EXISTENTIAL EXPERIENCES OF HUMAN & NATURE SYMBIOSIS

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EXPERIENTIAL ARCHITECTURE FOR MOTIVATION OF
ENVIRONMENTALLY RESPONSIBLE BEHAVIOUR

by

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*Figure 0.1 Authors Image. (2020). Light at the end of the Wharf
[Photograph]. Taranaki Street Wharf.*

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We have arrived.

First and foremost, I would like to thank my parents. I could never express my appreciation enough. Thank you for constantly supporting me in my journey and nurturing me into the person I am today. To my brothers and grandparents, thank you for keeping me grounded throughout the years.

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Last but not least, to the friends I have made along the way, thank you for being a part of this. I am excited for the futures you are yet to create, and I look forward to joining you out there.

*Figure 0.2 Authors Image. (2020). An environment beyond where I stand
[Photograph]. Taranaki Street Wharf.*

ABSTRACT

The deterioration of natural environments since the industrial revolution is a consequence of humanity's ignorance of their symbiosis with broader biological ecosystems and the behaviours that have arisen from this lack of awareness. Today, there is urgent global demand for societies to address this issue by shifting toward pro-environmental systems and behaviours to ensure natural resources are secured for future generations.

This research proposes that there is a potential for architecture to contribute to this shift by providing an experience that raises awareness of the symbiosis that human beings exist within and motivates people to behave with greater responsibility toward the environment. Taking an interdisciplinary approach by exploring principles of psychology and architectural theory, this work engages with architectural concepts of transcendence, phenomenology, atmosphere, memory and emotion, sense of place and biophilia in ways that positively affect intellectual and emotional dimensions of the human psyche.

A design framework is developed from this, and a subsequent range of methods are developed and tested at various levels of resolution. Ultimately, this research arrives at a design methodology that can shape an architectural experience that serves a higher purpose of motivating behavioural change in society toward greater environmental responsibility. It speculates on a potentially new form of public architecture that unifies the human spirit with nature and interrelated systems.

PREFACE

I have constantly been intrigued by the natural environment and the many phenomena that occur there. I have my childhood and parents to thank for that.

I have observed that when I interact with natural systems or am immersed in a natural setting, I become present in that moment. My perspective of the world changes significantly. It cultivates a sense of ease, comfort, and serenity. At this moment, I tend to become more consciously aware of the difference in scale between my personal life story and the vast biological world that I exist within. Consequently, it has a positive impact on my perception of nature and inspires my gratitude for it.

Today, the global population is under immense pressure to develop and adapt toward pro-environmentalism. In contemplation of my own established connection with natural entities and personal desire to contribute to this change, I began to wonder whether there is room for architecture to support the behavioural shift that is increasingly demanded from society.

This thesis explores the potential for architecture to strengthen human-nature relationships, increase gratitude, and thus help to motivate environmentally responsible behaviours.

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CHAPTER 01

- 1.1 Project Statement
- 1.2 Research Proposition
- 1.3 Research Aim
- 1.4 Research Objectives
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INTRODUCTION

INTRODUCTION *Chapter 01 establishes the research intent. It describes the Project Statement and Research Proposition, articulates the Aim and Objectives of the research, and outlines the Methodology, Scope and Thesis Structure.*

PROJECT STATEMENT

1.1 Densely populated urban centres continue to more frequently and intensely experience an imbalance between natural and artificial systems. The deterioration of these natural environments is mostly due to human behaviour and the displacement of humanity from the greater biological ecosystem. Present-day society is mainly obsessed with speed, consumerism, technology, entertainment, and economic growth, ultimately leading to a decreased connectivity with nature.

In the present age, there is a significant global demand for societies to shift toward pro-environmental systems and behaviours to ensure natural resources are secured for future generations. A constant mediation between humans, artificial systems and natural systems takes place. Whether the effects are positive and to be admired or harmful and to be concerned for, individuals contributing to the present environmental changes are rarely conscious of the symbiotic relationship between humans and nature.

Figure 1.1 Authors Image, (2020). Pohutukawa Finds a Home [Photograph]. Taranaki Street Wharf.

This research exploration asks...

Can architectural experiences serve to motivate a persons intention to act with environmentally responsible behaviour?

RESEARCH PROPOSITION

- 1.2 This research proposes that there is a potential for architecture to psychologically support members of society during this shift by providing an experience that motivates people to adhere to behaving with responsibility toward the environment.

This research takes an interdisciplinary approach by exploring principles of psychology and architectural theory to address this issue. It engages with architectural concepts of transcendence, phenomenology, atmosphere, memory and emotion, sense of place, and biophilia to inform how experiences facilitated by architecture can serve the greater purpose of positively motivating behavioural change in society toward greater environmental responsibility.

Architecture has a unique ability to entertain transcending experiences capable of opening people's minds to a holistic view of the world in which they live. By employing architectural devices that raise attention to phenomenological encounters of human and nature symbiosis, the experience can communicate important messages about the natural environment and give rise to existential realisations that provoke a sense of being in the world. The experience can ultimately heighten a sense of gratitude for nature and increase hope for future change.

A design framework is developed from literature and then tested through design. A methodology is guided by and developed in response to the design framework. The design research explores a range of design methods to arrive at a final design that demonstrates how architecture can facilitate existential experiences of human and nature symbiosis.

1.3 RESEARCH AIM

The research aims to explore how experiences facilitated by architecture can serve to motivate people's intention to act with greater environmental responsibility. The research focuses on developing a process by which architects can create an existential experience that intentionally facilitates environmental awareness and empathy.

RA

The principal aim of this research is to explore how experiences facilitated by architecture can motivate environmentally responsible behaviour.

1.4 RESEARCH OBJECTIVES

Advancing the research aim, this research aspires to:

R0.1

Develop a design framework that informs how architecture can facilitate experiences that motivate environmentally responsible behaviour.

R0.2

Explore a design process that informs the creation of existential experiences of human and nature symbiosis in architecture.

1.5 SCOPE OF RESEARCH

This research is focused on developing a process for understanding and giving expression to intentional architectural experience at a resolved conceptual level. The nature of the research favours the exploration of naturally occurring essences, natural atmospheres, and formal and material relationships, requiring the project to prioritise speculative design outcomes. Issues essential to the built realisation of conventional architecture sit outside an immediate scope of this investigation. These include architectural detailing, structural analysis, and construction costing, etc.

Although it is essential to acknowledge contradictions in the fact that construction inevitably damages the environment, the research focuses on the contribution architecture can make to support environmentalist efforts from a psychological and sociological perspective. Positive influence on the human psyche is equally as significant as the tangible solutions that are more widely explored.

1.6 THESIS STRUCTURE

Key concepts in psychology and architecture are addressed in Chapter 02 and presented alongside an analysis of relevant precedent designs. The results of this survey are synthesised into a Design Framework that is used to structure the methodological exploration, which is outlined in Chapter 03. Chapters 04 - 08 describe each of the methods explored in detail; covering the key phases of design exploration from *Initial Ideation* (Chapter 04), through *Site, Context and Place Immersion* (Chapter 05), *Form and Space Generation* (Chapter 06), *Site Inhabitation* (Chapter 07) and ending up with a refined design outcome in Chapter 08. This thesis concludes with a critical reflection on the work against the research aim and objectives in Chapter 09. Here the research findings are discussed in terms of their contribution to the wider body of knowledge and proposes future research opportunities.

CHAPTER 02

2.1 Environmentally Responsible Psyche

2.1.1 Influencing Human Behaviour

2.1.2 Learning Through Experience

2.1.3 Primary Influencers of Environmentally Responsible Behaviour

2.2 Impactful Experiential Architecture

2.2.1 Transcendence

2.2.2 Phenomenology

2.2.3 Atmosphere

2.2.4 Memory & Emotion

2.2.5 Sense of Place

2.2.6 Biophilia

2.3 Precedent Analyses

2.4 Discussion

2.5 Conclusion & Design Framework

PSYCHE & EXPERIENCE

INTRODUCTION *The following chapter provides the literary context and precedent analyses that establish a foundation of understanding in both psychology and architecture that is used to develop the design framework.*

ENVIRONMENTALLY RESPONSIBLE PSYCHE

2.1 Before exploring how experiences facilitated by architecture can motivate participants to act with greater environmental responsibility, an in-depth understanding of the factors that influence environmental and conservational behaviour is required. Such concepts identified here may inform subsequent design explorations that investigate how to achieve the Research Aim by designing impactful experiences in physical settings.

Section 2.1 establishes fundamental principles of psychology and sociology found in this body of literature that inform how environmentally responsible behaviour is motivated. It gathers information from a range of disciplines before reinterpreting the body of knowledge from the perspective of architecture. It considers what an architectural experience must do to have a positive and impactful psychological effect on participants that motivates a behavioural change.

INFLUENCING HUMAN 2.1.1 BEHAVIOUR

The willingness for individuals to accept responsibility for the natural environment and to actively conserve and support it, is grounded in their behaviour and values. In the journal article “Conservation Means Behaviour”, Paul Schultz further develops ideas of conservation psychology from researchers (Balmford & Cowling, 2006; Cowling, 2005; Mascia et al., 2003; Schultz, 2011). Schultz’s research determines that while conservation has advanced science, the primary incentive to modify human behaviour and motivate conservation practices has proven less successful. Schultz argues that “conservation is a goal that can only be achieved by changing behaviour”.

The notion that behaviour is fundamentally linked to conservation and environmentalism is supported by the research from Ehrlich & Kennedy (Ehrlich & Kennedy, 2005) and Schultz & Kaiser (Schultz & Kaiser, 2012). Despite widespread conservation efforts that have generated a high level of awareness and concern for environmental issues among global communities, the shifts in behaviour essential to motivating pro-environmental action have not yet been observed (Crompton, 2008; Leiserowitz et al., 2005). Social scientists suggest that self-interest, social responsibility, and self-transcendent values are potential motivators of pro-environmental endeavours (Stern, 2000).

The inability of society to adopt environmentally responsible behaviour hastily and effectively results from various systematic challenges and individualised personal challenges that produce resistances to change.

A study of the gap between environmental knowledge and awareness and environmentally responsible behaviour identifies specific factors influencing models of pro-environmental behaviour and discusses their findings in detail (Kollmuss & Agyeman, 2002). External (systematic) challenges include demographic, institutional, economic, social, and cultural factors which demand action across higher-level disciplines.

The factors discussed include motivation, environmental knowledge, values, attitudes, environmental awareness, emotional involvement, locus of control, responsibilities, and priorities. Schultz’s research also discusses similar factors, summarising them into four challenges for behavioural change: education does not typically result in increases in conservation behaviour; human thinking is biased and promotes short-sighted responses to environmental threats; individuals generally perceive themselves as separate to nature, and social norms guide their behaviour. (Schultz, 2011).

A great deal of current social and cultural research focuses on inspiring behavioural change, most of which proposes that motivation is fundamental to inducing behavioural change and therefore offers the most potential for addressing environmental issues (Schultz, 2002).

"We are not separate from nature,
we are nature itself,
and we are very much in this together"

- Casper ter Kuile. *The Power of Ritual: Turning Everyday Activities into Soulful Practices*. p.94

LEARNING THROUGH 2.1.2 EXPERIENCE

Recent literature in this field indicates that, in order to motivate participants, it requires collectively affecting the mind, body, and spirit through processes of affective cognitive, affective experiential and cognitive experiential learning. Research suggests that human cognition can be influenced by the physical settings and the events created within them.

Michael Brody, Chair of the North American Association for Environmental Education Research Commission, reinforces these ideas in the journal article “Learning in Nature”, in which concepts of cognition, learning in informal settings, learning in museums, and value development and dialogues are discussed (Brody, 2005). Brody suggests that meaningful cognitive learning experiences in nature result from direct experiences over time that assimilate new ideas and either accommodate or reinforce existing ideas by providing an opportunity for participants to discover new information. It is asserted that experiences are most impactful, and thus memorable, when they affect knowledge systems (thinking), physical and sensory systems (action), and value systems (feeling) (Brody, 2005).

An individual’s awareness of the environment depends on the extent of personal knowledge they have gained through education and

overall life experience. While it is essential to consider the potential for architecture to increase environmental awareness and build on foundations of knowledge, research suggests that while education influences behaviour, alone it does not generally induce behavioural change (McKenzie-Mohr et al., 2012). However, increasing knowledge and awareness is essential to experiences that teach. It allows the participant to link prior knowledge to new information and thus more accurately comprehend the messages being communicated (Brody, 2005).

Experiences without explicit interpretation can induce a connectedness to nature that inspires pro-environmental intentions by providing enjoyable, satisfying and engaging learning experiences (Farmer et al., 2007; Pennisi et al., 2017; Powell & Ham, 2008). Direct aesthetic experiences with nature, sensitive and emotional content, and multi-sensory engagements are described as essential characteristics that determine the success by which the experience motivates environmentally responsible behaviour (Farmer et al., 2007).

Figure 2.2 Authors Image. (2021). Design Framework Stage I [Digital Image].

PRIMARY INFLUENCERS OF ENVIRONMENTALLY

2.1.3 RESPONSIBLE BEHAVIOUR

Studies in psychology have identified the leading factors that influence individuals to act with environmental responsibility are connectedness to nature; place attachment; and self-identity (Lokhorst et al., 2014). The links between each psychological concept and architectural application are below described.

CONNECTEDNESS TO NATURE

The interconnectedness between humans and their natural environment ultimately influences pro-environmental behaviour. The concept of “connectedness to nature” is defined as “the extent to which an individual feels that he or she is a part of nature” (Schultz, 2001, 2002). Research from various behavioural and social scientists broadly agree that individuals who identify themselves as a part of nature are more motivated and have greater intention to act with environmental responsibility (Davis et al., 2009; Dutcher et al., 2007; Gosling & Williams, 2010; Mayer & Frantz, 2004). Evidence suggests that efforts to promote beliefs about connectedness through experiential activities could potentially increase the probability of conservation behaviours among society (Gosling & Williams, 2010).

PLACE ATTACHMENT

Several psychologists describe place attachment as an essential influence of the desire to act with environmental responsibility. It is defined as “a positive connection or emotional bond between a person and a particular place” (Williams & Vaske, 2003). The concept of *place identity*, as opposed to *place dependence*, lends itself to the research as it refers to the symbolic importance of a place as a repository for emotions and relations that give meaning (Ramkissoon et al., 2013; Raymond et al., 2011; Stedman, 2002; Vaske & Kobrin, 2001). Providing humans with an opportunity to interpret the environment and landscape allows for creating symbols that form meaning and establish an attachment with a place (Cuba & Hummon, 1993). Some authors suggest that positivistic and phenomenological approaches can be explored through sense-of-place theory and research (Stedman, 2002). Studies have shown that human attachment to places of nature can influence environmentally responsible behaviour in an individual’s everyday life (Ramkissoon et al., 2013; Vaske & Kobrin, 2001).

SELF IDENTITY

Self-identity is critical to consider as experiences that establish emotional bonds with nature induce a change in self-identity that can prompt a shift toward pro-environmental behaviour. Self-identity refers to the “extent to which a certain behaviour is considered part of the self” and mediates the relationship between connectedness to nature and the intention to act with environmental responsibility (Lokhorst et al., 2014; Terry et al., 1999). Studies suggest that people are more willing to protect environments central to their identities, especially when the locations where the bond with nature is experienced comes under threat from future change (Stedman, 2002).

IMPACTFUL EXPERIENTIAL ARCHITECTURE

2.2 This section provides architectural literature and precedent analyses that further bridge the gap between psychology principles identified in Section 2.1 and architectural discourse. It focuses on “experience” and sets out an understanding of how architecturally designed settings can facilitate impactful experiences that motivate environmentally responsible behaviour.

This additional context addresses the principal aim of this research from an architectural perspective. It begins to merge the aforementioned psychological principles with architectural theory to propose a design framework that informs subsequent research through design.

*Figure 2.4 Authors Image. (2020). Marine Organisms Claiming Territory [Photograph].
Taranaki Street Wharf.*

2.2.1 TRANSCENDENCE

In the book *Transcending Architecture: Contemporary Views on Sacred Space*, edited by Julio Bermudez, several authors address the spiritual dimension of humanity concerning architecture and the built environment. They offer a range of perspectives on numinous experiences in designed environments and suggest various design strategies. Transcendence describes architecture as a means of providing people with a numinous experience – an experience of spiritual awakening, often mysterious or awe-inspiring.

Landscape architect and artist, Rebecca Krinke addresses the role of nature in transcending experiences, asserting that many of society's most considerable problems stem from human disconnection from the natural world (Krinke, 2015). From the perspective of health, she raises attention to the importance of nature in the process of recovery and suggests opportunities for personal, social, ethical, and spiritual growth and healing (Bermudez, 2015c; Krinke, 2015). Krinke offers insight into how architecture can offer people relief from stress by providing opportunities for people to come into close physical contact with nature and thus open them up to existential understandings of the world around them.

Richard Vosko, a planner of sacred space, reinforces this notion. He suggests reaching beyond the mundane and offering numinous experiences beyond traditional sacred spaces (Vosko, 2015). He argues that transcending experiences, whereby participants are invited to “elevate themselves”, are essential to architectures that help the environment – perhaps even psychologically (Bermudez, 2015b; Vosko, 2015). To produce architecture that serves humanity, it must engage with light, volume, materials, scale, and proportion. Simultaneously, it must achieve delight, function, and inclusive accessibility (Vosko, 2015).

Upon conclusion of *Transcending Architecture*, Thomas Walton proposes three critical approaches to transcending architecture: transcendence as dialogue, transcendence and scale, and transcendence as sensual (Walton, 2015).

2.2.2 PHENOMENOLOGY

In architectural literature, phenomenology is generally defined as the philosophical study of conscious human experiences from the first-person point of view. It is aimed at intentionally directing one's attention toward an object. The concept of phenomenology is discussed from various perspectives across several authors in the book *Transcending Architecture* (Bermudez, 2015c).

Connecticut-based architect, teacher, and editor of *Faith & Form* magazine, Michael J. Crosbie, addresses phenomenology in the chapter *Calling Forth the Numinous in Architecture* (Crosbie, 2015). Crosbie asserts that phenomenological encounters are essential to architecture that transcends. However, the architecture alone cannot create these encounters – it can only “invite, symbolise, host or prepare” for the numinous (Bermudez, 2015a).

