

JOSEPH SHEPHERD

THE WEATHERED TRACE

CAPTURING THE ACTUALISATIONS OF TIME



JOSEPH SHEPHERD

THE WEATHERED TRACE

CAPTURING THE ACTUALISATIONS OF TIME

A 90 point Thesis submitted to the School of Architecture and Design, Victoria University of Wellington, in the fulfilment of the requirements for the degree of Masters of Architecture (Prof.)

Victoria University of Wellington

10th December 2010, Joseph Shepherd

ABSTRACT

It may be considered that architecture does not as a discipline, acknowledge the changes a building will go through after construction completion. Therefore, weathering of materials occurs without direction forcing a building to degrade over time rather than mature.

We may accept that materials have a given lifespan and that it is simply a question of time before that material is no longer suitable for its original use.

However, the impermanence of materials through weathering need not be considered a negative element throughout the life of a building. It may give us the impression that we can grasp the effects of time in a tangible way through its visual expressions, reminding us of our own place in the cycle of time.

This thesis was design led by firstly producing material experiments, and going on site to understand the conditions of weathering on materials.

This lead to a number of questions – firstly, may architecture direct its own visual expression of time through embracing the inevitable process of weathering within its materials and site? Can these actualizations of time documenting the events of a buildings life promote the build up of personal memory between the user and the architecture they experience?

These questions were tested through the design of temporary research accommodation units located at Te Raekaihau Point on the south coast of Wellington. Being an extremely harsh environment, the full force of a weathered trace could be illustrated. Through design, the idea of architecture as an evolving image was explored. The contrasting material time frames of concrete and wood were understood in their relation to one another and how one may act as a framework for the other. Concrete surfaces expressed positive and negative detail, directing the weather to enhance certain patterns over time.

The organic nature of timber was interpreted throughout the site with varied levels of exposure.

Original traces of weather on site were used to understand future interpretations. These traces influenced material placement, orientation and gave an understanding of the processes that will affect architecture in time.

Accepting that no material is permanent, certain details explored the idea that one materials death may bring about the birth of another. Over time, a timber walkway connecting two areas of the site was designed to erode, revealing a concrete stairway hidden beneath.

These design considerations lead to the conclusion that architecture must be considered over time, with careful consideration of the natural forces that will affect its development. A site analysis does not occur in one visit, it must be a more thorough process considering all aspects that affect materials in time and how best to work with these inevitable facts as opposed to against them. This will result in a building capable of capturing the actualisations of time promoting memory through the weathered trace.

ACKNOWLEDGEMENTS.

I would firstly like to thank Philippe Campays, my supervisor throughout the year. I would not have been able to keep on track and on schedule without his constant support and speedy feedback. I would also like to thank Hamish Clayton from Victoria University Student Learning Support. Through several meetings, his advice gave me confidence in my writing and clarity to the structure of my thesis. I would also like to thank the graduating class of 2011 from Victoria School of Architecture. The advice and support from classmates has been reflected within my work. And lastly, my friends and family who have put up with the unusual lifestyle of a final year architecture student.

INTRODUCTION	1
1.0 - THE PROCESS OF WEATHERING	3
Introduction	4
The Final Finish of Weather	5
Architecture in Time	6
Learning from Previous Trace	7
Aesthetics of Imperfection	8
Weathered Comprehension	10
Material Time frame	10
Honesty in Materiality	12
Weathering and Surface	12
Conclusion	13
2.0 - ACTUALISATIONS OF TIME	15
Introduction	16
Weathered Trace Creates Ownership	16
Designed with trace in Mind	18
Material Impermanence	19
Conclusion	21
3.0 - CREATING MEMORY	23
Introduction	24
Materials give our Memory Grounding	24
Memory: The Addition of Layers	25
Interpretation of Fragments	27
Conclusion	29
4.0 - DESIGN RESEARCH	31
5.0 - CONCLUSION	87
APPENDIX	92
BIBLIOGRAPHY	98
LIST OF FIGURES	99

FOREWORD

I have always been interested in the indefinable atmosphere of aged buildings. What influences them over time and how does this add a level of character not seen in new buildings? I keep coming back to the image of a worn away step. The conditions of age have left the memory of all those who have passed over it and in doing so, a trace of time has been engrained within the material.

Going on exchange to Italy in 2009 allowed me to witness firsthand how buildings age 'with dignity' and triggered in me an interest in materials and time.

The trace of ageing on buildings exposes the passage of time. This may trigger from their users and witnesses a sense of affinity, sometimes attachment, often admiration.

The passage of time brings buildings in touch with life, giving them a human quality. Understanding this process adds a new level to design, one I believe can benefit a building to speak far beyond the last coat of paint.



FIGURE 1: THE STEPS WITHIN OLD WYCOLLER HALL
NEAR COLNE, LANCASHIRE . WORN AWAY THROUGH
HUNDREDS OF YEARS OF USE.

INTRODUCTION

'Understanding the ageing process and the corresponding developments of structures, as opposed to merely analysing formal design ideas, allows a more profound interpretation of the building in context of the past and the future'(Schultz, 2000, p. 47).

Every material is impermanent; it is simply a question of how long that material will resist the erosion of time. Materials have a given lifespan and the inevitability of disintegration is an omnipresent feature displayed visually as materials weather. "The skin of weathering" will envelope a building, giving clues to how rain falls from roof to ground, which areas are protected and which are exposed. The physical trace of an action or event is left on a material, allowing us to visualize how the changes came about.

However, the impermanence of materials need not be considered a negative element throughout the life of a building. Rather it can be seen as an important part in the meaningful making of architecture. Weathering may give us the impression that we can grasp the effects of time in a tangible way through its visual expressions, reminding us of our own place in the cycle of time. Given this, may architecture be allowed to direct its own visual expression of time by positively embracing the inevitable process of weathering within its materials and site? Can these actualisations of time documenting the events of a buildings life, promote the build up of personal memory between the user and the architecture they experience? This understanding could bring a rich, new dimension to architecture as the spaces and places would not only be defined by their original design, but also by connected events that occur over time and the memories associated with them.

Thus, I seek to understand the process of weathering and the visual expressions it may leave on materials over time. This will lead me to understand the way we perceive these traces and how they can promote the build up of personal memory.

This research has been undertaken firstly by focusing on design and site specificity and then reflecting on the topic of positive weathering. The research will be presented, however, in a reverse manner with the design component presented last. Chapter One explores the process of weathering on materials and what may be added to a building over time. The process of weathering may ground a building 'within time' as opposed to at a 'given time' adding a new layer of knowledge, allowing us to view weathering as a positive aspect. Chapter two will look at initiating memory through directing the visual traces of time. That is, considering how we may control the negative aspects of weathering to positively improve a building. Chapter Three seeks to understand the way in which our body, through all its senses, may process the experience of a weathered trace into our own, unique memory. How are the spaces we inhabit informed by the memory of previous events and traces? Design will make up chapter Four, applying the ideas of previous chapters to a physical site and programme.



1.0
THE PROCESS OF WEATHERING

INTRODUCTION

'In a word, the finishing of materials is never finished'(Leatherbarrow, 1993b, p. 154). The conditions of weathering are an inevitable fact that will affect all architecture in time. As soon as construction is complete, the final finish of weather will begin and continue throughout the life of the building. By directing the way in which this occurs, a building may improve over time. This chapter firstly explores weathering as the final finish on a building, grounding it "within time" as opposed to at a "given time". As weathering adds a new layer of knowledge to the building, we may view aesthetic perfection within its apparent imperfections. Secondly this chapter explores the notion of Weathered Comprehension; there is no escaping the erosion of time so through understanding its process, we may control it, promoting the build up of memory.



FIGURE 2: DE BEJINKORF DEPARTMENT STORE [1955-1957]
MARCEL BREUER, A. ELZAS. ROTTERDAM, NETHERLANDS

THE FINAL 'FINISH' OF WEATHER

Leatherbarrow states that the last coat of paint is not the final 'finish'; weathering is the final finish to a building, making the outer shell a place of continual modification. Within the first year of a building's completion, it will have weathered in certain ways directly related to local context and weather conditions, changing the exterior appearance. These finishes will only mature over time, heightening the connection or disconnection between a building and its context. The skin of weathering will envelope a building, showing which material receives more sunlight or moisture. Furthermore, the physical memory of an action will be left on a material, allowing us to visualize how it came to be.

According to Leatherbarrow, weathering is the element that brings architecture to life, expressing the inherent characteristics hidden within its being. For example, it will take the addition of weather to bring forth the imperfection of wood, expressing the knots as they contrast against the sun faded grain. '...time is the medium within which the process of their (materials) articulation is worked out' (Leatherbarrow, 1993b, p. 222). This is another level of understanding where we as designers may make the first gestures towards a materials form, connection and primary finish, but weathering has the "final say" in how the material is articulated.

'The process of polishing "ends" for marble when the surface shines and "gives the impression of" translucency. But this is always a "tending toward" a provisional "ending" because the process of polishing is caught up in time and can never be "finished"' (Leatherbarrow, 1993b, p. 153). Marble can be considered by client and user to be finished when it has received its first polish. The material is seen in the context of the present and appears in a singular state. Over the course of time, this polish will fade and will need reworking to bring it back to its original appealing appearance. In this respect, how can we ever define when a material is "finished"? Leatherbarrow states that we cannot. Materials have a technically defined state of finish within the construction phase but in fact, they are never really finished. Weathering and time influence materials into a constant state of change, growth and decay that will only be "finished" when the material ceases to be.

There are two orders of time as stated by Leatherbarrow. Within materials, there are the primary properties that endure and persist through time and modification; the technical qualities being density, weight, brittleness, chemical makeup etc which are of a changeless duration. These qualities are what make wood different to concrete or plastic different to glass and influence the applications to which they may be used. They are a reliable source of information that designers may understand instantly. The secondary properties are variable, defined and dictated by weather. They can be visual changes to a surface and will grow and decay over time. The results will vary, dependant on the sited environment and whether the surface changes have had due consideration. It is this secondary property that gives a new dimension to design where the time after construction is considered.

'...setting definition is essentially by substance finishing. When materials are selected, assembled, and "polished", settings are defined and finished. Construction finishes design' (Leatherbarrow, 1993b, p. 176). As designers, we construct the stage on which life and weathering take place. We create the "setting" as Leatherbarrow terms it and it is this consideration that will influence the way weathering will play its role.

ARCHITECTURE IN TIME

It may be considered that we perceive buildings in the present of time. 'When seen "now" the facade seems to show the building as it is in its lasting sameness' (Leatherbarrow, 1993b, p. 218). We may look at a building and understand it only in relation to its current state, with no consideration of its connection to the past, or the future. For example a glass curtain wall may appear anonymous, with little to no clues as to how old it is or the events it has lived through. Most plastics reject the passage of time, living in the present or not at all. It can be said that this reading of a building limits its potential to speak of its surroundings and promote the memory of past events. If a building is capable of resonating these memories, it will give a more profound connection to the present and foster imagination to what the future may bring. Leatherbarrow states that the building's regeneration and degeneration emphasizes the temporality of nature as an order of beginning and ending or, more broadly, life and death. By seeing the building "through" time as opposed to at a "given" time, a human quality is expressed.

The 'whiteness' of Le Corbusiers' Modernist movement implied there was a level of finality at the completion of a buildings' construction. 'It is the eye of truth' (Le Corbusier:Leatherbarrow, 1993a, p. 82). White was a symbol of clarity and transparency, a cross cultural solution able to suit any context and would not allow for marks or traces to affect "the masterly play of masses in light'. The act of inhabitation and weathering were detrimental and would take away from the ideal condition causing a building to be visually unappealing and undesirable. 'For Modern architects, stains, such as those that resulted from surface accumulation of dirt, were thought of as faults, to be suppressed both technically and morally'(Leatherbarrow, 1993a, p. 82). The problem with this approach was that weathering and inhabitation were an inevitable and fundamental part of a building which needed to be considered as opposed to denied if a building was to mature with time.



FIGURE 3: VILLA SAVOYE IN POISSY, FRANCE - LE CORBUSIER. THE SIGNS OF EROSION EVOKE A MOVING PRESENCE NOT FELT AFTER THE BUILDINGS RENOVATION.

LEARNING FROM PREVIOUS TRACE

If one considers that site is integral to architectural process, it may be said that it is the only permanent feature of a piece of architecture. It will outlast generations and is the determining element that everything else reacts to. 'The lethargic slow parts of a building are in charge, not the dazzling rapid ones. Site dominates the structure, which dominates the skin, which dominates the services, which dominates the space plan, which dominates the stuff' (Brand, 1997, p. 17). This statement illustrates that site will affect all aspects of a design and therefore must be a primary consideration. By understanding existing site conditions and how the landscape has already weathered, we can predict how our architecture will sit in context and what may happen to it over time. 'Rocks represent the most amazing resilience to the elements and yet even the hardest granite must eventually yield to the omnipotent forces at large...the extremes they have undergone are written both on their surfaces and through their cores and can be literally entrancing' (Juniper, 2003, p. 136). Site may give clues as to how we orient form, materials chosen and the suitability of location. Respecting site and its influence in the future of a building will result in a lasting image, correctly embedded within a given context.

The connection between the built form and the landscape is extremely important in relation to the way materials will deteriorate. The conditions e.g. moisture, heat, airflow will determine how a material will age and the distinction at this threshold should be made apparent and celebrated. There must be a mediator between highly manufactured products and the natural site. In Ross Stevens Container House, the connection was dealt with through uncoated steel. 'As the connection between the building and the land became more intimate, the dissimilar material qualities between the new finishes and the weathered rock became increasingly contrasting. The introduction of uncoated steel that reacted to the environment created a mediating material, manufactured yet weathered like the rock' (Stevens, 2006, p. 91). The correct placement of materials will allow them to be fully appreciated. Concrete on its own is not attractive. But if placed where light and dark can play on its surface, the material will come to life. 'I believe that they can assume a poetic quality in the context of an architectural object, although only if the architect is able to generate a meaningful situation for them, since materials in themselves are not poetic' (Zumthor, 2006, p. 10). A material must use its inherent physical qualities to its advantage but also consider the greater context of the environment it interacts with.



FIGURE 4: CONTAINER HOUSE -
ROSS STEVENS, WELLINGTON.
CONNECTION BETWEEN BUILT FORM AND
LANDSCAPE MUST BE CONSIDERED.

The passing of knowledge can be considered one of the only constants over time. Materials will fade and people will pass but the legacy of their existence can live on. The knowledge gained from one materials' passage of time can be documented and used in future interpretations. For example, the stains left on a wall as a result of rain may influence the future development of that use to incorporate a function that channels the stains. Using the wrong type of nail in a marine environment will be visually noted by rust stains which may influence a change in design, or simply act as a reference giving a site specific finish. 'As all inner and outer, purposeful and accidental modifications take place over time, any account of the nature of a material must comprehend its history' (Leatherbarrow, 2002, p. 169). This passing of knowledge is relevant to human beings also. An aged person, bearing the traces of a lifetime has built up knowledge invaluable to the next generation. '...we are controlled by the dead as we live with their achievements and residue in our traditions...' (Spatial recall :memory in architecture and landscape 2009, p. 7) This leads to the point whether the build up of previous trace may be considered as visual imperfection.

AESTHETICS OF IMPERFECTION

Is imperfection ugly or can it be beautiful? It may be argued that this is a deeply personal preference. Our own perceptions of beauty are influenced through our varied upbringing and societal influence. I suggest that there are no universal rules to what makes the surface of architecture beautiful or ugly, learned perceptions dictate this. But there are vast differences between Eastern and Western aesthetic principals, in particular the Japanese aesthetic philosophy of Wabi Sabi and its appreciation of variation and imperfection. Some may find a rain stain on an exposed wall to be unsightly as they cannot place it in a preconceived category of 'beautiful'. Others may find beauty in the stain as it doesn't sit inside the norms of positive aesthetic and therefore displays a deeper character. The stain may reflect the ever-present force of nature and display a truth that gives modesty to the building. Andrew Juniper notes in Wabi Sabi – the Japanese art of imperfection that 'real beauty that we can enjoy in true and pure aesthetics is neither beautiful nor ugly, it is the magical state that happens before any of the concepts have found voice in the intellect'(Juniper, 2003, p. 111). Andrew is describing the fact that Wabi -Sabi focuses on the world before the concept of classical beauty had been conceived, considering it in the natural state of things. Wabi -Sabi can therefore be considered as beautiful and ugly but the resulting emotional response will ultimately depend on the disposition of the audience. 'We must suppose two sorts of beauties in architecture, namely those that are founded on solid, convincing reasons, and those that depend only on prepossession and prejudice; by beauties founded on convincing reasons, I understand such as cause building to please everyone because their worth and value are easy to be known, such as the richness of the materials, the grandeur and magnificence of the structure, the exactness and neatness of their performance, and their symmetry' (Leatherbarrow, 1993b, p. 179).

Modern materials such as plastic and certain metals tend to be sleek and shiny with an even finish. Any imperfection is considered a negative and steps are taken to avoid this. Andrew Juniper states that 'Wabi –Sabi expressions tend to use the organic nature of the materials and forms to leave the object with a rough and uneven surface. As nothing in the world we perceive is perfect, the idea of perfection is an unattainable concept that can only be approximated. If we look at any object in enough detail we will see imperfections and flaws that are an unavoidable part of the randomly evolving environment we live in. If an object is supposed to be unflawed then the eye is drawn to and inevitably offended by any imperfections. On the other hand when something makes no attempt at perfection but yields to the universal laws, then the image sits more comfortably on the eye'(Juniper, 2003, p. 109). By understanding the natural influences on our buildings, we can design to a

new form of perfection, one that is found within imperfection.

