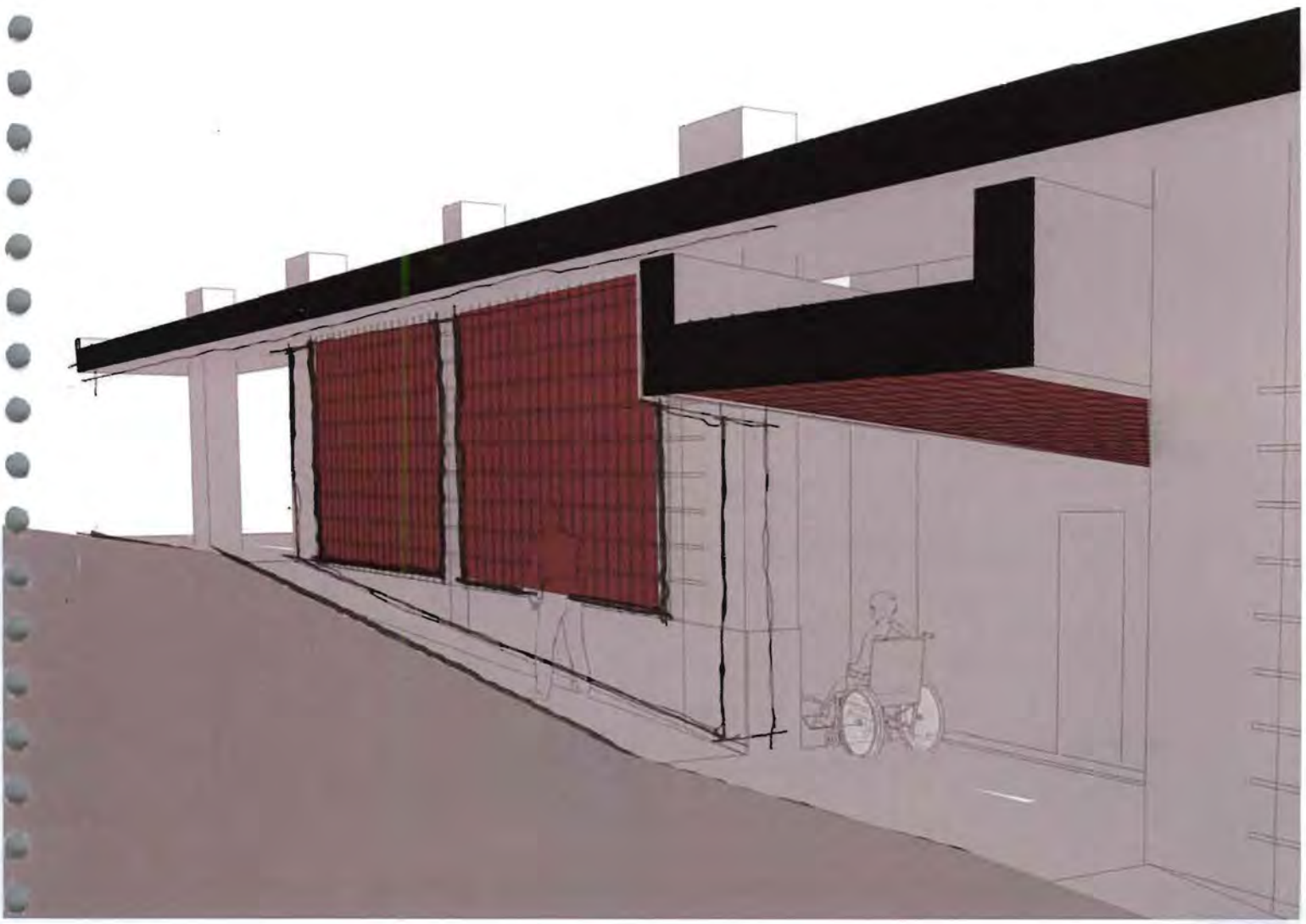
DESIGN
THRESHOLD MANIFESTATIONS

5. Niche Walls / Screens

A niche wall is in essence a frame which holds urns. These have been interpreted as screens, which mediate between the changes in privacy levels. The closer to the 'dead' rock the bereaved are, the more isolated they become. The screens allow for visual permeability while creating a certain level of privacy.

The screens are dynamic, changing the scenery of the building as cremations are undertaken. The wall becomes a collage of void and in-filled squares, at times allowing you to peer through to the 'other side' of the walkway.