Furthermore, in *Le Corbusier at the Parthenon*, editor Julio Bermudez states that architecture only becomes transcendent through the actions or events it facilitates. The author suggests that detailed studies of the experiential nature of phenomenological encounters are imperative to the design process that seeks to produce this form of architecture (Bermudez, 2015b).

David Seamon, an environment-behaviour researcher who studies in the field of architecture at Kansas State University, provides a thorough analysis of the literature on phenomenology theory in *Phenomenology, Place, Environment, and Architecture: A Review of the Literature* (Seamon, 2000). Seamon addresses topics of history and nature of phenomenology, key assumptions of a phenomenological approach, the methodology of empirical phenomenological research; trustworthiness and phenomenological research; and phenomenology and environmental design (Seamon, 2000). The text provides a critical foundation of knowledge for conscious experiential learning through the broadly defined scope of phenomenology and advances the concept of the transcending experience to existential experience (Seamon, 2000).

Methods of research are described as “radical empiricism”, as understanding phenomena emerge from the researcher's first-hand experience and personal perception (Seamon, 2000). Seamon describes processes of inquiry that serve the research methodology, suggesting that they are to incorporate uncertainty and spontaneity; to be developed creatively; and allow for “fluidity of methods and research process” (Seamon, 2000).

The author explains the challenge of the subject-object dichotomy in establishing intimate connectedness between humans and their world and states it is broadly overcome by intentionality – whereby some aspect of the world is used to establish the context and meaning for the conscious human experience (Seamon, 2000). In conjunction, Seamon suggests that offering a change in perspective (the phenomenological reduction) can increase gratitude for “lifeworld” phenomena (Seamon, 2000).

“The numinous is not inside us, but outside. It is sensed inside of us, but it resides apart from us.”

— Michael Crosbie, “Calling Forth the Numinous” in Julio Bermudez (ed), *Transcending Architecture*. p.226

2.2.3 ATMOSPHERE

German Philosopher Karsten Harries discusses the aesthetic phenomenon of “aura”, or in other words ambience or atmosphere, as it evolves from the work of philosopher Walter Benjamin. In *Transcending Aesthetics*, Harries refers to renowned philosophers Georg Wilhelm Friedrich Hegel, Martin Heidegger, and Immanuel Kant to form his argument (Harries, 2015). Harries argues that transcending experiences emerge from what is accurate, and the experience of the aura takes place when physical matter and the human spirit are unified (Bermudez, 2015a).

Finnish architect and former professor and dean at the Helsinki University of Technology, Juhani Pallasmaa, discusses the importance of architectural atmospheres in his journal article *Space, Place, and Atmosphere*. Pallasmaa asserts that atmosphere is fundamental to the human experience of space and place. He suggests that understanding atmospheres and applying such knowledge when designing physical space can inform architecture with the potential to influence entire societies through the ways in which they support revelations of human existence (Pallasmaa, 2014).

The atmosphere is essential to the immediate perception of physical space. The mood and ambience of space are first to affect a participant’s attitude toward that space, doing so unconsciously, before drawing attention to the detailed subjects of the experience - bringing them into the realm of conscious awareness (Pallasmaa, 2014). The author proposes several design strategies that most effectively produce ethereal atmospheres. These include, but are not limited to illumination, colour, majestic proportions, dimensions, scale, rhythm, geometry, formal theme, materiality, and multi-sensory stimulus (Pallasmaa, 2014).

Each of the architectural design strategies suggested here contributes to creating existential experiences in architecture by helping to provoke emotional responses when engaging with the physical setting and phenomenological encounters.

“A space or a place is a kind of a diffusely felt multi-sensory image, an experiential ‘creature’, a singular experience, that is fused with our very existential experience and cognition.”

— Juhani Pallasmaa, “Space, Place, and Atmosphere” in *Lebenswelt: Aesthetics and Philosophy of Experience*. p.235

“One who cannot remember can hardly imagine, because memory is the soil of imagination. Memory is also the ground of self-identity; we are what we remember”

— Juhani Pallasmaa, "Space, Place, Memory, and Imagination". p.190

Figure 2.6 Authors Image. (2020). Four Senses of Human Perception - Direct experiences with nature [Drawing].

2.2.4 MEMORY & EMOTION

In his article “Space, Place, Memory & Imagination: The Temporal Dimension of Existential Space” Pallasmaa discusses the dual function of memory and emotion concerning experience in physical settings.

Pallasmaa describes landscapes and buildings as amplifiers of emotions that “reinforce sensations of belonging”.

The role of architecture is not to create feelings but to evoke and strengthen participants emotions and project them back through channels of authority and aura (Pallasmaa, 2007). Several design strategies that serve to establish stronger memories through experience are suggested in the text. Embodiment, multi-sensory stimulation, and atmosphere are described as fundamental attributes of space that affect emotion (Pallasmaa, 2007, 2014).

Manipulation of space, material, and light and shadow can produce memorable experiences in physical settings through their effect on the senses (Pallasmaa, 2007). Such design strategies can be engaged in ways that prompt existential experiences and have a lasting impact on participants.

Profound imagination, which is essential to both memory recollection and memory establishment, is achieved through the focused intimacy of a room and generating

a sense of safety or familiarity for the participant (Pallasmaa, 2007). This strategy supports memory establishment of gained experiences.

Referring to the works of writers, film directors, poets, and painters, Pallasmaa asserts that architecture serves to “amplify human emotions, mental states and memories through purposeful depictions of settings, both natural and man-made” (Pallasmaa, 2007). The dimension of time is fundamental here, fusing perception, memory, and imagination (Pallasmaa, 2014).

Pallasmaa also suggests that reducing the speed at which the participant experiences the architecture can better establish memories and bring the experience into focus as “speed is directly proportional to the intensity of forgetting” (Kundera, 1966).

2.2.5 SENSE OF PLACE

Sense of place, or place attachment, is the positive emotional bond and feeling people have for a place (Hashemnezhad et al., 2013; Najafi & Shariff, 2011; Sime, 1986). It is affected by socio-demographic characteristics; environmental experiences (people's type of involvement with place, degree of familiarity with a place, and people's expertise or knowledge about a place); culture; place satisfaction; preference and attachment; activity; and most importantly, place itself (Najafi & Shariff, 2011).

Norwegian architect and architectural theorist, Christian Norberg-Schulz, addresses the significance of creating a sense of place in architecture. He asserts that the concept of *space* is an existential dimension that is of central importance to architecture, whereas *place* encapsulates the physical characteristics of space (Norberg-Schulz, 1971). The overall experience of the physical setting provides people with an opportunity to apply meaning to the immediate environment and hence establish place attachment (Sime, 1986).

Some authors discuss the concept of place with *place-identity*, which are fundamentally interlinked with self-identity and place attachment (Proshansky et al., 1983). The experience of place serves to define human identity, establish a sense of belonging and contributes to existential understandings

of the world (Sime, 1986). Orientation and identification are suggested as central psychological functions that determine this form of experience (Norberg-Schulz, 1971, 1980). Essentially, people must be able to understand their whereabouts and identify themselves with the immediate environment (Sime, 1986).

Philosopher Martin Heidegger defines the term “dwelling” as the characteristics of a physical setting that induce a sense of presence in the world (Heidegger, 1971). Norberg-Schulz develops this concept further, asserting that experiences of dwelling are facilitated by architecture and serve to provide people with a moment of peace in a place of safety (Norberg-Schulz, 1980; Sime, 1986). Creating a sense of safety is essential to accommodating imagination, suggesting that safety is an essential consideration of place creation when providing existential experiences (Pallasmaa, 2007).

Physical characteristics of the environment are fundamental to creating meaning, and hence the experience of place and space is essential to establishing a place attachment (Najafi & Shariff, 2011; Norberg-Schulz, 1980; Stedman, 2003). It is solely determined by the physical setting and the participants (personal) perception of the experience (Najafi & Shariff, 2011; Sime, 1986). Place is

an entirely subjective and sensual experience perceived through visual, auditory, olfactory gustatory and tactile stimulus (Najafi & Shariff, 2011; Shamai, 1991).

Therefore, through the stimulation of the senses, impactful experiences can be facilitated in architecture in an attempt

to establish place attachment. Likewise, through the physical characteristics of place and presentation of natural phenomenon that occur there, the experience can prompt existential realisations that contribute to forming connections between participants and place, and participants and nature.

Figure 2.7 Authors Image. (2020). Oriental Bay at Dusk [Photograph] . Eastern Oriental Bay Reef.

2.2.6 BIOPHILIA

The concept of biophilia is defined as an innate affinity human have for the natural world (Wilson, 1984). Interdisciplinary research continues to support concepts of biophilic design in architecture as a means of improving human health and well-being (Browning et al., 2014; Kellert, 2018; Pedersen Zari, 2009). The literature on biophilia suggests several biophilic design strategies that inform how architecture is created in close relationship with nature to benefit humans psychologically.

Three types of human experience with nature are addressed in the literature; the direct experience of nature, the indirect experience of nature, and space and place (Kellert, 2018). It appears that direct experiences with nature that prioritise naturally existent encounters with the natural world are most favourable for designs that motivate environmentally responsible behaviour as they are pure realities of nature.

The direct experience of nature involves direct contact with natural phenomenon as they occur in the present environment (Kellert, 2018). It is a physical, sensual and ephemeral experience of natural essences such as light, air, water, flora, and fauna (Browning et al., 2014; Kellert, 2018). Design strategies that enhance nature and place through experiences in a physical setting,

and the resulting psychological effects, are described in Figure 2.5.

Several authors assert that indirect experiences of nature, including biomorphic design, can also induce human-nature connectivity (Browning et al., 2014; Kellert, 2018; Pedersen Zari, 2009). Such experiences involve the symbolical representation of features, characteristics, or patterns of materials found in nature in architectural form, material, colour, and patterns (Browning et al., 2014; Kellert, 2018).

The experience of space and place is characterised by the physical setting, which encompasses individual encounters with nature that contribute to the overall experience (Kellert, 2018). Research asserts that experiences in the space of nature are strengthened by the intentional arrangement of spaces and events. Combining spatial design strategies – such as prospect, refuge, mystery, and risk/peril – with the abovementioned strategies for creating direct and indirect experiences with nature can more effectively engage participants (Browning et al., 2014). It, therefore, has a more significant psychological impact.

Overall, the experiences serve to “nurture a love of place”, which suggests that an underlying goal of biophilic design is to

14 PATTERNS	•	STRESS REDUCTION	COGNITIVE PERFORMANCE	EMOTION, MOOD & PREFERENCE
NATURE IN THE SPACE	Visual Connection with Nature	• Lowered blood pressure and heart rate (Brown, Barton & Gladwell, 2013; van den Berg, Hartig, & Staats, 2007; Tsunetsugu & Miyazaki, 2005)	Improved mental engagement/ attentiveness (Biederman & Vessel, 2006)	Positively impacted attitude and overall happiness (Barton & Pretty, 2010)
	Non-Visual Connection with Nature	• Reduced systolic blood pressure and stress hormones (Park, Tsunetsugu, Kasetani et al., 2009; Hartig, Evans, Jammer et al., 2003; Orsega-Smith, Mowen, Payne et al., 2004; Ulrich, Simons, Losito et al., 1991)	Positively impacted on cognitive performance (Mehta, Zhu & Cheema, 2012; Ljungberg, Neely, & Lundström, 2004)	Perceived improvements in mental health and tranquility (Li, Kobayashi, Inagaki et al., 2012; Jahnccke, et al., 2011; Tsunetsugu, Park, & Miyazaki, 2010; Kim, Ren, & Fielding, 2007; Stigsdotter & Grahn, 2003)
	Non-Rhythmic Sensory Stimuli	• Positively impacted on heart rate, systolic blood pressure and sympathetic nervous system activity (Li, 2009; Park et al, 2008; Kahn et al., 2008; Beauchamp, et al., 2003; Ulrich et al., 1991)	Observed and quantified behavioral measures of attention and exploration (Windhager et al., 2011)	
	Thermal & Airflow Variability	• Positively impacted comfort, well-being and productivity (Heerwagen, 2006; Tham & Willem, 2005; Wigg, 2005)	Positively impacted concentration (Hartig et al., 2003; Hartig et al., 1991; R. Kaplan & Kaplan, 1989)	Improved perception of temporal and spatial pleasure (alliesthesia) (Parkinson, de Dear & Candido, 2012; Zhang, Arens, Huizenga & Han, 2010; Arens, Zhang & Huizenga, 2006; Zhang, 2003; de Dear & Brager, 2002; Heschong, 1979)
	Presence of Water	• Reduced stress, increased feelings of tranquility, lower heart rate and blood pressure (Alvarsson, Wiers, & Nilsson, 2010; Pheasant, Fisher, Watts et al., 2010; Biederman & Vessel, 2006)	Improved concentration and memory restoration (Alvarsson et al., 2010; Biederman & Vessel, 2006) Enhanced perception and psychological responsiveness (Alvarsson et al., 2010; Hunter et al., 2010)	Observed preferences and positive emotional responses (Windhager, 2011; Barton & Pretty, 2010; White, Smith, Humphreys et al., 2010; Karmanov & Hamel, 2008; Biederman & Vessel, 2006; Heerwagen & Onians, 1993; Russo & Altwagner, 2003; Ulrich, 1983)
	Dynamic & Diffuse Light	• Positively impacted circadian system functioning (Figueroa, Bruns, Pitnick et al., 2011; Beckett & Roden, 2009) • Increased visual comfort (Elyezadi, 2012; Kim & Kim, 2007)		
	Connection with Natural Systems			Enhanced positive health responses; Shifted perception of environment (Kellert et al., 2008)
NATURAL ANALOGUES	Biomorphic Forms & Patterns	•		Observed view preference (Vessel, 2012; Joye, 2007)
	Material Connection with Nature		Decreased diastolic blood pressure (Tsunetsugu, Miyazaki & Sato, 2007) Improved creative performance (Lichtenfeld et al., 2012)	Improved comfort (Tsunetsugu, Miyazaki & Sato 2007)
	Complexity & Order	• Positively impacted perceptual and physiological stress responses (Salingaros, 2012; Joye, 2007; Taylor, 2006; S. Kaplan, 1988)		Observed view preference (Salingaros, 2012; Hagerhall, Laike, Taylor et al., 2008; Hagerhall, Purcella, & Taylor, 2004; Taylor, 2006)
NATURE OF THE SPACE	Prospect	• Reduced stress (Grahn & Stigsdotter, 2010)	Reduced boredom, irritation, fatigue (Clearwater & Coss, 1991)	Improved comfort and perceived safety (Herzog & Bryce, 2007; Wang & Taylor, 2006; Petherick, 2000)
	Refuge	•	Improved concentration, attention and perception of safety (Grahn & Stigsdotter, 2010; Wang & Taylor, 2006; Wang & Taylor, 2006; Petherick, 2000; Ulrich et al., 1993)	
	Mystery	•		Induced strong pleasure response (Biederman, 2011; Salimpoor, Benovic, Larcher et al., 2011; Ikemi, 2005; Blood & Zatorre, 2001)
	Risk/Peril	•		Resulted in strong dopamine or pleasure responses (Kotino et al., 2013; Wang & Tsien, 2011; Zaid et al., 2008)

Figure 2.8 Browning et al. (2014). 14 Patterns of Biophilic Design [Table] Terrapin Bright Green.

establish place attachment with natural contexts (Browning et al., 2014). Doing so, provides people with an opportunity to gain a sense of belonging in the world that ultimately improves human well-being by providing stress relief, enhancing clarity of thought, and accelerating healing (Browning et al., 2014; Pedersen Zari, 2009). It suggests

that experiences are more impactful when engaging with the biophilic design strategies suggested here. The transcendence of naturally occurring phenomenon can give rise to existential realisations that benefit people psychologically.

PRECEDENT ANALYSES

- 2.3 The following case studies engage examples of art and architecture that illustrate and advance concepts identified in architecture and psychology theory established in the literary context. Each case study emerges from a broader selection of projects that are categorised under three experience types: educational, immersive, and spiritual. Several works illustrate how architecture can serve conservation and environmentalist agendas or raise attention to the phenomena that occur naturally in the environment. There are generally overlaps between each of the experience types. Together, the overall collection of work provides a broad understanding of how experiences in architecture can collectively develop knowledge, stimulate the sense, and provoke emotion.

BURIAL / CEREMONIAL

DIANA, PRINCESS
OF WALES
MEMORIAL
FOUNTAIN
2004

London, UK
*Gustafson Porter
& Bowman*

THE NATIONAL
MEMORIAL FOR
PEACE & JUSTICE
2018

Montgomery,
Alabama, USA
*MASS Design
Group*

ATRIUM OF HOLY
ANGELS
MAUSOLEUM
2017

Fawkner, Australia
*Harmer
Architecture*

CREMATORIUM
CHARITY TRUST
2013

Coimbatore, India
*Mancini
Enterprises*

SAYAMA
LAKESIDE
CEMETERY
COMMUNITY HALL
2013

Saitama, Japan
*Hiroshi Nakamura
& NAP*

LAKEWOOD
CEMETERY
GARDEN
MAUSOLEUM
2012

Minneapolis, USA
*HGA Architects &
Engineers*

HARBOUR VIEW
BURIAL GROUND
& CREMATORIUM
2018

Lytchett Minster,
UK
*Western Design
Architects*

SITE & HISTORY

ALLMANNAJUVET
ZINC MINE MUSEUM
2016

Saude, Norway
Peter Zumthor

THE TWIST MUSEUM
2019

Jevnaker, Norway
Bjarke Ingels Group

STORYBOARD ON
THE LANDSCAPE
2016

Batoche, Canada
*Ekistics Planning
& Design*

WAITOMO CAVES
VISITORS CENTRE
2010

Waitomo, NZ
*Architecture
Workshop*

CONSERVATION & ENVIRONMENTALIST

ILULISSAT
ICEFJORD CENTRE
Expect. 2020

Disko Bay,
Greenland
Dorte Mandrup

Longbush Eco-
Sanctuary
Welcome
Shelter
Expect. 2020

Disko Bay,
Greenland
Dorte Mandrup

ENVIRONMENTAL
INTERPRETATION
CENTRE
2009

Leziria, Portugal
Maisr Arquitectos

CORAL
GREENHOUSE
2020

Great Barrier Reef,
Australia
*Jason De Caires
Taylor*

RIO SALADO
AUDUBON CENTRE
2009

Phoenix, USA
*Weddle Gilmore -
Black Rock Studio*

WATERFRONT
BOTANICAL
GARDENS
2019

Louisville, USA
Perkins and Will

OROKUNUI ECO-
SANCTUARY
VISITORS CENTRE
2015

Dunedin, NZ
*Architecture
Ecology*

ØSTERILD
VISITORS AND
OPERATION
CENTRE
2017

Thisted, Denmark
Cubo Arkitekter

PARQUE DO ROLA
MOCA VISITORS
CENTRE
2016

Belo Horizonte,
Brazil
*Tetro Arquitetura
& Humberto
Humeto
Arquitetura*

THE
SUSTAINABILITY
TREEHOUSE
2013

Glen Jean, USA
Mithun

ART

HEAVY WATER
1991

Poitiers, France
James Turrell

MUSEUM OF
NATURE
2003-2008

Traveling
Exhibition
Ilkka Halso

- + Programme *Thermal Mineral Springs Spa*
- + Experience *Immersive & Spiritual*
- + Client *The Community of Vals*

Appearing as if it were carved within the hillside, the Therme Vals dramatically ushers in the surrounding natural context and introduces the locally quarried Valser Quartz and natural spring waters to the external light. Zumthor's attention to material relationships, and acceptance of change and imperfection, results in unique, stimulating events that transcend the overall experience. His work demonstrates the ability for architectural experiences to raise attention to interactions between natural systems and building material to entertain sensuous experiences.