By using materials that reflect and celebrate imperfection, a truth is displayed allowing greater connection between us the spaces we create. 'accepting the natural cycle of growth, decay and death... it reminds us that we are all but transient beings on this planet- that our bodies as well as the material world around us are in the process of returning to the dust from which we came'(Lawrence, 2004, p. 17). By expressing the imperfections of time, we accept the inevitability of age as a positive attribute, reflecting human fragility within built form. Leatherbarrow believes the reason for this is that both the human body and the material thing are "natural" in the sense of development (they grow and decay) (Leatherbarrow, 1993b, p. 198).

It has been said that we are more relaxed in spaces that are not perfect. A certain anxiety arises where we are forced to alter our behaviour due to fear of affecting a space from its pristine state. These spaces are alien to the human condition. They do not consider the inevitable forces of life and its truth that nothing and nobody are perfect. Juniper notes that our mind has a natural affection towards the imperfections of life. Importantly - 'The mind can then...enjoy the randomness and imperfections of the piece and feel in it the imperfections present in our lives'(Juniper, 2003, p. 110). In order for architecture to accept imperfection, there must be an understanding of the way in which it establishes itself through weathering.

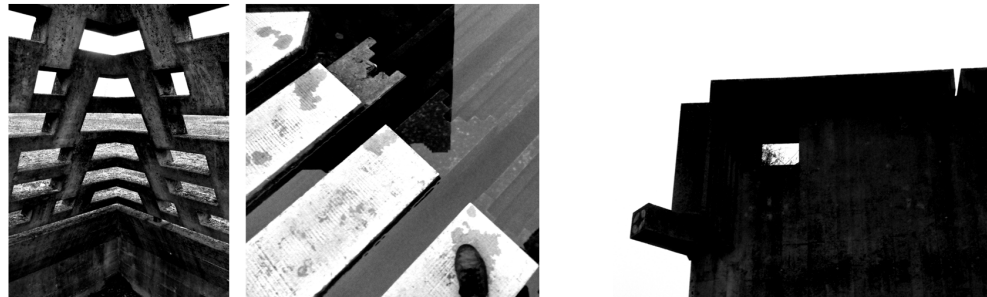


FIGURE 5: BRION CEMETERY IN SAN VITO D'ALTIVOLE NEAR TREVISO, ITALY - CARLO SCARPA. THE TRACES OF WEATHER ARE PURPOSEFULLY DISPLAYED IMPLYING A REFLECTION ON TIME.

WEATHERED COMPREHENSION

There is the assumption that a building is considered new and finished when the final coat of paint has dried. It is in its prime state and from then on, the building will slowly deteriorate and lose the status of 'new'. As previously noted, this finalised state was doomed from the beginning, as the natural addition of the weathered trace has not been considered. As soon as the first occupant moves in, scratches will be left, things will break and stains appear. Sun bleaches wood while rain stains concrete and the skin of weathering will envelope a building. This is a natural occurrence but will leave the user seeing a detrimental effect related to their inhabitancy. Ross Stevens uses the example of the Apple Ipod in his thesis *Worn In or Worn Out*. When bought from a shop, it is pristine, spotless, beautifully designed to be at its best at that particular moment in time. First, the plastic layer protecting the screen is taken off and smudged by fingers. To restore it to the pristine original state, it is wiped resulting in scratches. Within the first minute of owning an Ipod, the owner has actively forever altered its status of 'new'. The owner will feel guilty for using the ipod and wish to take back the traces they have left. The same applies to the notion of a 'white wall'. The surface will need constant maintenance to resist mould growing, paint cracking, stains appearing and so on. I suggest we need to move away from the pristine and turn the weathered trace into a positive act. If the Ipod had started out as a dull metal, the act of touch and abrasion would bring the surface to life. If a wall has been constructed to consider its own erosion, the more it is knocked, scratched and rubbed, the more beautiful it could become. With the correct direction, weathering can be seen in a positive light.

There are limits to how far a material can deteriorate before it is perceived as past its use. When consciously deciding to incorporate a material that will better with age, there must be an understanding of the processes that material will go through. There are different stages of weathering; some perceived as beautiful as previously noted, others as an indication that the material needs maintenance or to be discarded completely. Stevens notes that If we design materials without considering the human and weather trace, we leave the user feeling uneasy about the future of a material, wondering if they have gone past the designer's intent. For example, if a step tread is to wear away, leaving an exposed surface which will increase deterioration, the user will view it as having failed from its original use. If we design knowing that these surfaces will wear and incorporate a pattern or message that will be revealed through abrasion, the user will feel comfortable with letting this process continue. I suggest that it is all in the architect's comprehension of what processes will occur after initial construction and that it is essential the architect is in control of these processes, not allowing the user to feel the initial intent of the design has failed.

MATERIAL TIMEFRAME

Every material is impermanent; it is simply a question of how long the material will resist the erosion of time; and additionally, different materials erode at different time scales. It may take 50 to 100 years for a timber weatherboard to erode depending on its context and initial treatment, where a steel profile may rust away in half the time. I suggest that it is important to realize these varying timeframes when designing a building, as they affect the visual coherency as weathering and use take hold. There needs to be a balance between the short and long term components. If everything decayed at the same rate, would the building seem as if it were dying? Within a material composition, comparison between long lasting and temporary materials will ensure their individual beauty is not denied. The vibrant red foliage of a Pohutukawa tree comes out only in summer and acts as a temporary component of the tree. The trunk is long lasting, surviving through the cold winter months and in summer, a backdrop. Each component emphasises the importance of the other. 'A building properly conceived is several layers of

longevity of built components' (Duffy:Brand, 1997, p. 12). Understanding that different components will fail at different times, needs to be incorporated into a design.

Bernard Leupen states that for changeability to occur there must be a framework. The long term must reference the short term, and without this comparison, there is no question of a reinterpreted old, there is simply the new or the dead. An overriding framework must survive generations and act as the permanent features of a dwelling or building. This framework is typically the skeleton or structure combined with the shelter or roof. These features could be in place to act as a stage for changeability. . 'The ability to change is a form of freedom – it will destroy itself without a bounded framework'(Leupen, 2006, p. 22). Through material choice and detail, an expression of this can take place defining what will eventually change at a faster or slower rate. Giving expression to the permanent by making it visible or perceptible will display its significance and therefore its enduring character. The comparison between wood and concrete is relevant. Wood being organic will age at a different rate to Concrete which has been artificially designed to last. The fragility of wood may only be appreciated when contrasted against the longevity of Concrete, and vice versa. One may consider concrete to act as a lasting framework in the same manner as stone. Artist Andrew Goldsworthy acknowledges the importance of varied timeframes. 'The dialogue between stone and wood remains an abiding concern of the sculptor. In recent years, working increasingly on and around trees, he has come to recognise profound, elemental differences between the two materials. "A stone is passive, a witness to the place in which it sits; it is a focus, the core, the remains of something that its' movement is one of erosion...A tree is an active part of its place, it makes that place richer and is an indication of the way something can change a place...A tree is close to the gesture of a leaf or a stone throw, but over a much longer span of time, during which it thrusts up and reaches out into space before decaying and dropping back to the ground'"(Friedman:Goldsworthy, 1996, p. 6).

Within buildings, there is the assumption that each component has a given lifespan and that when passed their initial anticipated use, they will cease to function. But buildings don't necessarily have a single life. It is interesting to consider that the end of one components life may trigger the birth of a new function. Leupen explains that there are different components in a building, each having a unique timeframe of use. These components such as structure, skin and services will fail at different points throughout the buildings life. Wood and Concrete have different life spans. Concrete, depending on site conditions, will outlast wood over time. Understanding this, we may set up a multi layered function where as the life of the wooden component comes to an end, the concrete may serve as a new function. If we understand the timeframes of different components and how they relate to one another, we may set up a narrative where a building may have a multitude of layers, each with its own unique development. Through the designers' intent, a building may go through multiple lives, having a more profound presence over time.

HONESTY IN MATERIALITY

For people to feel comfortable in their environment, it is important they understand the nature of what it is that surrounds them. It is comforting to know that certain materials are true to their original purpose and are intended to be used in that way. For example, a window is a window, not to be touched but simply act as a thermal threshold between an interior and an exterior. A concrete wall is strong, durable; one could feel comfortable kicking a ball against it without fear of damage. Materials that make us feel uneasy are those that we fear by contact, will leave an unintentional mark, defacing the original intent of the designer. These are things such as white walls, finger smudges on glass etc. These materials will dictate how we perceive a space and how we act in it.

Falsifying a structure or an element may bring about an assumption of possible failure that needs to be hidden; the hidden leads to a possible latent fear of the unknown and discomfort in our bodily relation to it. For example, if a concrete column is faced with gip, we will assume it is weak, and treat the material in accordance. 'If a material looks like anything, it looks like itself: no material should claim for itself the form of another'(Leatherbarrow, 2002, p. 70). On the other hand, revealing the trueness of materials and the way in which they age will give integrity to their purpose, allowing users to understand a given space and promote interaction. As designers, we need to create a relaxed atmosphere, where people aren't afraid to engage with architecture, such as leaning against a wall or sitting in a particular spot. If we design buildings with a clear knowledge of what a material is capable of, it will allow this interaction between people and materials and result in a building capable of documenting the traces of life.

WEATHERING AND SURFACE

The act of weathering may cause hidden layers to become apparent. Many materials have multiple dimensions which are hidden from view by a surface finish. Trace may reveal these layers, giving information on how a components anatomy is structured and how it came to be. It is important to understand how the spaces we create separate us from the elements and realize our relation to them. 'Weathering can highlight the subtle evidence of workmanship' (Stevens, 2006, p. 286). Faults and joints will become more apparent as layers are removed and this may be a positive act as new information is revealed. By cutting through and revealing layers, we may also learn about a components history. As an illustration, layers of wallpaper will tell us of the many alterations and different inhabitants who have occupied a space before us.

We can dictate where sediments will lay and which areas will attract abrasion depending on their exposure to use. An experiment undertaken by Stevens Identified that there are three dimensions to surface weathering; the first actively wants a surface to wear fast by having it protrude past a base surface. If we need a surface or pattern to be apparent, this will ensure it is in the full extent of contact with the trace of weathering and use. The next level of exposure is the base level where the surface is not prone to extra stress but acts as a zone for other extremes to contrast against. A negative exposure will go beneath the base level and be a safety zone where minimal trace can occur. The negative detail means sediments will build up in these spots as there is no force actively removing them. With this in mind, we can create scenarios where active use of a surface will create a desired pattern.

CONCLUSION

This chapter has demonstrated that architecture can be perceived not only as a space in the present, but also of the past and future. Buildings are not static images, frozen at the end of construction, but will move away from their original state and grow the skin of weathering as the “final finish”. Accepting this, I suggest that the imperfections of time will allow us to be more engaged with our buildings, as our own fragility is reflected within their skin. Site can be considered the original trace of weathering, and our buildings may sit comfortably within such contexts. Weathered comprehension may direct architecture to capture the actualisations of time and in turn the build up of memory. The following chapter will explore in detail how memory may be initiated through material experience.



FIGURE 6: LAYERS OF WALLPAPER. THE HISTORY OF A ROOM IS REVEALED AS PREVIOUS LAYERS ARE EXPOSED.

2.0

ACTUALISATIONS OF TIME



INTRODUCTION

The characteristics of a site will be visually represented on a building as weathering leaves its mark. This chapter will explore how weathering may create ownership of the site over the building. The notion of weathering as a positive aspect on buildings (introduced in the previous chapter) will be developed to look at the physical representation of weather on materials and how negative acts such as rain stains and accumulation of surface debris may be directed to positively improve a building. If the life of a building has not been considered during design, erosion may visually degrade its surface without control. However, if this erosion is directed, positive properties of a building may be expressed over time reminding us of our place in its cycle. All materials are impermanent and the notion of renewal will be explored.

WEATHERED TRACE CREATES OWNERSHIP

Weathering is a continual process of subtraction and addition. The sun will bleach wood, rain erodes layers of stone, footprints and cobwebs will appear and this may be considered a detriment from the original state. But weathering is also an addition: a series of new layers upon the building surface. It “tells” the site’s direct effect. It paradoxically reveals the trueness of materials. It covers to reveal, not to mask. Local sediments will lie in less exposed areas and will create a visual pattern where rain and wind have touched a surface. ‘The contrast between light and dark on a building surface provides it with shadows permanently embedded within its fabric’ (Leatherbarrow, 1993a, p. 38). As weathering occurs, a building may appear more a part of its context, taking on the sites colours and textures. The subtraction of one layer in a material may reveal the beauty off a layer beneath and this will reflect the location of a trace.

‘An old car left in a field to rust, as it transforms from an eyesore to a part of the landscape...’(Lawrence, 2004, p. 21). In the same manner, a building may become further connected to site as weathering takes stronger hold. As a result, most materials will be given a site specific finish. This in turn will assist in building up personal meaning and memories associated with such specificity of site and building. For example, an object will change meaning depending on the context in which it is placed. A generic pocket watch illustrates that with time comes ownership. ‘Through use, damage and repair, this pocket watch has transformed from a “Tissot Antimagnetique” into simple my “grandfathers” watch’ (Stevens, 2006, p. 278). Although the watch was probably one of many manufactured by Tissot, the human trace has made it unique to its owner and given tangible proof of the persons existence. There is a release from the anonymity of the ‘new’ and another level of ownership is created, intimately connected to the user, telling their story. The same can be said between weathering and building materials as the unique conditions of rain, wind and sunlight will add a new representation of context. ‘Weathering ... is the process whereby the encompassing situation asserts its rightful claim over everything artificially (and temporarily) separated from it’ (Leatherbarrow, 1993b, p. 169).



FIGURE 7: AN OLD CAR LEFT IN A FIELD TO RUST
BECOMES FURTHER CONNECTED TO SITE AS
WEATHERING TAKES HOLD.

DESIGNED WITH TRACE IN MIND

Understanding the affect we have on buildings can lead to well designed relationships between us and our environment. By predicting where in a building, a material will wear away the fastest, we may speed up the process using soft surfaces, or slow it down with more durable ones, depending on the intended effect. They can be deliberate, considered and designed acts which visually document the way weathering effects form. A negative act can be reinterpreted as a positive one if we direct it to do so. For example, an entry step may be a heavily used area, collecting dirt from feet and wearing away as people scuff it. This process may turn into a positive act by using a metal in place that will become beautiful with polish. The contrast between sediments of dirt and polished metal will illustrate where the step is most used and may influence the way people interact with it.

A building that is capable of recording the traces of time can be considered a form of Palimpsest. The traces of a climatic event are left and the build up of new events may only enrich a building and promote memory. 'Our situation in the natural and constructed world needs to be frequently brought to mind' (Spatial recall :memory in architecture and landscape 2009, p. 78). It is refreshing to be reminded of our place in the cycle of time, to readjust our thinking and see things from the greater perspective. By capturing a trace of weather as it leaves its mark on a material, we are witness to a visualization of time, celebrating the build up of a memory as opposed to denying it.

Every touch, no matter how small will alter a material in some way. '...the various markings and layers of a surface record and allow one to recollect earlier stages in the history of a building and the human life associated with it' (Riegl: Leatherbarrow, 1993, p. 84). A polished door knob will subconsciously remind us of the many people who have passed through it before us. A sooty fireplace will indicate the numerous fires that have comforted on a cold night. These traces add richness and dignity to place that is only attainable by lasting through generations. The traces trigger recalled memories of that particular site and experiences you may have had, or if you are new to a place, it may open your imagination to fill in the gaps of time. By adding our own trace, we are on the shoulders of giants so to speak, multiplying the effect of everyone before us.

By visually representing a change in state from the new to the aged, a memory is documented as one can remember a materials original state but see what time has produced. By pointing out a trace, one can imagine what it was like before the trace occurred. Carlo Scarpa was aware of this fact and detailed many of his buildings to capture the weathered trace and also express the trace of previous inhabitancy. 'The play of memory is most provocative in instances where original objects undergo transformation. In working with existing buildings, Scarpa's interest was didactically to point out the changes those buildings experienced during their existence' (Schultz, 2000, p. 53).

MATERIAL IMPERMANENCE

It is interesting to consider our buildings as impermanent. In general, we design all aspects of a building to last, keeping the rain out and aiming to use materials that will last against the erosion of time. But this is an inevitable fact. Materials will eventually go back to the earth they came from as the ever-present force of weathering takes hold. The work of Andrew Goldsworthy sees beauty in impermanence, creating natural installations with a short life span. 'Goldsworthy's usual practice has been to make each sculpture, which can vary in size from miniature to monumental, using only one kind of material and constructed during a brief time span, often within a single day. The work is then photographed before it naturally disintegrates. ...the moment is intense only because it lasts for a short time, and it would be wrong for such an intensity to last longer than that...' (Goldsworthy, 1996, p. 10). The captured moments become unique to the viewer, illustrating that nature is in control, but on a much shorter time frame than a building. Impermanence is the key that gives his work truth; capturing a unique moment through illustration of time.



FIGURE 8: TEMPORARY STONE SCULPTURE - ANDREW GOLDSWORTHY. THE SCULPTURE ACCEPTS BEAUTY IN FLEETING MOMENTS THAT DO NOT ATTEMPT TO RENEW THEMSELVES.