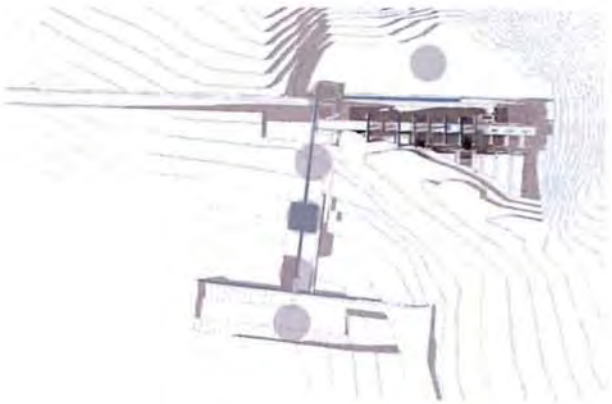


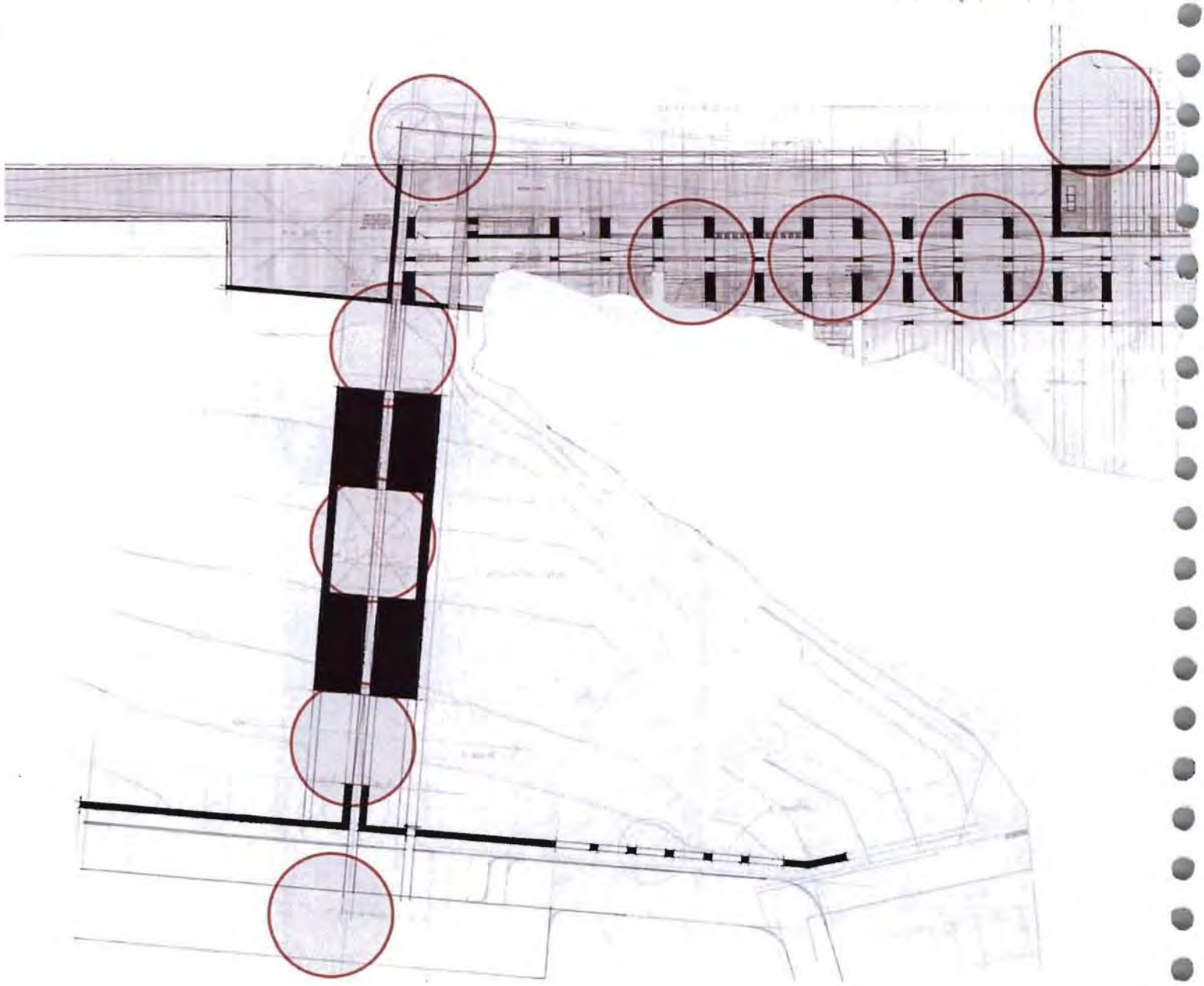


DESIGN
THRESHOLD MANIFESTATIONS

6. Between Worlds, the relationship between inside and outside

Previously discussed in the Theory Chapter on Aldo Van Eyck.





DESIGN
PRECEDENT - THEORY BASED

Fumihiko Maki

Kaze-No-Oka Crematorium,
Nakatsu, Japan

Theoretical influence – Event and journey program classification

The architectural strategy used the transition spaces to alternate between intervention (inside) and site (outside). The building has been split into 3 distinct components, each having its own language and location on the site.