In harmony with experiences of phenomenological encounters, the peripheral atmospheric experience helps to provoke emotion and a sense of presence with that place in that moment. Consequently, it has the potential to establish place attachment.

As a construct of locally sourced materials that offer embodied immersion, the

experience not only establishes place attachment but communicates the interconnectivity between visitors and local natural systems.

The informal circulation, freely arranged spaces, and focused intimacy of rooms favour exploration. It demonstrates how to create cohesive spatial configurations using concepts of prospect, refuge, mystery, and risk or peril. Qualities of atmosphere, such as manipulating space, material, and light and shadow, combined with the multi-sensory experience of phenomenological encounters, supports memory establishment.

Experientially, architecture primarily affects the body and spirit. Programmatically, it provides participants with an opportunity to relax the mind, body and spirit collectively and thus invites redefinition of self-identity with a personal self-focus, which establishes place attachment and potentially gives rise to existential realisations.

Figure 2.10 Hélène Binet. (1996). Therme Vals Interior Spa [Photograph].

Figure 2.11 Hélène Binet. (1996). Therme Vals Exterior Spa [Photograph].

Figure 2.12 Hélène Binet. (1996). Therme Vals Lounger Seats [Photograph].

Figure 2.13 Hélène Binet. (1996). Therme Vals Exterior [Photograph].

- + Programme *Restaurant & Marine Research Centre*
- + Experience *Educational, Immersive, & Spiritual*
- + Client *Hoteliers, Stig & Gaute Ubostad*

Under is an exemplary design that challenges common approaches to marine wildlife observation in an era increasingly concerned with human impact on natural environments. It currently appears vastly separate from its natural surroundings; however, as time permits, marine organisms will inhabit the surfaces, and the architecture can support the local ecology. Construction methods, technology, and material employed by the designers demonstrate new opportunities for marine architecture.

The architecture goes beyond facilitating an immersive gustatory experience. It allows visitors the rare opportunity to experience an underwater environment in its raw nature from a space of safety and comfort. Intensity is given to this experience through multi-sensory stimulation, material expression, atmosphere, and most importantly, the transcendence of phenomenon in the underwater environment. The experience generates a sense of awe driven by human's affinity with nature that can elicit contemplation

of human and nature interrelationships as they occur in the present context.

Material expression and illumination enhance the sense of place in this experience. Artificial lighting is kept dull to allow natural light filtered by the ocean outside to flood into the interior space with blue hues and unique light patterns. The phenomenon colour observed when light is diffracted by water is used to inform the interior aesthetic as seen in Fig. 2.15. Engaging with materials in ways that subtly represent natural systems or phenomenon is a highly effective approach to enhancing the sense of place. While these aspects of the design are not fundamental, they contribute to a more impactful experience that helps to draw attention to the marine systems and thus more effectively immerses people in the immediate environment.

Figure 2.14 Ivar Kvaal. (n.d.). Under Observation Window [Photograph].

Figure 2.15 Ivar Kvaal. (n.d.). Waves crashing onto exterior [Photograph].

Figure 2.16 Ivar Kvaal. (n.d.). Skyward Window [Photograph].

Figure 2.17 Ivar Kvaal. (n.d.). Under [Photograph].

RIVERBED

HUMLBÆK, DENMARK

OLAFUR ELIASSON

- + Programme *Art Installation*
- + Experience *Immersive*
- + Client *Louisiana Museum of Modern Art*

Contemplation is the experience offered in any museum. However, artists Olafur Eliasson and Fabian Knecht take this notion further by placing participants directly into the experience. These exhibits employ bodily movements and personal interactions with space and material to strengthen the communication of ideas. Likewise, the very actions of the individual are exhibited. It places the natural phenomena and human in the same immediate realm and suggests the interrelationships between the two.

Together, the precedents advance the understanding that immersive experiences that stimulate the senses without explicitly interpreted information can communicate important existential messages and potentially develop knowledge.

Two approaches are illustrated here. One is a construction of a natural system in an artificial environment. The latter, in contrast to Riverbed, frames raw natural environments as unique three-dimensional

Figure 2.18 Olafur Eliasson. (2014-2015). Riverbed [Photograph]. Anders Sune Berg.

Figure 2.19 Olafur Eliasson. (2014-2015). Riverbed [Photograph]. Natasha Harth.

ISOLATION*FISCHERBERG, GERMANY***FABIAN KNECHT**

- + Programme *Art Installation*
- + Experience *Immersive*
- + Client *Unknown*

compositions. In both circumstances, the artists use stark white walls with fluorescent lighting to draw attention to and emphasise the landscape and interactions of participants. Ultimately, the experiences serve to bring certain essences of nature into reflective awareness similar to how artwork on a wall invites contemplation. Both installations challenge patterns of perception and question the actions of participants in ways that increase an appreciation for nature and natural processes.

Figure 2.20 Fabian Knecht. (2019). *Isolation - Wetland* [Photograph]. Alexander Levy.

Figure 2.21 Fabian Knecht. (2019). *Isolation - Forest* [Photograph]. Alexander Levy.

Figure 2.22 Fabian Knecht. (2019). *Isolation - Exterior* [Photograph]. Alexander Levy.

- + Programme *Exhibited Artworks*
- + Experience *Immersive & Spiritual*

From a pessimistic point of view, Finnish photographer Ilkka Halso imagines a potential future for architecture. His visualisations, which montage photographed landscapes with digital 3D models, suggest architecture as an agent for preserving and protecting natural entities from human-induced threat.

Halso's speculative work demonstrates a seemingly plausible future for human interaction with nature. There is an apparent duality expressed between natural systems and artificial systems while concurrently highlighting the unique essences of nature. The atmosphere in each image helps draw attention to the object and provoke emotions through contrasting light and colour. Audiences are forced to consider the notion of environmental responsibility as the work begins to communicate that experiences with nature have become so rare that nature now requires being exhibited as a series of artefacts.

Collectively, the works illustrate experiences facilitated by architecture that can potentially induce human and nature connectivity, establish place attachment, and prompt participants to redefine their self-identity. There is a clear focus of phenomenology and atmosphere presented in the works of art that suggest a form of existential experience centred around contemplative practices.

As the visualisations suggest the exhibition of nature, the experiences favour visual stimulus and lack alternative stimuli. Halso does this intentionally; however, the experience can become more impactful and thus memorable by stimulating multiple senses of human perception.

Figure 2.23 Ilkka Halso. (2008). Theatre II [Digital Image].

Figure 2.24 Ilkka Halso. (2003). Museum I [Digital Image].

Figure 2.25 Ilkka Halso. (2003). Theatre I [Digital Image].

2.4 DISCUSSION

The research asks, “*Can architectural experiences serve to motivate people’s intention to act with greater environmental responsibility?*”. Research suggests that experiences facilitated by architecture can potentially motivate people to act with environmental responsibility. Furthermore, it offers design strategies that inform *how* architecture can provide such experiences.

Conclusions can be drawn from the literature that suggests an opportunity for architecture to support society psychologically as it attempts to shift toward pro-environmentalism. The research surveyed in this chapter has made an interdisciplinary call to arms to resolve environmental issues. Within the architectural profession, there is an increasing demand for sustainable and environmentally sensitive design. While practical solutions continue to develop in response to environmental concerns, an intriguing body of work is emerging in response to psychological and sociological responses.

This thesis research points toward existential experiences in architecture to make people more intensely aware of human-nature symbiosis on emotional and intellectual levels. The intended experience must direct the participant’s attention toward the essences of this symbiosis to establish

context and meaning and raise awareness. Humans affinity for nature drives these experiences. Architecture could attempt to transpose grand-scale environmental issues to an easier perceivable human scale to increase conscious awareness of human-induced changes occurring in the natural environment.

Subsequent design research explores how to transcend “lifeworld” experiences of this symbiosis to induce human and nature connectivity. In turn, it invites perspective change, given that such an experience successfully gives rise to the existential realisation that human beings are essential participants in a greater biological ecosystem. Such experiences can cultivate a sense of optimism toward social change and motivate pro-environmental intentions.

The dialogue engages the architecture as a facilitator, while the interrelating human (artificial) systems and natural systems become the objects of attention. Human perception is fundamental to the interpretation of this dialogue and establishing a place attachment. An architecture designed in close relationship with its surrounding natural context can direct attention toward symbiotic phenomenon to develop knowledge and provide numinous experiences that reinforce sensations of belonging to nature. Such experiences are

most impactful and more likely to connect participants with nature and place when multiple senses are stimulated under this intent. Subsequent research explores how a designed experience in a physical setting can cultivate meaning in the immediate context by providing a multi-sensory experience that develops knowledge of place and symbiosis and provokes emotion.

The atmosphere is essential to creating emotive spatial qualities and thus intensifies phenomenological encounters to more effectively create numinous experiences. Subsequent design research explores how to engage atmospheric design to provoke emotions that spiritually unify humans with nature.

Provided that the emotional effect is achieved, the probability of the experience being established as a fragment of memory increases as it acts as a repository of emotions. It informs the extent of meaning and attachment that person forms with the place and the events. Ultimately, this defines their self-identity. When participants establish an attachment to a place of nature and gain positive memories from direct experiences with nature, this can align participants with pro-environmental values that motivate their intention to act with environmental responsibility. There is a possibility that impactful experiences

that induce human and nature connectivity can improve psychological responses to similar environments elsewhere and further strengthen a human connection with nature. People are unique, and there are differences in intellectual and emotional understandings of human and nature symbiosis. Therefore, the influence of individual (personal) and social (shared) factors on the cognitive learning outcomes of the designed experience is considered. It suggests that design research must explore various experiential approaches aimed at affecting participants in different ways.

The cognitive processes of self-reflection and contemplation central to this form of experience suggest that the designed experience must facilitate points of pause and offer participants an opportunity to consider their values. Potentially, it influences a re-definition closer toward pro-environmental values.

Figure 2.26 Authors Image. (2021). Design Framework Stage III [Digital Image].

2.5 CONCLUSION & DESIGN FRAMEWORK

The design framework emerges from this literary context and suggests concepts of architectural theory that can be engaged through design to address psychological principles. It provides the foundation of understanding from which subsequent design research unfolds. The intervention relevant to this design exploration is one that mediates the relationship between human beings and the natural world.

Located in the centre of the diagram is the research aim. Motivation exists at the core of human behavioural change.

Literature on psychology identifies that impactful learning experiences in physical settings are one approach to this. Moving outward from the centre of the diagram, the two initial layers indicate how an impactful learning experience can motivate behavioural change described in Section 2.1.2 and summarises these into three experience types (Fig. 2.2). It suggests that an experience that collectively develops knowledge (the mind), stimulates the senses (the body) and provokes emotion (the spirit) will have the most significant impact. Each of these experiential learning processes is interrelated and supports one another.

Psychology literature uncovered that the degree to which a person feels they are a

part of nature (connectedness to nature), the emotional bond a person has with a place (place attachment), and the extent to which the behaviour is considered part of the self (self-identity) are all leading factors that motivate a person's intention to act with environmental responsibility (Section 2.1.3). These determining factors are translated into overarching design objectives in the third layer of the diagram, encapsulating the core principles. It advances the research toward experiences that not only motivate behaviour change but do so to instil greater environmental responsibility.

Encompassing the interior layers (psychological principles) of the diagram, the two outer layers suggest architectural approaches and related design strategies covered in Sections 2.2 and 2.3 that bridge the gap between the two disciplines (Fig. 2.26). Each layer of the framework functions collaboratively. Each of the psychological principles and concepts in architectural theory is necessary for achieving the impactful experiences this research sets out to create. Recommended design strategies feed into the framework from the exterior. It is not critical that all be addressed. Instead, it is suggested that designers use a select combination of strategies as relevant to the site context, objects of attention, and design intent.

CHAPTER 03

3.1 Design Research Objectives

3.2 Methodology Diagram

METHODOLOGICAL EXPLORATION

INTRODUCTION *Chapter 03 describes the methodology leading to creating the design framework and describes the design-led research explorations that unfold from this framework.*

This research prioritises the multi-sensory experience and is conceptualised in the design from experiences gained at sites of inquiry and in the natural marine environment. Attention is given to contextual relationships and focuses on the symbiotic interrelationships between human systems and natural systems. Various methods of documentation, art, drawing, and modelling are engaged in the methodology to develop a design process that addresses each of the following design research objectives:

3.1 DESIGN RESEARCH OBJECTIVES

EDUCATIONAL EXPERIENCE

The Mind - develop knowledge – affective cognitive and cognitive experiential

Affecting systems of knowledge by provoking the prompting participants to think about the existential reality of human and nature symbiosis.

DRO 1

Employ architectural devices that experientially allow participants to assimilate the interrelationships between humans and nature for the purpose of developing a conscious awareness for the position of the individual-self in relation to present natural environments.

IMMERSIVE EXPERIENCE

The Body – stimulate the senses – cognitive experiential and affective experiential

Affecting physical and sensory systems by stimulating multiple senses of human perception and actively engaging the participant in ways that support the communication of human-nature symbiosis.

DRO 2

Engage architectural strategies that experientially engage physical interaction and stimulate human senses of perception in ways that effectively draw attention to phenomenological evidence of interrelationship between humans and nature and induce a sense of connectivity.

SPIRITUAL EXPERIENCE

The Spirit – provoke emotion – affective cognitive and affective experiential

Affecting systems of value by provoking ethereal emotions and awaken feelings in the participant that induce human and nature connectivity.

DRO 3

Use architectural approaches to design experiences in physical space capable of provoking ethereal emotions, providing participants with the opportunity to establish meaningful spiritual connections with nature.

3.2 METHODOLOGY DIAGRAM

IMMERSION

site selection

OBSERVATION

SITE PHASE 01

- + Written Journal
- + Photographic Analysis
- + Audio / Audio Visual Recording

INTERPRETATION

EXPERIENCE PHASE 04

- + Storyboard Drawing
- + Watercolour Painting

MACRO CONTEXT

SITE PHASE 02

- + Nature Based Activities
- + Site Axis & Exposure
- + Tidal Charts
- + 3D Digital Site Model
- + Historical Context

DESIGN

FORM & SPACE

DESIGN PHASE 02

- + Biomorphic Design
- + Form Exploration
- + Material Compositions

INHABITING SITE

DESIGN PHASE 03

- + Spatial Arrangements
- + Freehand Sketch
- + Digital Modeling

concept selection

DESIGN REFINEMENT

DESIGN PHASE 04

- + Material Renders
- + Freehand Sketch
- + Digital Modeling

This methodology is explorative. It engages a series of experiments used to develop a useful design methodology that aims to deliver impactful existential experiences of human and nature symbiosis using architectural design to motivate participants to act with environmentally responsible behaviour.

Research into the site, experience, and design unfolds in three stages as illustrated in the design framework (Fig. 2.26). The diagram reads sequentially from top to bottom and left to right, identifying critical reviews and decisions that progressively refine the design scope and focus. Listed beneath each exploration title and phase sub-title are the various methods of inquiry that contributed to the greater research exploration.

The initial ideation stage broadly explores a range of approaches and strategies identified in the literary context. It gives direction for the design research and evaluates appropriate design process and methods that advance the design-led research. The explorations undertaken in this phase were undefined to a site.

Immersion encapsulates the site investigation stage of the research. It adopts a less conventional approach to site analysis that applies a direct focus on the direct experience with nature gained at the site. The research also identifies macro contextual relationships and develops an understanding of the site history.

Finally, the research concludes with a design stage. This stage involves exploring the design framework and the conceptualisation of design research findings to design experiences in public interventions within the context of the site. The design tests illustrate the research findings through design while concurrently helping to challenge and develop the design framework.

Methods for each of these stages are set out in detail in Chapters 04 – 08.

CHAPTER 04

- 4.1** Biomes & The Essences of Nature
- 4.2** Pavilion Design
 - 4.2.1** Biome Specific Pavilions
 - 4.2.2** Pavilions Specific to Environmental Issues
- 4.3** Mnemonic Devices
- 4.4** Critical Reflection

INITIAL IDEATION

INTRODUCTION *Chapter 04 sets out to establish initial ideas regarding subjects of attention and freely explores potential design typologies undefined to a specific site. It provides a start point for subsequent designs and experiences to evolve from. The explorations serve to inform the overall design method that engages with site specific contexts in the following chapter.*

4.1 BIOMES & THE ESSENCES OF NATURE

While the above Sections 2.2.1 & 2.2.2 identifies the role of architecture in transcending lifeworld phenomenon to create existential experiences, this research looks toward developing an understanding of naturally existent phenomenon.

Colour, light and shadow, water, sound, touch, proportion and scale are described as phenomenological attributes of space (Holl, 2006). This section explores these attributes of space in natural landscapes and identifies impactful phenomenological encounters of nature. It specifically explores the existence of such attributes in terrestrial, aquatic, and avian biomes found throughout New Zealand to give direction to the research inquiry.