The Ise shrine in Japan is an example of a building that attempts to understand the temporality of built form and its reflection in our existence. The shrine has been reconstructed every twenty years to symbolise the death and renewal of nature and the impermanence of all things. It is built to exact specification as all previous shrines and acts as a way of passing building techniques from one generation to the next. Edward Ford writes in "The Illusion of Durability" that 'the Ise shrine in Japan, according to one's point of view, is either twenty or 1300 years old, since it has been systematically reconstructed in an elaborate ritual roughly every twenty years since the 7th Century' (Ford, 1997, p. 12). The idea of recreating the past on a continual basis poses a question. Although the building materials may only be a maximum of 20 years old, does the space still hold the presence and history of a building that has been there for 1300 years? I believe this is not the case. The passage of time and build up of trace is unique to the materials it encompasses. With new materials comes a clean slate for the build up of memory. They are anonymous with no connection to previous events and it is only through the passage of time that meaning will be added. 'human memory is acquired; we are born with a clean slate upon which experience makes its marks. As with the human, so with the built environment...buildings and landscapes can acquire wisdom in their fabrics. They can tell us things, should we choose to ask and listen' (Spatial recall :memory in architecture and landscape 2009, p. 14).



FIGURE 9: ISE SHRINE - JAPAN. THE SHRINE HAS BEEN RECONSTRUCTED EVERY TWENTY YEARS TO SYMBOLISE THE DEATH AND RENEWAL OF NATURE AND THE IMPERMANENCE OF ALL THINGS.

CONCLUSION

We have seen that the weathered trace creates ownership as the unique conditions of site leave their mark on materials. These traces can be considered as a record of moments in the life of the building, triggering a memory of certain events or promoting the imagining of how those traces came to be. It has been considered that memory is collected within built form and that furthermore, weathering is a visual representation of this. As Marc Treib observes - 'We might say that there are both memories in and memories projected upon our built environment...the built environment as a memory bank, both individual and communal' (Spatial recall :memory in architecture and landscape /Marc = Treib, editor, 2009, p. 14). By accepting that all materials are impermanent, we may accept beauty in fleeting moments that do not attempt to renew themselves, but live on purely as a memory. The following chapter will explore embedded memory and the way in which we create memories from the spaces and traces of weather.

3.0
CREATING MEMORY



INTRODUCTION

It can be understood that when we picture a memory in our mind's eye, it will most likely be situated within the context of a space. Built form and site are the backdrops to our memories and therefore we can consider our memories to be embedded within their fabric. The previous chapter understood the physical representation of a trace and its importance in grounding architecture within time. This chapter seeks to understand the way in which our body processes the experience of a weathered trace into our own unique memory.

We perceive space through the build up of previous memory related to a given place which is not a series of recognizable events, more a series of categories we re-stimulate as stated by Harry Mallgrave. The chapter will look at memory over time and how it is stimulated not only visually but through our whole body. The idea of fragments is explored and how they may promote imagination as we attempt to construct their previous occupation in our mind.

MATERIALS GIVE OUR MEMORY GROUNDING

Buildings and materials are the physical things we can relate a memory to. If we consider our memories, they are usually grounded within a context. 'Built structures...materialise the course of time and make it visible...they concretize remembrance by containing and projecting memories...they stimulate and inspire us to reminisce and imagine'(Spatial recall :memory in architecture and landscape /Marc = Treib, editor, 2009, p. 18). Without materials and buildings, our memories would be floating with no context to attach themselves to. Our memory of an event will most likely be set against the backdrop of a room, a site, an urban space and these are the components that illustrate our memory and express the way we felt while experiencing the event.

MEMORY: THE ADDITION OF LAYERS

Prof. Mallgrave states in “The Architects Brain” that our perception of a given thing is understood through the addition of all previous experience. If we view a window in one context, then see a windowless frame in another context, our previous experience will allow us to imagine what the frame would look like with glass. We can experience a space by relating it to previous examples. We know a room is dark and poorly lit because we can compare it to the memory of a well lit room. Hence the depth of memory embedded within a material is directly related to previous experience. The greater knowledge a person has of a place before visiting, the more images may be evoked. In many European cities, the traces of previous life still exist within the built fabric. Via della Lungaretta in the Roman suburb of Trastevere is an historic street showing numerous traces of its previous use. The street was once lined with Porticos- covered walkways with a wall on one side and supporting columns on the other, still prominent in parts of Northern Italy. Most of the Porticos are now “filled in” due to ancient laws linked to rising crime. Knowledge of the buildings’ past alters the experience of architecture. One can imagine how the building used to be, with the visual aid of the portico trace still expressed in the wall. We may visualize in our mind’s eye the physical events that have shaped a particular place. ‘Buildings can therefore act as materialized memories, memories that relate to the observers knowledge and experience’(Schultz, 2000, p. 49). Schultz goes on to point out that in the absence of the ability to decode the associative layers from previous knowledge, aesthetic values move to the foreground. We make up our own history of a given thing with preference to visual clues.



FIGURE 10: 20 VIA DELLA LUNGARETTA, ROME – TRACES OF THE PORTICO REMAIN AT THE BASE OF THE FRONT FACADE.

By remembering, we are actively reliving the favourable parts of a previous experience. The amount we recall of a particular thing will vary, depending on the level of experience and the passage of time. If we are not re-stimulated by experiencing a place often, our memory of it will most likely fade. We will, however remember particular aspects of it. On a summers evening, walking across sand still warm from the days heat may seem familiar but we don't know where from. 'Memory is not a fixed portfolio of previously recorded events but is rather (following the fragmentary nature of how our perceptions are constructed) a series of perceptual or generalized categories that we re-stimulate. Lines forms, colours and bodily feelings – these are the categorical patterns...they together with the perceptual input from the other senses and from fantasies, emotions, and dreams, are the elements that we fashion into memories' (Mallgrave, 2010, p. 165).

'Memories may metamorphose into meaning over time'(Spatial recall :memory in architecture and landscape 2009, p. 7). It can be said that a place is given meaning through the addition of experience and related memory. As we experience a building and events take place, the build up of memories associated to a context will strengthen. Memory needs time to establish itself within our subconscious and build up an emotional response.

For example, we may inhabit a dwelling in a context previously unknown. Being in unfamiliar territory may be unsettling as we are unsure of our surroundings and have not had time to fully understand the context we are in. As time passes, the negative feelings may fade, as our subconscious is given the time to process what is around us. The events that unfold within a given place may linger in our memory and as they build on top of one another and background information is lost, we will retain the positive aspects which will be given greater meaning over time.

'We are taught to think of memory as a cerebral capacity, but the act of memory engages our entire body' (Spatial recall :memory in architecture and landscape /Marc = Treib, editor, 2009, p. 28). Memories are triggered through more than visual trace; all of our senses hold memory. This can be considered 'body memory' as Edward S. Casey describes in his book "Memorizing". Each sense- sight, smell, touch, taste and audio may have traces within a place and give a site specific meaning. The first time we smell a perfume, without knowing, we will connect it to the person wearing it and if smelt in a new context, will remind us of that initial experience. When opening the doors to the family Bach, only used a few times a year, the musty, stale air will remind us where we are, on holiday. The touch of warm, wooden arms on an old chair will tell us to relax. These traces of place become connected to our memory through previous experience and will influence the way each individual will interact with a space.

INTERPRETATION OF FRAGMENTS

'Incompleteness and fragmentation possess a special evocative power' (Pallasmaa: Spatial recall :memory in architecture and landscape /Marc = Treib, editor, 2009, p. 21).

As time passes, certain materials or function may become obsolete. But they may be retained through some other form of use, or simply left as a reminder and memory trigger to a time gone by. I believe that a fragment or trace of a bygone use can exist as an experience in itself and be considered a valid architectural statement. As we view fragments of a previous use, the lack of complete information allows our imagination to fill in the gaps. In Wellington, just past the Pencarrow Lighthouse, the remains of a stone quarry exist at the edge of the water. During Wellington's settlement, Stone was quarried here and shipped by Barge to the city to be used in many concrete buildings. A jetty and service building were established by the beach. Today, all that remains is the skeleton of one of those service buildings, a highly reinforced concrete structure in a peculiar shape with no allusion to its previous purpose. But this lack of information is what allows the structure to promote new experience. We engage with the architecture, attempting to understand what it means. We are allowed to make up our own mind as to what it was, giving a personal connection to the experience. By allowing the structure to remain, we acknowledge its artistic and cultural value and the varied perceptions we have of it as time passes.



FIGURE 11: REMAINS OF STONE QUARRY - SOUTH OF PENCARROW Lighthouse, WELLINGTON

At my Primary school, there was a dilapidated swimming pool behind a large corrugated fence that hadn't been in use for many years. The area was 'out of bounds' and anyone caught in there would be severely punished. Over the years, areas of the pool had filled with dirt and sediment allowing large clumps of weed to envelope. It fascinated me to picture the pool in its former glory, full of cool water on a hot summer's day with kids splashing and swimming lessons taking place. Now, it was empty with faded blue paint cracking off the interior and rusty stains from handrails. During the weekend, friends and I would often jump the fence and explore the pool area. The conditions of weathering had given mystery and excitement to the pool and its current state promoted imagination and exploration. The character did not need disturbing. It existed as a memory of the past but also a creation of new experience. 'Our memories give meaning to things, and at the same time the things exist as samples of a bygone experience. Their existence in daily life also creates new experiences, so it is not only the past they reflect, but the present as well.' (Leatherbarrow, 1993a, p. 38)

CONCLUSION

We have learnt that fragments may exist as a memory of the past but also promote imagination and be active in the creation of new experience. Their existence proves their artistic and cultural value and use as grounding for our memories. Our perception of a given place is dictated by the memory and knowledge we bring from previous experience, meaning our interpretation of a place is very personal. In order for our buildings to gain individual and collective meaning, the passage of time must occur allowing our memories to “mature”. As we re-experience a place over time, our memories are given space to process our feelings towards it, taking in more detail and embedding the memory deeper within our subconscious. These memories will be re-stimulated through our whole body: ocular, touch, taste, smell and hearing illustrating that memory is not only in the mind but experienced through all our senses. The following chapter will explore the ideas raised in previous chapters applied to a physical site and programme.

4.0
DESIGN RESEARCH



INTRODUCTION

The ideas previously discussed are explored through design in this chapter.

Chapter one focused on the process of weathering on materials and the way in which they may be perceived as a representation of the past, present and future. Through siting a project within a physical context, this idea may be explored with reference to the existing traces of weather on site. Chapter two explored the actualizations of time and the role weathering has in creating ownership of a site over architecture. Through the following design component, we may understand the way in which site specific characteristics can be ingrained and reflected within architecture over time. The idea of material time frames will be explored, testing the validity of material placement to purposefully erode areas at a faster rate. The project sits in an extremely harsh environment testing Goldsworthys' ideas on the impermanence of all things. Chapter three saw the introduction of the way in which we create memory from our experience with architecture. Developing this idea, fragments of a building after the process of weathering will be explored, understanding how they may promote memory and also activate new experience. Designing towards a building that is capable of capturing the weathered trace will illustrate how our memories need time in order for architecture to gain personal meaning.



FIGURE 12: FORCE OF SEA DISPLAYED THROUGH STREWN
SEAWEEED AMONGST ROCK POOLS.

SITE: TE RAEKAIHAU POINT

The site is located at the southern end of Lyall Bay on the South Coast of Wellington. This location is extremely exposed to northerly and cold southerly winds and during storms, is battered by large waves and debris. These elements allow the affects of weathering on a building to be most visible. The varied weather patterns will leave their mark as the colours and textures of the site are reflected within the buildings' skin effectively creating ownership of the site over the architecture.

There are numerous environmental cycles within the site that help to illustrate the passage of time. The tidal change, wind direction, movement of debris and sand all add a new interpretation of the site to every visit.

The site also offers a range of weather conditions. The east is exposed to northerly winds, as it is not protected by the hill. It also receives large waves as it is open to the southern ocean. These conditions offer a chance to express weathering but at a much faster rate as there is little to no protection from surrounding topography. This influences the plant and sea life that grows here, as it must be much hardier in order to survive. The west of the site focuses into a sheltered bay, protected from northerly winds and the larger waves. This fosters a larger population of sea life with many rock pools and seaweed growth.



FIGURE 13: SITE PLAN

ORIENTATION

The orientation of units called for careful consideration of climate conditions. Sourced from the NIWA website, the number of rainy days per year is on average 110 days. The number of days with wind gusts (33 Knots or above) per year is 140 days and the predominant winds are from the North.

The units are oriented to protect from these conditions but also make the most of the views towards Island Bay and the South Island. The four units are placed separately to illustrate the varied levels of exposure and weathering conditions within the site.

PUBLIC/PRIVATE

In situating the building on such a public piece of land, I felt it necessary to keep a public aspect to the layout of the four units. Many people use this site for fishing, diving, walking and exploring and I did not want to restrict the experience of the environment to a select few.

The units are spread amongst the site with interconnecting pathways and jetties serving amenity to divers and fishers. The circulation allows public to go past, underneath and around the units and access all areas of the site.

Depending on whether the units are in use, access to areas may be restricted or open. For example, the South Eastern unit (unit one) has a private jetty when the unit is in use defined by a gate. When not in use, this may be opened allowing public access to the end of the jetty.

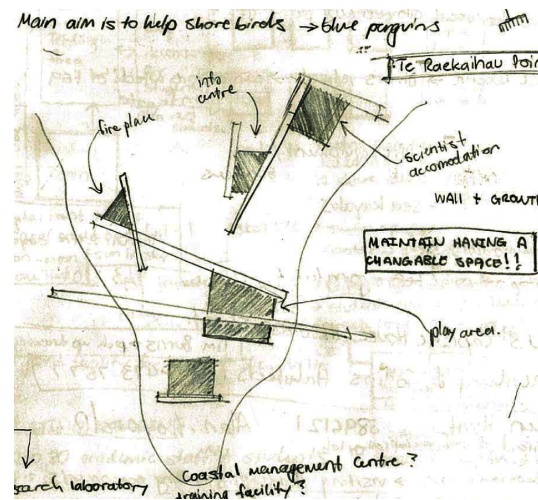


FIGURE 14: EARLY CONCEPT SKETCH

FIGURE 15: ORIENTATION
INFLUENCES

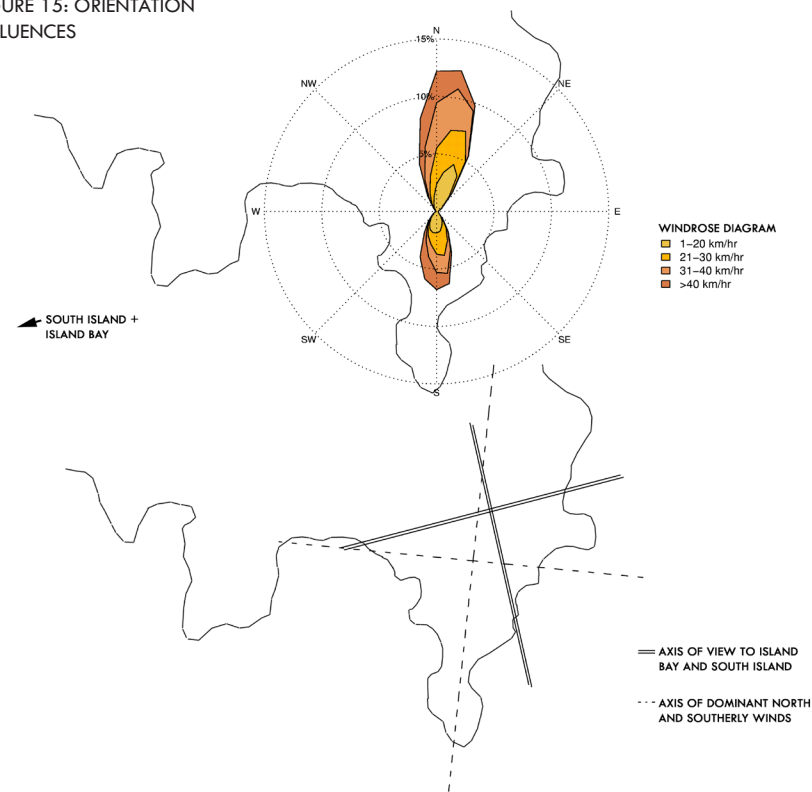


FIGURE 16: SITE PLAN - ZOOMED IN



PROGRAMME

The site sits adjacent to Tapu Te Ranga Marine Reserve, an area of extensive scientific research for the last 20-30 years, which was made a legally protected area in 2008. A major user of the reserve is the Victoria University Coastal Ecology Lab, situated on its doorstep.

After talking to a key member in the creation of the Ecology Lab, the need for temporary accommodation for visiting scientists became apparent. The lab, finished at the end of 2008, had in its original scheme three accommodation units to be located on the roof. Budget restrictions meant this was not possible, but the need was still apparent.

I have proposed that four units be situated at Te Raekaihau Point, serving the needs of the VUW ecology lab and also that of NIWA research, located a short distance north of the site.

Visiting Scientists may use the accommodation for as little as a few days, up to a few months.

I must stress the programme is not key to my research, but simply acts as a platform on which I can test the ideas of weathering on materials.