Images A, B and C -

Artist unkown, 2009. Kaze No Oka Crematorium by Maki and Associates. [Photographs]
Available at:
http://theaccounts.tumblr.com/post/174803578/kaze-no-oka-crematorium-by-maki-and-associates.
[04 June 2012]

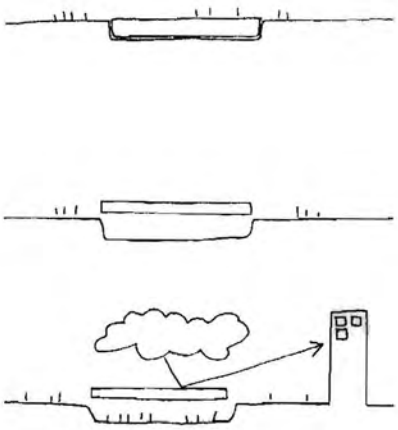
DESIGN
PRECEDENT - EARLY FORMAL INFLUENCE

Jordi Badia and Josep Val

Tantario Municipal de Leon
Leon, Spain

Formal Influence – Subterranean construction

At the point in time that I came across this building, the site had not yet been finalized. The initial proposal to have a city based crematorium drew me to this structure. The entire building is sunken and roofed by a pond. It holds an air of mystery, slotting into the urban fabric with minimal effort. The only clue of given above ground about the building below are the skylights which pierce through the ground.



Images A, B, C, D and E -

Artist unkown, 2009. Tanatorio Municipal de Leon / BAAS. [Photographs]
Available at:
http://www.archdaily.com/3891/tanatorio-municipal-de-leon-baas/
[06 June 2012]

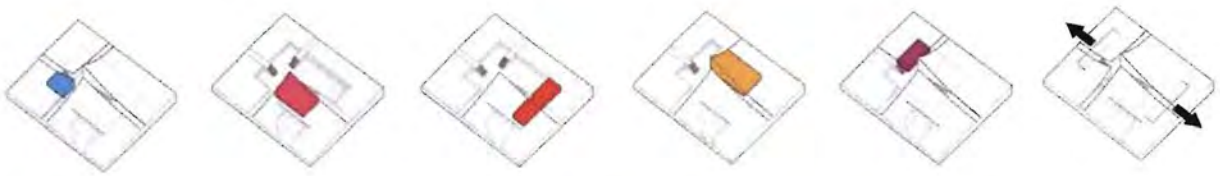
DESIGN
PRECEDENT - SITE SPECIFIC

BIG Architects

Forest Crematorium
Stockholm

Site Specific Influence – Site integration

The sketch proposal highlights in a similar fashion, the numerous events which make up such a facility. The events are each located within a building of its own. The architects approached the site as a receptacle for the intervention, weaving it seamlessly into its surroundings.



Images A and B -

BIG Architects, 2010. Concept Development. [3D Renders]
Available at:
http://www.evolo.us/architecture/forest-crematorium-bjarke-ingels-group/
[10 June 2012]

