

**Base Processes in The Ocean Environment.  
An Investigation Through ‘Sculptural Assemblage’.**

**Fiona Murphy**

MFA: Monash University, Melbourne.  
Grad. Dip. (Fine Art): Phillip Institute of Technology, Melbourne.  
Grad. Dip. (Education): Melbourne Institute of Education, Melbourne.  
Dip A.D: Victoria College (P.C.A.E.) Melbourne.

Department of Fine Arts, Faculty Art and Design.  
Documentation submitted for Degree of PhD., January 2013.

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## II ABSTRACT

‘Base processes’ is the central concept of this research. ‘Base processes’ is the term I coined to refer to underlying workings in the ocean environment that are expressed through movements, cycles and forces. The key finding in this overall research: As an artist, it is possible to visualize and perceive phenomena in the ocean environment as though seeing it for the first time, as an assemblage of ‘base processes’ that describe the underlying workings of nature. Further to this, during my field research I witnessed impacts of climate change. It is envisaged that climate change will increasingly degrade the ocean environment. This finding is demonstrated through my ‘sculptural assemblages’.

I extend the parameters of sculptural ceramic practice. ‘Sculptural assemblage’ refers to my installation practice, that includes ceramics, mixed media, video and spatial concepts. This methodology offers the viewer a visual, physical, conceptual, and tactile experience. The three core areas in this research investigation are: sculptural form, material qualities and ‘climate change’ concepts.

This is an art practice led research project. Exegesis documentation outlines field research investigations and studio explorations. Field research is my fundamental research methodology to investigate ‘base processes’. This approach offers: first-hand observation and knowledge, spatial perceptions, and close-up visualization of physical and intangible phenomena. My research focuses on underwater reefs, intertidal zones, icebergs and glacial environments. Ocean phenomena are mostly investigated through their movements rather than their stationary appearance. Changeable ocean processes and phenomena are observed, imaged and made concrete through ‘sculptural assemblages’.

As part of research into ‘base processes’, I examine the interactions between water, earth, fire and air as foundational elements of life. This is interpreted through clay and glaze

materials that are transformed through studio ‘making’ and firing processes into a tangible expression of ‘base processes’.

My artworks celebrate the wonder of the ocean environment, but also draw attention to impacts from ocean acidification, coral bleaching and global warming and to the bio-diversity that may be lost. Transformational states represented through my sculptural forms imply natural processes that have gone awry due to climate change. My documentation references scientific data on climate change impacts.

The two major ‘sculptural assemblages’ produced during this project are *Reef Lab* 2012 and *Melt* 2012. My artworks are visually-poetic expressions of ‘base processes’. ‘Other world’ is a term I use in my research to refer to unfamiliar, enigmatic phenomena that I experience in this world. This poetic concept is applied to these immersive sculptural installations.

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## **IV DEDICATION**

Hilary Murphy 1928-2012.

## V TABLE OF CONTENTS

I	CERTIFICATION OF AUTHOR .....	2
II	ABSTRACT .....	3
III	ACKNOWLEDGEMENTS .....	5
IV	DEDICATION .....	6
V	TABLE OF CONTENTS .....	7
IV	LIST OF ILLUSTRATIONS .....	9
	List of Videos .....	12
	INTRODUCTION .....	13
1.	‘BASE PROCESSES’ .....	22
	Physical and Intangible Phenomena and the Visually Poetic.....	25
	Movement: Water as Form Maker .....	27
	Movement: Order and Chaos.....	28
	Cycles: Tides, Growth, Fragmentation.....	32
	Forces: Climate Change .....	34
	Water Earth, Fire and Air Transformations.....	35
	Making.....	38
	Field Research and Photography .....	40
2.	REEF LAB METHODOLOGY .....	46
	‘Sculptural Assemblage’ .....	49
	Ocean Acidification and Coral Bleaching.....	61
	Reef Lab (Spatial Installation).....	69
	Underwater Spatial Immersion.....	70
	The Essence of Experience.....	74
	Field Research: Images, Notebook, Videos .....	77
3.	SCULPTURAL ASSEMBLAGE – METHODOLOGIES.....	96
	Other World and Atmospheric Immersion .....	97
	Melt Installation (Still–Life).....	99
	Touch and Making.....	109
	Field Research: Images and Notebooks.....	110
	Icebergs and Dissolution .....	118
	‘Base Processes’ in Polar Oceans.....	119
	Jörg Schmeisser .....	122
	Time and Tide I .....	125
	Tide and Time II.....	131

4.	INSTALLATION METHODOLOGIES BY CONTEMPORARY ARTISTS .....	135
	Fragile Ocean Ecologies .....	136
	Cross Disciplinary and Mixed Media Installation .....	138
	Sculptural Installation Investigates Ocean Reef .....	140
	Poetic Interplay Between Stillness and Motion .....	142
	Field Work Approach .....	144
	Water as Form Maker .....	148
	CONCLUSION .....	152
	BIBLIOGRAPHY .....	160

## IV LIST OF ILLUSTRATIONS

Sizes indicate: Height x Width x Depth.