FIGURE 17: SECTION A-A THROUGH SITE ILLUSTRATING RELATIONSHIP TO HILL

FIGURE 18: VIEW FROM TE RAEKAIHAU POINT DOWN TO SITE

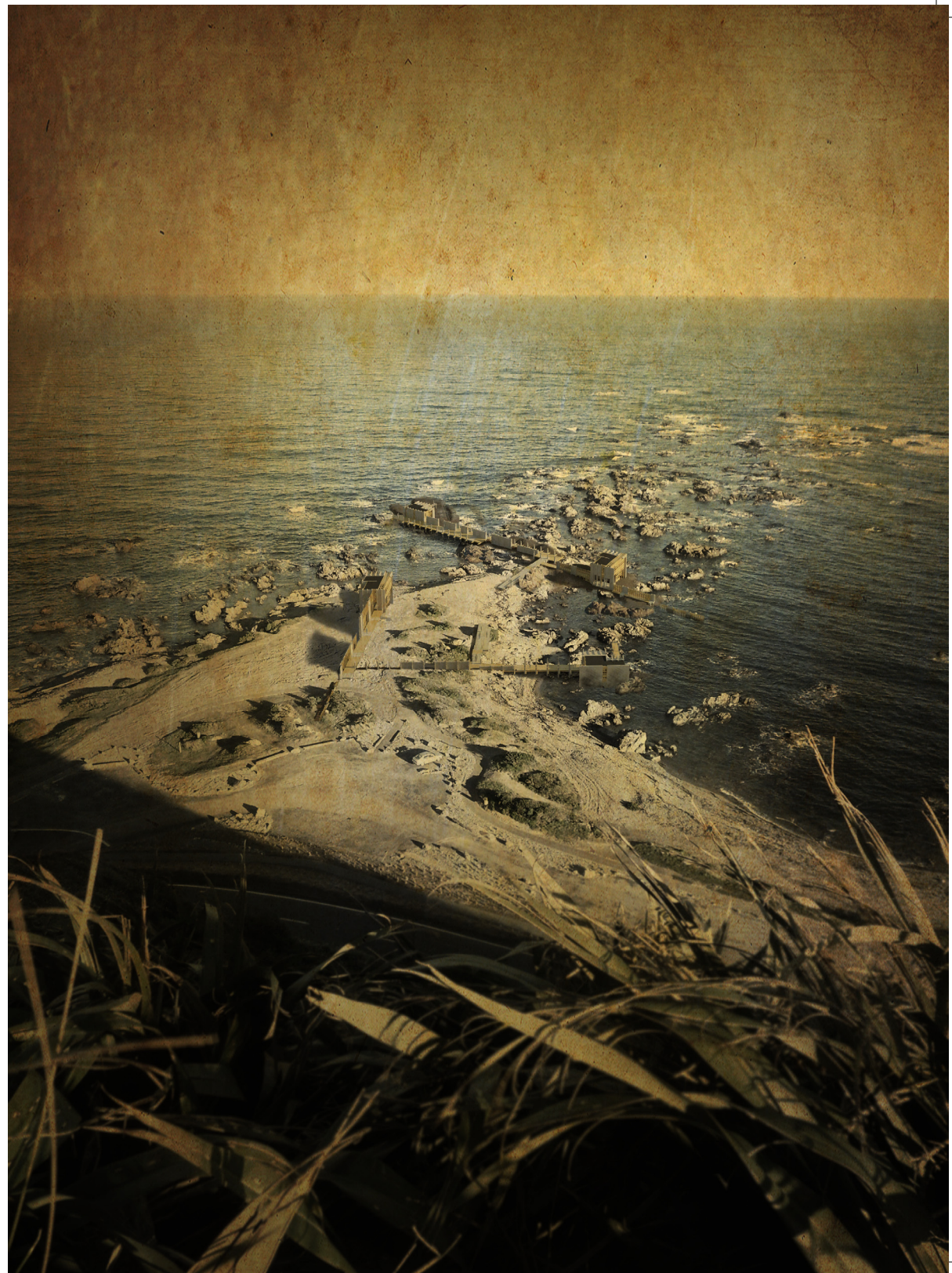




FIGURE 19: VIEW BACK TO TE RAEKAIHAU POINT FROM ROCKS



FIGURE 20: VIEW FROM TE RAEKAIHAU POINT DOWN TO SITE WITH ISLAND BAY IN DISTANCE. EXTREMELY EXPOSED SITE PRODUCES THE CONDITIONS OF WEATHERING AT A FASTER RATE.



FIGURE 21: LOW TIDE - 10:40 AM 27/10/10



FIGURE 22: HIGH TIDE - 4:55 PM 27/10/10. 1.2M TIDAL HEIGHT CHANGE. IF USERS EXPERIENCE THE SITE OVER AN EXTENDED PERIOD, THEY WILL NOTICE THE CHANGABLE NATURE OF THE LANDSCAPE. THE MEMORY OF ONE VISIT WILL BE REINFORCED BY ITS COMPARISON TO THE NEXT VISIT WHERE EVERYTHING HAS CHANGED.



FIGURE 23: LOGS WASHED UP FROM RECENT STORM - WAVES WILL SHIFT THEIR POSITION IN NEXT STORM ILLUSTRATING THE FORCES ADDING AND SUBTRACTING TO THE SITE

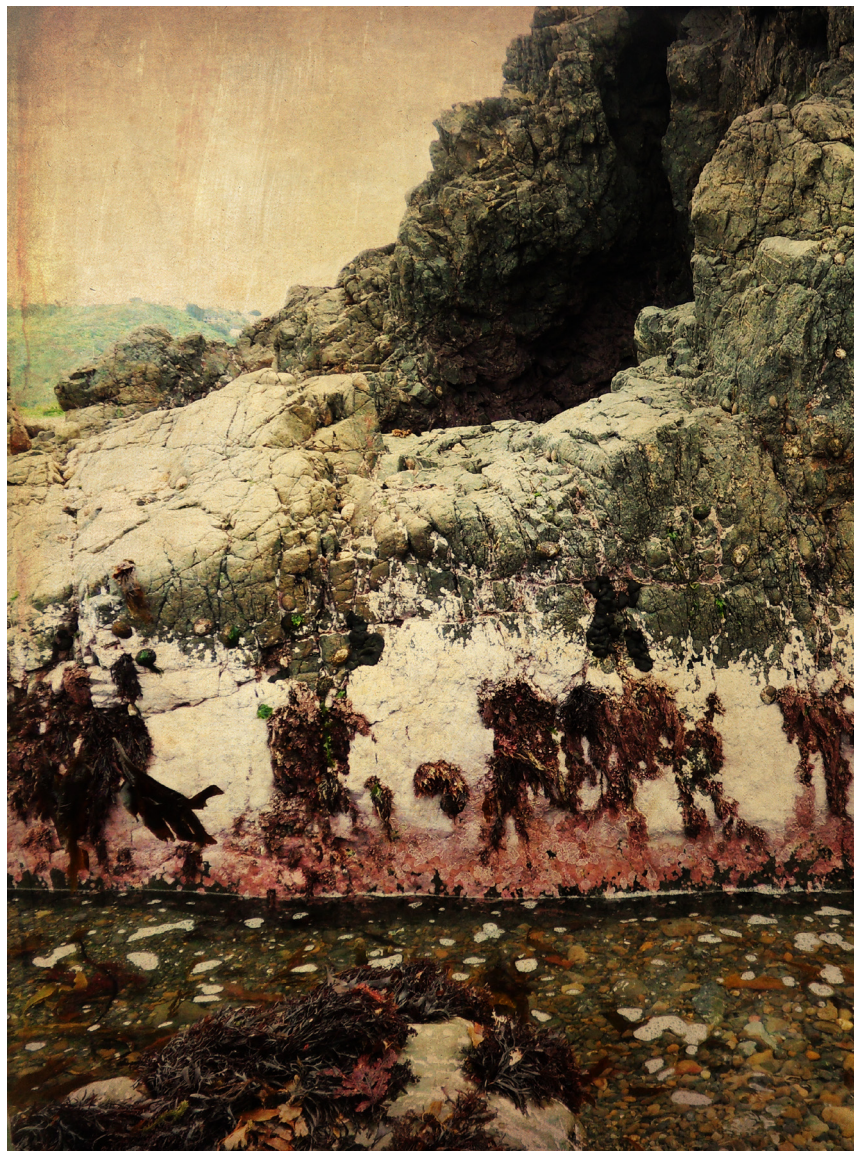


FIGURE 24: A WIDE VARIETY OF SEA LIFE CAN BE FOUND WITHIN THE TIDAL ZONE. THE DIFFERENT HEIGHTS OF THE TIDE ARE ILLUSTRATED IN THE POSITION OF GROWTH ON THE ROCKS.

CONCRETE SURFACE EXPERIMENTS

There are different time frames of trace.

A trace can last an afternoon through the event of a rain shower saturating a wall then disappearing when the sun comes out. A trace can last for a couple of days through captured water that will only disappear when evaporated. A trace can also build up over a number of years through grime and debris embedding itself within crevices of a facade. Over years of weathering, we can also consider the remaining fragments of a building as having experienced the most extreme trace of weather.

RAIN TRACE

In general, rain is seen as a negative force on buildings, as it erodes and alters buildings from their 'pristine' state. But what if the event of a rain shower could enhance a building temporarily?

In the following experiment, I have used a water sealant to create a pattern across the surface of a vertical piece of concrete. Naturally, concrete turns dark when it is wet and I have used this property to bring out the pattern. When the surface is saturated from a rain shower, the pattern is revealed as the wet, dark concrete contrasts against the dry light concrete. The event is impermanent and the pattern is visible only as long as the rain shower persists. This effectively catches a temporary trace of weather, evoking a memory to be made. The process of weathering is seen as a positive act as it is the action that reveals the pattern. Rain activates the wall.

WET SURFACE - PATTERN IS EXPRESSED

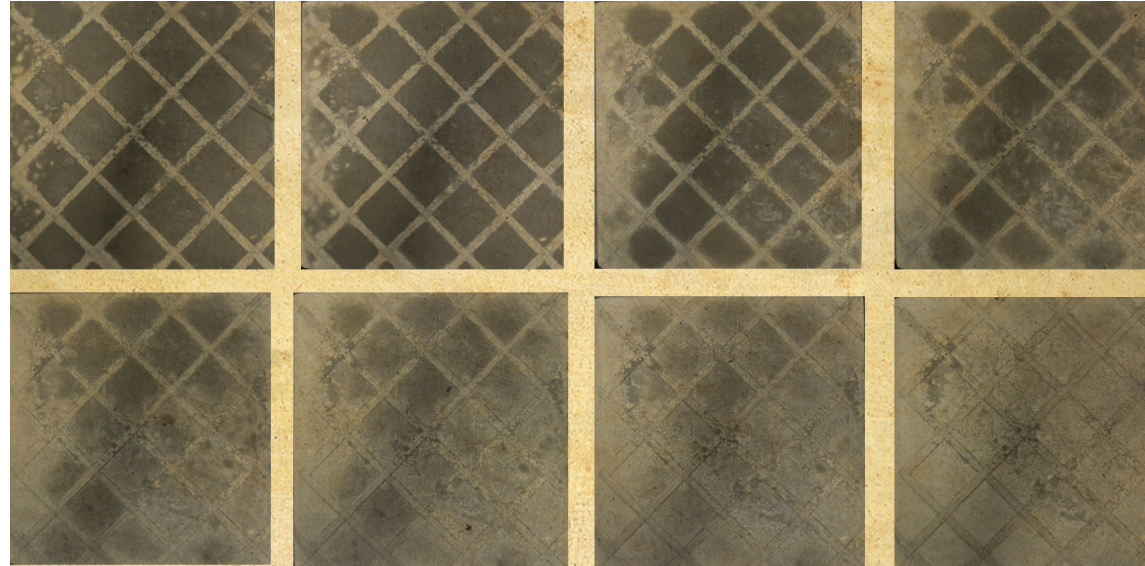
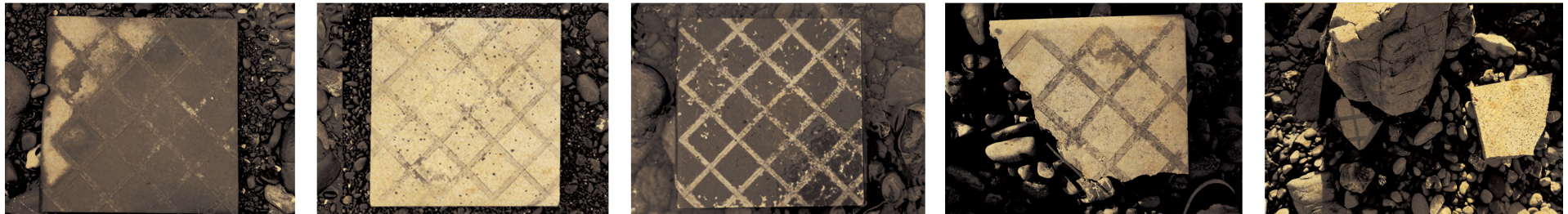


FIGURE 25: CONCRETE WET/DRY EXPERIMENT

DRY SURFACE - PATTERN IS HARD TO DECIPHER

FIGURE 26: CONCRETE WAS LEFT ON SITE TO DOCUMENT THE TRACE OF WEATHER. THE FOURTH AND FIFTH VISITS SHOW THE FORCE OF WAVES AND TIDES, SMASHING THE CONCRETE INTO PIECES.



RAIN GROOVE

By creating a groove pattern in a piece of horizontal concrete, a different timeframe of weather can be temporarily captured. In this experiment, I have left the concrete tile out on the site at the top of the intertidal zone. At high tide, the concrete was submerged, and as the tide receded, sea water remained within the groove pattern. Trace of the tide is captured within the groove pattern and will last until the water evaporates, or is replenished by the next tide. The captured water effectively extends the event of a tidal change and visually represents a moment in time.



FIGURE 27: RAIN GROOVE - WATER IS CAPTURED UNTIL EVAPORATION EXPRESSING A LONGER TIME FRAME OF A WEATHER TRACE

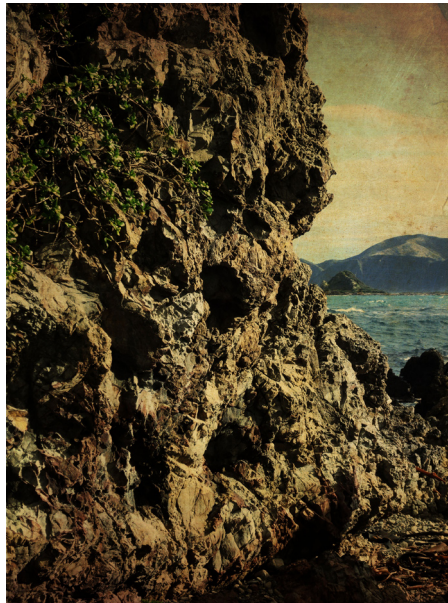


FIGURE 28: PLANTS CLING TO ROCKS SHELTERING AGAINST STRONG WIND AND WAVES. A FRAMEWORK IS PRESENTED FOR CHANGE TO OCCUR. THE ROCK LASTS OVER MANY YEARS WHILE PLANTS COME AND GO.

EXISTING TRACES OF WEATHER ON SITE

A lot can be learnt about environmental affects on materials through analyzing the traces of weathering already apparent on site.

In certain areas, the volcanic rock formations show a defined pattern of erosion in a similar form to an orthogonal grid. Where the rock is soft or more exposed to rain, the groove is deeper and wider. These grooves allude to a trace of something that has been before, but is no longer. The artist Rachel Whiteread explores this idea through her 'negative mould' sculptures. By taking moulds of the negative space between objects, she implies the presence of the positive objects themselves. A memory is described through its remaining trace.

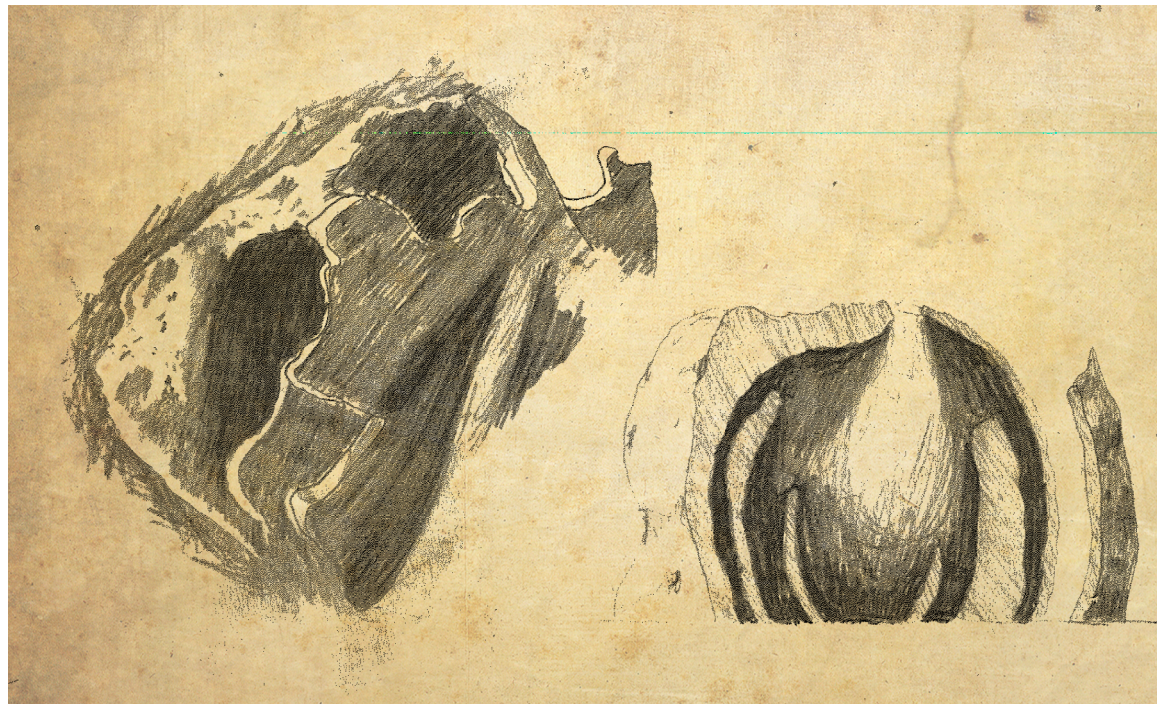


FIGURE 29: A LAYERED SKIN DEGRADES, EXPOSING SOME AREAS WHILE OTHERS ARE HIDDEN. THE EXPOSURE OF ONE AREA IMPLIES CONTINUATION FORCING US TO IMAGINE A HIDDEN INTERIOR.