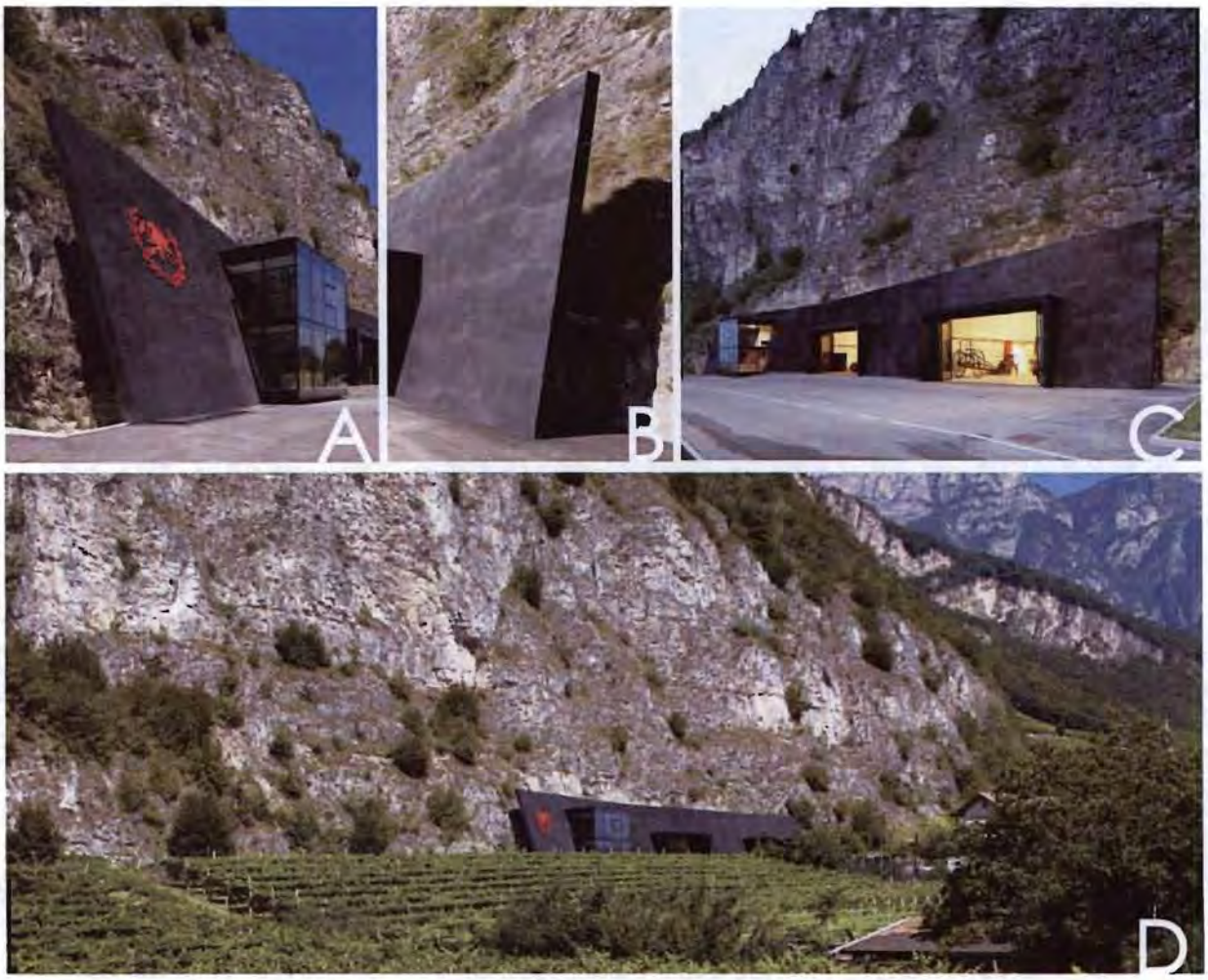
DESIGN
PRECEDENT - FORMAL INFLUENCE

Bergmeister Wolf Architekten

Fire Brigade Margreid
Margreid, Italy

Formal Influence – Entry wall execution in relation to site

The buildings entry point is marked by the strong linear lines of the concrete wall which users pass through to enter. This gives the impression that the wall is the mediator between the intervention and the rock face within which it sits. The strategy marks the entrance as the most significant component of the building.



Images A, B, C, and D -

Artist unkown, 2010. In The Rock. [Photographs]
Available at:
http://www.archdaily.com/237131/fire-magreid-bergmeister-wolf-architekten/
[30 May 2012]

DESIGN
PHYSICAL MODEL EXPLORATIONS

Model #01
Conceptual Threshold Interest Model

The timber framed 'box' expresses my interest in the threshold formally. Two pieces of glazing form the enclosure for each of the materials. Each layered material is representative of an independent space which makes up the whole. The void between is representative of the threshold, the pause, vague area between which allows for personal interpretation.

This model was the first major design breakthrough and sparked numerous design ideas.

DESIGN
PHYSICAL MODEL EXPLORATIONS

Model #02
Site Modelling and Initial Site Strategy

Subsequent to a few rounds of drawn proposals, I felt the need to physically build the sketched proposals in a manner that would quickly give me an understanding of the difficult terrain and the manner in which the proposal met the earth.

The contour model was built as a section in order to show the subterranean nature of the intervention.

DESIGN
PHYSICAL MODEL EXPLORATIONS

Model #03
Entry and exit eplorations based on the threshold theory of 'ambiguous space'

The physical model of the entry point portrays the scale in relation to the visitor. The idea of conscious entry and an extended threshold is brought to life in the 3 stages.