Attributes of space are visually summarised to illustrate a collection of direct experiences with nature in each biome. Outcomes are suggestive of spatial qualities and natural phenomenon that the designed experiences can engage with. While the exploration does not address human and nature symbiosis explicitly, experiencing these phenomenon can contribute to a inducing sense of being in the world.

These qualitative findings inspire subsequent design explorations, such as the interaction (reflection, diffraction, refraction, and scattering) between light and water or air, and the effect of water in motion against earth or built surfaces. The perceptual fusion of foreground, middle ground, and distant view is considered in these experiences (Holl, 2006).

AVIAN

TERRESTRIAL

AQUATIC

Figure 4.1 Authors Image. (2020). *Essences of Nature* [Digital Collage].

4.2.1 BIOME SPECIFIC PAVILIONS

This initial exploration attempts to create a series of small-scale pavilions that establish a spiritual connection between participants and the immediate environment. Each pavilion is designed in response to general habitat types and focuses on raising attention to interrelationships between biomes and the natural essences that occur there. It considers the sensory experience with the natural environment whereby the process of contemplation is primary.

It serves to create architectural experiences that affect the mind, body, and spirit for the purpose of inducing a connectivity between the participant and immediate natural systems.

Designs primarily explore how to exhibit naturally occurring phenomenon and communicate the dialogue between humans and nature. It applies design strategies of light, scale, multi-sensory stimulation, sense of safety, atmosphere, and focuses the intimacy within spaces.

The exploration utilises freehand sketch as a conceptual exploration. Concepts developed in the initial sketch design phase are translated into digital modelling software and developed through an iterative work flow.

This exploration considered Māori mythology and the personification of natural phenomenon as relevant to the biomes investigated. This included the story whereby Tāne (god of the forests and birds) and his siblings push Ranginui (the sky father) and Papatuanuku (the earth mother) apart to allow light into the world. It personifies the relationship between the sky, land and sea similar to that explored in the pavilion concepts.

Outcomes demonstrate a start point for design exploration. They suggest architectural potential to collectively induce human and nature connectivity, establish place attachment and prompt re-definition of self-identity in small-scale architectural interventions with attention to human and nature symbiosis. These concepts are employed to refine subsequent design direction.

CONCEPT SKETCHES. VARIOUS NATURE CONNECTIONS

HORIZON PLANE

UNCHANGED

HOVERING

PAVILION SERIES 1. CONNECTION TO SEA, LAND & SKY

P1.05

P1.06

P1.07

P1.08

PAVILION SERIES 2. CONNECTION TO SKY, FLORA, & FAUNA

P2.01

P2.02

P2.03

P2.04

P2.05

P2.06

P2.07

P2.08

PAVILION SERIES 3. CONNECTION TO SEA & MARINE LIFE

P3.05

P3.06

P3.07

P3.08

PAVILIONS SPECIFIC TO

4.2.2 ENVIRONMENTAL ISSUES

This exploration advances the previous Section 4.2.1 and aims to explore design approaches that communicate grand-scale environmental issues at an easily perceivable human scale. It engages architecture to mediate human and nature interrelationships. Essences of human and nature symbiosis, and the imbalance of such, are brought into conscious awareness and intensified using architectural design strategies.

It sets out to develop knowledge of environmental issues that human beings actively participate in, immerse participants by stimulating the senses, and provoke ethereal emotions. The experiences intend to induce human and nature connectivity and consequently prompt the participant to re-define their self-identity toward pro-environmental values.

Designs address all six approaches described in the framework. Specific strategies explored are described for each of the design outcomes below.

A range of concepts are explored through freehand sketch and created freely as a way of proposing potentially universal interventions. Conceptual sketches are then translated into digital models and evolve through a process of freehand sketch parallel to digital modelling.

Two of the four outcomes are partially artificial simulations of the direct experience with nature, while the others engage with phenomenological encounters that occur naturally in their respective environments. It is more beneficial for experiences seeking to induce human and nature connectivity to engage people with naturally occurring phenomenon as artificial simulations produce trivial experiences. The inherent value of the interrelating systems being presented can become lost due to the artificiality suggesting that it is less likely for the participant to establish meaning in that experience.

By freely approaching design, unspecified to site, allows the research to explore outcomes that could potentially be integrated into similar environments across the globe. The exploration suggests various environmental and habitat focusses that the research could test the design framework on.

Fauna accommodation - Shelf to catch sea debris when washed up - Diffused light in transition between interior

Traditional wharf structural expression - Isolated to view down to space below - Capture of light interactions -

exhibition space and exterior exposed space - Light interactions with water in raw and constructed settings

Figure 4.8 Authors Image. (2020). Seashore Pavilion [Digital Render].

SEASHORE PAVILION

UNTAMED NATURAL CONTEXT

ID.01

This concept inhabits a raw natural coastline and draws attention to interrelationships of land and sea, light and water, sea-debris, and non-human marine species. It attempts to communicate the threat of rising sea levels. It explores concepts of dynamic and diffuse light, movement, time, spatial configuration, focused intimacy of a room, mystery, rhythm, risk/peril, presence of water, multi-sensory stimuli, and connection with natural systems.

Attention drawn to rainbow phenomena - User engagement activated with urban water-scape - Constructed

human-nature interactions - Healing of damaged and lost culvert streams - Create sense of thrill and awe

Figure 4.9 Authors Image. (2020). Culvert Pavilion [Digital Render].

CULVERT PAVILION

CONTROLLED URBAN CONTEXT

ID.02

This concept exhibits a culverted stream that exists in the urban context to draw attention to draw attention to natural waterways lost beneath the city and highlight the ecological health of such natural systems. It explores concepts of movement, time, focused intimacy of a room, scale, mystery, risk/peril, presence of water, material connection to nature, multi-sensory stimuli, and connection with natural systems.

Archive of the sea organisms and artificial debris - Expose the ocean floor and other contaminants -

the marine environment concealed by reclaimed land - Immerses the participant in an uncommon environment

Figure 4.10 Authors Image. (2020). Intertidal Archive [Digital Render].

INTERTIDAL ARCHIVE

MARINE - URBAN THRESHOLD

ID.03

This concept exposes the ecological changes that occur in the marine environment as a result of artificial debris and impeding on the habitat of marine organisms. It evidences negative outcomes of the interrelationship between humans and nature. It explores concepts of dynamic and diffuse light, time, mystery, refuge, presence of water, visual and non-rhythmic stimuli, the exhibition of human-nature symbiotic phenomenon that naturally occur, and connection with natural systems.

points and then spread throughout - Static outer graveyard of the extinct - Live inner graveyard that has posts

People must first venture through non-indigenous forests unguided by paths - Native seeds are collected at entry

generating sound, the "voices" of the endangered - The journey concludes in the core designed for contemplation

Figure 4.11 Authors Image. (2020). Memorial for Species Loss [Digital Render].

MEMORIAL FOR SPECIES LOSS

FOREST - URBAN THRESHOLD

ID.04

This concept memorialises species loss in New Zealand and attempts to reduce the grand-scale issue down to a perceivable human-scale. It explores concepts of light and shadow, complexity and order, scale, rhythm, time, focused intimacy of a room, mystery, refuge, presence of water, multi-sensory stimuli, reducing the speed of experience, spatial configuration, and perspective change.

4.3 MNEMONIC DEVICES

This series of explorations sets out to test and develop processes of art as a mnemonic device while bringing the focus more specifically to bear on marine environments.

The mnemonic devices explored in this section address psychological principles by identifying events within the direct experience with nature that contribute to motivation of environmentally responsible behaviour. Experiences interpreted below, express a series of encounters in nature that influence connectivity to nature, place attachment, and re-definition of self-identity.

It uncovers impactful atmospheres, phenomenological encounters, and sequences of events that help conceptualise the personal experiences gained in the marine environment to inform the designed experiences. Each inquiry delves into multi-sensory recollection of memories in nature, which too informs the subsequent designs. Specific design concepts considered in each exploration are described below.

Prior to exploring each process, a broad list of memorable life experiences is created. Those which proved most influential on personal gratitude for nature were highlighted. Occasionally, photographs and audio-visuals that document the same or similar experiences are engaged as mnemonic devices, assisting the author to reconstruct specific memories. Once the memory is established clearly in the mind, the hand would follow and begin to visually illustrate the experience with attention to certain naturally existent qualities.

Mnemonic Exploration 1 employs watercolour painting to uncover visually observed phenomenological encounters and atmospheres previously perceived when interacting with the marine environment. It engages with illumination and colour.

MNEMONIC EXPLORATION 01. PHENOMENOLOGICAL ENCOUNTERS & ATMOSPHERES

CALM SEA-SURFACE
TO SEABED

WC.01

LOW-TIDE AT
DUSK

WC.04

STREET LIGHT
ON SHORELINE

WC.05

SURFACE
INTERFERENCE

WC.03

SUNSET, SHEPHERDS
DELIGHT

WC.02

SUN FALLS BELOW
THE HORIZON

WC.06

Figure 4.12 Authors Image. (2020). Atmospheres & Essences in Natural Marine Environment as derived from Memory (Exploration 2) [Painting Series].

MNEMONIC EXPLORATION 02. PLAYFUL CONCEPTUALISATIONS

PHOTOSYNTHESIS THEATRE

PS.01

WATER QUALITY STATION

PS.02

OXYGEN FACTORY

PS.03

INTERTIDAL REFUSE CENTRE

PS.04

SEA ORGAN

PS.05

Figure 4.14 Craig Moller. (2019). A Gourd House Town - An idea of inhabitation that strays from conventional architecture [Drawing].

AQUATIC PLAYGROUND

PS.06

Mnemonic Exploration 2 adopts the process of playful conceptual sketching to generate a range of concepts relevant to general encounters with the marine environment. Each drawing utilises the previous watercolours as a source of inspiration and background condition (Fig. 4.15). It freely explores concepts of dialogue, materiality, geometry, spatial configuration, and scale.

MNEMONIC EXPLORATION 03. STORYBOARD DRAWINGS

DIVING THE POOR KNIGHTS ISLANDS / BELOW

SB.01

Figure 4.15 Authors Image. (2020). Storyboard as derived from memory of Poor Knights Island scuba-diving experience [Pen & Pencil Drawing].

FORAGING BIG MANLY / TINDALLS REEF / ABOVE & IN-BETWEEN

SB.02

Figure 4.16 Authors Image. (2020). Storyboard as derived from memory of Big Manly /Tindalls Reef childhood foraging experience [Pen & Pencil Drawing].

***Mnemonic Exploration 3** engages drawing as a process for developing a sequence of sensory events and phenomenological encounters with nature based on different zones within the marine environment. Additional events were identified in the same experience, however, a total of five key moments (beginning, transition, middle, transition, and end) were selected for interpretation as they produce the clearest memory and provided the greatest sense of awe. The subject is positioned within these events to illustrate the experiential interrelationship between the participant (author) and nature. Concepts of materiality, scale, orientation, multi-sensory stimulus, speed reduction, movement, and dialogue are also explored here.*

MERCER BAY CAVE

CO.01

***Mnemonic Exploration 4** combines methods in Exploration 01 and Exploration 03 to merge phenomenological encounters, atmospheres, and sequence thereof into a single process that most effectively supports recollection of memory. This process more clearly represents complete spatial and sensory experiences throughout a single journey. Concepts explored in the previous Mnemonic Explorations 1 & 3 are equally explored here.*

The above explorations uncover a range of spatial qualities experienced in the natural marine environment that can be engaged in the design process to induce human and nature connectivity and establish place attachment. Each moment is considered from a multi-sensory perspective and the emotional and intellectual effects of such are noted.

Mnemonic Exploration 4 requires recollection of the peripheral atmospheric experience prior to specific material and sensory encounters. This proves counter-intuitive as the objects of attention, and interaction with such, act primary to the experience and therefore should be reconstructed before the peripheral qualities of space.

Due to the nature of this research, it seemed intuitive that the methods engaged to uncover essences, atmospheres and concepts of the marine environment used wet media as a form of interpretation. Using the element of water in the process supported memory recollection and produced outcomes in close relation to aquatic environments. Likewise, the physical action of drawing gave rise to material and sensory qualities that occurred in the experience, yet were not previously considered when drawings began.

While recalling each of the memories, various stimuli would rise to attention and allow the memory to build with increased clarity. It became apparent that challenging the mind to remember various sensory events within the same experience helped to identify what made the experience more memorable. Consequently, these sensory perceptions produced emotional responses that too influenced the establishment of the memory.

Although there is potential for the sequential findings to influence subsequent design explorations, specifically those related to the marine environment, there is a potential disconnection between the qualities described here and future sites of inquiry. Subsequent research explorations engages the same methods interpretation at sites of interest.

Exploring a sequence of events through combined watercolour and storyboard methods is effective in reconstructing the experiences gained. This provides the research with a clearer understanding for the multi-sensory events, sequence thereof, and atmospheres that made the experience memorable.

Having the artworks in Mnemonic Exploration 4 as separate events allows for rearrangement of events to create different

sequences and complete experiences. It suggests that the phenomenological encounters are the critical moments that have the greatest influence on the memory, while the specific sequence simply helps in recollection.

Each series of explorations was not developed further in consideration of other gained experiences as they serve to further develop the design process and not the content.

Overall, the process uncovers a variety of direct experiences with nature that can inform designed experiences in physical settings that induce human and nature connectivity and potentially establish place attachment. It is in the impactful experience's humans have with natural resources that influential memories are established, the perception of which later has an effect on an individual's willingness to act with environmental responsibility.

Explorations in this chapter engage with architectural concepts of transcendence, phenomenology, atmosphere, sense of place, and memory and emotion. Outcomes inform how these concepts can begin to inform the experience and architectural design as a means of developing knowledge about present natural systems, stimulating various senses to immerse users, and provoking emotional responses in a way that awakens the numinous. Findings serve to inform the existential experience of human and nature symbiosis being designed, beginning to suggest ways in which architectural experiences can potentially motivate environmentally responsible behaviour.

A variety of phenomenological encounters are identified in the above explorations, some of which evidence human and nature symbiosis. Collectively, the body of methodological exploration in this chapter suggests that impactful architectural experiences can be achieved through the intensification of direct experiences with nature that exhibit lifeworld phenomenon. The experience of such collectively develops knowledge of human interrelationships with nature, immerses participants via stimulation

of the body, and coincidentally provokes an emotional response. Directing people toward gaining holistic and existential realisations that humans are part of nature by affecting dimensions of the mind, body and spirit using architectural design has potential to motivate environmentally responsible behaviour.

Public experiential pavilions appear to be an appropriate architectural typology for this type of experience. It becomes apparent that offering these types of experience in densely populated urban centres is likely to provide for, and motivate behaviour of, a greater population. It also provides an opportunity to connect with nature in places where direct experiences with nature are limited.

City environments generally induce stress. Therefore, offering moments of refuge and tranquillity while prompting existential realisations of human and nature interconnectedness proves highly beneficial for the psychological well-being of the general public.

Using processes of art to extract natural atmospheres and essences of nature, multi-sensory interactions with phenomenological

encounters, and sequences of events is an effective method of conceptualising direct experiences with nature. This method is taken forward and engaged at sites of inquiry.

Mnemonic devices explored here emerge from concepts of memory and emotion. It actively engages with the effect of memory on behavioural intentions. Such approaches identify how the research can conceptualise direct experiences with nature, and informs which events and experiences can be facilitated in architecture to have the greatest impact on memory. Therefore, qualitative findings from mnemonic explorations suggest how a designed experience can influence self-identity and ultimately behavioural change.

The research undertaken in the initial ideation stage provides the project with a preliminary understanding of design methods, concepts for designed experiences, and design typologies that accelerate the following design research explorations. It begins to demonstrate how the design framework applied in architectural discourse, and suggests how existential experiences facilitated by architecture can potentially motivate environmentally responsible behaviour.

SUBMERSION

CHAPTER 05

5.1 Introduction to Sites

5.1.1 Site 01. Taranaki Street Wharf

5.1.2 Site 02. Clyde Quay Marina Slipway

5.1.3 Site 03. Eastern Oriental Bay Reef

5.2 Experiential Data Collection

5.2.1 Written Journal - Multi Sensory Observations

5.2.2 Photographic Analysis - Visual Observations

5.2.3 Audio/Audio Visual Recording - Auditory & Visual Observations

5.2.4 Narrative Development - Storyboard Drawings

5.2.5 Extracting Essences & Atmospheres - Watercolour Paintings

5.3 Context Mapping

5.4 Critical Reflection

SITE, CONTEXT & PLACE IMMERSION

INTRODUCTION *Chapter 05 sets out the methods undertaken to gain a multi-sensory understanding for each of the three investigation sites. It applies approaches developed from Chapter 04, but further developed with greater attention to phenomenological encounters in the marine environment at site and analyses the effect of such on four senses of human perception.*

Figure 5.1 Authors Image. (2020). Site Location Map [Digital Image].

INTRODUCTION TO SITES

5.1 Three sites located along the Wellington City waterfront are selected to further the exploration of relevant design processes and to test the application of the design framework.

The Wellington City waterfront has become the centre of focus for this research. Water alone is biologically, culturally, and spiritually significant. The waterfront serves to substantially improve the quality of life for Wellington residents.

Each site has been significantly altered from their original state prior to human occupation and thus deeply reflect the historical interrelationships between human systems and natural systems in the local context. Sites transition from the densely artificial environment of the central city (Taranaki Street Wharf) toward progressively less constructed and seemingly more natural sections of the waterfront (Clyde Quay Marina and Eastern Oriental Bay).

The research focus at each site differs. First, it begins with the underwater environment at Taranaki Street Wharf (below) and moves upward toward the inter-tidal zone (in-between) at the Clyde Quay Marina Slipway, before reaching the Eastern Oriental Bay Reef which focuses on the zone located at and above the water's surface. The intention is that experiences created at each site provide experiences that immerse people in the marine environment with the same intensity to which the sites have been artificially modified.

This 3D image locates the three sites of inquiry within Wellington City. Each is significant to the Wellington waterfront network.