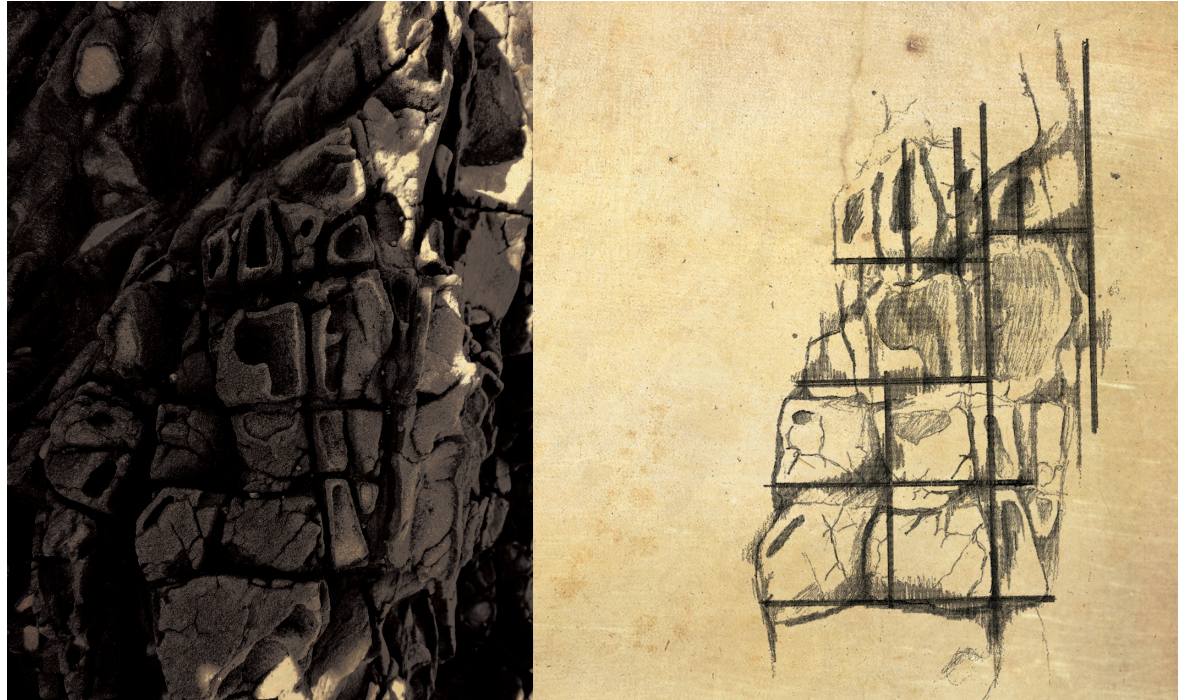


FIGURE 30: DEFINED PATTERN OF EROSION SIMILAR TO ORTHOGONAL GRID

ROCK AND GROWTH - CONCRETE AND WOOD

Only the hardiest of plants will survive at Te Raekaihau Point. In order to do so, they are naturally drawn to the sheltered areas of the site, behind rock formations and away from dominant winds. I have referenced this natural ability to deal with the weather by using concrete as a protective element symbolizing the rocks of the site and wood as an interpretation of the fragile plants. This reinterpretation illustrates a comparison in material timeframes as mentioned in chapter one where each material emphasises the characteristics of the other. This relationship is tested throughout the site with wood exposed in some areas where it is purposefully meant to erode and protected in others where its longevity is needed. The concrete walls of the units have been oriented to protect against the persistent waves and dominant winds with the more fragile wooden facades placed in its protection. The strength of concrete is emphasized through ribs which wrap over the top of the unit, also acting as support. Concrete walls can also be seen along the jetties aligned in the centre of the walkway. Users may choose which side of the wall to inhabit depending on which way the dominant wind is blowing.



FIGURE 31: OVERALL VIEW FROM SEA LOOKING BACK TO TE RAEKAIHAU POINT - COMPARISON OF MATERIAL TIME FRAMES IS EXPRESSED THROUGH CONCRETE AND WOOD



FIGURE 32: UNIT 2 - SOUTH FACADE - FOCUS IS TOWARDS A SHELTERED BAY WHERE SEA LIFE MAY GROW WITHIN THE INTER TIDAL ZONE

UNIT TWO

The unit is raised above ground, minimizing the impact on the existing environment and maintaining access through. It was important for users to fully experience the wild weather conditions of the south coast. With this in mind, all walls running north to south are timber screens. The living spaces are enclosed by floor to ceiling, double glazed, sliding glass panels. These panels allow the spaces to feel open but may act as a thermal threshold. The floor is polished concrete, continuing out to the deck area. Having a continuous material from interior to exterior will express the presence of the weathered trace as we may see the comparison with the protected interior. In the bathroom, the shower is connected to one of the external screen walls. The screen is permeable here, allowing the user to feel as if they are showering out-doors.



FIGURE 34: SECTION THROUGH SHOWER - WOODEN SCREEN ALLOWS CONNECTION TO THE ELEMENTS

FIGURE 33: UNIT TWO - PLAN

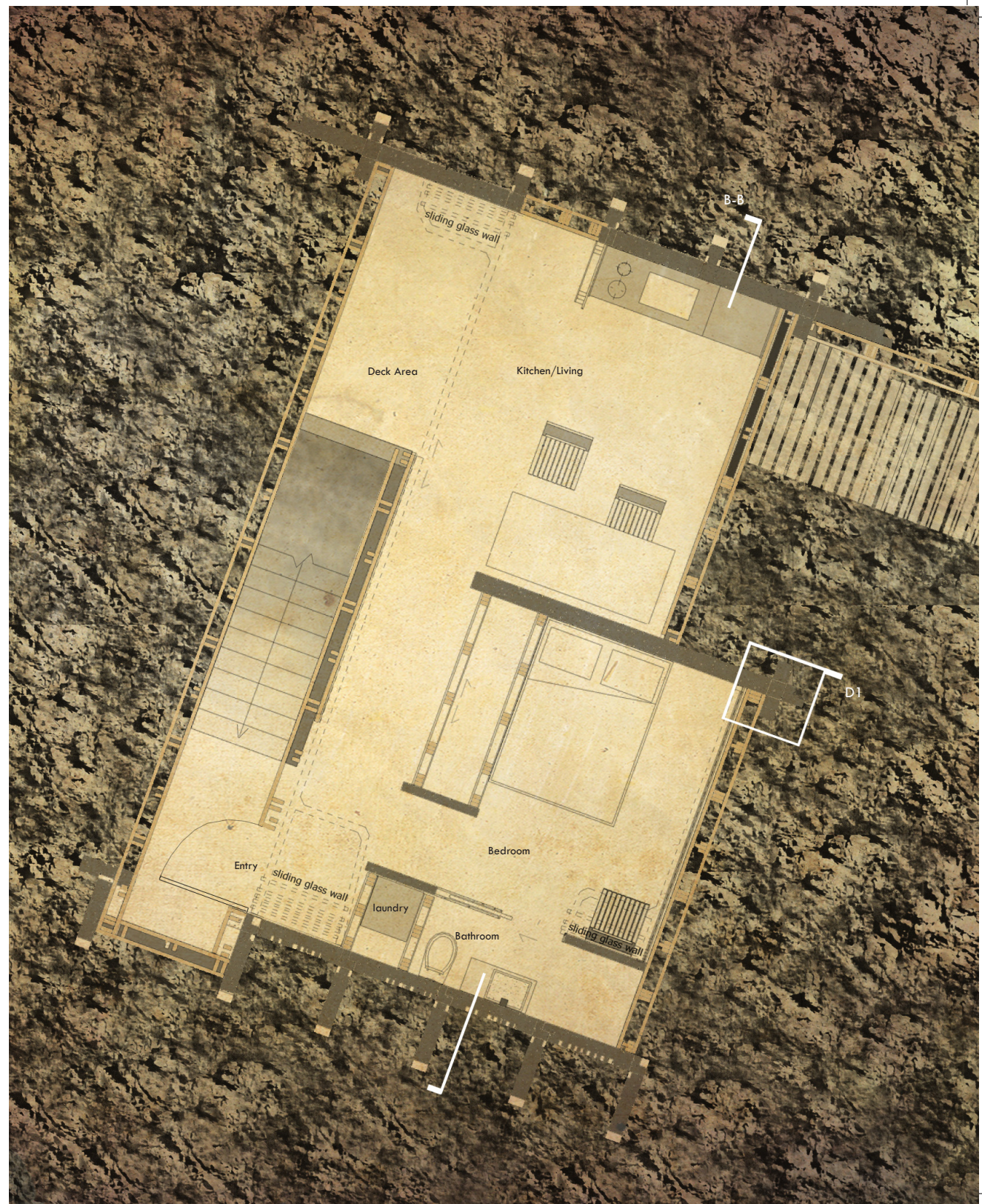




FIGURE 35: INTERIOR VIEW FROM ENTRY DOWN TO KITCHEN/LIVING AREA. GLASS WALL SLIDES ALONG TO CREATE INTERNAL SPACE. THE SCREENS ALLOW PERMEABILITY AND A BREAKDOWN BETWEEN THE THRESHOLD OF INTERIOR AND EXTERIOR.



FIGURE 36: SECTION B -B
PUBLIC ACCESS IS MAINTAINED UNDERNEATH BUILDING WITH MINIMIZED EFFECT ON EXISTING ENVIRONMENT. ON THE LEFT HAND SIDE, THE CONCRETE WALL WRAPS OVER TO FORM A PARTIAL ROOF. THIS EMPHASIZES ITS USE AS A PROTECTIVE ELEMENT AS IT IS EXPERIENCED FROM THE INTERIOR ALSO. AS DISCUSSED IN CHAPTER ONE, ALL MATERIALS EXPRESS THEIR TRUE IDENTITY ALLOWING THE USERS TO FEEL COMFORTABLE INTERACTING WITH THEM.

FIGURE 37: D2 - ELEVATION DETAIL

Tidal rock pools have been reinterpreted into the base of the southern concrete wall. As the tide changes from low tide to high tide (taking approximately 6.5 hours with a height change of 1.2m) the pools will be replenished with new sea water. There are slits in the face of the concrete at different heights allowing water to flow into the pools only when the tide has reached the pre determined height. When the tide has reseeded, these heights will be captured as the varied slit heights illustrate the change in tide over time. The processes of the site are reflected in the building, visually displaying time.



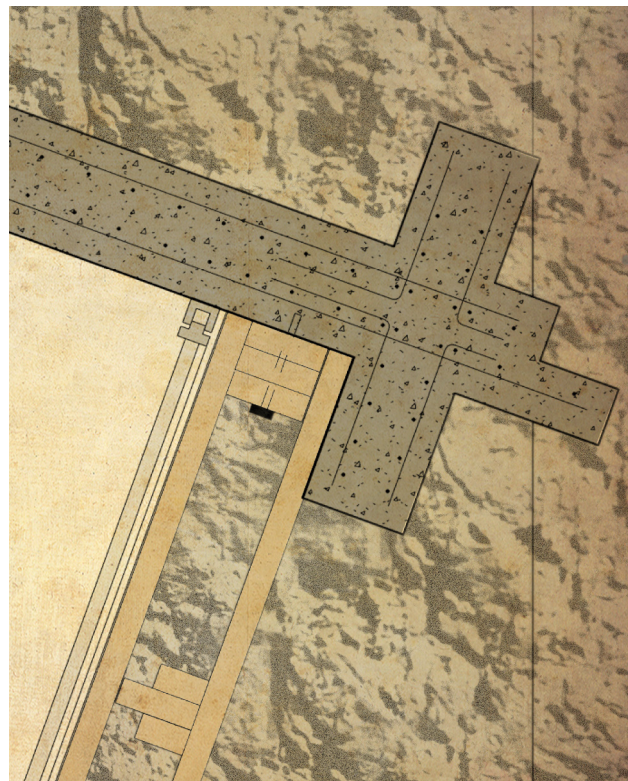
FIGURE 38: UNIT 2 - NORTH FACADE.

The positive pattern located between the ribs on the main facade represent an existing trace of weather on site. The orthogonal pattern is similar to that seen on the surface of the volcanic rock formations, illustrating where erosion has occurred. With the pattern protruding out from the surface of the wall, the build up of debris will be directed into certain areas, defining the pattern further over time. The wall running parallel to the building's facade will allow areas of protection during strong southerly or northerly winds and acts as an access route to different areas of the site. With the framework of concrete the wood will weather, displaying the beauty of its natural erosion when compared to the longer time frame of concrete.



FIGURE 39: D1 - PLAN DETAIL THROUGH WOODEN SCREEN TO CONCRETE WALL
CONNECTION

As discussed in weathered comprehension in chapter one, we may direct the way in which wood erodes by choosing which areas are protected and which are exposed. In the detail below, the end of the wooden screen has been fixed behind the concrete, protecting it from the majority of wind and rain. The end grain of other pieces of timber within the wall (as seen in the perspective opposite) are exposed and will erode from this end towards the protected end. As this occurs over many years, it will only bring more light into the unit. The crucial pieces of timber are protected at either end.



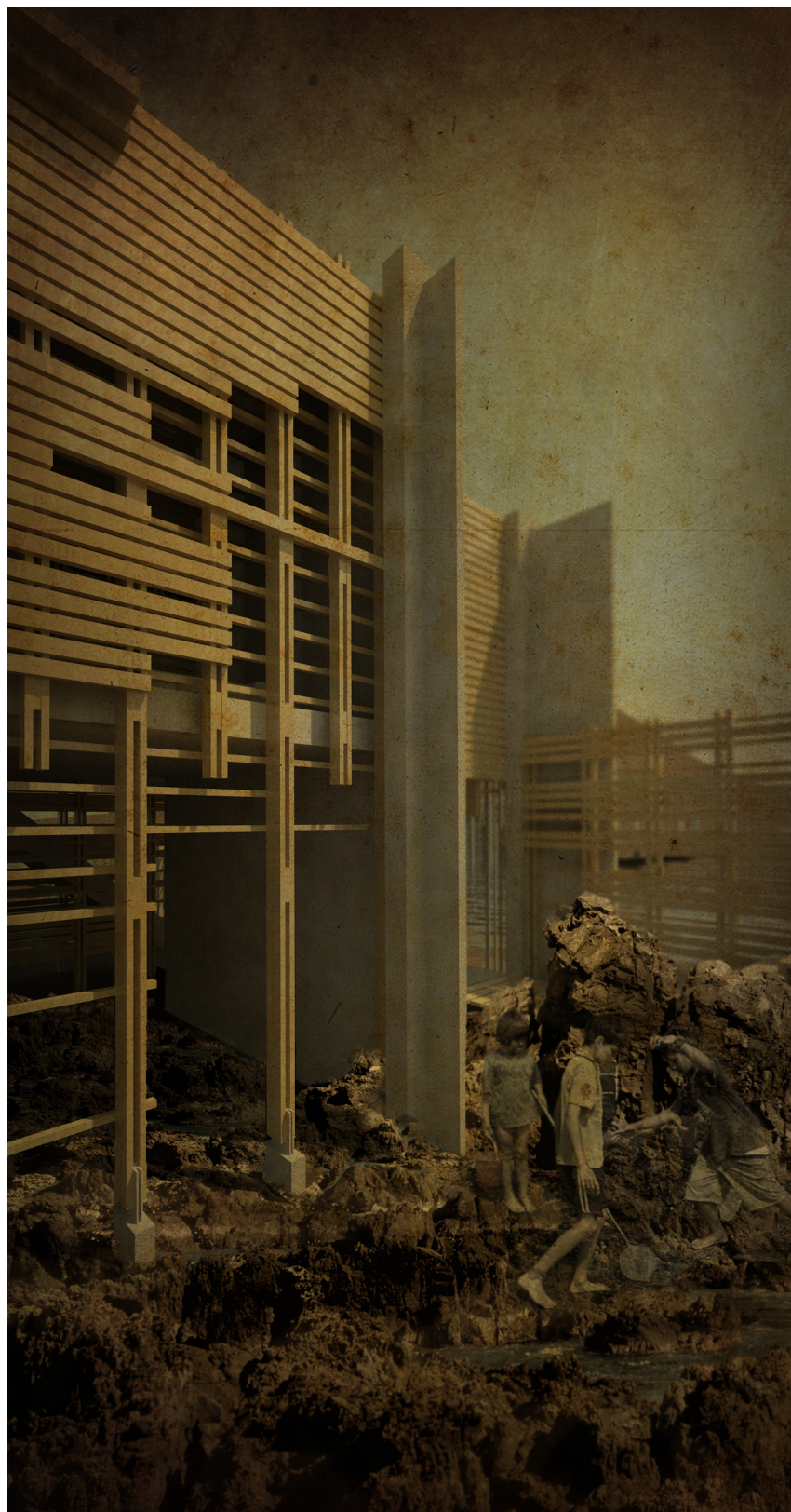


FIGURE 40: UNIT 2 - EASTERN FACADE.
EROSION IS DIRECTED TO CERTAIN
AREAS OF THE FACADE.