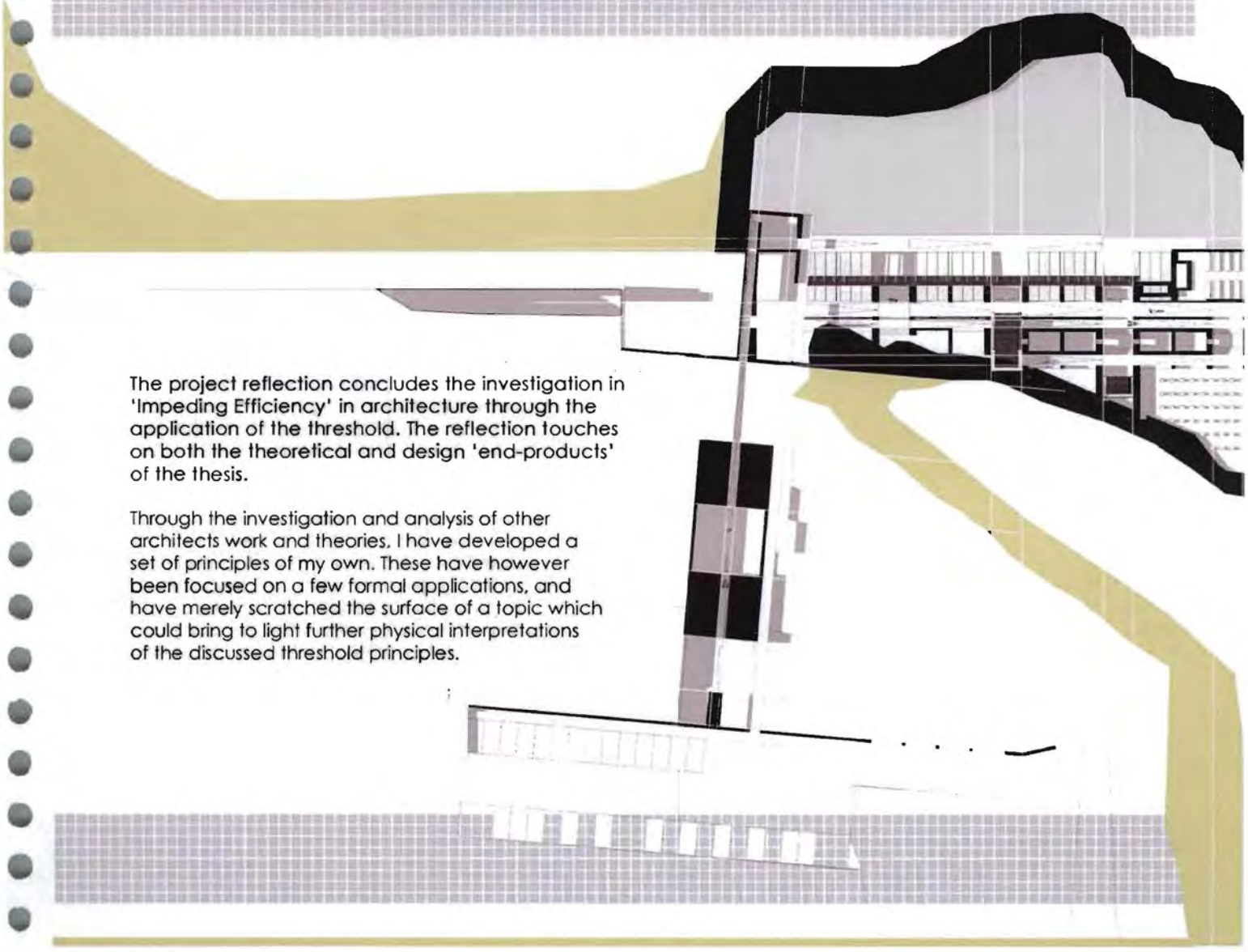
The first takes you in through a narrow slit and staircase, the landing presents you with an open platform. A void, with no particular function. It prompts you to question and occupy the space as you see fit. The last space takes you in again and transports you onto the next journey along the process.

DESIGN
PHYSICAL MODEL EXPLORATIONS

Model #04
Site Materiallity

Forecasting the final model, i set about making a model out of a material that most aptly depicts the quarry. The inverse of the quarry rock faces were cast using card to create the mould for the concrete pour.

PROJECT REFLECTION



The project reflection concludes the investigation in 'Impeding Efficiency' in architecture through the application of the threshold. The reflection touches on both the theoretical and design 'end-products' of the thesis.

Through the investigation and analysis of other architects work and theories, I have developed a set of principles of my own. These have however been focused on a few formal applications, and have merely scratched the surface of a topic which could bring to light further physical interpretations of the discussed threshold principles.

Compiled by: Ziyaad Majiet (MJTZIY001)

Supervisors: Nick Coetzer, Alta Steenkamp + Jo Noero

PROJECT REFLECTION
THRESHOLD INVESTIGATION

Impeding Efficiency Thesis
Theory and Design Reflection

Our current economic climate, coupled with the speed at which contemporary society lives deters our ability to create 'large' scale non-functional space as discussed in this document. Clients / developers are hesitant to spend on a space which houses no particular function.

Public buildings however afford us the opportunity to apply the threshold principles by reinterpreting the programmatic requirements.

The notion of spaces being either 'events' or 'journeys' helps to both classify use and thereafter design accordingly. At a household scale, passages and entrance lobbies could be transformed to become spaces of similar importance to bedrooms and kitchens by making them in a way that slows us down. At a larger scale, the emphasis on efficiency should be balanced with a counter space, a relief area which suspends you in time while society moves around you.