5.1.1 WHARF

Situated alongside the Te-Papa Museum of New Zealand, at the outer edges of Wellington City's reclaimed land, are two distinct subtractions in the man-made landscape that attempt to invite people to the water's edge. An interesting dialogue takes place here - one which portrays a rich sense of human and nature in mediation. This area includes the Taranaki Street Wharf (1905) and forms part of the 1965-1966 land reclamation (Figure 5.4).

The waterfront is essential to the vitality of Wellington City and significantly contributes to the quality of life for people living here. While the site is frequently used by members of the public, consequences of water pollution appear to disrupt the experience of engaging with the marine environment below the wharf. Storm-water leaching chemicals into the harbour, the copious amounts of litter and artificial debris blanketing the sea floor, and the bright fragments of plastic hugging the surface do not make for a healthy nor entirely enjoyable interaction with the natural marine environment.

Due to these reasons, the site has been identified as a critical area for connecting people with the marine environment. There is an opportunity for the design to take beyond the surface of water and provide existential experiences of human and nature symbiosis without requiring participants to come into direct contact with polluted water.

Vertical wharf structures provide the inner areas of the wharf with a degree of protection from swells and wind. However, above the wharf and on the outer edge, the site is largely exposed to weather patterns.

The zone of focus at this site is the space that exists *below* the surface of water, and above the seafloor. The experience being considered at site includes the events that take place when entering and exiting the water.

Figure 5.3 Authors Image. (2020). Taranaki Street Wharf [Modified Satellite Image].

Figure 5.4 Catz Graphics. (2001). Pa Sites and the Various Reclamations Since 1857 [Digital Image].
Waterfront Leadership Group. The Wellington Waterfront Framework

Figure 5.5 Creator Unknown. (1884). Reclamation at Te Aro [Photograph - Print]
Wellington City Council Archives. 00120-1-31.

Figure 5.6 Authors Image. (2020). Taranaki Street Wharf [Photograph].

5.1.2 SLIPWAY

The slipway has historically served the human endeavour of exploration in the natural marine environment. It speaks directly of human's affinity with nature and evidence at site projects human and nature interrelationships. Both Māori and Pakeha have historically strong nautical cultures and the coastline remains an integral part of life for many New Zealanders. The boat sheds located here are critical to the sense of place and greater Wellington Culture.

With Mount Victoria and its residential housing on one side and the expanse of Wellington Harbour on the other, this location is one of the first points of compression as people journey along the waterfront between the city centre and Jerminham Point. The road-side pathway is frequent used by pedestrians, whereas the pathway bordering the waters-edge here has become a far less desirable route as a result of access risks. Consequently, this section of waterfront remains seemingly disconnected from the water's edge (other than visually) compared to its neighbouring locations.

It potentially serves as a statement of reconciliation in a site that once polluted the harbour and deteriorated the local marine ecology when boat hulls were chemically cleaned here (RPNYC Member, personal communication, July 17 2020). As a derelict

site, there is potential for the slipway to be repurposed and provide people an opportunity to gain an existential experience and connect with the marine environment. While the intended experience is unique, it is in keeping with nearby programme whereby amenities are provided for human endeavour in the marine environment.

Due to the bordering sea wall, and shelter from neighbouring buildings, the site is generally well protected from strong weather patterns. Swells tend to roll into the marina under the effect of northerly and westerly winds.

At the slipway site, the research focuses on the site conditions that exist within the intertidal zone - the *in-between* - an interchanging threshold between land and sea.

Figure 5.7 Authors Image. (2020). Clyde Quay Boat Harbour [Modified Satellite Image].

Figure 5.8 Authors Image. (2020). Slipway [Photograph]

Figure 5.9 Charles Collins. (2015). Clyde Quay Marina Slipway at the Coene's Sheds [Photograph].
Wellington City Heritage.

Figure 5.10 Authors Image. (2020). *Fragments of Human and Nature gather ashore* [Photograph]. Clyde Quay Marina Slipway.

5.1.3 REEF

Located the farthest away from the city centre, a seemingly natural reef created by Isthmus as part of the Three Beaches project demonstrates how human intervention in the landscape can benefit both humans and nature. Human and nature symbiosis is projected by this. The reef eventuated into a thriving habitat for marine organisms while securing the beaches that allow Wellingtonians to experience and enjoy Wellington Harbour.

In a way, the reef marks an end point for those who journey along the waterfront. It extends from the sea wall offering a subtle glimpse into the original and natural appearance of the shoreline condition, unlike the constructed headlands at Freyberg Beach and Oriental Bay Beach. The reef is an object of mystery that hints at its existence during low tides which proves rather enticing to the eye.

The site was selected as it is an example of change in the natural marine environment that benefits both human beings and natural organisms. There is an opportunity to engage with this existing change and enhance the experience of interrelating natural and artificial systems at this site to communicate long term ecological benefits of positive human induced changes.

Water movement and patterns that form across the surface of water transform as they interact with the reef and adjoined coastline.

The site is subject to strong forces of prevailing wind from the north and exposed to strong weather. This results in an environment which personifies the ocean as either calm and forgiving, or fierce and destructive.

At this site, the research investigates the zone that exists at and *above* the surface of water.

Figure 5.11 Authors Image. (2020). Reef at Eastern End of Oriental Bay [Modified Satellite Image].

Figure 5.12 Isthmus. (2004). Three Beaches Project - Oriental Bay [Digitised Drawing].

Figure 5.13 Creator Unknown. (ca 1900). Cyclists following a motor vehicle along Oriental Parade [Film Negative]
National Library of New Zealand. 1/2-011197-F.

Figure 5.14 Authors Image. (2020). Eastern Reef - Oriental Bay [Photograph]

TIDE PARAMETERS

SLR. *Sea level rise*

(NIWA, 2017)

HAT. *Highest astronomical tide*

MHWS. *Mean high water springs*

MHWN. *Mean high water neaps*

MSL. *Mean sea level*

MLWN. *Mean low water neaps*

MLWS. *Mean low water springs*

LAT. *Lowest astronomical tide*

CD. *Chart datum*

(LINZ, 2020b)

SLR. *Sea level rise*

(LINZ, 2020a)

*At each site, a constant negotiation takes place
between the artifice, the land and the ocean.
Both the terrestrial and marine realms are lent a
temporary extension of their habitats, creating a
unique threshold environment.*

5.2.1 WRITTEN JOURNAL MULTI-SENSORY OBSERVATIONS

The written journal engages writing as a method of inquiry into the multi-sensory experience at each of the three sites as a means of identifying phenomenological encounters of human and nature symbiosis.

This process of site analysis requires attention to the present environment through channels of the mind, body and spirit. Collectively, it has an influence on the perceived connectivity to nature and place attachment at site.

It contributes to each of the three design objectives by developing an understanding of atmospheres, induced emotions, and transcendental qualities present at site. The research addresses multi-sensory stimulus, connection with nature, dialogue, and materiality.

A template document is prepared prior to visiting sites which divides auditory, tactile, visual, and olfactory observations. Within each of these sensory sections, observations fall under one of three category's - either naturally occurring, artificially created, or as a result of interaction between an artificial and natural system. The document concludes with a reflection of site functions, systems, strength of sensory perception, and perceived emotional affect. In addition to making observations using each sense together, attempts are made to observe site

with senses in isolation by closing the eyes, using earplugs, and using finger and thumb to block the nose. This helps to heighten the sense of focus. Observations are made from several locations around the site to consider whether different locations and approaches produce different perceptions.

A foundation of understanding for the direct experience with nature at site is established here. Through an evaluation of the senses, the inquiry identifies the certain stimuli that most effectively raise attention to the encounter. Findings later inform the objects of attention in the designed experience while providing consideration for secondary peripheral stimuli. Upon reflection and digitisation of the written journal, the research categorised findings into observations of water, water under motion, wind, light, colour, erosion, flora, fauna, material, climate, and machinery.

The immersive approach to site analysis provided a more intense engagement between the designer and place that prompts design concepts. The research uncovers phenomenological encounters of human-nature symbiosis and nature itself that have an influence on existential experiences.

5.2.2 PHOTOGRAPHIC ANALYSIS VISUAL OBSERVATIONS

The art of photography is utilised here to identify essences of symbiotic relationships and natural qualities that exist at site. It broadly addresses the visual sensory experience at site and connection to nature, building upon the prior written journal.

Photographs depict the environment while illustrating the dialogue between humans and nature. It informs the design of materiality, colour, illumination, and atmosphere.

Similar to the written journal, places of interest are approached from different directions and observed from different locations. Moments of pause, that invite an embodied perception of place, are practiced prior to capturing images. This is used to limit distraction from the complete experience at site caused by the use of the camera.

Sites are revisited under different climactic and atmospheric conditions to identify new design opportunities and re-evaluate preconceived ideas of site.

Images are later curated into respective files depending on date and location to establish a visual library that later serves the design process as a mnemonic device.

The collection of photographs serves as mnemonic devices that support design

contextualisation and conceptualisation. A broad variety of key human and nature symbiotic interrelationships are observed through visual stimulus, further suggesting that the primary attraction to such phenomenological encounters is visual. Allowing time to explore the context of site through a camera lens presents the research with new ideas.

The research advances understanding for phenomenological encounters of human-nature symbiosis and relevant atmospheres that occur at each site of inquiry. It also contributes to site specific material understandings that allow for design conceptualisation.

AUDIO / AUDIO VISUAL

5.2.3 RECORDINGS AUDIO & VISUAL OBSERVATIONS

This method of inquiry unfolds similar to the abovementioned photographic analysis, except it employs audio and audio-visual recording as a mnemonic device.

It serves to inform the design of atmosphere and sense of place; and contributes to the understanding of phenomenological encounters of human and nature symbiosis.

Recordings are gathered at site using a phone or camera and are collated into their respective documents depending on date and location. They serve to contextualise and conceptualise design primarily through auditory stimuli. The research furthers understandings of the auditory stimulus that raises attention to essences of nature and human and nature symbiosis that occur at site.

Utilisation of tools such as the camera or audio recording devices gives focus to specific senses and thus serves to strengthen understanding for the singular sensory experience of site. Having a library of photographs, videos and recordings proves beneficial for the re-immersion into site when designing away from site. It serves more to re-establish prior sensory perceptions than induce new ones.

Figure 5.16 Authors Image. (2020). Vertical Traces of Time [Photograph]. Taranaki Street Wharf.

SITE 01 / WHARF. MULTI-SENSORY OBSERVATION SUMMARY

This multi-sensory summary of phenomenological encounters at site focuses its attention on the experience of going down below the surface of water (immersion). It identifies objects of attention that have potential to give rise to existential realisations of human and nature symbiosis.

*changing surface conditions
and water clarity*

*water pushing and
pulling stones*

wind carrying water spray

*rhythm of waves
colliding with shoreline*

*marine organisms
inhabiting surfaces*

marine avian species

*shifts in light and colour
as light interacts with water*

weathering & erosion

wave interaction patterns

*wind interacting with
body & surfaces*

*differentiating layers
of sediment*

*light & heat reflecting
off of water surface*

TACTILE

VISUAL

AUDITORY

OLFACTORY

SITE 02 / SLIPWAY. MULTI-SENSORY OBSERVATION SUMMARY

This multi-sensory summary of phenomenological encounters at site focuses its attention on the experience of being in the intertidal zone (submersion). It identifies objects of attention that have potential to give rise to existential realisations of human and nature symbiosis.

marine avian species

*waves interacting with
built surfaces and body*

*wind interacting with
built surfaces and body*

*light & heat reflecting
off of surfaces*

*organic & artificial
debris washed ashore*

weathering & erosion

corrosion

*marine organisms
inhabiting built surfaces*

marine aquatic species

observing people swimming

*surface water run-off &
storm drain outlets*

TACTILE

VISUAL

AUDITORY

OLFACTORY

SITE 03 / REEF. MULTI-SENSORY OBSERVATION SUMMARY

This multi-sensory summary of phenomenological encounters at site focuses its attention on the experience of above the surface of water. It identifies objects of attention that have potential to give rise to existential realisations of human and nature symbiosis.

*changing surface conditions
and water clarity*

*water pushing and
pulling stones*

wind carrying water spray

*rhythm of waves
colliding with shoreline*

*marine organisms
inhabiting surfaces*

marine avian species

*shifts in light and colour
as light interacts with water*

weathering & erosion

wave interaction patterns

*wind interacting with
body & surfaces*

*differentiating layers
of sediment*

*light & heat reflecting
off of water surface*

TACTILE

VISUAL

AUDITORY

OLFACTORY

Figure 5.20 Authors Image. (2020). Outer Sea Wall [Photograph]. Clyde Quay Marina.

Figure 5.21 Authors Image. (2020). A Mosaic of Surface Debris & Litter [Photograph]. Clyde Quay Marina.

5.2.4 EXPERIENCE DEVELOPMENT STORYBOARD DRAWINGS

Here, the research employs the same method as the previous exploration which uses storyboard drawing (Mnemonic Exploration 3, Section 4.3) and engages with observations gained at site (Sections 5.2.1-5.2.3) as mnemonic devices.

It is used to interpret the direct experience with nature gained at each of the three sites of inquiry and uncover key events, and sequence thereof, that collectively affect systems of knowledge, physical and sensory systems, and systems of value. Each focuses on specific zones within the marine environment.

The drawings closely examine memorable encounters experienced at site that give rise to objects of attention, materiality, scale, orientation, multi-sensory stimulus, speed reduction, movement, and dialogue to be developed through design. Ultimately, the drawings suggest a range of events that potentially prompt the re-definition of self-identity through direct experience with nature.

Due to health and safety procedures, research into the Taranaki Street Wharf was disallowed. The gap in knowledge is informed by the recollection of past personal experiences in similar marine environments are supported by site specific photographs and audio-visual content retrieved online (Pete Diver, 2016, 2017; Wellington City Council, 2014).

Each drawing exploration offers insight into the various sensory events that can be intensified at site, and suggests how they may sequentially unfold.

The outcomes proved critical to the conceptualisation of designed experiences with relevance to biophilia, sense of place, and phenomenology.

As the experience of place is determined by the individual, the essences of human and nature symbiosis are not necessarily experienced in the ways described here in the observations and interpretations of site. It is a subjective and qualitative method of research. However, the outcomes serve as important sources of inspiration that inform the events, atmospheres, objects of attention, and sequence of experience developed in the following designs.

EXTRACTING ESSENCES

5.2.5 & ATMOSPHERES WATERCOLOUR PAINTINGS

This exploration uses watercolour painting as mnemonic to extract essences and atmospheres from the events that took place during each of the three site experiences. The watercolours build upon the storyboards in Section 5.2.4 to identify atmospheric qualities to later inform design.

Concepts of transcendence, atmosphere, phenomenology, memory and emotion and sense of place are considered in this exploration. It informs phenomenon that designs exhibit and conceptualises the design of atmosphere, illumination and colour.

The artworks uncover atmospheric qualities that develop the emotive qualities of natural settings and the phenomenological encounters of human-nature symbiosis.

The atmospheric qualities identified inform subsequent design explorations that focus on developing the spiritual dimension of the experience.

There are clear overlaps between the three experiences illustrated in the story-board and watercolour explorations. Differences suggest potential for site-specific designs and experiences, while similarities suggest potential for the research to explore design applications across each of the three sites.

*Figure 5.22 Authors Image. (2020). Waves Taking a Step [Photograph].
Eastern Oriental Bay Reef.*

"DIVING" TARANAKI STREET WHARF

Figure 5.23 Authors Image. (2020). Immersive experience at Site 01 - Taranaki Street Wharf [Pen & Pencil Drawing].

SB.03

BELOW HULL & POSTS

WC.09

MARINE ORGANISMS INHABITING POSTS

WC.10

MARINE ORGANISMS AMONG LITTER

WC.11

LIGHT SHAFT THROUGH APERTURE ABOVE

WC.12

GLIMPSE OF LIGHT UNDERWATER

WC.13

CO.02

CO.03

CO.04

CO.05

CO.06

EXPLORING THE SLIP-WAY AT CLYDE QUAY MARINA

Figure 5.25 Authors Image. (2020). Immersive experience at Site 02 - Clyde Quay Marina Slipway [Pen & Pencil Drawing].

SB.04

ORGANIC & ARTIFICIAL DEBRIS

WC.14

LIGHT CATCHES WATER

WC.15

LAPPING WAVES & GLIMMERS OF LIGHT

WC.16

ORGANISMS & LITTER HUG THE EDGE

WC.17

WATER & LIGHT INTERACT WITH HULL

WC.18

CO.07

CO.08

CO.09

CO.10

CO.11

FORAGING EASTERN REEF AT ORIENTAL BAY

Figure 5.27 Authors Image. (2020). Immersive experience at Site 03 - Eastern Oriental Bay Reef [Pen & Pencil Drawing].

SB.05

WAVES BATTER THE SEA WALL

WC.19

WHITE-WASH EMBRACES SHORELINE

WC.20

RISE & FALL OF WATER WITH LIGHT

WC.21

WATER EBBS & FLOWS ALONG TIDE-LINE

WC.22

POOLS PROVIDING SANCTUARY

WC.23

CO.12

CO.13

CO.14

CO.15

CO.16

5.3 CONTEXT MAPS

The nearby attraction map locates areas that either integrate elements of bio-inspired design, create a connection between people and nature, or environmental-based groups. Relationships between research sites, nearby nature-based activities, and the greater Wellington City context are identified here. It informs what new form of experience would be most beneficial for the public, and how designs would function as new additions to the existing waterfront environment.

The site axis and visual exposure map identifies general axis of alignment as determined by site, illustrating the relationship between the built environment on land and the natural marine environment that borders it. Observations both outward from the sites and onward from nearby advantage points are considered. It serves to generate an understanding for the visual exposure of the three proposed interventions, while concurrently identifying possible view shafts to utilise in the designed experience.

The explorations and analyses undertaken in this chapter provide the research with understandings of the spatial qualities and phenomenological encounters of human and nature symbiosis within each zone of focus at the three sites. Furthermore, it identifies design opportunities for creating emotive atmospheres, creating a sense of place, transcending lifeworld phenomenon, experientially affecting memory, and addressing biophilic strategies.

Multi-sensory observations and interpretations of site that result from immersing oneself in the present environment, is a critical method in creating architectural experiences that serve to induce human and nature connectivity, establish place attachment, and prompt re-definition of self-identity toward pro-environmental values. To create impactful existential experiences that serve to develop understanding for the interrelationship between humans and nature, designers must first establish a personal connection with place and nature at sites of inquiry.