FIGURE 41: UNIT 1 - NORTH FACADE. UNIT IS SITUATED IN AN EXTREMELY EXPOSED SPOT OUT IN THE WAVES. THE AFFECTS OF WEATHERING WILL ALTER THE SURFACE AND STRUCTURE AT A MUCH FASTER RATE THAN THE OTHER UNITS. THIS HIGH EXPOSURE AND RAPID EROSION QUESTIONS THE PERMANENCE OF ARCHITECTURE AS DISCUSSED IN CHAPTER TWO - MATERIAL IMPERMANENCE.

FIGURE 42: UNIT ONE - PLAN

The basic layout of this unit is similar to unit two. However, the location is far more exposed to the elements. The unit sits at the end of a jetty with the north facade focused into a sheltered bay while the south is battered by large waves. So that the unit may last a reasonable time, the southern wall has a water dissipation system where the waves must pass through two reinforced concrete screens before hitting the main concrete wall. These screens will slow the water down and with the added scoop at the base of the wall to redirect the water upwards, the structure may stand for far longer.

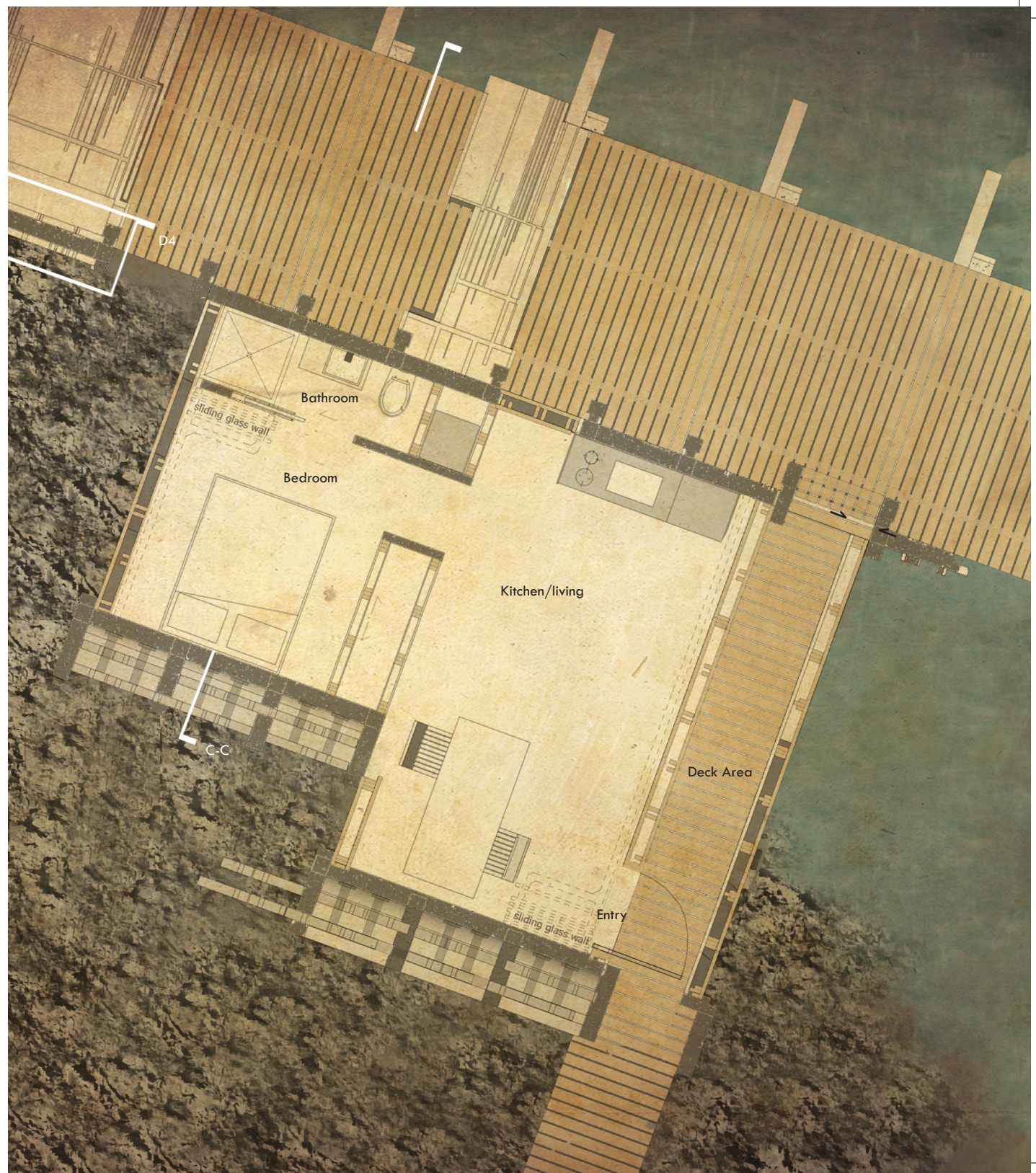




FIGURE 43: UNIT ONE - SOUTHERN FACADE
STRENGTH OF WAVES IS DECREASED THROUGH A SERIES OF DISSIPATION SCREENS



FIGURE 44: UNIT ONE - INTERIOR VIEW FROM KITCHEN/LIVING TOWARDS DECK AREA.
GLASS WALL SLIDES ACROSS TO ENCLOSE SPACE WHEN A THERMAL THRESHOLD IS REQUIRED. THE WOODEN SCREENS FRAME VIEWS TOWARDS THE SEA AWAY FROM PUBLIC AREAS TO PROMOTE REFLECTION AND CONTEMPLATION OF THE PROCESSES OF TIME (SUCH AS THE TIDES) AFFECTING THE SITE.



FIGURE 45: SECTION C-C. USERS ARE AS CLOSE AS POSSIBLE TO THE ELEMENTS. THEY WILL HEAR THE WAVES CRASH UP AGAINST THE WALLS AS THEY LIE IN BED. THIS MAY BE A LASTING MEMORY OF THE SITE THAT IS NOT ONLY VISUAL, BUT AUDITORY.

FIGURE 46: D3 - SECTION DETAIL THROUGH ROOF TO WALL CONNECTION

Rain water flows from the roof, down the exterior concrete walls and is directed through channels. These channels represent an existing trace of weather on site and are in an orthogonal pattern, similar to that seen on the surface of the volcanic rock formations. Over time, the pattern is enhanced as the rain illustrates its most frequent route from roof to ground. A trace of weather builds up and promotes the memory of how the trace came to be.

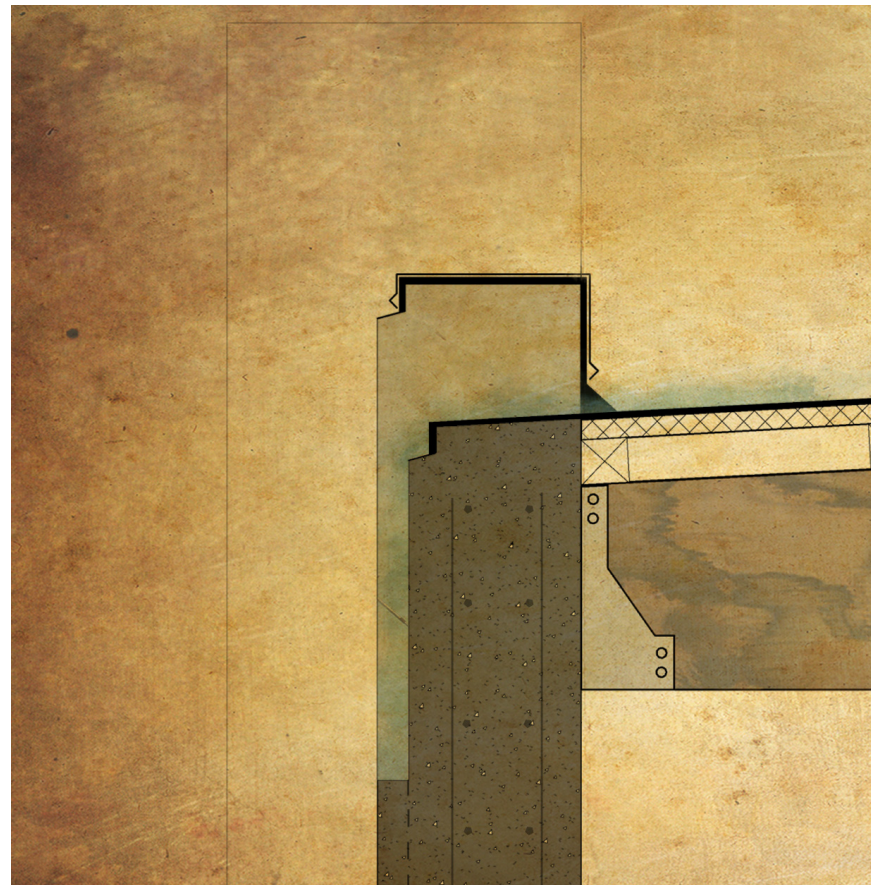




FIGURE 47: VIEW OF RAIN WALL ILLUSTRATING
DOMINANT DIRECTION OF RAIN FROM ROOF TO
GROUND

D4 - WATER TRACE SEATING

Water is captured at the top of the wall and channeled through cracks to the ground where it is then dispersed through the grooves across the concrete. This captures a temporary trace as explained in the rain trace experiment. Steel reinforcing for the seat is set into the grooves in the wall and as rain passes over the steel, the rust is carried down and directed through the grooves in the ground. Over time, the rust will envelop the ground grooves illustrating how we may direct the path of erosion.



FIGURE 48: SECTION THROUGH WATER TRACE SEATING. STEEL REINFORCING IS SET INTO RAIN GROOVE ALLOWING RUST STAINS TO BE DIRECTED

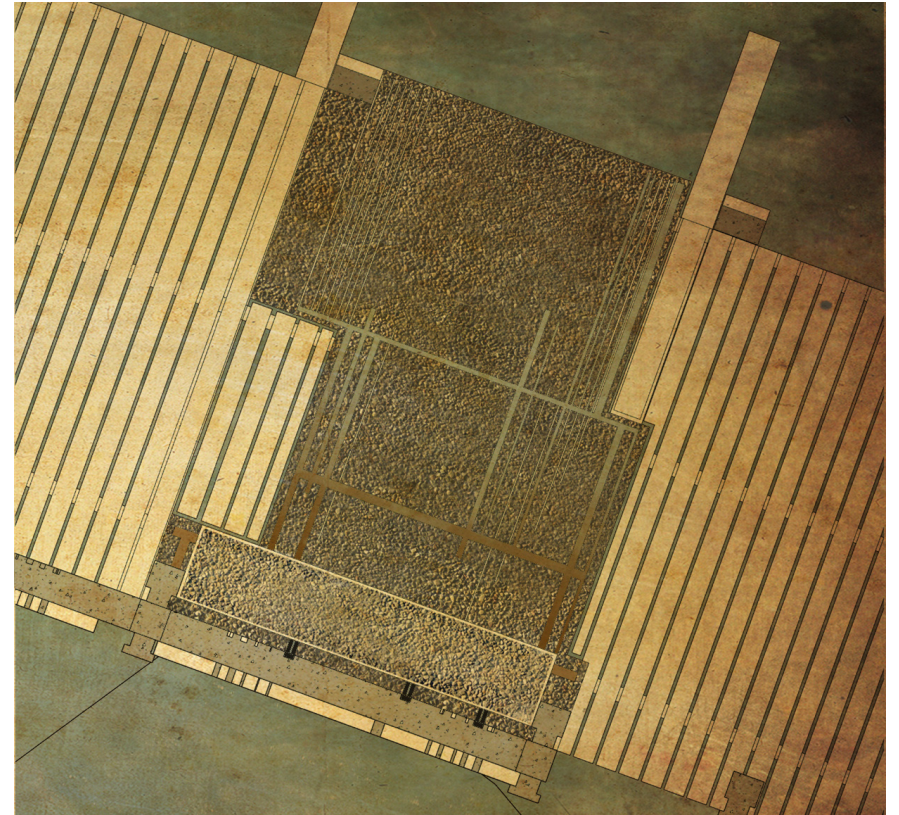


FIGURE 49: PLAN OF WATER TRACE SEATING. RUST STAINS ARE DIRECTED ACROSS GROUND. THIS PATTERN WILL ONLY BECOME MORE APPARENT OVER TIME AS THE RUST SPREADS THROUGH THE GROOVES.

FIGURE 50: VIEW OF WATER
TRACE SEATING TOWARDS
UNIT TWO





FIGURE 51: VIEW ALONG WALKWAY SHOWING WOOD TO CONCRETE CONNECTION. OVER TIME, THE WOOD WILL ERODE, REVEALING STAIRS UNDERNEATH WHICH ALLOW THE USER TO TAKE A DIFFERENT DIRECTION THROUGH THE SITE. THE ARCHITECTURE IS GIVEN 'TWO LIVES' AS DISCUSSED IN WEATHERED COMPREHENSION IN CHAPTER ONE.



FIGURE 52: PATH AT CONSTRUCTION COMPLETION WITH WOODEN SURFACE INTACT



FIGURE 53: PATH AFTER THE EROSION OF TIME - STAIRS ARE REVEALED CREATING A 'SECOND LIFE' TO THE ARCHITECTURE



FIGURE 54: UNIT ONE AFTER THE WEATHERED TRACE OF 100 YEARS.
AS DISCUSSED IN CHAPTER THREE, FRAGMENTS OF THE BUILDING EXIST AS A MEMORY OF THE PAST BUT ARE ALSO ACTIVE IN THE CREATION OF NEW EXPERIENCE.
THEY STIMULATE IMAGINATION OF THE COMPLETE SETTING THAT ONCE WAS AND THE LIFE ASSOCIATED WITH IT.

A vintage, sepia-toned photograph of a coastal scene. In the foreground, a dark, pebbly beach is visible. The middle ground shows a rocky shoreline with numerous dark, jagged rocks protruding from the water. The water is calm, reflecting the warm, golden light of the sky. In the background, a small town or village is nestled at the base of a steep, forested hillside on the right. The sky is a uniform, warm yellow, suggesting a sunset or sunrise. The overall image has a grainy, aged texture.

5.0
CONCLUSION

As previously mentioned, this thesis was design led by firstly producing material experiments, and going on site to understand existing conditions. Through this several questions arose – firstly, what are the processes of weathering that will affect a building over time. How can these processes be interpreted as the visual characteristics of time and lead to the creation of a personal memory connected to architecture? This research sought to answer these questions, however, some require further in depth analysis beyond the limitation of this present thesis. It may be considered that architecture in general does not as a discipline, acknowledge the changes a building will go through after construction completion. Therefore, the weathered trace occurs without direction forcing the building to degrade over time rather than mature. However, through working with the weathered trace, architecture may be capable of the buildup of personal memory between the individual and architecture, adding a rich dimension to design as it is perceived in the past, present and future.

THE PROCESS OF WEATHERING

In chapter one, the process of weathering on buildings was introduced. We saw that architecture is not a static image. A building will not be “finished” at the end of construction; it will continue to grow and change throughout its life as nature takes hold. Considering this, architecture may be viewed in its present condition but speak of previous events that have left their traces over time. Simultaneously, it will allude to future stages through which it may evolve and interpretations of these. Within the design, I have explored this idea through creating scenarios where weathering may leave its mark. The concrete surfaces throughout the site play with having a positive or negative pattern depending on the intended effect. As rain and debris affect the surfaces, they will change, developing the pattern which has been predetermined before weathering has taken hold. As this process occurs, the trace of weather has been directed, documenting itself within the surface of the concrete as stains are left. As time passes, these patterns will ripen, changing the appearance of the building and therefore acknowledging that architecture is not a static image. The visual marks on the concrete illustrate how weathering has affected that particular area of the building and allows us to predict how it will develop in the future.

The imperfections in materials will only become more pronounced over time. This will promote a closer engagement between us and our buildings as our own fragility is reflected within their surface. The organic nature of wood means that as it weathers, the grain and knots will only become more apparent. It will fade in the sun and take on the colours and textures of its immediate context. With this in mind, timber has been used throughout the site with varied levels of protection. In areas where the stability of the wood is important, its fixings and end grains have been protected within the shadow of concrete. In other places, the wood has been purposely exposed so that it will erode at a faster rate. As weathering affects these areas over time, the fragility of our own skin is reflected in their surfaces and exposes a truth that weathering dominates our buildings as well as us.