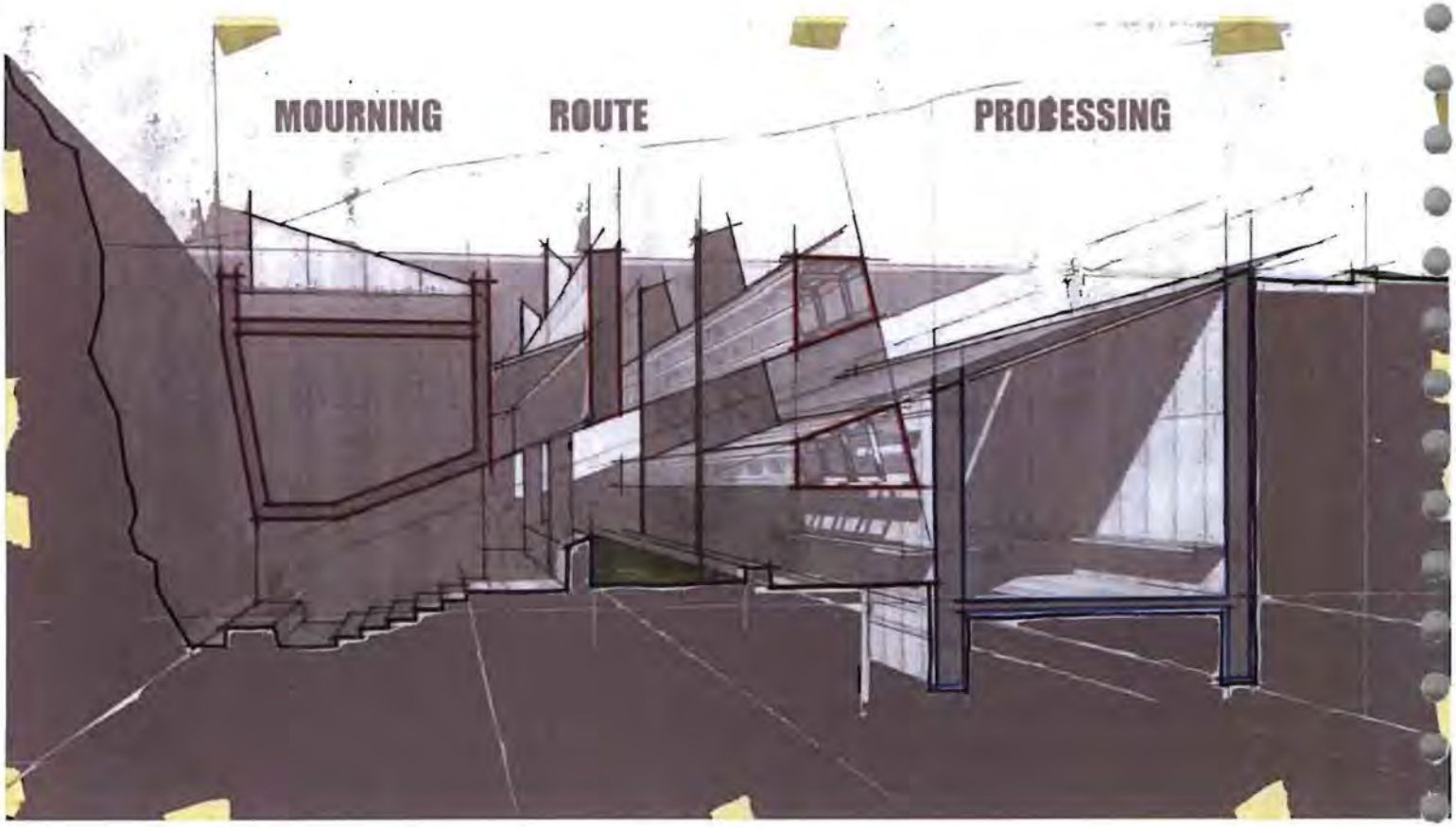
The formal conclusion expressed in the design contains six variants of the threshold:

Gateways, ramps, ambiguous space, portals, screens and multiple inside / outside experiences, these are only a few threshold manifestations. The emphasis on entry and exit as a conscious act should be translated through the rest of the intervention.

Our architecture should prompt the user into active engagement. It should be dynamic and stimulated by the users, rather than a stagnant machine which offers us little more than shelter.

I believe that the correct application and placement of intermediate space enriches our built environment. When given the opportunity to remove yourself from experiencing space while moving, and provided with a niche, step or courtyard, one starts to read your surroundings differently. When presented with a space which encourages thought and interrogation, a relationship is set up between us and our architecture.

Superseded perspective section indicating the different components of the crematorium



PROJECT REFLECTION
THRESHOLD INVESTIGATION

The initial interest in the 'threshold" at the beginning of this thesis, transformed into a study of 'the experience of space' at a broader scale. The threshold formed the basis for the investigation, which helped to unlock a range of larger order ideas.

Thoughts on user consciousness and a relationship between built environment and people set the tone for the early research. This developed into personal views on contemporary society and our dislocation from architecture. These thoughts revolved around the heavily functional programming we have become accustomed to.