Immersive methods engaged in this series of site analysis served to establish a connection between the designer and

natural context at each of the three sites. It uncovers a wide variety of atmospheres and phenomenological encounters, and identified the affect they have on each of the senses (visual, auditory, tactile and olfactory) and thus established the strongest memory. The collection of explorations provides an understanding for the phenomenological encounters of human and nature symbiosis capable of being transcended by architectural devices. Doing so, shifts perceptions of the lifeworld occurrences and serves to induce existential realisations. It consequently makes people more consciously aware of the real-world impacts of human behaviour in the present natural environment when negative interrelationships are brought into reflective awareness.

Findings in this chapter provide the subsequent design explorations with a wide variety of place specific attributes that inform the creation of experiences which serve to induce human and nature connectivity to the marine environment, establish place attachment at sites of inquiry, and subsequently prompt the re-definition of self-identity. The greater purpose of providing such experiences at site is to motivate environmentally responsible behaviour.

The site observations (Section 5.2.1-5.2.3) provides this research with a variety of phenomenological encounters that contribute to creating existential realisations of human and nature symbiosis. However, those that are potentially clearest in communicating

the symbiotic interrelationship through experience and have the greatest impact on the senses are encounters such as: marine organisms inhabiting built structures, the interactions between light and water, wave patterns and the collision of waves against surfaces, the movement of objects in water, organic and artificial debris entangled together, weathered materials (erosion and corrosion), and the observation of others interacting with the marine environment and its systems. While several of these concepts alone are not convincing, expressing these phenomena to form part of the same experience can potentially contribute to communicating human and nature symbiosis.

There are weaknesses in the watercolour method. While it identifies essences and atmospheres experienced at the sites of inquiry, it would have been beneficial for the research to explore the architectural creation or facilitation of these atmospheres in further detail. It is beneficial to developing a sense of the site and environment being designed for, however, the same conclusions can be drawn from the site observations.

Qualitative research at the Taranaki Street Wharf (Site 01) and Clyde Quay marina Slipway (Site 02) would have benefitted from either scuba-diving or free-diving expeditions to develop a deeper experiential understanding for the phenomenological encounters and atmospheres present at site. While the site inquiries developed without this body of knowledge, it would have

provided rigor to the method and potentially uncovered new design concepts.

Likewise, the same method of immersion at site would have further informed understanding of the symbiotic interrelationships between humans and nature that exist in the zones of focus. This would allow the designer to come into closer contact with these encounters to gain an in-depth understanding for the multi-sensory experience of such phenomenon – particularly the tactile and auditory senses of perception which are either not accessible nor accurately depicted by digital media.

Relying on past experiences in similar environments helps to conceptualise this missing area of knowledge, however, it is difficult to assert whether such translations of experience are appropriate to the context of site.

Overall, the research on site and context provides the design research with a broad understanding of multi-sensory phenomenological encounters of human and nature symbiosis, naturally occurring atmospheres, and contextual relationships that grounds the subsequent design research to site and the natural marine environment.

It gives direction to the designed experiences by providing the research with a variety of concepts that inform the impactful existential experiences facilitated by architecture that potentially motivate environmentally responsible behaviour.

CHAPTER 06

- 6.1** Biomorphic Design
- 6.2** Context Inspired Form Exploration
- 6.3** Context Informed Material Composition
- 6.4** Critical Reflection

FORM & SPACE GENERATION

INTRODUCTION *Chapter 06 emerges from contextual observations in Chapter 05. It explores analogue and digital methods of design to generate qualities of form and space that provide inspiration for the following design explorations and experiences within.*

*Figure 6.1 Authors Image. (2020). Debris Marking High-Tide [Photograph].
Oriental Bay.*

6.1 BIOMORPHIC DESIGN

This exploration addresses one of the natural analogues described in the “14 Patterns of Biophilic Design” that asserts humans have a visual preference for organic and biomorphic forms and patterns that ultimately has a positive influence on the human psyche (Browning et al., 2014). Through design, it explores the organic artefacts (washed up Ponga debris) as inspiration for creating a functioning architectural element. Through biomorphic design, it explores the potential for biological constructs to inform human-scale architecture using complexity and order and material connection with nature.

Photographic documentation, reinterpretation through drawing and iterative digital modelling are engaged in this process to arrive at a final conceptual design element. Various sound sculptures were studied to inform this exploration (Alistair McNicol, 2011; Jonathan Brind, 2009).

Conveying nature in this way through form and material has an effect on participants perception of both the experience and the original source of inspiration. The outcome suggests potential for biomorphic design to inform elements of architecture that provide for or passively enhance the sensory experience of natural phenomenon. It considers the sensory auditory experience as wind interacts with the panels and structure,

and likewise the tactile experience, as participants are tempted into using it as an instrument.

It was through the process of drawing that the exploration began to inform structural implications and conceptualise sensory design application.

The outcome was successful in exploring biomorphic design, however, it is disassociated from the sites of inquiry. Despite evolving from organic debris washed ashore, the outcome does not support the sense of place at either of the three sites. Future biomorphic design considerations, such as the representation of the oyster and mother pearl in the developed design, attempt to ground this method of design more appropriately within site and context.

Many biological creations offer invaluable insight into design. However, it was observed that while biomorphic design can generate a certain form of appreciation for nature, it could potentially distract from generating an awareness for human and nature symbiosis and place. Therefore, biomorphic design should be used strategically and in subtle harmony with the physical setting.

Figure 6.3 Authors Image. (2020). Ponga as Architecture [Drawing].

IT.01

IT.02

IT.03

6.2 CONTEXT INSPIRED FORM EXPLORATION

The exploration uses the physical manipulation of card to generate a variety of spatial configurations by experimenting with concepts of prospect, refuge, mystery, and risk or peril as described in the “14 Patterns of Biophilic Design” (Browning et al., 2014).

It does not serve the psychological component of the research, it simply begins to give a formal situation to the educational, immersive, and spiritual experiences being created.

Each model begins with a concept of the environment observed at site, such as the hull of a boat or the form of a fish as it turns, which is then translated into a physical model. The process begins with a rectangular piece of card made with roughly the same dimensions. It is then manipulated using hands and a craft knife engaging with processes of subtraction, folding, dissecting, and connecting to create various forms and spaces. Abovementioned spatial concepts are explored, which through the process of physical making morph into unexpected outcomes. Desirable physical models tend to influence those that follow.

The fluid form of Richard Serra’s sculptures inspired model expressions and approaches undertaken in this exploration.

Naturally, the models began to represent organic and nautical forms found in the context of site closely related with the marine environment. During the modelling process, conceptualisations for exhibiting natural phenomenon and providing direct experiences with nature through form and space would occur.

Physical model explorations were an essential stepping stone toward creating forms and spatial configurations. The outcomes serve to inform subsequent digital models which begin to inhabit sites and develop experiences in parallel.

In the process of translating physical models into digital software, the designs begin to take scale and integrate with the site context as modelled in the 3D digital site models. Certain limitations in physical modelling, such as clean curvature and readily adjustable scaling, were removed by digital modelling software, while certain processes of physical modelling helped to inform approaches to creating digital models. More successful outcomes were achieved as a result of this.

CM.18

CM.19

CM.20

CM.21

CM.22

CM.23

CM.24

CM.07

CM.14

CM.05

CM.09

CM.21

CM.17

*Figure 6.11 Authors Image. (2020). Caustics of Light on Algae
[Photograph]. Clyde Quay Marina Slipway.*

6.3 CONTEXT INFORMED MATERIAL COMPOSITIONS

Overall this exploration addresses the built-material approach to stimulating the body and provoking emotion. The exploration serves to uncover materials qualities that contribute to the tactile experience within the context of site. It addresses the depiction of setting & environment, materiality, formal theme, colour, place identification, presence of water, connection with natural systems, material connection with nature, and the dialogue between architecture and nature.

The process follows analysis of site and context and utilises previously captured photographs. It employs digital media tools to generate a series of material collages that identify relationships between architectural materials and naturally existent material. Compositions consider the effects of change induced by natural systems over time. It is important that compositions attempt to remain true to the experience of site.

The visual material library developed here has an important influence on the material considerations in the following design explorations. It helped to uncover desirable material relationships.

Exploring material relationships through digital collage is an effective method of translating the multi-sensory experiences of site into potential forms of architecture.

Ultimately, the research serves to conceptualise the sense of place, atmosphere, and multi-sensory experience. In the process, it uncovers relationships between phenomenological encounters and either contrasting or harmonising materials. The surrounding natural context and systems that interact with these materials is important to consider. It can serve to enhance the understanding of interrelationships between humans and nature through material evidence.

A limitation of this method is the lack of physical interaction with the materials illustrated. Ideally, the designer would be able to interact and experience the materials physically by touch. Likewise, it would be beneficial for material relationships to be observed over a duration of time in context.

Next steps for the research are to translate the 2D material compositions into three-dimensional physical space.

Irregularity
non-uniformity?

MC.03

Dark stated metal/slate.
Drawing attention to lighting
Dark stone
bedrock to
granite/iceberg
beyond depth
not sea bed.

MC.04

Excavated/Imputed
stone -> Eucass.

MC.07

MC.08

The abovementioned explorations provide the research with a variety of formal and material concepts that are used to inform the following concept design interventions.

Biomorphic design proved an effective approach; however, it is necessary for designs to ground symbolic representations of nature to the place being occupied. This is ensured in subsequent design explorations.

The physical models provide the design research with contextually inspired forms that create the spaces in which the direct experiences with phenomenological encounters of human and nature symbiosis can occur. It was observed that formal outcomes are most successful when they draw inspiration from contextual elements relevant to the sites of inquiry. Subtle representations of the context serve to create a sense of place and thus supports place attachment.

Although it is not possible to design an embodied experience solely through this process of physical modelling, or vice versa solely through the methods of art described previously, the two explorations function together with one informing the other.

It is not clearly illustrated in the model outcomes; however, the conceptualisation of experiences begins to evolve into physical architectural space through the process of physical making.

Material compositions help uncover material qualities suggestive of atmospheres. Through the effect materials have on the senses, the exploration informs how phenomenological encounters at site can be better communicated in physical settings to induce existential experiences. For an experience to be impactful, it is imperative that it enhances the sensory experience by creating an intense physical setting. In doing so, it is also critical that designs create material connections with place and nature to generate a profound sense of place. As the research focuses on the marine environment, the element of water becomes an integral part of the experience by supporting positive emotion and memory establishment, and improving the psychological well-being of participants (Browning et al., 2014).

Research findings uncovered in these explorations begin to bridge the gap between the direct experiences with nature informed

by observations and interpretations of site, into architectural designs. While outcomes do not illustrate the experience or events necessary for motivating environmentally responsible behaviour, they provide a foundation of formal and spatial design knowledge that gives physical structure to the complete educational, immersive and spiritual experiences being developed in subsequent design explorations.

Methods engaged in this chapter are an important stepping stone toward designing concept interventions. Without these form and space explorations, it becomes difficult to visualise and understand how the existential experiences being conceptualised can play out in physical architectural space. The subsequent design explorations build upon findings in this chapter and work closer toward producing a speculative example of architecture that engages with the design framework in an attempt to facilitate existential experiences that have potential to motivate environmentally responsible behaviour.

CHAPTER 07

7.1 Sketch & Model

7.2 Concept Development

7.2.1 Wharf

7.2.2 Slipway

7.2.3 Reef

7.3 Critical Reflection

INHABITING SITE

INTRODUCTION *Chapter 07 advances Chapters 05 and 06, bringing findings together to produce speculative design outcomes that illustrate potential approaches for architecture to motivate environmental responsibility. It critically reflects on the designed experiences and how well they respond to the Research Aim, Research Objective 2 and Design Research Objectives.*

*Figure 7.1 Authors Image. (2020). Enter the Void [Photograph].
Taranaki Street Wharf.*

7.1 SKETCH & MODEL

The concept design process engages intermittent freehand sketch parallel to digital modelling as a means of exploring, testing, resolving, and developing design concepts.

Some concept drawings emerge from a similar approach to that described in the playful sketch exploration which abstract the sensory experiences of phenomenological encounters with nature at site. Digital models evolve from previous physical models, spatial arrangements, and concept drawings.

2D spatial configuration sketches explore potential approaches to site occupation and opportunities for inviting direct experiences with nature in the context of site. Drawings identify appropriate journey routes and locations for phenomenological encounters of human and nature symbiosis to occur. It broadly explores concepts of prospect, refuge, mystery and risk/peril while situating designs within the context of site. Overall journeys are explored with the intention of reducing the speed of experience.

Designs focus on engaging participants with the natural phenomenon that exist at site to provide direct, and impactful, experience with nature. Objects of attention and peripheral experiences considered in the process evolve from prior multi-sensory observations and interpretations of site.

Conceptual drawings emerge from prior established experiential understandings of site and the previous spatial arrangement explorations. Sketches are occasionally drawn as overlays on top of photographs of site to prompt memory of the experiences gained at each site or on top of digital model images to fill in the missing information unachievable in the digital modelling software.

Informed by previously explored spatial configurations, the digital modelling process starts by identifying desirable entry points and destinations for encounters with, and contemplation of, human and nature symbiosis. This takes place within a 3D digital model of site to establish concepts within context. The events and journeys arise through an iterative workflow. Each design focuses on one key event as the primary experience, while additional supporting encounters occur as fragments that contribute to the overall experience.

Figure 7.2 Authors Image. (2020). 2D Spatial Configurations for Site 01 - Wharf [Drawing Series].

2D spatial configurations are drawn over satellite images of each site. Each exploration develops through an iterative work-flow, presenting new ideas and merging with those previous. The spatial arrangements occasionally take inspiration from the ways in which marine organisms and natural systems interact with structures. Volumetric modelling in Rhino is used to translate these 2D sketches to scale 3D space within the digital site models and developed iteratively.

Forms and spaces generated in the physical modelling exploration are used to inform those created in the digital models and are translated into appropriate scales.

Figure 7.4 Authors Image. (2020). 3D Spatial Configurations - Series: Inspired by rituals engaging water [Rendered Digital Models].

Figure 7.5 Authors Image. (2020). 2D Spatial Configurations for Site 03 - Reef Series 1 [Drawing Series].

Figure 7.6 Authors Image. (2020). 2D Spatial Configurations for Site 03
- Reef Series 2 [Drawing Series].

The collection of work identifies potential approaches to site occupation. Practical site limitations and constraints are identified in the process. It serves to locate desirable spaces, accessways, and landscape gestures that help to create a sense of place and inform the sequence of events in which the experience unfolds.

Concept sketches identify potential opportunities for the primary experience at site and supporting multi-sensory stimulations to be facilitated within the intervention. Each explores ideas of raising attention to human and nature symbiosis that exist in the three zones of focus. Concepts considered here include rise and fall of the tide, water under motion, erosion, corrosion, marine organisms inhabiting surfaces, buoyancy, litter debris, and interaction between soft water and hard surfaces.

Design concepts and digital model outcomes for each of the three sites of inquiry are illustrated and described in the following sections.

Abstract conceptual sketching is not always an effective design method, however, in some circumstances they do give rise to concepts of experience and elements of the drawing inform desirable design outcomes. Each concept serves to conceptualise digital models. Using freehand sketch intermittently throughout the modelling process allows for designs to evolve much quicker than digital modelling alone.

Each spatial configuration exploration situates the design within the context of site and identifies the ways in which the participants will be introduced to the phenomenological encounters of human and nature symbiosis that occur there. Consequently, the explorations give rise to the journeys between spaces and events, beginning to consider how they contribute to the overall experience. In each of the existential experiences being created, the journey is as important as the destination.

Figure 7.7 Authors Image. (2020). Focal points of Phenomenological Encounters at Site 03 - Reef [Digital Image].

7.2.1 WHARF

The Taranaki Wharf structure dominates the water's edge, concealing the marine ecology beneath from the public, who are less aware of the interrelating natural and artificial systems that exist there. The intervention removes people from the largely artificial environment above the wharf, and entices them down into the depths of Wellington Harbour below. It focuses on creating an experience that provides participants with an opportunity to gain new perspectives on human and nature symbiosis that exists *below* the surface of water.

Emerging from observations and interpretations of site, and the previous formal and spatial explorations, the concept develops into a highly speculative intervention. It specifically attempts to highlight the expanse of litter that blankets the sea-floor, deteriorating water quality, marine organism occupation of artificial structures, and the importance of natural light for marine life in underwater ecologies.

An important consideration for the design was its impact on the above landscape. The design avoids disrupting common pedestrian routes, making subtle gestures to invite people down below and hinting at an experience beyond the water surface.

The design makes a grand attempt to reduce the speed of experience, with a consideration of inclusive accessibility. Extensive passages emphasise the experience of traveling down toward the sea floor while intertwining themselves within the existing wharf structures.

Formal considerations are made to reduce risk of water infiltration and dissipate forces of hydrostatic pressure and wave motion. Inspiration is taken from marine and naval architecture.

Overall the architecture provides an experience which is educational, immersive, and spiritual. It attempts to do so by raising attention to both positive and negative phenomenological encounters of interrelating artificial and natural systems within an intensified physical setting. In the process there is potential for the experience to induce a connectivity between the participant and present underwater environment, establish a place attachment with the Wellington Harbour, and consequently it offers participants an opportunity to redefine their self-identity potentially toward pro-environmental values. Ultimately, the experience serves to bring about existential realisations by experientially affecting the mind, body, and spirit which in turn has potential to motivate environmentally responsible behaviour.

7.2.2 SLIPWAY

Nestled within a sheltered marine between the existing Coene's sheds, the Slipway concept invites pedestrians from the upper pathway down toward the water's edge. Again, the intervention transports people from the largely artificial environment above and immerses them into the marine environment. The design focuses on creating an experience which offers participants an opportunity to gain new perspectives on human and nature symbiosis as it exists in the intertidal zone (*the in-between*).

The design form evolves from the physical model exploration (CM.22), observations and interpretations gained from the site experience, concepts sketches, and previous spatial configurations. Here, the experience raises attention to the symbiotic evidence of artificial and organic debris that is frequent washed ashore. It includes consideration of ecological marine growth and inhabitation of structures, corrosion, wave propagation and motion interacting with built structures, and the interactions between light and water.