- fig. 1.1 Fiona Murphy, *Matrix of Life I* 2010. Photograph.
- fig. 1.2 Fiona Murphy, *Matrix of Life II* 2011. Photograph.
- fig. 2.1 Fiona Murphy, *Reef Lab* 2012. Work in progress, installation detail. Fired clay, glazes, metal tins, glass laboratory apparatus, resin, photographic transparencies, wood, foam sub-structures, and video projection. Dimensions variable: 175 x 550 x 250 cm (approx).
- fig. 2.2 Murphy, *Reef Lab*. Installation detail.
- fig. 2.3 Murphy, *Reef Lab*. Installation detail.
- fig. 2.4 Murphy, *Reef Lab*. Installation detail.
- fig. 2.5 Murphy, *Reef Lab*. Installation detail with video projection.
- fig. 2.6 Murphy, *Reef Lab*. Installation detail with video projection.
- fig. 2.7 Murphy, *Reef Lab (Water as Form Maker)*. Installation detail. Fired clay, glazes. Dimensions: largest part H 70 cm; smallest part H 38 cm.
- fig. 2.8 Murphy, *Reef Lab (Water as Form Maker)*. Installation detail. Fired clay, glazes. Dimensions: largest part H 63 cm; smallest part H 30 cm.
- fig. 2.9 Murphy, *Reef Lab (Chaotic Forms)*. Installation detail. Fired clay, glazes. Dimensions: largest part H 17 cm; smallest part H 15 cm.
- fig. 2.10 Murphy, *Reef Lab (Branching Forms I)*. Installation with video projection. Fired clay, glazes. Dimensions: largest part H 80 cm; smallest part H 10 cm.
- fig. 2.11 Murphy, *Reef Lab (Branching Forms II)*. Installation detail. Fired clay, glazes. Dimensions: largest part H 80 cm; smallest part H 65 cm.
- fig. 2.12 Murphy, *Reef Lab (Frozen Motion)*. Installation detail. Fired clay, glazes. Dimensions: largest part H 78 cm; smallest part H 68 cm.
- fig. 2.13 Murphy, *Reef Lab (Intersecting Waves)*. Installation detail. Fired clay, glazes. Dimensions: largest part H 39 cm; smallest part H 36 cm.
- fig. 2.14 Murphy, *Reef Lab (Fin Crests)*. Installation detail. Fired clay, glazes. Dimensions: largest part H 10 cm; smallest part H 5 cm.
- fig. 2.15 Murphy, *Reef Lab*. Installation detail.

- fig. 2.15 Murphy, *Reef Lab*. Installation detail.
- fig. 2.16 Murphy, *Reef Lab*. Installation detail.
- fig. 2.17 Murphy, *Reef Lab*. Installation detail.
- fig. 2.18 Murphy, *Reef Lab*. Installation detail.
- fig. 2.19 Murphy, *Reef Lab*. Installation detail.
- fig. 2.20 Murphy, *Reef Lab*. Installation detail.
- fig. 2.21 Murphy, *Reef Lab*. Installation detail.
- fig. 2.22 Murphy, *Reef Lab*. Installation detail.
- fig. 2.23 Murphy, *Reef Lab*. Installation detail.
- fig. 2.24 Fiona Murphy, *Reef and Cyclical Tides I* 2009. Photograph.
- fig. 2.25 Fiona Murphy, *Reef and Cyclical Tides II* 2009. Photograph.
- fig. 2.26 Fiona Murphy, *Reef and Cyclical Tides III* 2009. Photograph.
- fig. 2.27 Fiona Murphy, *Reef and Cyclical Tides IV* 2009. Photograph.
- fig. 2.28 Fiona Murphy, *Underwater: Other World I* 2009. Photograph.
- fig. 2.29 Fiona Murphy, *Underwater: Other World II* 2009. Photograph.
- fig. 2.30 Fiona Murphy, *Underwater: Other World III* 2009. Photograph.
- fig. 2.31 Fiona Murphy, *Water, Light Distortion I* 2009-2011. Photograph.
- fig. 2.32 Fiona Murphy, *Water, Light Distortion II* 2009-2011. Photograph.
- fig. 2.33 Fiona Murphy, *Process* 2009. Photograph.
- fig. 2.34 Fiona Murphy, *Pattern and Surface* 2011. Photograph.
- fig. 2.35 Fiona Murphy, *Pattern and Surface* 2011. Photograph.
- fig. 2.36 Fiona Murphy, *Water as Form Maker: Order and Chaos I* 2010. Photograph.
- fig. 2.37 Fiona Murphy, *Water as Form Maker: Order and Chaos II* 2010. Photograph.
- fig. 2.38 Fiona Murphy, *Water as Form Maker: Order and Chaos III* 2010 Photograph.
- fig. 3.1 Fiona Murphy, *Melt* 2012. Work in progress, installation detail. Fired clay, glazes, resin, wood platforms, lighting. Dimensions variable: 140 x 200 x 180 cm (approx).

- fig. 3.2 Fiona Murphy, *Melt*. Installation detail.
- fig. 3.3 Fiona Murphy, *Melt*. Installation detail.
- fig. 3.4 Fiona Murphy, *Melt*. Installation detail.
- fig. 3.5 Fiona Murphy, *Melt*. Installation detail.
- fig. 3.6 Fiona Murphy, *Melt*. Installation detail.
- fig. 3.7 Fiona Murphy, *Melt*. Installation detail.
- fig. 3.8 Fiona Murphy, *Melt*. Installation detail.
- fig. 3.9 Fiona Murphy, *Melt*. Installation detail.
- fig. 3.10 Fiona Murphy, *Melt*. Installation detail.
- fig. 3.11 Fiona Murphy, *Ice-forms I* 2012. Photograph.
- fig. 3.12 Fiona Murphy, *Ice-forms II* 2012. Photograph.
- fig. 3.13 Fiona Murphy, *Ice-forms III* 2012. Photograph.
- fig. 3.14 Fiona Murphy, *Ice-forms IV* 2012. Photograph.
- fig. 3.15 Fiona Murphy, *Dissolution I* 2011. Photograph.
- fig. 3.16 Fiona Murphy, *Dissolution II* 2011. Photograph.
- fig. 3.17 Fiona Murphy, *Dissolution III* 2011. Photograph.
- fig. 3.18 Fiona Murphy, *Dissolution IV* 2011. Photograph.
- fig. 3.19 Fiona Murphy, *Other World: Ice and Fire* 2009. Photograph.
- fig. 3.20 Fiona Murphy, *Time and Tide I* 2010 (group of 3). Dimensions: 89 x 110 x 80 cm.
- fig. 3.21 Fiona Murphy, *Time and Tide I (Other World I)* 2010. Installation view. Fired clay, glaze. Dimensions variable.
- fig. 3.22 Fiona Murphy, *Time and Tide I (Other World II)* 2010. Installation view. Fired clay, glaze. Dimensions variable.
- fig. 3.23 Fiona Murphy, *Time and Tide I (Other World III)* 2010. Installation view. Fired clay, glaze. Dimensions variable.
- fig. 3.24 Fiona Murphy, *Time and Tide I (Other World IV)* 2010. Installation view. Fired clay, glaze. Dimensions variable.