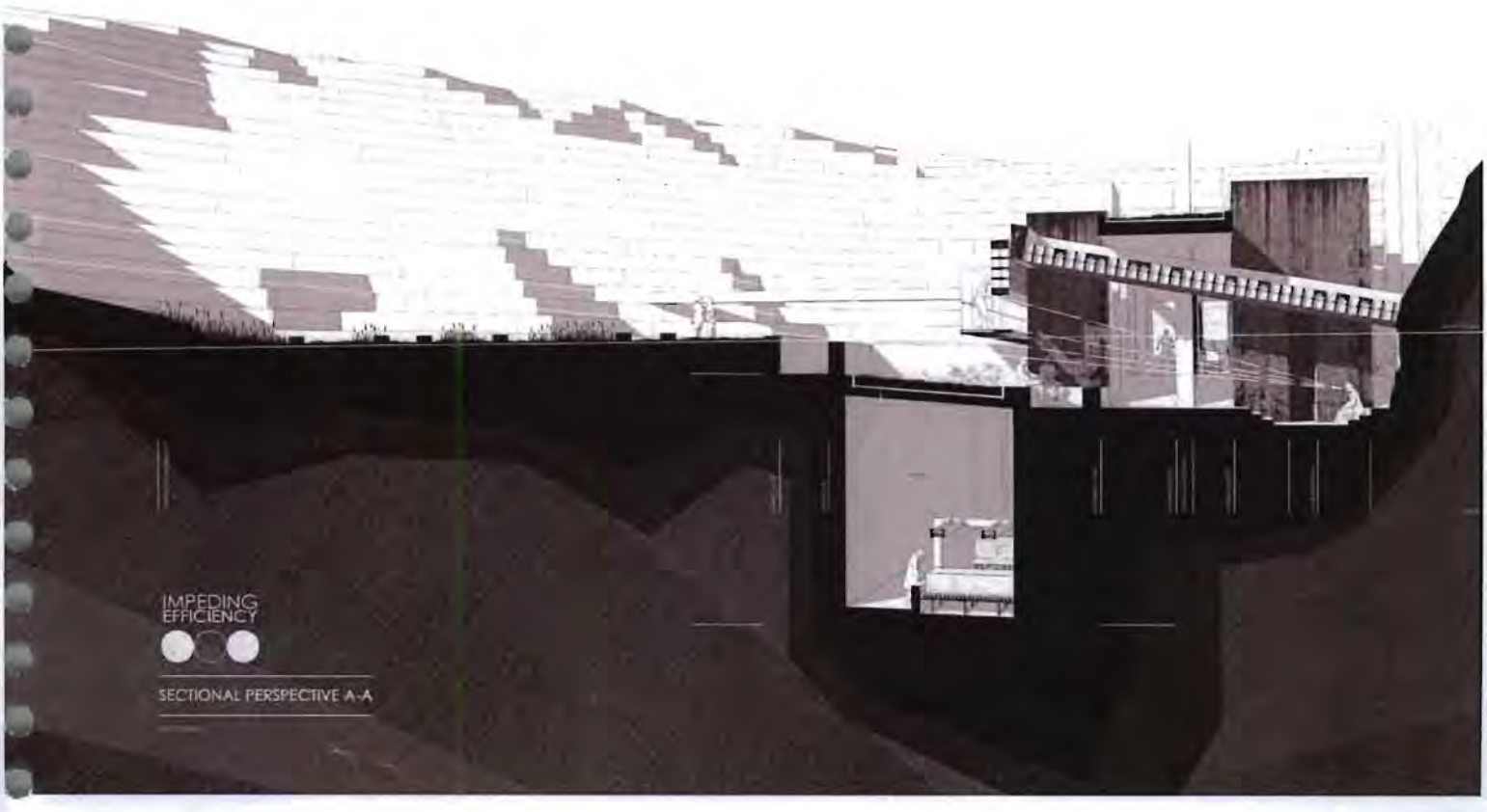
The opportunity to come across a built space which holds no function at all appealed to me. A break from the rigidity of our contemporary architecture, dictating to us the manner in which we should occupy and use it.

The four architects studied formed the springboard for my personal interpretation of the threshold and in particular, gateways, ramps, portals, screens and the relationship between interior and exterior space.

These physical manifestations are a mere handful of the many possible prompts which could be used to 'impede efficiency' and aid user consciousness.

This thesis is a scratch on the surface of the study into the threshold. A primer for further studies and manifestations of the principles discussed.