Unlike the other concepts explored, this design symbolically represents the original functions of the slipway in order to evoke a sense of place and acknowledge the events that historically took place here.

Compared to the previous concept design, this intervention is more practical and addresses the design intent more appropriately.

It became imperative that the neighbouring Coene's sheds remain in place and unchanged due to their historical significance. However, it was decided that the design would be developed outside of the heritage and waterfront framework limitations.

The design attempts to signal people toward the water, enticing people into the intertidal zone. Opportunities are created to experience the intertidal zone from a space of safety, sheltered by the canopy walls and curved hull-like shape. When below, in the contemplation space, the roles are reversed and the participants become immersed below the water as if they too were an organism existing in the intertidal zone.

As participants travel from the outer "secular" environment into the contemplation space, the scale and geometry provoke sensations of feeling big to progressively feeling smaller and more diminished as participants are immersed deeper into the marine environment. This serves to reflect the ways in which humanity is perceptually larger than marine organisms and suggests a similar effect to that of human systems impeding on the natural marine habitats.

Figure 7.9 Authors Image. (2020). Site 02 Slipway Concept Sketches [Digitised Drawings].

Overall the design aspires to prompt participants to contemplate the role human beings play as essential participants within the greater biological ecosystem. Attention is raised to phenomenological encounters of human and nature symbiosis in intense architectural settings for the purpose of making people more consciously aware of the impact human behaviour has on the natural environment; stimulating the body to produce memorable direct experiences with nature; and provide an opportunity for participants to connect with the present natural environment on a spiritual level.

Consequently, the experience has potential to motivate environmentally responsible behaviour through the ways in which it gives rise to existential realisations about the symbiotic interrelationships between human beings and the natural marine environment.

Figure 7.11 Authors Image. (2020). Digital Model translation from Physical Model for Slipway Concept Design[Digital Image].

7.2.3 REEF

Situated above the reef, as if it were sheltering a section of the natural ecology here from the environmental changes induced by humanity, the intervention provides a moment of sanctuary in the Wellington Harbour. Similar to the previous designs, it allows participants to exit the highly artificial environment and gain a direct experience with nature. It focuses on drawing attention to the symbiotic interrelationships between humans and nature that exist at and *above* the surface of water.

It specifically attempts to highlight the marine ecology that has come to exist here, while also communicating the effects of wave propagation, erosion, and sea-level rise by designing to accommodate for and exhibit these interactions.

Designed outcomes emerge from observations and interpretations at site, explorations of form and space, concept sketches, and spatial configurations.

Due to the design location, ease of access is important. Two access options are provided to allow participants to more naturally travel into and out of the primary experience.

Figure 7.12 Authors Image. (2021). Site 03 Reef Concept Design Render [Digital Image].

light shaft

salvage of metal etc.
increasing total heights/sec.

fibres & balls
w. total level.

→ Pick up door to
reduce tight leaks.
dishes
cone.

→ tunnel
make tunnel overlap
→ cascade into core.

needs to be accessible at
various stages

Issue only accessible at
certain stages... continuity.

organisms to habitat
small surfaces.

minimal only/cut
Plan ponds to add
natural water effect.

Platform has
rotary structures

→ light lost in
this direction

doors from top.

→ stairs up along side
of the habitat.
→ Accessibility raised... 2.

Figure 7.13 Authors Image. (2021). Site 03 Reef Concept Sketches [Digitised Drawings].

The design orientates itself perpendicular to the prevailing wind to invite swells through the western gap and capture the impact of waves across outer surfaces. A moment of risk and prospect is provided at the outer extents where participants are able to view outward across the harbour as waves pass into the gap beneath them and collide with the surrounding structures.

The outer facades not only serve as shelter for the interior, they provide for the marine ecology similar to that of shipwrecks.

Central to the experience is a secure space of contemplation, which is designed with attention to the auditory experience of water interacting with the surrounding structure. A single shaft of light penetrates into this space. The experience to reach it, is informed by the tactile experience of a sea cave whereby participants are forced to navigate the confines of a long hallway with a moment of darkness before reaching the contemplation space.

The intervention provides participants with an opportunity to gain an understanding for human and nature symbiosis from the broader perspective of creating marine ecologies using artificial means. Experientially, it serves to affect the mind, body, and spirit through design approaches of transcendence, atmosphere, phenomenology, biophilia, sense of place, and memory and emotion. The intended outcome is for the phenomenological encounters with nature to give rise to existential realisations and thus provoke a sense of gratitude for nature. As a result, it has potential to motivate environmentally responsible behaviour.

This chapter sets out the attempt to create concepts of existential experiences of human and nature symbiosis at three sites situated on the Wellington waterfront. While some prove more successful than others, the concept designs test the design framework and demonstrate different approaches to creating this type of architectural experience. In creating these public interventions, the design-led research informs the appropriate design processes to be engaged.

Outcomes consider how to develop knowledge, stimulate the senses, and provoke emotion through the direct experience with nature to provide impactful learning experiences that effectively engage participants with nature and place. Each designed experience employs a combination of strategies proposed in architectural theory of transcendence, phenomenology, atmosphere, memory & emotion, sense of place and biophilia as a means of positively influencing the human psyche. Psychologically, experiences have potential to influence participants to strongly identify themselves as part of the greater biological ecosystem and establish an attachment to the natural marine environment and/or Wellington Harbour.

The design methodology proves successful in creating impactful experiences that raise attention to phenomenological encounters that exist in the marine environment and therefore generate a profound sense of being in the world. This is primarily due to the understanding of site developed through methods of immersion and multi-sensory observation at site. A great sense of adventure and mystery is created in these concepts, of which is inherent to the experience humans generally have with the marine environment.

However, in some circumstances, such as the Reef intervention for example, the objects of attention are too far displaced from clearly evidencing the symbiotic interrelationship of humans and nature. It therefore becomes difficult to assert that participants will be capable of gaining an understanding of human and nature symbiosis. Experiences which expose imbalances of the symbiotic relationship, such as the litter caught in the intertidal zone or the artificial debris that litters the sea floor, perhaps communicate the notion of human and nature interrelationships more clearly. This adds another layer to the overall existential experience which educates participants about the present environment

in an attempt to change perspectives on these types of lifeworld occurrences.

It is evident in the design outcomes that the design framework is appropriate for designing public interventions that facilitate existential experiences of human and nature symbiosis, which ultimately motivate participants to act with environmentally responsible behaviour. The design framework suggests a variety of strategies that can be used to inform design. This research asserts that it is critical for architectural experiences of this kind to address each of the six design approaches (transcendence, phenomenology, atmosphere, memory and emotion, sense of place, and biophilia). However, the designer need not address all design strategies, it is recommended that they select combinations of design strategies appropriate to the site and habitat being designed for.

The research carried out here identifies that the most impactful experiences are achieved by presenting phenomenological encounters within an intensified physical setting that establishes a dialogue between humans and nature, and humans and place. Important strategies suggested by the concept designs and process undertaken include: multi-sensory stimulus, light and shadow, dynamic light, material connection to nature, presence of water, scale, orientation, sense of safety, focused intimacy of rooms and events, spatial configuration (prospect, refuge, mystery, and risk/peril), and reducing the speed of experience. Biomorphic design also serves an important role in the creation of form, space, structure and consideration of material; however, it is essential that the representation of such is subtly integrated into the design.

CHAPTER 08

- 8.1** Refinement Process
- 8.2** Developed Design Showcase
- 8.3** Critical Reflection

DESIGN REFINEMENT

INTRODUCTION *Chapter 08 develops the design concept for 'Site 02 – Slipway' toward a further refined design and experience. The research was initially conceived off as a multi-site project. While it chose to take only one site further, the other concepts serve as experimental designs that helped to develop the process further.*

The Slipway concept was selected as it was most appropriate for the intended experience and presented the most significant potential for communicating human and nature symbiosis. The intertidal zone encompasses the areas above and below the surface of the water and, therefore, provides an experience of each zone. Nearby amenities and activities are also centred around human interaction with the marine environment.

The following design research sets out to create a final design outcome that demonstrates the design framework in architectural application. It critically reflects on how well the outcome addresses the Research Aim, Research Objective 2 and Design Research Objectives.

RPNYC produces a draft Master Plan for re-development, engaging Craig & Coltart Architects.

Funding from the Council is pursued.

Memorandum of Understanding signed between Mayor Prendergast and the RPNYC.

February, Report presented to Strategy & Policy Committee reporting back on the design development and recommend a new initiative prepared for the 2012-2022 Long Term Plan.

June, Clyde Quay Boat Harbour Restoration Master Plan reviews and taken for consideration in the 2013/2014 Draft Annual Plan.

Funding granted for minor improvements to access ways, lighting and other minor works.

The Coene sheds and slipway exist very similar in appearance today and remain in use.

They form part of the Clyde Quay Boat heritage Area, contributing the sense of place and waterfront continuity.

The surviving building is reconstructed from the existing materials into two smaller timber sheds neighbouring the slipway, named the Coene sheds.

Funding not approved in Annual Plan

RPNYC continues consultation to develop design brief scope and reports, later presenting a developed design to the Strategy & Policy Committee.

Wardale Marine Industry Consulting engaged, report returned in December identifies risks and recommends design changes.

Slipway is decommissioned. Cradle, cradle arms, timber piles, and guard rail are removed.

Rail tracks are cut, leaving the remaining rail tracks and winch in place.

The old dock is removed. Timber piles and guard rail are removed.

8.1 REFINEMENT PROCESS

The design refinement process engages two design methods – parallel freehand sketch and digital modelling, and material application and render testing. Throughout this final phase of design, observations and interpretations of place, material compositions, and spatial configurations are revisited to accelerate the design.

"Ruins and eroded settings have a special evocative and emotional power; they force us to reminisce and imagine. Incompleteness and fragmentation possess a special evocative power."

— Juhani Pallasmaa, "Space Place, Memory and Imagination". p.191

Accommodates
for vertical
relationship.

Blur the threshold
+ allow light into
cave space.

Lead the eye.

Relate participant
to space below.

Masonry openings

Crossing the divide

Refines and mode of a what...?

As materials are applied, material relationships are continually re-considered, and necessary design changes are identified. Alterations are made to the digital model in Rhinoceros and relinked to Lumion.

Reduce step.

The hull + underside.

Partly Vertical Relationship.

Recontextualized as reference to broken wall that sits on edge of ramp.

Sand slows participants + provides points of interaction.

Metal → Solid Concrete.

After to reduce boat hull.

Skylights as the transition between natural + human realm.

Layers of Depth.

Spot lighting directs.

Identify material as 'core wall'.

Alternate clay variant to appear excavated.

Figure 8.7 Authors Image. (2020). Slipway Development Sketches [Digitised Drawings].

Feasible?
Swimming.

"A fundamental quality of a landscape, house and room is its capacity to evoke and contain a feeling of safety, familiarity, and at-homeness and to stimulate fantasies. We are not capable of deep imagination outdoors in wild nature; profound imagination calls for the focusing intimacy of a room."

— Juhani Pallasmaa,
"Space' Place, Memory and Imagination".
pg.193

Water Pearl -> Mouth of Pearl.

→ Ensure Mutual relationships remain consistent.

Encourage tactile engagement under-foot.

A mark-up process is undertaken to clarify concepts and identify the strengths and weaknesses of the designed experience. Attention is given to the sensory experience and the effect of the materials, space, and atmosphere on the perception of symbiosis phenomenological encounters. Upon reflection, findings are considered and used to refine the design and experience facilitated within.

As materials are applied and test rendered, material relationships are continually re-considered and changes are made to the digital model. The refinement process advances the design through an iterative workflow as illustrated here. Several iterations have not been included as they involve minor changes compared to those seen here.

IT.08

IT.12

IT.14

IT.16

DEVELOPED DESIGN SHOWCASE

8.2

Numbers on this plan and subsequent plans indicate the sequence of experience. These are paired with renders on the following pages.

VIEWING PLATFORM SITE PLAN - LEVEL GROUND

Figure 8.14 Authors Image. (2021). Developed Concept Design - Site Plan [Digital Drawing].

- 1. Approach from east via road*
- 2. Entering onto the viewing platform*
- 3. View out to harbour and below intertidal platform*

CLYDE QUAY
MARINA

BOAT SHEDS

SLIPWAY

COENE'S SHED A

COENE'S SHED B

FREYBERG POOL

ORIENTAL PARADE

1 2 5 10
metres (m)

DEVELOPED CONCEPT LOCATION PLAN

Figure 8.15 Authors Image. (2021). Developed Concept
Design - Location Plan [Digital Image].

WELLINGTON
HARBOUR

CLYDE QUAY
MARINA

FREYBERG
BEACH

FREYBERG
POOL

COENES
SHEDS

RPNYC

ORIENTAL PARADE

0 50 100 200 500

In Dialogue with the Marine Environment.

The dialogue between humans and nature is communicated by transcending encounters of the lifeworld phenomenon of intertidal debris containing artificial litter and organic material (Section 2.2.1). This experience establishes a connection between the participant and the exhibited natural marine system, thus inviting participants to contemplate the consequential impacts human behaviour has caused to it. It ultimately prompts perspective change and gives rise to existential realisations about human and nature symbiosis (Section 2.2.1).

This human-nature dialogue is emphasised by the atmosphere, materiality, rhythm (spatial and structural), and subtle biomorphic design (mollusc and mother pearl) (Sections 2.2.3 & 2.2.6) Materials are selected to either contrast or harmonise with the marine environment, sometimes purposefully accommodating for changes induced by natural systems – such as the corrosion of metals and marine organism inhabitation of structures.

The design expresses itself as a boat hauled ashore, anchored into the land. The interior concept is inspired by the phenomenon of molluscs attaching to the underside of boat hulls. The historical use of the site whereby hulls were cleaned at the Slipway site is referenced here. As people journey toward the Contemplation Lounge, materials enhance the sensation of going below the surface of water and through layers of the sea bed.

WATERLINE

PLAN - LEVEL 01

Figure 8.17 Authors Image. (2021). Developed Concept Design - Waterline - Plan - Level 01 [Digital Drawing].

- 4. Approach from west along waterline*
- 5. Looking out along the Intertidal Platform from the Intertidal Grotto*
- 6. Submersion into the sea along the Intertidal Platform*
- 7. Return to land*
- 8. Main Entrance*

BELOW SURFACE

PLAN - LEVEL 02

Figure 8.18 Authors Image. (2021). Developed Concept Design - Below Surface - Plan - Level 02 [Digital Drawing].

- 9. Intersecting the hallway, views obscured*
- 10. View down hallway toward vestibule*
- 11. Beginning of gradually expanding stairs*

CUSHIONED HAMMOCKS

BASIN (MOTHER PEARL)

SEATING

CONTEMPLATION
LOUNGE

TRANSITION 2 - INTO
THE MARINE TERRITORY

TRANSITION 1 - AWAY FROM
THE HUMAN TERRITORY

SEATING

SHOE RACK

EXIT / ALTERNATE ACCESS

SEA FLOOR

PLAN - LEVEL 03

Figure 8.19 Authors Image. (2021). Developed Concept Design - Sea Floor - Plan - Level 03 [Digital Drawing].

12. Entry into the vestibule via the stairs & invitation to remove shoes
13. Entry into the vestibule via the alternate access (lift) & invitation to remove shoes
14. Entry into Transition 1
15. Passage through Transition 1 & away from the human territory
16. Entry into the Contemplation Lounge toward basin in Transition 2
17. Return to beginning of Transition 2 from basin
18. Journey toward Contemplation Lounge seating
19. Seats facing across to the basin and up toward the rock pool
20. Exit back toward the lift to return to above ground

The outer edge of the sea wall is referenced in the interior hallway and divides Transition 1 and Transition 2 - breaking through the barrier between the human territory and into the marine territory. The hallway employs horizontal compressions and expansions to create differences in the spatial sequence and generate a sense of mystery throughout.

In support of memory establishment, the design uses architectural devices such as the timber structure along the intertidal platform, long passageways, gradually declining stairs and soft ground conditions (sand) to activate the participants navigation and balance to **reduce the speed of experience** (Section 2.2.4). It provides a different **tactile experience** that contributes to the **sense of place**. The visual experience is also enhanced as the sand provides necessary air particles that **allow light to interact with space** and intensify the atmosphere.

THE EXPERIENCE BEGINS...

Figure 8.20 Authors Image. (2021). Approach from East via Road [Digital Render].

A sense of tension is created by the mooring lines that intersect the above pathway and anchors the intervention to the land. The platform breaks through the sea wall, suggesting the removal of boundaries between pedestrians and the marine environment. It draws inspiration from the lift access as a winch, viewing platform structure as an anchor and the intertidal platform as a boat. As people reach the intervention, attention is engaged by this structure and they are invited out onto the viewing platform to view the symbiosis occurring in the intertidal zone below.

Figure 8.21 Authors Image. (2021). Entering onto the viewing platform [Digital Render].

Figure 8.22 Authors Image. (2021). View out to harbour and below intertidal platform [Digital Render].

*Spatial configuration strategies, such as **refuge and prospect**, are engaged to provide a **sense of safety** throughout the experience. This sense of comfort is intermittently challenged by moments of **risk and peril** that make for a more thrilling experience. Consequently, these strategies help induce positive emotional responses, increase attention toward the symbiotic phenomenon, and support memory establishment. The concept of **mystery** is frequently engaged throughout the designed intervention to entice people further into the experience and induce strong pleasure responses, such as the metal mesh that blurs the threshold between people on the platform and the symbiosis below. (Figure #2.5). The intertidal platform appears as if it were a shipwreck salvaged from the seabed.*

Figure 8.23 Authors Image. (2021). Approach from west along waterline [Digital Render].

The **auditory experience** is also enhanced throughout the design. When participants are above the surface of water, the propagating waves collide and interact with the many timber elements along the intertidal platform to create **a rhythm of sound** depending on the direction and magnitude of the waves. The same sound echoes into the interior space below. When water is calm, the **lapping of waves against the concrete exterior shell echoes into the space**; when water is rough, the same auditory experience occurs with far greater intensity. The same auditory experience is achieved in the intertidal grotto, whereby the hard-concrete sides **funnel ocean sounds as they echo across the water's surface**.