- fig. 3.25 Fiona Murphy, *Time and Tide II* 2009-2012. Installation with video projection. Fired clay, metal tins, pigments, photographic transparencies. Dimensions variable: 150 x 160 x 4 cm. (Each tin: 21 x 15 x 4 cm.)
- fig. 3.26 Fiona Murphy, *Time and Tide II*. Installation detail.
- fig. 3.27 Fiona Murphy, *Time and Tide II*. Installation detail.

### ***List of Videos***

It is intended that the videos be viewed/projected in full-screen mode as a loop, and without sound.

- Video I: Water Ripple Study. Chapter 2, Field Research.
- Video II: Water Ripples. Projected over *Reef Lab* 2012.
- Video III: Water Ripples. Projected over *Reef Lab* 2012.
- Video IV: *Cycles* 2012.
- Video V: Water Study. Chapter 3, Field Research.

## INTRODUCTION

The key question in the overall research: As an artist, how do I visualize the ocean environment as though seeing it for the first time, as an assemblage of ‘base processes’ that describe the underlying workings of nature?

The aim of my field research is to re–discover the ocean world through its processes rather than by objectifying its phenomena. The intention is to visualize and perceive phenomena in new ways that go beyond outer appearances. My field research methods include observation, walking, snorkeling, and free–diving. Perceptions through physical engagement with environments provide fundamental knowledge for my research. In this way, a type of knowledge is found that could only be acquired through physical/bodily participation and a ‘re–awakening of the senses’. Merleau–Ponty’s philosophy proposed in *Phenomenology of Perception* examines ways to experience the natural world and informs me on how I apply field research knowledge to making sculptural installations. <sup>(1)</sup>

‘Base processes’ is the central focus in this research. This study of ‘base processes’ is achieved by art installations and exegesis. The three core areas in this overall research are sculptural form, material qualities and climate change impacts to ocean environments.

The two major ‘sculptural assemblages’ produced during this research project are *Reef Lab* 2012 and *Melt* 2012. This exegesis follows my research investigations and studio explorations. I will also explain my earlier developmental artworks that inform my installation methodologies.

This art–practice led research proposes new ways of interpreting, changeable ocean processes and its phenomena into a tangible formation. ‘Sculptural assemblages’ is a term I use to refer to my installation practice that structures and organizes three–dimensional forms within space. Video, spatial and lighting concepts are developed as part of these

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<sup>1</sup> “Our task will be, moreover, to rediscover phenomena, the layer of living experience through which other people and things are first given to us, the system ‘self-others-things’ as it comes into being; to re-awaken perception and foil its trick of allowing us to forget it as a fact and as perception in the interest of the object which it presents to us and of the rational tradition to which it gives rise”. (Maurice Merleau-Ponty (Translated by Collin Smith), *Phenomenology of Perception*, 1st (english) ed. (London: Routledge & Kegan Paul Ltd, 1962), 57.)

immersive installations. This method offers the viewer a sense-oriented, cognitive experience on a number of levels: visually, physically, conceptually, and tactilely.

My artworks are visually poetic rather than naturalistic. I offer metaphoric meanings through visual imagery. My sculptural language is rhythmical. Meanings are subtle rather than explicit and are only revealed through careful and close inspection of forms. It reveals the world and enlarges its transitory and intangible processes. In saying this I mean that my installations re-create a world that may be unfamiliar to the viewer. 'Other world' is a term I use in my research to refer to unfamiliar, enigmatic phenomena that I experience as unearthly, in the real world.

My ceramic-based installations demonstrate a mixed media and multi-discipline approach. Clay, glaze, mixed media and video physically express the concept of 'base processes'. This is a sculptural approach, rather than an exploration of conventional ceramic traditions that focus on the 'object' and its usability.

As part of research into 'base processes', I examine the interactions between water, earth, fire and air as foundational elements of life. This is interpreted through clay and glaze materials that are transformed through my studio 'making' processes. I explore the tension between clay's inherent fluidity and its transformation through kiln firing into a concrete state. 'Fluid' forms in my sculptures express the memory of 'water' that constitutes plastic clay. Making my ceramic forms carefully by hand, I use skills and multiple processes as a way of honoring the complexities within this natural world. 'Making' sculptural work interprets research findings and expresses my close-up engagement with natural processes and phenomena.

'Base processes' is the term I coined to refer to the underlying workings in the natural environment that result in complex phenomena. The potential thematic scope of an exploration of 'base processes' is epic, for in our world it extends throughout all of life. Land, atmosphere, seasons, climate, and geology all demonstrate 'base processes'. 'Base processes' include the daily rhythm of tides or the hugely changeable Southern Oscillation Index that drives the cycle of El Niño/La Niña, while spanning the epochal processes of stromatolites that made our atmosphere as it is today and which, a billion years on, can still

be witnessed in both fossilized and living states. The broad scope of ‘base processes’ makes it necessary to limit the focus of exegetical study to an appropriate scale.

Field research is my fundamental methodology to investigate ‘base processes’ Field research observations and interpretations of ocean reefs are undertaken in Australia and Vanuatu. This study is also examined and referenced through literature and scientific data. Field research on glaciers, ice and snow phenomena are undertaken in New Zealand and Australia. However, my investigation into icebergs is through literature, scientific data and artworks as discussed.

My research focuses on the ocean environment. I refine this to selected environments: ocean reefs, intertidal zones and glacial/iceberg environments. The reason being that when I examine these environments, I cannot help but see the visible impacts from climate change processes and imagine what can be lost. Transformational states represented through my sculptural forms imply natural processes that have gone awry due to climate change impacts.

Climate change is examined as a ‘force’ as part of my concept of ‘base processes’. In my research, climate change issues are investigated through global warming, ocean acidification and coral bleaching. Climate change processes are studied through complex interactions between ocean, land and atmosphere.