Site can be considered to show the original trace of weathering, as nature's marks are illustrated on the surface of existing topography. These are the actualisations of future materials, showing what will happen as the process of weathering takes hold. Understanding these traces will result in a building that sits comfortably within its site, reflecting the environment in its surface. By analysing which side of a rock shows greater signs of erosion, we may decide the orientation of our building to promote or protect from the direction of this erosion. Within the project, areas of exposure have been understood and concrete has been used to protect the more fragile wood in very exposed places such as the southern wall of unit one which will see

large waves crash against it. The extreme winds of the site have forced plants to grow in the direction of the dominant winds. Screens made up of concrete and wood have been placed at right angles to these strong winds, creating areas of protection for users of the site. As time passes, the wooden areas of the screen will erode at a faster rate, and new paths may be taken as areas of the screen open up along its length. Protection, though, will remain behind the concrete strongholds. The orthogonal grid of erosion found on the surface of existing rocks has been reflected in the pattern seen on most exterior walls of the buildings. This pattern acknowledges how the surface of the concrete may erode in a similar way to the rocks on site but also acts as an encompassing element that ties all architectural elements together.

THE VISUAL EXPRESSIONS OF WEATHERING ON MATERIALS

Chapter two explored the actualisations of time and how weathering may manifest itself within the surfaces of architecture.

The weathered trace creates ownership of a site over architecture as the environmental conditions leave their unique mark of “place” on the surface of a material. When this fact is considered, appropriate material choice and orientation will ensure a stronger connection between building and site which will only strengthen over time.

These visual expressions of weathering on the skin of architecture can be considered a record of the events it may experience throughout its lifetime. This will allow us to imagine when and how those traces came to be as the building is seen as a collector of memories over time.

If we accept that no material will last forever, then we accept there is beauty in impermanence. Materials and experiences that do not attempt to renew themselves give significance to the lifespan they had as the unique moments live on purely as a memory. By allowing a fragile wooden jetty to erode, we may accept its natural process and find beauty in its slow return to nature. In the project, the timber walkway that slowly turns into steps after the weathered trace has left its mark reveals an acceptance that nothing is permanent. When this is understood, we may design towards the death of one component of a building and see in it the birth of a new use or meaning.

PERCEIVING TRACES AND FASHIONING THEM INTO MEMORY

In chapter three, we understood the way fragments of a building may exist as a memory of the past but also be active in the creation of new experience. Their existence proves the artistic and cultural value they hold within their being and their use as grounding for our memories. Within the design, the perceived image of unit one illustrates the weathered trace over 100 years. It is an example of architecture promoting imagination of something that is no longer, which in turn, allows us to have our own unique interpretation of a place.

Our perception of a given place is influenced by the memory and knowledge we bring from previous experience. At one level, memories are the build up of all previous perceptions towards a given thing and therefore, the way in which we view architecture is extremely personal. With our varied backgrounds, we project individual memory onto our buildings which will reflect a varied experience.

Time must pass in order for our buildings to gain meaning. In this respect, our buildings must be capable of collecting the traces of weather, as they are a reflection of the passage of time. This will allow our memories to “mature” as they are given a context to settle in as feelings towards a given place are embedded deeper within our subconscious. The concrete and wood used throughout the site do not reject the build up of a weathered trace; rather they promote it by exposing themselves to all forms of erosion. Every event, be it a rain shower passing in an afternoon or the change from high to low tides has been expressed within the nature of these materials. The memories individuals hold of a given place will not only be stimulated through viewing, but can be understood as a whole body experience. We may touch, taste, smell and hear our memories. As people experience the rugged south coast site, they will take away the taste of salty waves, the texture of jagged rocks, the smell of seaweed and hear the seagulls in the distance as the site is relived through a memory.

LIMITATIONS OF DESIGN

It is extremely hard to predict at what rate a material will erode. We can only make assumptions based on preconceived examples that have been put through the same conditions. In that respect, my design has assumed some characteristic ways in which a material will erode, but in reality, these processes are far more unpredictable.

Within this project, the detailed design of the mechanisms to capture the trace of weather are initial ideas that may benefit from further development. Construction details illustrated within the project are a starting point which, with development, could result in more concrete answers.

If this project were to develop, it would experiment further with placement of materials on site, previous to construction and an analysis of the site specific weathered traces that may occur.

The results of this thesis rested heavily on having the project sited in an extremely exposed position. It allowed a full force encounter with wind, waves, rain and debris and therefore allowed the most extreme case of a weathered trace. Being site specific, it was an absolute necessity to be on site as the design process developed, understanding the way in which the site changed throughout the year, through different tides, in calm, warm conditions and in bitterly cold storms with gale force southerlies.

WHAT HAS BEEN LEARNT

This is what may be taken from the project: that architecture must be considered over time, as something that will grow and develop throughout its life. Through directing the actualisations of this development, the spaces we inhabit may be informed by the memory of previous events. We may witness the numerous additions and subtractions that shape architecture through time and in doing so, our experience may be of the present, but also of the past. Over time, we will understand the physical changes a building goes through, provoking an interest in what the next stage of development may be.

Impermanence of materials is an inevitable fact and by accepting the process of erosion, we may give direction to the life of a building after construction. As the skin of weathering alters the original appearance, we may capture the memory of a given place.

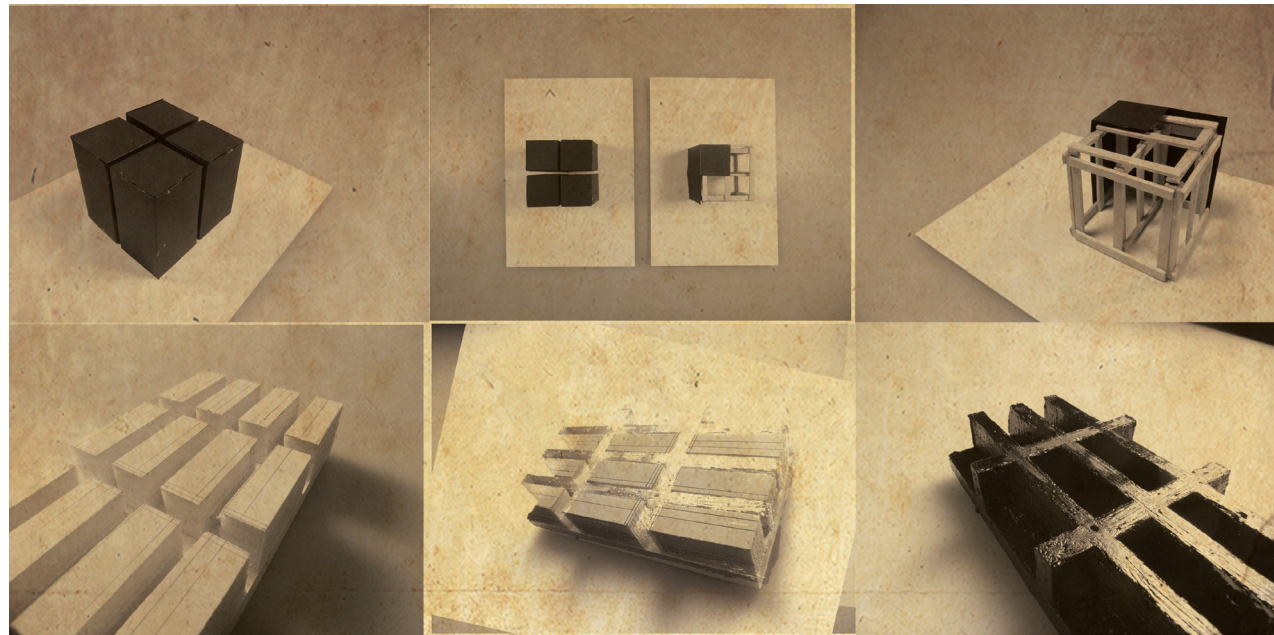
We must pay careful consideration to the natural forces that will affect a building's development. A site analysis does not occur in one visit, it must be a more thorough process considering all aspects that affect materials in time and how best to work with these inevitable facts as opposed to against them. This will result in a building capable of capturing the actualisations of time promoting memory through the weathered trace.

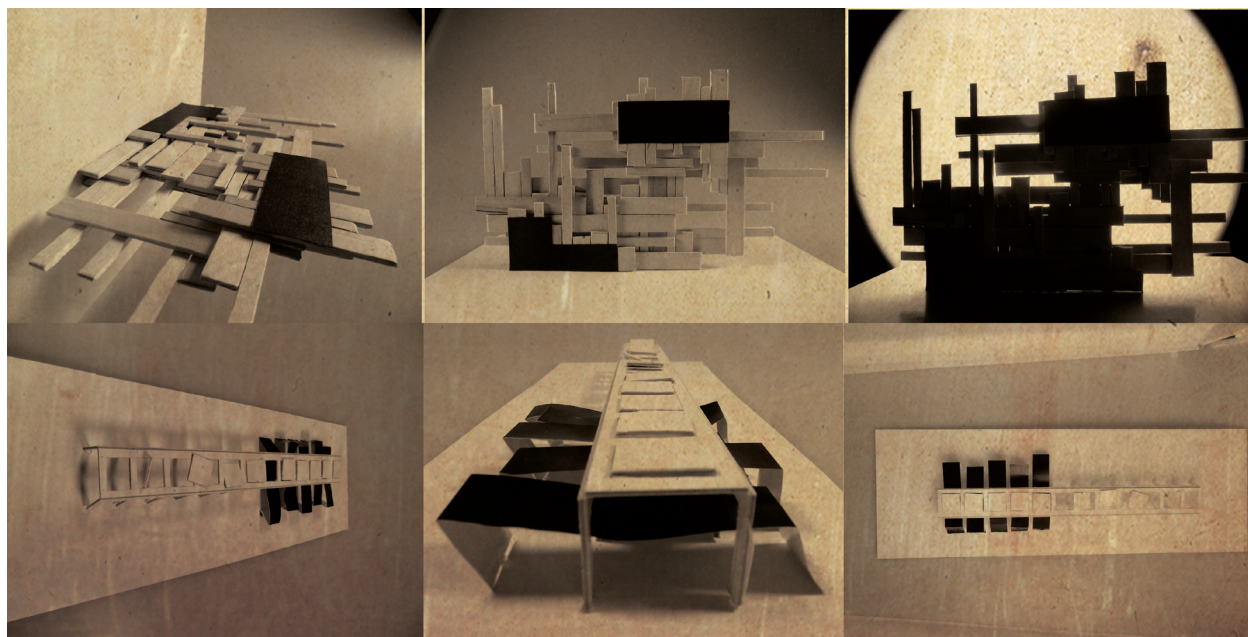
APPENDIX

FIGURE 55 : MAQUETTE EXPERIMENTATION

SKELETAL STRUCTURE MAY PROMOTE
IMMAGINATION OF WHAT HAS ERRODED

DOES THE ABSENCE OF A FRAMEWORK IMPLY THERE MUST HAVE BEEN
ONE PREVIOUSLY? NEGATIVE SPACE MAY GIVE THE PRESENCE OF
SOMETHING THAT IS NO LONGER





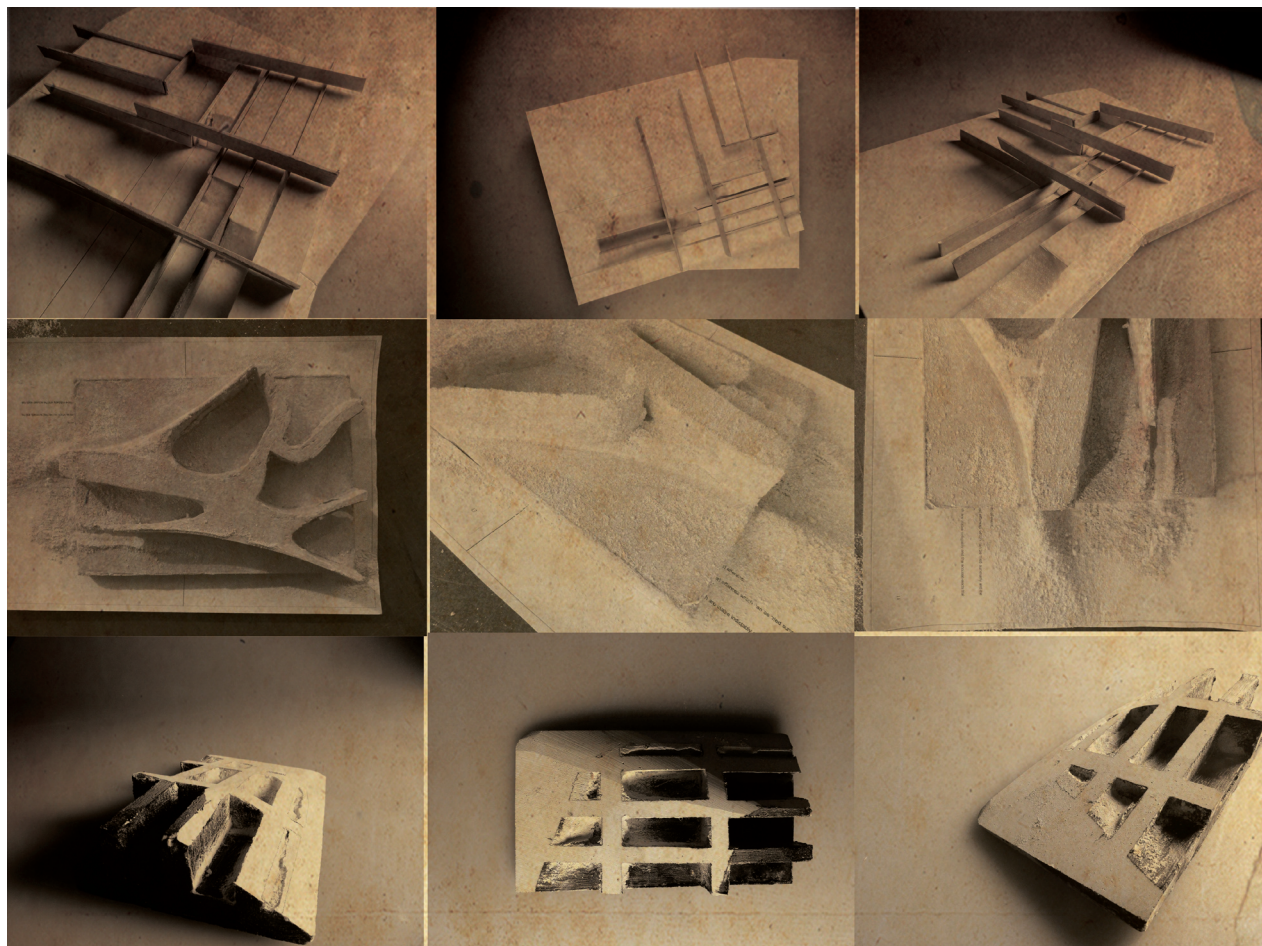
LAYERS OF INFORMATION MAY BE REVEALED AS EROSION EXPOSES
NEW SURFACES

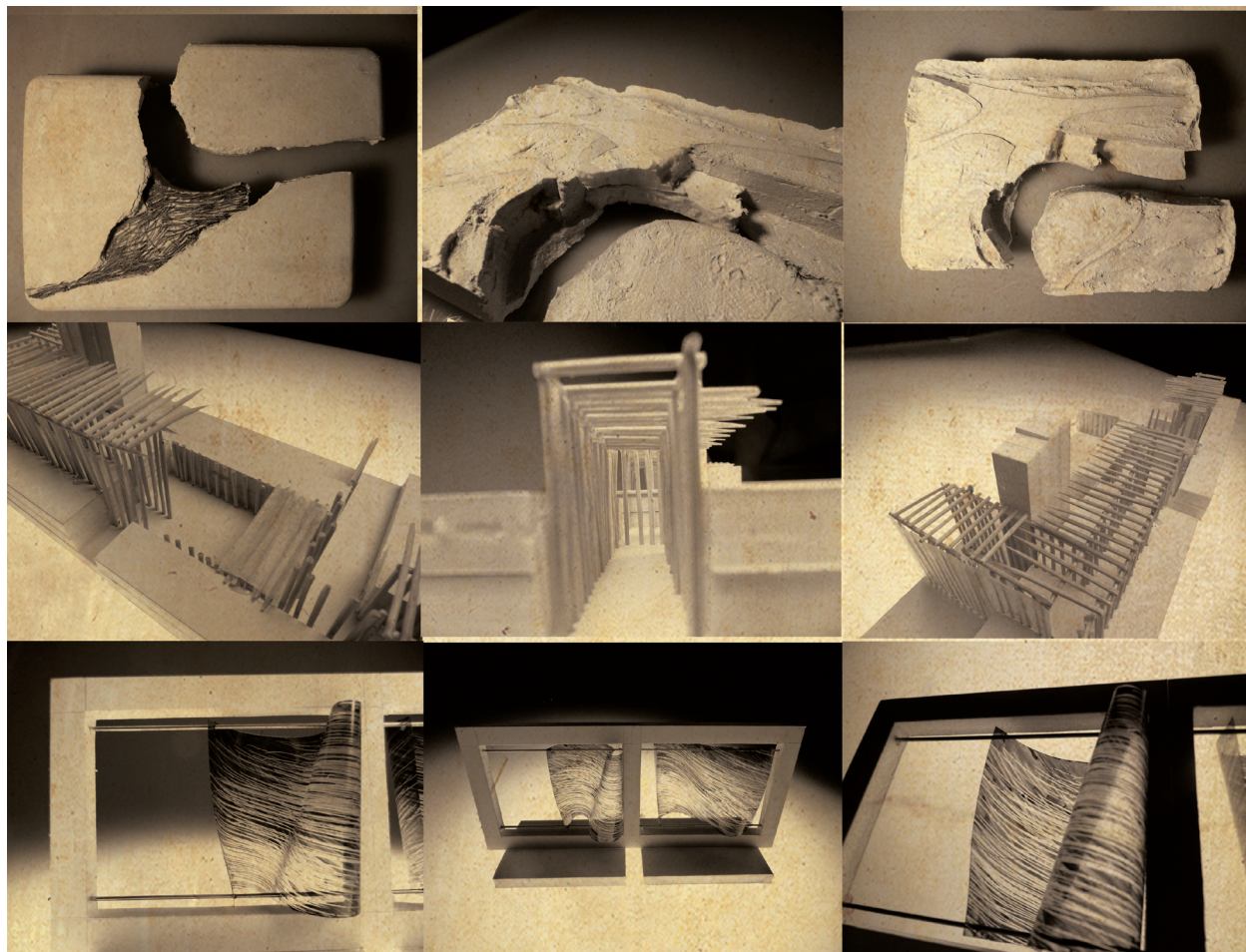
THERE MUST BE A FRAMEWORK FOR CHANGE TO OCCUR

WOOD BEING A TEMPORARY MATERIAL IS NOT PROTECTED BY THE LARGER MASS IN SOME AREAS. ONCE, THE LARGER MASS ENVELOPED THE STRUCTURE, BUT HAS WORN AWAY. THE TRACE OF THE GRID GOES FROM BEING ENVELOPED BY MASS - TO FREE STANDING - TO AN INDENTATION IN THE GROUND.