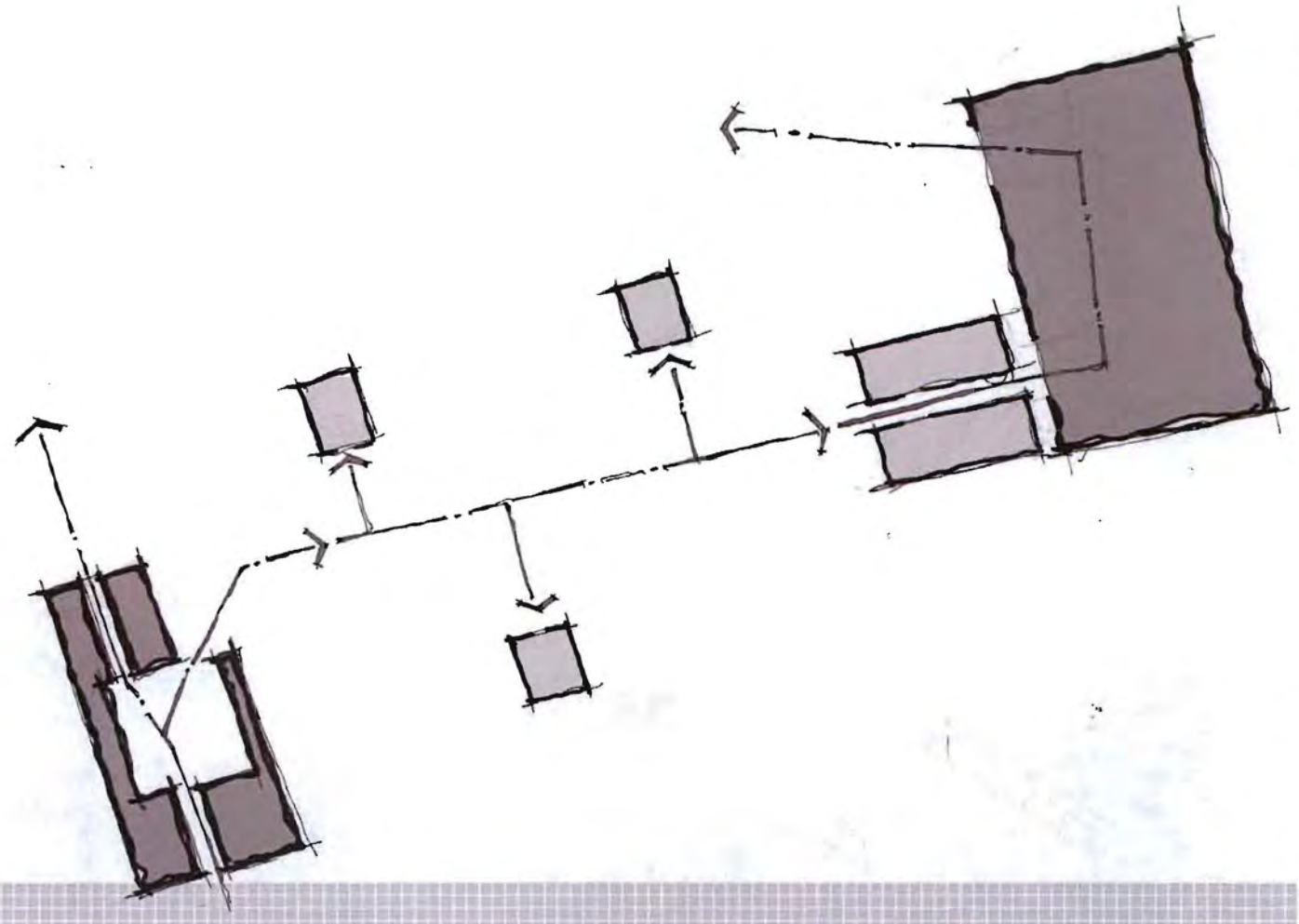
END



SECTIONAL PERSPECTIVE A-A

9

BIBLIOGRAPHY
REFERENCES



Compiled by: Ziyaad Majiet (MJTIY001)

Supervisors: Nick Coetzer, Alta Steenkamp + Jo Noero

BIBLIOGRAPHY
IMPEDING EFFICIENCY

Bibliography

Betsky, A. Landscrapers, Building with the Land.
United Kingdom: Thames and Hudson Ltd, 2002

Buchanan, P. Aldo and Hannie Van Eyck, Recent Work Two.
Amsterdam: Stichting de Beurs van Berlage, 1989

Carmody. Underground Space Design.
New York: Van Nostran Reinholdt Publishers, 1993

Gideon, G. Chinese earth sheltered dwellings: indigenous lessons for modern urban design.
United States of America. University of Hawaii Press, 1992

Golany, G. Urban Underground Space Design in China, Vernacular and Modern Practice.
London: Associated University Presses, 1989

Hertzberger, H. Lessons for Students in Architecture.
Rotterdam: 010 Publishers, 2009

Holthusen, T. Earth Sheltering: The Form of Energy and The Energy of Form.
New York: Pergamon press, 1981

Kurokawa, K. The Architecture of Symbiosis.
France, Milan-Paris: Rizzoli International Publications, 1987

Kurokawa, K. The Philosophy of Symbiosis.
Great Britain: Academy Group LTD, 1994

Norberg-Schulz, C. Existence, Space & Architecture.
London: Praeger Publishers, 1971

Pallasmaa, J. The Eyes of the Skin, Architecture and the Senses.
Great Britain: Academy Editions, 1996

Rasmussen, S. Experiencing Architecture (Volume 2).
New York: The MIT Press, 1964
Van Eyck, A. Niet Om Het Even. Rotterdam: Stichting Rotterdam-Maaskant, 1986

Thompson, J. Weiss/Manfredi: surface/subsurface.
New York: Princeton Architectural Press, 2008

Image References

All images contained in this report are by the author unless referenced