My ‘sculptural assemblages’ contribute to the discussion on climate change in visually–, physically– and spatially–immersive ways. I believe that physical, sensory based experiences intrinsic to my artworks offers the viewer a unique type of knowledge that compliments the cultural discourse on the factual and rationalized science of climate change.

As an artist I imaginatively explore ‘base processes’ through a sculptural language. ‘Base processes’ are also about the science of ocean life and, as such, I will provide a background context for my research. Therefore, citations by scientists describing climate change issues are important inclusions in this research. Many scientists inform my thinking and research including: Ove Hoegh–Guldberg, David N Thomas and Tim Flannery. Their philosophies, theories and scientific data address processes and issues important to this research.

Through field research the environment is ‘described’ to me as a physical sensate experience. Australian artist and academic Lesley Duxbury describes this type of perception as “experiential knowledge”.<sup>(2)</sup> This approach influences the way I investigate environments.

My field research observations and photography informs my making of sculpture in the studio. Close-up and mid-range spatial studies are re-interpreted into ‘sculptural assemblage’. Field research observations are documented through notebooks. Photography demonstrates the breadth of my experience and understanding of ‘base processes’ and records my tactile and visual means of perception.

I create ‘sculptural assemblages’ that offer an immersive spatial experience for the viewer. This is an intimate and tactile engagement that includes moving around my installations to explore forms through all three dimensions. Theories about perception by Merleau-Ponty inform my installation methodologies, as well as Paul Crowther’s theories on the experience of sculpture as phenomena.<sup>(3)</sup> Laura U. Marks theory on an immersive “haptic visuality”<sup>(4)</sup> is also referenced as it relates to my observational and photographic methodologies that are transfigured as ‘sculptural assemblage’.

In Chapter One, I explain ‘base processes’ as my central research concept. ‘Base processes’ are expressed through movement, cycles and forces. ‘Movement’ is examined through water phenomena. ‘Forces’ are examined through climate change. ‘Cycles’ are examined through growth, fragmentation, decay and tides.

This research examines life-bringing processes impacted by climate change. For example, in the ocean, water interconnects with all other foundational elements of life. The sea is in a constant state of flux, moving matter through cycles as well as from one place to another. Carbon dioxide from the atmosphere, dissolved in the ocean, is used in photosynthesis by growing plants. However, the increasing level of carbon dioxide is contributing to climate change and is becoming a threat to the oceans biodiversity including corals.

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<sup>2</sup> Lesley Duxbury, “Lunch Time Forum”, Monash University Art and Design, Melbourne, 5 May 2010.

<sup>3</sup> Paul Crowther, *Phenomenology of the Visual Arts* (California: Stanford University Press, 2009).

<sup>4</sup> Laura U. Marks, *Touch: Sensuous Theory and Multisensory Media*, (Minneapolis: University of Minnesota Press, 2002), xiii.

An important finding from my field research is that ‘base processes’ become visible through physical and intangible phenomena. I examine corals and plants as physical realizations of unfolding life. Intangible phenomena are processes rather than objects that are seen rather than touched and include: atmospheric, space, cyclical tidal processes and the passing of time. These types of changeable phenomena are not fixed in any one form. I develop a visual poetic language to express intangible phenomena.

This research examines ocean movements as the essence of ‘base processes’. Firstly, I observe waves, ordered and chaotic water flow, water ripples and reflections. Secondly, I examine the interaction of water motion with phenomena. Tidal processes are also examined through the physical phenomena that are both concealed and revealed during these large movements of water.

Water as ‘form maker’ is a focus in this chapter. Through field research, I closely examine changeable movements that make strong structures, including waves. Forms are visualized and imaged, then implied through static sculptural form. Leonardo da Vinci drawings and studies of water movement also inform this research. I see and interpret these water structures (waves, turbulence, ripples) as three-dimensional forms.

*Reef Lab 2012* is a major outcome from research and is the focus in Chapter Two. This large installation combines a science lab with sculptural forms that evoke a reef impacted by ocean acidity and coral bleaching. Mounds of coral-like rubble represent the process of fragmentation and decay in a once thriving reef. My ‘sculptural assemblage’ gives a tangible and visual presence to climate change that impacts ocean reef growth processes and biodiversity.

Studio explorations probe the formative processes of the ocean. Ocean phenomena are imaged mostly in terms of their movements rather than their stationary appearance. Ceramic forms imply moving coral-like and plant-like forms, as well as curvilinear structures that imply underwater waves and turbulence. Forms that express underwater rhythmical movements are positioned closely together in spatial groupings.

A visual poetic expression is developed from my field research that observes and interprets momentary and enigmatic underwater phenomena and processes. These visualizations are a

synthesis of multiple phenomena. In my studio practice I juxtapose images together, as a visual language that is transfigured into three-dimensional sculpture.

How do I further imply underwater movements through this sculptural installation? *Reef Lab* 2012 expresses underwater movements through a spatially-immersive video of sunlit water ripples projected over my sculptural forms. Importantly, the video brings movement to an otherwise static 'sculptural assemblage'. This video evokes underwater tidal currents while implying spatial depth within the installation. The flickering light ripples create sensual rhythmic movements. However, on closer inspection we may see that the ripple patterns are chaotic rather than ordered. My video is a metaphor for the oceans changing chemistry and the cumulative processes of climate change that result in chaos.

My experience of the wondrous biodiversity in reef ecologies compels me to imagine what may be lost through climate change impacts. Extracts from my field research notebooks outline my studies undertaken on the Australian Great Barrier Reef and at reefs in Vanuatu. Climate change issues are examined and referenced through scientific data, literature and media publications.

I examine coral bleaching and ocean acidification as climate change forces. An important question is how do I use sculptural form and material qualities to engage the viewer in these difficult issues? I create vital colorful and sensuous forms, along with decaying fragmented white forms. I also include an 'underwater lab' with complex forms that offers the viewer a close examination of intricate details.

My quasi lab represents the measuring and testing of complex 'base processes' related to climate change. However, the viewer of this artwork may wonder whether scientific testing has come too late to save this reef scenario from climate change. The white sculptures nearby imply coral damage with forms breaking down into large amounts of rubble.