EROSION SMOOTHENS THE EXPOSED AREAS. THE DEBRIS FROM THIS EROSION BUILDS UP IN UNEXPOSED AREAS. INTERNAL WALLS ARE ROUGH, PROTECTED FROM REMOVAL OF THE FIRST LAYER.

THE BUILD UP OF DEBRIS IN CREVICES CREATES A SECONDARY GESTURE. IT IS CLEAR THAT THE SOLID FRAME CAME FIRST AND THE POWDER AREA CAME SECOND - A PROCESS OF TIME IS VISUALLY EXPRESSED IN THIS ACTION



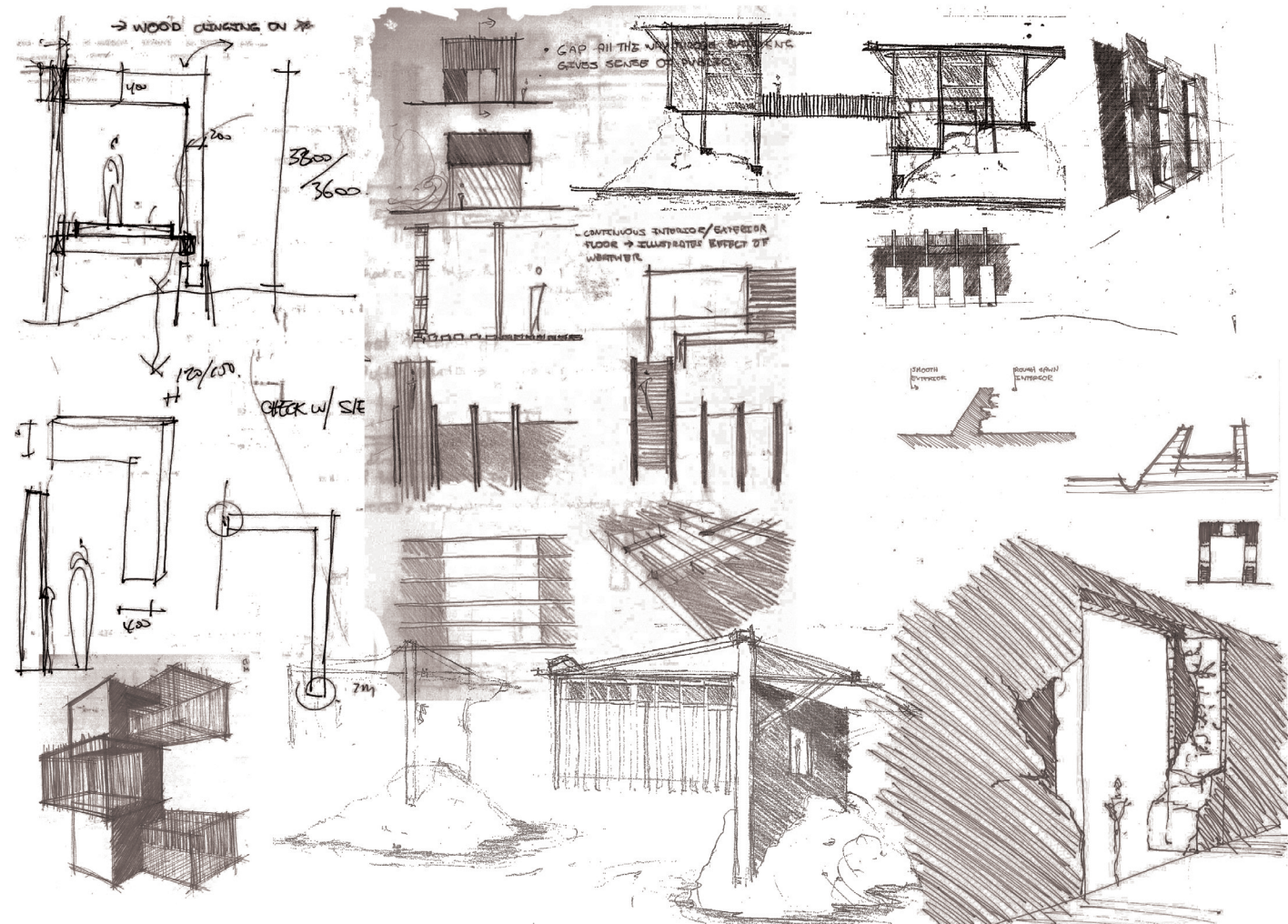


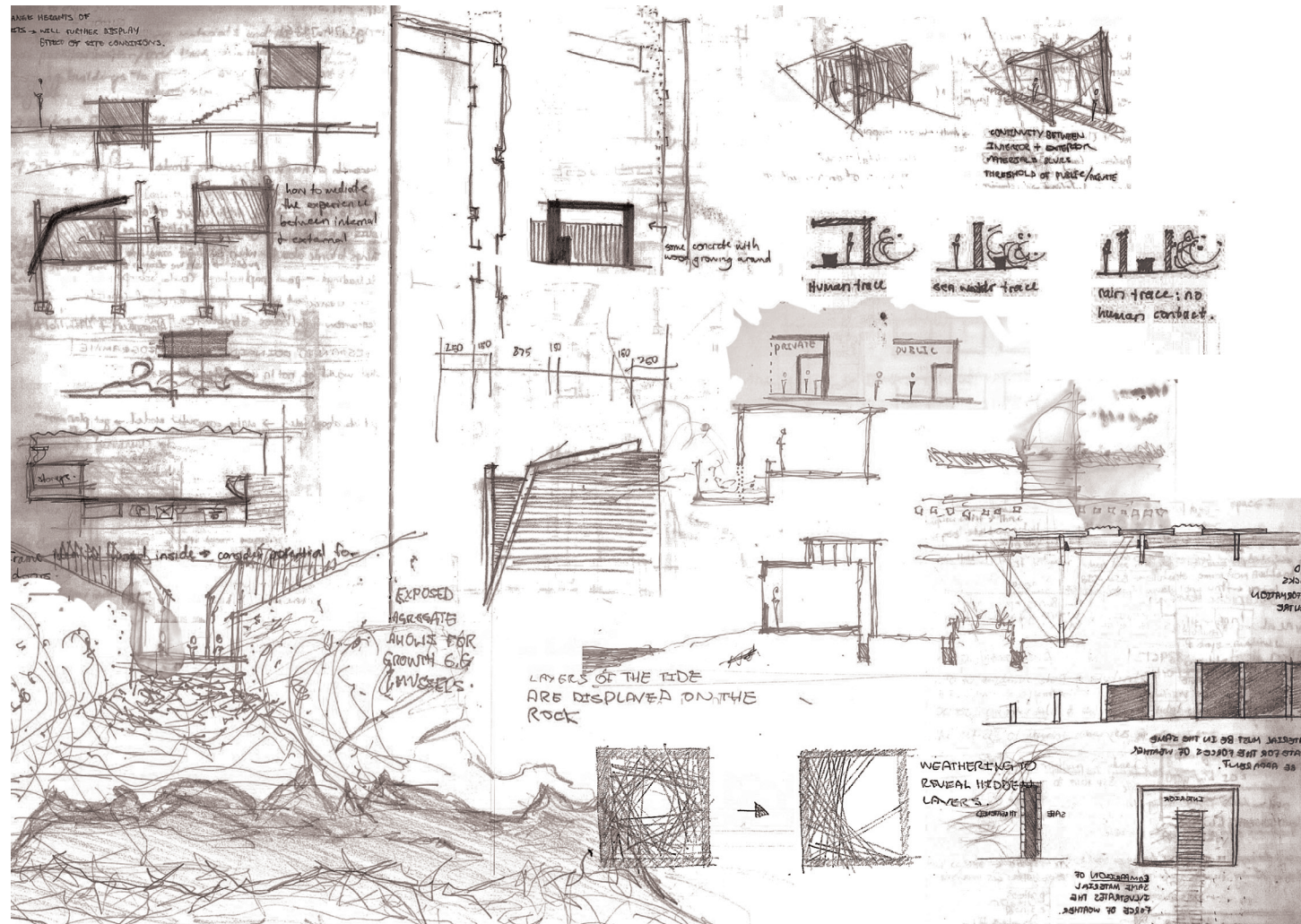
THE EROSION OF ONE LAYER MAY EXPOSE A NEW LAYER WHICH CAN BE DIRECTED IF CONSIDERED IN DESIGN

STUDY OF THE RELATIONSHIP BETWEEN A TEMPORARY AND 'PERMANENT' MATERIAL

DELICATE NATURE OF MOVEABLE SCREENS IS REINFORCED THROUGH A STRONG FRAME.

FIGURE 56: CONCEPTUAL
SKETCHES





BIBLIOGRAPHY

- Brand, S. (1997). *How buildings learn :what happens after they're built*. London :: Phoenix Illustrated.
- Ford, E. (1997). *The Theory and Practice of Impermanence*. *Harvard Design Magazine*, 3(Fall), 12, 13,14,15,16,17,18.
- Goldsworthy, A. (1996). *Wood* /Andy Goldsworthy ; introduction by Terry Friedman. New York :: Harry N. Abrams.
- Heschong, L. (1979). *Thermal delight in architecture* /Lisa Heschong. Cambridge, Mass. :: MIT Press.
- Juniper, A. (2003). *Wabi sabi :the Japanese art of impermanence* /Andrew Juniper. Boston :: Tuttle Pub.
- Lawrence, R. G. (2004). *The Wabi-Sabi house :the Japanese art of imperfect beauty* /Robyn = Griggs Lawrence ; photographs by Joe Coca. New York :: Clarkson Potter.
- Leatherbarrow, D. (1993a). *On weathering :the life of buildings in time* /Mohsen Mostafavi = and David Leatherbarrow. Cambridge, Mass. :: MIT Press.
- Leatherbarrow, D. (1993b). *The roots of architectural invention :site, enclosure, materials* = /David Leatherbarrow. Cambridge [England] ;New York, NY, USA :: Cambridge University Press.
- Leatherbarrow, D. (2002). *Surface architecture* /David Leatherbarrow and Mohsen Mostafavi. Cambridge, Mass. :: MIT Press.
- Leupen, B. (2006). *Frame and generic space* /Bernard Leupen. Rotterdam :: 010 Publishers.
- Mallgrave, H. F. (2010). *The architect's brain :neuroscience, creativity, and = architecture* /Harry Francis Mallgrave. viii, 273 p. ::
- Pallasmaa, J. (2005). *Encounters :architectural essays* /Juhani Pallasmaa ; edited by = Peter MacKeith. Helsinki :: Rakennustieto Oy.
- Schultz, A.-C. (2000). *Landscapes of memory and experience* /edited by Jan Birksted. viii, 272 p. ::
- Spatial recall :memory in architecture and landscape* /Marc = Treib, editor. (2009). New York ;London :: Routledge.
- Stevens, R. E. (2006). *Worn out or worn in? :''this book is submitted as a commentary on = Design Research by Composition undertaken for the degree of Master of = Design [sic]'' at Victoria University of Wellington* /by Ross Ernest = Stevens.
- Zumthor, P. (2006). *Thinking architecture* /Peter Zumthor ; [translation: Maureen = Oberli-Turner (essays 1988-1996), Catherine Schelbert (essays = 1998-2004)]. 96 p. ::

LIST OF FIGURES

Figure 1: Spencer. F (2008). Old Stairs [Photograph]. Retrieved from http://www.flickrriver.com/photos/felixspencer2/2248164223/	vii
Figure 2: De Bijenkorf Department Store. From <i>On Weathering: The Life of Buildings in Time</i> (p.41), by Leatherbarrow. D, 1993, Cambridge Mass.: MIT Press.	4
Figure 3: Structural Integrity Ltd. (2010). "A Machine For Living" [Photograph]. Retrieved from http://www.structuralintegrity.co.nz/Corbu.html	6
Figure 4: Alter. L (2008). Shipping Container House by Ross Stevens [photograph]. retrieved from http://www.treehugger.com/files/2008/04/shipping-container-house-ross-stevens.php	7
Figure 5: Brion Cemetery in San Vito d'Altivole near Treviso, Italy - Carlo Scarpa. Personal photographs by Joseph Shepherd. 23 september 2009.	9
Figure 6: Tenement Museum (2009). layers of wallpaper [Photograph]. Retrieved from http://www.tenement.org/slideshows/collections_2.html	13
Figure 7: Craig. R (2008). The Same Fate [Photograph]. Retrieved from http://www.flickr.com/photos/imrickndakota/2300232572/	17
Figure 8: From Wood - Andy Goldsworthy (p.43) introduction by Terry Friedman, 1996, New York: Harry N. Abrams	19
Figure 9: Cole. R (2010) Ise: Japan's Holiest Shinto Shrines [Photograph]. Retrieved from http://www.gonomad.com/alternatives/0509/ise.html	20
Figure 10: Andrea.(2010) Medieval house in Via della Lungaretta [Photograph]. Retrieved from http://roma.andreapollett.com/S5/rione13b.htm	25
Figure 11: Remains of Stone Quarry - south of Pencarrow Lighthouse, Wellington. Personal Photograph by Joseph Shepherd. 14 July 2010.	27
Figure 12: Seaweed on Rock. Photograph authors own.	33

Figure 13: Site plan. Image authors own.	35
Figure 14: Early concept sketch. Image authors own	36
Figure 15: Orientation influences. Image authors own. Wind rose map courtesy of NIWA national institute of water and atmospheric research.	37
Figure 16: Site plan - Zoomed in. Image authors own	37
Figure 17: Section A-A through site. Image authors own	38
Figure 18: View from Te Raekaihau Point down to site. Image authors own	39
Figure 19: View back to Te Raekaihau Point from rocks. Image authors own	40
Figure 20: View from Te Raekaihau Point down to site with Island Bay in distance. Image authors own	40
Figure 21: Low Tide - 10:40 am 27/10/10. Photograph authors own.	41
Figure 22: High Tide - 4:55 PM 27/10/10. Photograph authors own	41
Figure 23: Logs washed up from recent storm. Photograph authors own.	42
Figure 24: Tidal Zone. Photograph authors own.	43
Figure 25: Concrete wet/dry experiment. Image authors own.	45
Figure 26: Concrete on site. Image authors own.	45
Figure 27: Rain Groove. Photograph authors own.	46
Figure 28: Plants cling to Rock. Photograph authors own.	47
Figure 29: Drawing. Image authors own.	48
Figure 30: Drawing. Image authors own.	49

Figure 31: Overall view from sea looking back to Te Raekaihau Point. Image authors own.	51
Figure 32: Unit Two - South facade. Image authors own.	53
Figure 33: Unit Two - Plan. Image authors own.	55
Figure 34: Section through shower. Image authors own.	54
Figure 35: Interior view from entry down to kitchen/living area. Image authors own.	57
Figure 36: Section B - B. Image authors own.	59
Figure 37: D2 - Elevation detail. Image authors own.	61
Figure 38: Unit Two - North facade. Image authors own.	63
Figure 39: D1 - Plan detail through wooden screen to concrete wall connection. Image authors own.	64
Figure 40: Unit Two - Eastern facade. Image authors own.	65
Figure 41: Unit One - North facade. Image authors own.	67
Figure 42: Unit One - Plan. Image authors own.	69
Figure 43: Unit One - Southern facade. Image authors own.	71
Figure 44: Unit One - Interior view from kitchen/living towards deck area. Image authors own.	73
Figure 45: Section C - C. Image authors own.	75
Figure 46: D3 - Section detail through roof to wall connection. Image authors own.	76
Figure 47: View of rain wall. Image authors own.	77
Figure 48: Section through water trace seating. Image authors own.	79

Figure 49: Plan of water trace seating. Image authors own.	79
Figure 50: View of water trace seating towards unit two. Image authors own.	81
Figure 51: View along walkway showing wood to concrete connection. Image authors own.	82
Figure 52: Path at construction completion. Image authors own.	83
Figure 53: Path after the erosion of time. Image authors own.	83
Figure 54: Unit one after the weathered trace of 100 years. Image authors own.	85
Figure 55: Maquette experimentation. Images authors own.	92
Figure 56: Conceptual Sketches. Images authors own.	96