When inside the Intertidal Grotto, the weight of human beings on nature as they walk above is suggested. This impression on nature is also referred to by the intersection bridge and decline-incline passage between Transition 1 and Transition 2 (Fig. 8.16 - Long Section).

The vertical relationship communicates the connection between humans and the marine environment. Apertures and view shafts frame the interaction between participants and the intertidal zone to help communicate symbiosis.

Figure 8.24 Authors Image. (2021). Looking out along the Intertidal Platform from the Intertidal Grotto [Digital Render].

Participants are then enticed out onto the Intertidal Platform to engage with the symbiotic phenomenon of artificial and organic intertidal debris caught by the catchments and structure. Some may endeavour as far as the rock pool when tides are low. The tactile engagement between participants and this system is choreographed as participants navigate between the timber elements. These elements also provide a sense of safety and create a wave break.

This design considers the **olfactory experience**, utilising the catchments and timber elements along the intertidal platform to capture debris and thus allow **intense smells of salt and decaying sea debris** to rise into surrounding spaces.

Figure 8.25 Authors Image (2021). Submersion into the sea along the intertidal platform [Digital Render].

Figure 8.26 Authors Image. (2021). Return to land [Digital Render].

***Tactile interaction** is engaged along the intertidal zone. Secondary to this direct experience of the marine environment, materials used throughout enhance the experience of being in the marine environment – such as the negative impression forming the handrails which provide a hard and cold sensation on the hand, or the sensation of sinking into the netted hammocks that border the contemplation lounge similar to sensations of falling back into water.*

8

Figure 8.27 Authors Image. (2021). Main Entrance [Digital Render].

The main entrance latches itself onto the side of the main structure, similar to how a fender (buoy attached to side of a boat) cast off of the side of a boat. It aligns with the outer edge of the existing sea wall. It is designed with reference to hatch and door systems used in nautical architecture. The spiral staircase anchors around a concrete core designed to echo's sounds of water into the interior.

This bridge intersects the double-height interior hallway. It provides participants an opportunity to come close to the hull underside and skylight above with captured debris.

When viewed from the below hallway, the bridge frames participants into view of the symbiosis above. View shafts toward the Contemplation Lounge are blurred by glass textured with a falling water pattern.

From this point onwards, the sensation of being big is more intensely dissolved.

Figure 8.28 Authors Image. (2021). *Intersecting the hallway, views obscured* [Digital Render].

Figure 8.29 Authors Image. (2021). *View down hallway toward vestibule* [Digital Render].

11

Figure 8.30 Authors Image. (2021). Beginning of gradually expanding of stairs [Digital Render].

*Scale, proportion and geometry are used to create a transition in sensation from feeling big to small as participants journey from beginning to end (2.2.1 & 2.2.3). It aims to transport participants from the position of “dictator” of nature in human territories toward where they become **equal in perceived scale to the marine organisms**. Participants, therefore, feel small under the weight of the intertidal phenomenon occurring above them. Such strategies help **induce perspective change of human and nature symbiosis**.*

Figure 8.31 Authors Image. (2021). Entry into the vestibule via the stairs & invitation to remove shoes [Digital Render].

When participants reach the vestibule, they are invited to remove their shoes to allow sensations to be felt under-foot and enhance the tactile experience. It attempts to ground participants and connect them to the earth in which they stand. A shoe rack and seating is provided (left Fig. 8.32).

Figure 8.32 Authors Image. (2021). Entry into the vestibule via the alternate access (lift) & invitation to remove shoes [Digital Render].

Employing **scale, proportion and framed views**, each space focuses attention on the intertidal phenomenon. Vertical relationships are used to emphasise the dialogue between participants and the marine environment, thus **focusing the intimacy of the room** toward the symbiosis in the contemplation lounge, hallway, viewing platform and intertidal grotto. The acrylic windows attempt to penetrate the threshold that divides spaces above from spaces below - the threshold between the natural marine environment and artificially constructed environment. This approach to spatial relationships also provides a sense of place by suggesting **orientation and place identification** by **depicting the immediate natural setting** (Section 2.2.5).

Figure 8.33 Authors Image. (2021). Entry into Transition 1
[Digital Render].

*The presence of water is critical to this experience. It creates a **material connection to nature** and **connects participants with the natural marine systems**. It is employed throughout the experience, offering visual and potentially tactile stimulus that enhance the sense of place in the intertidal zone (Section 2.2.5 & 2.2.6).*

*Dynamic and diffuse light and colour that result from the **interaction of light with water**, provide a **unique atmosphere** (Section 2.2.2-2.2.6). Not only does it draw attention to the intertidal phenomenon it reduces stress, increases sensations of tranquillity, improves memory restoration, enhances perceptions and psychological responsiveness, and induces positive emotional responses by portraying movement and the ephemerality of life (Figure #2.5).*

Teeth of the viewing platform structure above protrude into this space, visually emphasising the vertical relationship and making reference to the "anchor" as it digs into the layers of earth.

Various **visual connections with nature** are created throughout the experience. The primary visual experiences are those created by the acrylic windows and the rock pool situated along the intertidal platform. They highlight the aforementioned intertidal phenomenon while blurring the threshold between above and below the waters surface.

Here, participants are invited to pause in contemplation of the experience and reflect on human and nature symbiosis.

This interior space is designed with reference to the shell structures of a mollusc latched onto the underside of a hull. The basin resembles a mother pearl, formed by the mollusc to protect itself from the irritants - human beings. Water flows across a mirrored surface above the basin and invites participants to interact with the water to symbolise spiritual cleansing and potentially provide an opportunity to repent.

Mirrored surfaces plate outer surfaces of the interior structural columns and the floor of the contemplation lounge, capturing patterns of light as it filters through the water above. It is inspired by how water falls off of the hull of a boat as it is lifted up from the water's surface.

This enhances the sense of place.

Figure 8.35 Authors Image. (2021). Entry into the Contemplation Lounge toward basin in Transition 2 [Digital Render].

Building upon the mollusc concept, the paths are designed to create movement similar to the "inhale" and "exhale" of water by the mollusc, carrying nutrients and foreign objects or "irritants" with it.

*Designing for a **sense of safety** is an important design consideration, especially for experiences entering into a naturally threatening and discomforting environment. Therefore, the experience has been facilitated within a dense concrete structure that uses proportion and scale to provide vertical and horizontal spatial relief that **reduces claustrophobia and anxiety**. Expressions of structure and material are employed to help induce this sensation, such as the columns supporting the hallway and the horizontal prospect along the hallway.*

The Contemplation Lounge is bordered by seats and cushioned hammocks that direct attention toward the symbiosis above in the rock pool. It also frames the actions of participants within these systems as they interact with the basin and move about the Intertidal Platform above.

Figure 8.37 Authors Image. (2021). Journey toward Contemplation Lounge seating [Digital Render].

Figure 8.38 Authors Image. (2021). Seats facing across to the basin and up toward the rock pool [Digital Render].

As participants return to the beginning of the hallway, the lift invites them out to return to the ground above and conclude the experience. The experience flows down from above, into the main entrance and out via the lift as the journey in reverse does not provide anything new to the existential experience of human and nature symbiosis created here.

Figure 8.39 Authors Image. (2021). Exit back toward the lift to return to above ground [Digital Render].

THE EXPERIENCE DRAWS TO AN END...

Engaging with various architectural strategies that achieve concepts of transcendence, phenomenology, atmosphere, memory and emotion, sense of place, and biophilia - the experience facilitated in the final Slipway intervention has a profound impact on systems of knowledge, physical and sensory systems, and systems of value. It illustrates one approach to how an experience facilitated by architecture can improve people's psychological well-being and have a positive influence on the behavioural and social changes intended in this research.

Developing Knowledge –

Throughout the experience, multi-sensory interactions with phenomenological encounters at the site are facilitated. Allowing participants to experience lifeworld phenomenon with fresh perspectives offers new interpretations of the natural environment and its systems. Experientially, this develops the participant's system of knowledge of natural systems and gives rise to existential realisations. It is particularly impactful when evidence of both positive and negative interrelationships between humans and nature is evidenced.

Stimulating the Senses –

Various senses are stimulated in the experience to support knowledge development and provoke emotion. It is used to draw attention to interrelating natural and artificial systems with greater intensity. Passive techniques are designed to stimulate visual, auditory, tactile, and olfactory senses. Doing so more effectively immerses participants and induces connectivity between themselves and the immediate marine environment and the Clyde Quay Marina.

Provoking Emotion –

A selection of architectural devices is employed to create a direct experience with the intertidal zone with greater emotional impact. It explicitly engages strategies that induce positive emotional responses which generate greater place satisfaction and support memory establishment. Provoking emotional responses is fundamental to motivating the participants toward strengthening or establishing pro-environmental values. Likewise, it provides an opportunity for participants to connect with the immediate natural environment spiritually.

Although the final design outcome effectively raises attention to interrelating systems,

the primary phenomenological encounter of human and nature symbiosis chosen to be exhibited here has a limited effect on the perception of human and nature interconnectivity. It is because it is dependant on the debris collecting naturally along the intertidal platform. While this phenomenon is observed frequently at the site, many environmental factors may limit the frequency and intensity to which this occurs.

Materials selected for the final design consider durability and weathering in the marine environment. The material surfaces in contact with the intertidal zone are designed to create a habitat for the marine ecology. There are weaknesses in the designed timber structure that forms the intertidal platform. Although solid in construction, it will eventually erode and cause issues when detached and left floating in the marina. The acrylic glass also presents issues as it is likely to get surface damage to the extent by which observations through it may become too far distorted. This issue could be solved through frequent servicing or further research on materials.

The experiences created here primarily focus on phenomenological encounters that form direct experiences with nature, it becomes reliant on encounters occurring naturally. There is a large degree of prediction in this. Therefore, design interventions need to host and prepare for a range of multi-sensory encounters with phenomenon to ensure an educational, immersive, and spiritual experience is provided for participants. Likewise, future research would benefit from a more in-depth analysis of the site with attention toward studying specific phenomenological encounters of human and nature symbiosis during a wider variety of environmental conditions and a greater duration of time.

A limitation to the experience created here is the unique interpretations that participants will gain from it. The experience will likely be perceived differently from the designer's intent. While interpretations may vary across the built design elements, the experience can provide participants with a collaboratively educational, immersive and spiritual experience that offers a direct experience with the natural marine environment. In

its essence, it still impacts participants, and there remains potential for the experience to motivate environmentally responsible behaviour by forming connections between people and the natural systems at the site. This multivalence is inevitable; however, it is not an issue that is seen as being problematic.

The design successfully engages people with the intertidal marine environment in various ways and offers new perspectives of human and nature symbiosis. Close examination of the site context and history proved beneficial to the design conceptualisation and informed symbolic meanings communicative of human and nature interrelationships. As a place of contemplation, it provides participants with an opportunity to pause and reflect not only about the experience they have gained but about external personal matters.

Although not focal to the design intent, the integration of structural expressions with the multi-sensory experience and overall design aesthetic has been successful. Occupying the marine environment requires significant structural consideration to counter hydrostatic pressure, wave pressure, and buoyancy. The exterior concrete shell (as seen in Figure #? – Model iterations) is designed with a particular curvature to diminish pressure forces, while the foundation structure counteracts the effects

of buoyancy. The design addresses these structural concerns while also enhancing the experience and design aesthetic.

Due to sea-level rise, the design and the neighbouring boat sheds are likely to become engulfed by the sea. While devices have been created that seal the interior off like a tomb, it could instead allow the water to infiltrate the interior space. It would then serve as a testament to the effects of human behaviour concerning climate changes. The building programme would then be adapted and become a scuba-diving and snorkelling attraction similar to a shipwreck or artificial reef. With further material considerations, it could provide a thriving new habitat for the local marine ecology. The above viewing platform would continue to invite people to contemplate the symbiosis below.

Findings in this research have contributed to the interdisciplinary research between fields of psychology and architecture. It has identified that emotional responses of thrill, awe, gratitude and hope support participants motivation. These responses can be achieved in architectural experiences when engaged with concepts of transcendence, phenomenology, atmosphere, memory and emotion, sense of place, and biophilia.

The direct experience with nature can be enhanced through architectural design to

create more impactful experiences. This research identified that dialogue, materiality, multi-sensory stimulation, contextually relevant formal expressions, sequence of events, spatial configuration, illumination, and the presence of water were most effective in communicating human and nature symbiosis and creating impactful physical setting.

The final design demonstrates that through architectural concepts of transcendence, phenomenology, atmosphere, memory and emotion, sense of place, and biophilia, impactful experiences can be created in

a physical setting to potentially influence behavioural change. It suggests that architectural interventions of this kind could benefit society in more ways than one. It can support psychological health and contribute to improved quality of life in Wellington City.

Figure 8.40 Authors Image. (2021). Night Render [Digital Render].

CHAPTER 09

CONCLUDING COMMENTS

DISCUSSION & CONCLUSION

While there is a potential for an architecture of the kind described and illustrated in the research to motivate participants to act with environmentally responsible behaviour, several factors influence the outcome of such experiences. These include social (shared) and personal (individual) factors outside the scope of architecture. Therefore, it is difficult to identify the degree to which the experience specifically impacts participants' motivation to act with environmental responsibility without carrying out post-experience surveys and evaluations.

Architecture can only attempt to induce human and nature connectivity, establish place attachment and prompt re-definition of self-identity. This research only proposes one design model that merges the two disciplines of psychology and architecture to suggest one potential approach to creating such experiences in physical space. As public interventions, designs of this type serve to support members of society as pro-environmental behaviour change is increasingly demanded.

The design research supported the original thinking. However, designed outcomes are not thoroughly resolved. Due to the complexity of the design framework, addressing the total body of knowledge was not achievable within the scope of this research project. As a result,

design explorations tended to investigate a selection of smaller strategies proposed in the framework and attempted to carry them through with lesser consideration of other strategies.

As this research is highly complex, specific areas of the framework require future research to advance understandings of architecture as a positive behavioural change tool. The concept of transcending phenomenological encounters to produce positive psychological responses was strong and accelerated the design process significantly.

Architectural research attempting to induce behavioural change to address other psychological and sociological issues could engage similar concepts as those proposed in this research. While this research attempts to instil motivation in participants, other emotional effects of experience could be explored.

While the final design outcome suggests one approach to applying the design framework, there is potential for the framework to be applied and tested elsewhere. Likewise, the process used to arrive at the final design suggests a range of transferrable methods.

The process engaged in this research proved appropriate for the sites of inquiry and the marine environment. It identified that the most effective methods are those that immerse the designer in the site and employ processes of observation and interpretation through the senses. It is fundamental to the conceptualisation and contextualisation of both the created experience and the architecture designed to facilitate it. Designers must understand the phenomenological encounters of human and nature symbiosis that occur at site to more accurately enhance the encounter through architectural devices.

Designers engaging with this design framework must investigate the sites and natural habitats appropriate to the situation and context. If this research investigation were to occur in an inland environment with limited natural landscapes, it would require a much different approach. As the objects of attention change and the intended psychological effect of the experience shifts toward different environmental systems, the process is likely to alter to suit this. Likewise, the process is likely to change depending on the designer's abilities to interpret, translate, and conceptualise the experiences gained at the site. Deciding which process to engage in relies on factors of the situation, context, and personal skill. Whatever methods are chosen, they must succeed in immersion.

The methods employed in this research were of personal preference and suggested only one approach to this type of research. However, methods such as the site documentation (multi-sensory written journal, photographic analysis, audio- and audio-visual recording), interpretation (mnemonic art devices), site relevant biomorphic design, and designed material relationships with site context and systems proved beneficial to this design research. These methods have definite potential to propel the design process in similar areas of research.

Sites explored in this research were selected due to travel uncertainties resulting from the Covid-19 pandemic. The inability to test the design framework in alternate locations outside of Wellington City created limitations for this research. Future research would benefit from testing both the design process and the design framework in alternate locations to present new design ideas and help to develop the framework.

This research focuses primarily on connecting people with symbiotic systems, natural systems and places of nature via immersion and spirituality. It steers away from conventional forms of architecture that exhibit nature, such as museums, aquariums, and zoos and toward a direct experience with nature in its raw and unmodified context.

However, future research would benefit from developing the educational component of the design framework by integrating some of the experiential education strategies used in conventional nature exhibits.

Additionally, it could improve the immersive and spiritual experience with nature by activating the design framework to design open-space swimming facilities. It can enhance connections between people and the marine environment by creating meaning in place by providing a spiritually elevating leisure activity such as that provided in Therme Vals (Section 2.3 – Check #). In addition, it could draw attention to symbiotic systems.

Creating underwater experiences through architecture incurs a high cost. While this remains out of this project's scope, it is appropriate for future research to explore alternate methods that are more cost-effective as a public intervention.

This research identified a gap in understanding the psychological effects of phenomenological encounters of human and nature symbiosis. While it has furthered understanding of these encounters and their effect on the senses at the three sites, future research is required to reinforce these findings and eliminate limitations of subjectivity. Furthermore, this

research would benefit from further analysis of the psychological effect and emotional responses induced by increased awareness of human and nature symbiosis.

The design framework would ideally be developed more closely with ecological design attributes and integrate with principles of biology to invigorate the local natural ecology. Designs would benefit from extending beyond a reconciliation of human and nature relationships and address sustainable design solutions that are equally restorative of natural habitats. Material and construction considerations would be imperative to this future research.

Overall, this research has contributed to understanding the psychological benefits of experience centred architecture that engages participants with natural systems. The process developed in this research informs how to effectively action psychological principles through architectural design. Findings suggests the synthesis of psychology and architecture can be explored through a design process to create impactful experiences for improved behavioural change amongst society.

CLOSING STATEMENT

The architectural discipline is multi-faceted and can improve many aspects of the natural, human world. Every day, human beings are influenced by the physical settings in which they carry out their lives. The behaviours we adopt and actions we perform are influenced daily by the designers who create our physical world. Architecture contributes significantly to people's life experiences and memories by creating meaning in the places we exist within. As this research has identified, there are significant benefits in providing architectural experiences that engage people with place and nature through the conscious mind, the senses, and spiritual dimensions.

Existential experiences of human and nature symbiosis are critical to cultivating a sense of belonging in the world and strengthening the connectivity between human beings and nature. Designers that can successfully engage architectural design strategies to create a profoundly impactful experience with nature in a physical setting and address principles of psychology have high potential in motivating people to act with greater environmental responsibility.

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