Glass laboratory apparatus can be found in two parts of *Reef Lab* 2012. Firstly, as individual items within the Lab assemblage and secondly, as a group of test tubes placed between forms that express dead and living coral. In the Lab, the individual glass apparatus is a metaphor for the science which brings understanding of climate change. However, the grouping of generic glass test tubes brings another layer of meaning. This glassware

represents a mass produced product of the industrial processes on which our modern society depends. As such, this is a metaphor for the collision of (CO<sub>2</sub> producing) human activities with the natural world. These metaphors are representative of competing scientific and industrial intentions.

Science gives us an extraordinary knowledge of the natural world and also contributes to the development of many beneficial technologies, including new energy sources that promise lower CO<sub>2</sub> emissions. However, the climate change issues we face today tell us that science technologies cut both ways. Since the industrial revolution technology has resulted in industries (such as fossil fuel production) that contribute to anthropogenic climate change.

The installation *Melt 2012* is the second major outcome from research and is the focus in Chapter Three. It addresses the dissolution of ice shelves and glaciers into icebergs due to global warming. Field research notebook extracts outline my glacier, ice and atmospheric studies undertaken in New Zealand and Australia that inform this artwork. Global warming and iceberg phenomena are investigated through scientific data, literature, films, media citations and artworks.

My field research experiences of glaciers, snow, ice and atmospheric phenomena offer immersive ‘other world’ spatial experiences. This field research has parallels with my underwater diving perceptions. Both are close-up and medium-distance spatial experiences. Perception of intangible phenomena within these environments activates psychological space. A sense of time passing can be altered, slowed down or even halted. Moving physically through these spaces is a way of visualizing and re-discovering phenomena as though for the first time. It is a way of ‘knowing’ environments.

How do I express iceberg dissolution and fragmentation processes through static sculptural forms and materials that suggest global warming? And, how do I develop this into an immersive ‘still life’ installation? *Melt 2012* is an intimately-scaled installation that is mainly white and minimal to simulate an atmospheric immersion. Warm-hued background lighting casts a subtle glow over one part of the installation, to imply rising temperatures. I arrange my iceberg-like forms to suggest they are marooned and isolated in an ‘other world’ time and space. My forms suggest cracking and fragmentation, dripping ice and

melting pools. In one place resin hangs over the edge of the platform to suggest water in suspended animation, as though time is halted. As the viewer moves around the installation to examine details they may comprehend this scene as a 'still life'. Through all these visual and physical cues the viewer may contemplate a 'tipping point' has occurred and the impacts of global warming are not reversible.

This installation is a metaphor for a collision between the natural world and the human activities that contribute to global warming. The viewer may be familiar with data and graphs on ice sheets breaking up in the Antarctic. In contrast, my installation offers the viewer a visually-poetic and physically-close-up immersive dialogue with this issue. The sculptural forms and material qualities of glaze, resin and clay are offered to the viewer as a way of drawing them to this issue of climate change.

The final part of the chapter explains developmental artworks which contribute to my methodologies for immersive 'sculptural assemblages'. These early installations are important as they indicate shifts of focus and new research pathways that occurred during the overall research period.

A group of nine large sculptures are collectively called *Time and Tide I* 2010. These hand-built sculptures express 'other world' themes through their altered plant-like forms. My research examines interactions between ocean and shorelines by placing selected sculptures in real intertidal environments. In this way my sculptures interact with space, atmospherics, time, cyclical tides and light. I document these installations through a series of photographic images. In this way I visually connect these sculptures with momentary processes and real elements – water, earth, fire (sun) and air. Importantly, these outdoor sculptural installations inform me about concepts for 'site specific' installations that can be applied to gallery installations. In gallery installations I simulate spatial dynamics, atmospherics and processes through videos projected over the 'sculptural assemblages' *Reef Lab* 2012 and *Tide and Time II* 2009-2012.

*Tide and Time II* 2009–2012 is a series of twelve mini sculptural assemblages, each installed within a wall-mounted tin. Intricate sculptural forms take on the appearance of highly-altered marine organisms, including plankton. Artificial interventions, tidal cycles and time are referenced by the inclusion of intricate clock parts and graphs placed within

the tins. I project a video of ordered and chaotic tidal processes over the sculptural forms as part of this installation.

In Chapter Four I put my research in context by examining art installations by artists who investigate subjects and concepts related to my methodologies. Their artworks look very different to mine but, collectively, we share related themes including: implied movement through static form, water as form maker, ordered and chaotic processes, changed states, other world, physical and intangible phenomena and poetic quality. Fiona Hall makes complex sculptural forms for particular artworks that suggest environmental impacts to ocean ecologies. Anne Wenzel employs a cross-discipline, mixed media approach to sculptural ceramic installation. I discuss an artwork that demonstrates her visually-poetic expression of a catastrophe-impacted environment. Vera Möller's sculptural installation methodology explores biological themes through hybrid plant forms. Pipolotti Rist explores underwater realms and 'other worlds' through videos projected over sculptural form. Anthony Caro and Richard Deakin employ static curvilinear forms in their sculptural vocabulary to express water movement. Andy Goldsworthy employs field research as a fundamental methodology to examine natural processes that are transfigured into site specific artworks. Jörg Schmeisser also undertook field research, but in the Antarctic.

Importantly, my research concept 'base processes' is an individual conceptualization in theory and artwork. My research project offers a less human-centered view of climate change. I do see contemporary art that focuses on climate change as it impacts humans; however, I see far less art that investigates these impacts on the natural ecologies.

## 1. 'BASE PROCESSES'

Clay, water, glass and fire combine in transformative processes through my studio practice. I work with the foundational elements of life: earth, water, fire and air. I make sculptures out of fired clay. They are modeled then slowly carved, after which they are dried, before multiple layers of color and glaze are applied. During kiln firing, by about 450 degrees centigrade, the chemically combined water has been drawn out of the clay. By 600 degrees, the clay begins a quartz inversion and, by 1200 degrees, it has changed into a rock like material. These materials and process are an embodiment of this research that examines the concept of 'base processes'.

Field research is my fundamental methodology used to observe and experience 'base processes' in ocean environments. In this context, I examine the foundational elements of life and their processes through a number of physical and intangible phenomena including:

- EARTH: nutrients, geological time, clay, rock, erosion.
- WATER:
  - Movements: turbulence, flow patterns, ripples, waves, splashes.
  - Cycles: tides, growth; fragmentation, decay.
  - States: liquid, ice, snow vapor.
  - Qualities: chaos, order, rhythms, reflections, flux, dissolution.
- FIRE: sun (in proxy), heat, transformation.
- AIR: space around forms, atmospheric, wind, carbon dioxide, foam and bubbles (air and water mixing).

The thematic scope of 'base processes' in the ocean environment is large. For this overall research I refine my focus to selected environments that include underwater reefs and intertidal zones; and glacial environments including icebergs.

In this chapter, I explain 'base processes' as the central concept in this research. 'Base processes' are expressed in the context of movement, cycles and forces. In the ocean environment I investigate 'base processes' as follows: 'movement' is examined through water phenomena; 'cycles' are examined through tides, growth and fragmentation and

‘forces’ are examined through climate change impacts. I explain these concepts through artworks and this exegesis documentation.

As an artist, I imaginatively explore ‘base processes’ as a visually–poetic expression of ocean phenomena. However, I cannot perceive processes within the ocean environment without knowing of climate change impacts. ‘Base processes’ are also about the science of ocean life. Therefore citations from scientists describing climate change impacts are important inclusions in this research. Scientific references provide a context for my research as well as balancing my creative and expressive explorations.

The key research question for my overall study of ‘base processes’ is: As an artist, is it possible to visualize the ocean environment as though seeing it for the first time and perceive it as an assemblage of ‘base processes’? My intention is to re–discover phenomena and re–awaken my senses so that I will perceive ocean processes that range from the barely perceptible to the dramatic. Through field research observations I will put aside my rational objectification of phenomena in favor of a physical and sensory experience. As part of this investigation I seek to identify the essence of ‘base processes’ in the context of this research.

The philosopher Merleau–Ponty, in his book *Phenomenology of Perception* writes about the rediscovery of phenomena in this world and the re–awakening of the senses:

“Our task will be, moreover, to rediscover phenomena, the layer of living experience through which other people and things are first given to us, the system ‘self–others–things’ as it comes into being; to re–awaken perception and foil its trick of allowing us to forget it as a fact and as perception in the interest of the object which it presents to us and of the rational tradition to which it gives rise”.<sup>5</sup>

Observation and interpretation of phenomena form the basis of this research. Field research explorations and observations are recorded with notes, photography, video and drawings. I examine ‘base processes’ so as to capture and express these qualities in my artwork.

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<sup>5</sup> Maurice Merleau-Ponty (Translated by Collin Smith), *Phenomenology of Perception*, 1st (english) ed. (London: Routledge & Kegan Paul Ltd, 1962), 57.

‘Base processes’ is the term I coined to express the underlying workings in the ocean environment. Water’s interactions with earth, air and fire through movement, forces and cycles will be explored through the concept ‘base processes’.

‘Base processes’ are expressed in the real ocean environment in many ways: motions of wave, tides and currents that oxygenate the water and distribute nutrients. In the ocean, water interconnects with foundational elements of life; for example, the sea is in a constant state of flux, moving matter through cycles as well as from one place to another, across and between ecosystems, climate zones and seasons. The carbon dioxide dissolved in the ocean contributes to photosynthesis in marine plants and the growth of shell-based marine life. However, carbon dioxide cuts both ways. Its level in the ocean is approaching a tipping point. Ocean acidification is threatening corals and other life, by impacting their capacity to form shells and biological structures. An important part of this research is to examine both life bringing processes, as well as climate change impacts on fragile marine ecologies.

The oceans are the bodies of salt water in motion that cover nearly two-thirds of our planet. From the shoreline we cannot see all its edges or where it begins or finishes. Its depths are so great they are still little known. Most of my field research has taken place in relatively-pristine environments that are rich in biodiversity. I also examine the ocean shore lines where water meets the land and human interventions are more evident. In both settings, ‘base processes’ can be experienced through their cycles, forces and movement. It is partly this mystery and enigmatic character of the oceans that captures my imagination and forms the basis of this research. It offers the possibility of visual poetic interpretation.

What is my concept of nature in the context of this research? There is raw nature and there are the natural things and objects that manifest out of raw nature. Raw nature is not a thing, object, or event. It is raw materials and elements – stuff that is incomplete – part of a whole that has the potential to interconnect with other things to form ‘life’. Nature is an immanent process, in which we see a living thing in the course of self-unfolding that results in growth. Aristotle writes:

“...some things exist by nature, some from other causes. By nature the animals and their parts exist, and the plants and the simple bodies (earth, fire, air, water) for we say that these and the like exist by nature. For each of them has within itself a

principle of motion and stationariness in respect of place, or of growth and decrease, or by way of alteration.”<sup>(6)</sup>

To understand ‘base processes’, it is important for me to investigate water, earth, air and fire as though ‘seeing’ them for the first time. Foundational elements interact through processes that make complex phenomena. I am reminded that:

“...almost 99% of the human body is a mixture of air, water, coal, and chalk. With traces of slightly more exotic elements like iron, zinc, phosphorus, and sulfur...the wonders of creation are assembled from such simple building blocks...”<sup>(7) (8)</sup>

### ***Physical and Intangible Phenomena and the Visually Poetic.***

An important finding from my field research is that ‘base processes’ are expressed through physical and intangible phenomena. Intangible phenomena are processes rather than objects. For example, a study of water reflections of shoreline plants reveals moving and transforming shapes (Video IV: *Cycles* 2012). These reflections are intangible because if they are touched they will disappear. Further along the shoreline I touch the water that is been drawn out by the tide but it is not possible to touch this cyclical phenomena itself because it is a process. Nearby, on a mountain peak, I observe melting snow. ‘Melting’ is a process, so it is also intangible. Some intangible things and processes can be seen whilst others may be unseen. Intangible phenomena may be sensed as atmospheric, as the passing of time, as cyclic processes and as the barely-perceptible movement of matter or space. These types of changeable phenomena are not fixed.

My artworks are visually poetic. I offer metaphoric meanings through a visual imagery. Its meanings are subtle rather than explicit. My visual language is rhythmical. It reveals the world and enlarges its transitory and intangible processes. In saying this, I mean that my installations re-create a world that may be unfamiliar to the viewer. ‘Other world’ is a term

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<sup>6.</sup> Stephen Davies and Ananta Ch Sukla, *Art and Essence* (USA: Praeger Publishers, 2003), 59.

<sup>7.</sup> Professor Jim Al-Khalili, *The Secret Life of Chaos*, [www.bbc.co.uk/programmes/b00pv1c3](http://www.bbc.co.uk/programmes/b00pv1c3), (accessed January 2, 2013).

<sup>8.</sup> Professor Jim Al-Khalili, *The Secret Life of Chaos*, <http://translatedby.com/you/secret-life-of-chaos-part-1-6/original/>, (accessed January 2, 2013).

I use to refer to unfamiliar, enigmatic phenomena that I experience as unearthly in this real world.

Intangible phenomena can touch the spirit and poetic sensibilities. Visual poetic expression is developed from field research that examines and interprets phenomena. I perceive intangible processes in the underwater realm. For example, after one dive I wrote about observations as fragmentary perceptions: air made visible...liquid space...flux... glow... transformation...interconnections...growth...cause of its own phenomena...form to the intangible.

I investigate physical phenomena through their parts, as well as the whole. I assemble and re-arrange mental images as a synthesis of experienced phenomena. From field research I juxtapose images together, establishing patterns, rhythms, contrasts and structures as a visual language. Momentary perceptions are also refigured as three-dimensional ideas for sculpture.

Intangible presence in the environment has an enigmatic quality that captures my imagination. Celebrated author Kim Scott brings intangible presence to the forefront in a passage from *That Deadman Dance*. In this book, he poetically explores water and space as though he is encountering it for the first time. Scott writes about the ocean environment with fresh insights. I believe he responds intuitively to his experience of phenomena. He writes about an immersive physical encounter with environment. His poetic language creates visual imagery for me:

“...the sea was smooth, but a little further from land—a few boat lengths no more – it was scuffed and agitated, and scribbles of foam spilled in a pattern he was still learning. Rain made sharp silver thorns and then there was no sea, no sky and the world had compressed itself into a diagonally grained grey space before him...waded in the shallows of the harbor, eyes scanning the sand ripples beneath the water, his vision at that in-between space, ready for the contrast, the counter movement, the shadow or flick of a tail that broke the pattern. He believed it was on an occasion like

this, the same coincidence of natural rhythms – movements of sun and wind, of fish, birds and animals...”<sup>(9)</sup>

### ***Movement: Water as Form Maker***

This research examines ocean movements in multiple ways. Firstly, I observe the dynamics of waves, ripples, water flow and reflection. Secondly, I examine the interaction of water motion with sea plants and corals, studying external forces on living things through currents and tides. Water movement is a fundamental activity in the ocean that demonstrates ‘base processes’. I mostly visualize phenomena in terms of their movements rather than their stationary appearance.

Water is truly a form maker. Through field research, I closely observe and analyze water movements, to interpret as structure. Water does make strong forms that are instantly recognizable including: waves, foam, bubbles and splashes. The idea that water has form can be quite challenging, because we mostly experience it as transient. Water and air combine to make forms, and can then dissolve and disperse as a spray. In this context, the shapes that water makes are constantly shifting. As well, moving water can ultimately shape and break down most things it comes in contact with, including land and rock.

An important research question for the ‘sculptural assemblage’ *Reef Lab 2012* is: How will I suggest implied water movement through static sculptural form? I develop curvilinear sculptures that describe circular to elliptical wave form transitions. My position is that implied movement through static form expresses vitality and life.

I observe and interpret waves underwater and above the surface, as well as in waves in slow motion video. There is a circular motion in waves, much of which is hidden under water. Movements in watery worlds that are ephemeral or changeable are investigated through field research. Underwater turbulence makes momentary structures. Water will plow-up over underwater obstacles, causing wavelets on the surface. The water below the surface forms eddies, swirls and vortexes.

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<sup>9</sup> Kim Scott, *That Deadman Dance* (Australia: Picador Pan Macmillan, 2010), 3 & 60.

Surface waves are formed by wind, tide and the shoreline. Their size is determined by the force of the wind, how long it blows and over what distance the wind blows. They break suddenly when they move from deep to shallow water. There are plunging or dumping waves that have the classic tubular shape. Spilling or rolling waves break when there is a longer transition between deep and shallow water and with less force. It is my observation that large waves tend to form in sets of five to six, followed by a lull of smaller waves. A wave may surge over the back of the preceding wave, creating a mass as they approach the beach. They may not break and are quickly circulated back into the sea.

Academic and art critic, Robert Nelson poetically describes wave formation in a response to Anne Wilson's video, titled *Sifting Motion*, and also my solo exhibition of asymmetric plant based sculptures in *Life Forms* at Christine Abrahams Gallery, Melbourne in 2008:

“With slow motion the waves can be analysed. The tide is independent of the choppy surface: its deeper current that surges below the ripples like a mighty convulsion. Contrary to your expectation, the upper surface rolls backwards as the swell pushes underneath. Then, as the rise rushes to the next superficial crest, some of the water runs forward like a surfer and spills over; and suddenly the backward motion is reversed and the surf tumbles forward over the mobile liquid mound. The wave movement grips you in uncanny ways. It's because so much of the heaving rhythm reminds you of the body and the pulse and chaos of life. These analogies also run through Fiona Murphy's work.”<sup>(10)</sup>

Beneath the water I examine coral and kelp forest movements. The push and pull of ocean currents over plants and corals produces oscillating and swirling movement. Corals and plants adapt to these turbulent movements and forces through their own unique forms of structure and growth. Soft corals bend and sway to the motions of the currents. Others orientate themselves to the flow of current so that they can access nutrients flowing by.

### ***Movement: Order and Chaos***

Field research findings on wave processes identify both ordered and chaotic movements. Ordered circular structures in waves form and then break into interesting chaotic forms that

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<sup>10</sup> Robert Nelson, “Visceral, organic vision makes waves”, *The Age*, April 16, 2008.

include: foam, spray and water droplets. Liquid water cannot maintain its shape for very long, as it is unstable, changeable, and constantly renewing its processes and cycles.

Water ripple phenomenon informs my theoretical research and studio investigations; water, sun–light and air interactions are observed and recorded. The wind breaks the water’s surface to cause ripples. I produce videos of water ripple patterns that appear as random–shaped interlocking rings. Water can act like a lens, magnifying chaotically moving ripples onto a sandy floor. Their rhythmic movements hold my attention, as they are surprisingly sensual yet disordered.

Field research also examines ordered and chaotic tidal movements. These investigations are documented through videos. Changing water speeds alter the shapes in the sandy river bed, as the water flows into the sea. This in turn causes the water to flow in chaotic configurations. These unpredictable patterns also morph into new configurations with only the tiniest change in water quantity. Ordered water movement and its disruption make compelling shapes and forms.

The chaotic nature of turbulent water is demanding to study. Even scientists find its behavior unpredictable and incalculable:

“For example if you repeatedly throw the same rock into the air at the same angle with the same force, every time it will follow the same parabolic trajectory as it falls to earth. But pump the same volume of water past the same obstruction in the same pipe, and each time the stream will form a somewhat different and disorderly flow pattern, called turbulence...No everyday phenomenon is as difficult for physicists to model as turbulence. It pops up almost everywhere that smoothly flowing fluids encounter some irregularity. Suddenly an orderly stream of molecules seems to become chaotic, and there is as yet no satisfactory mathematical description of how the turbulent patterns emerge.”<sup>(11)</sup>

To understand water turbulence more clearly I examine related scenarios. For example, the transition from order to chaos is clearly seen on the surface of boiling water. As the temperature increases beyond a threshold, ordered hemispherical bubbles form against the

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<sup>11</sup>. Curt Suplee, *Physics in the 20<sup>th</sup> Century* (New York: Harry N. Abrahams, 2002), 152 & 154.

heat source. Rising to the surface, they burst apart into irregular parts. Equilibrium is broken with only a small change of surface tension.

The writings and drawings by Leonardo da Vinci help me see and understand water structures as three-dimensional forms. Leonardo studies on water movements include waves, vortices, water droplets and tides. His observations and drawings in the Codex Leicester manuscript inform this research on order and chaos. <sup>(12)</sup>

Photo documentation through field studies is an important research methodology. I can slow the motion in water movement through a video recording that enables me to see the changing forms more clearly. However, I have also found new insights from viewing Leonardo's drawings that also capture movement. They have strong structures that I can visualize three dimensionally. His drawings of wave vortexes and turbulence formed by obstacles are informative. For example, his drawing of a wave vortex (*Sheet IIA f 26v*) shows the backward thrust as the broken wave draws back upon itself. <sup>(13)</sup> The drawing shows cross-sections of waves that look like repetitive modules or sculptural form. Another drawing shows rounded stones with turbulent water flowing around them. The water divides into streams around these obstacles. Leonardo also made drawings of forms placed in the water (*Sheet 15 B f 22 r*) to observe the flow patterns. <sup>(14)</sup> In this drawing, the water flows along a ramp and then plunges, forming tubular vortices over the angular form. In these drawings, Leonardo investigates the effects of water resistance on static form.

Leonardo's *Studies of flowing water* 1509-II imply water forced out of a hole and dropping in to a pool, forming whirlpools, splashes, bubbles and underwater eddies. He is transfiguring water structures that he observes and interprets. At the top of the page is a drawing of braids of water as they pass an obstacle. In a poetic way Leonardo likened water to hair. He is interpreting the movement of water as structure and line. Author Michael Ryan quotes Leonardo:

“Observe the motion of the surface of the water which resembles that of hair, and has two motions, of which one responds to the curl and the weight of the strands of hair

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<sup>12</sup> Michael Ryan and Phillip Cottrell and Michael John Gorman and Dorothy Cross, *Leonardo da Vinci: The Codex Leicester* (London: Scala Publishers, 2007).

<sup>13</sup> Ibid., Sheet 11A f 26v.

<sup>14</sup> Ibid., Sheet 15 B f 22r.

and the other to the direction of curls; thus the water makes turning eddies which in part respond to the impetus of the principal current, while the other responds to the incidental motion of deflection. <sup>(15)</sup>

Leonardo wrote a great deal about the structural forms that water makes: He observed air in its interaction with bubbling water, writing,

“The air which is submerged together with the water...returns to the air, penetrating the water in sinuous motions, changing its substance into a great number of shapes...When the air enclosed within the water has arrived at the surface, it immediately forms the figure of a hemisphere, and this is enclosed within an extremely thin film of water...” <sup>(16)</sup>

Leonardo is trying to understand his world. He followed the Pythagorean idea of the earth being made up of the four elements: earth, water, fire and air. He also embraced Plato’s doctrine of macrocosm and microcosm, believing that man is a miniature of the living organism that is earth. Through these concepts Leonardo developed his philosophy on how the world functions. In this way he came up with many theories on geology, botany and the four foundational elements of the earth. He wrote:

“...the earth has a spirit of growth; that its flesh is the soil, its bones the arrangement and connection of the rocks of which the mountains are composed, its cartilage the tufa, and its blood the springs of water. The pool of blood which lies round the heart is the ocean, and its breathing, and increase and decrease of the blood in the pulses, is represented in the earth by the flow and ebb of the sea; and the heat of the spirit of the world is the fire which pervades the earth.” <sup>(17)</sup>

Leonardo studies the physical properties of water movement, including the types of motion, resistance or friction that causes it to stop. He may have been influenced by Aristotle’s theories on motion. Aristotle had explained in his writings that changes in matter occur

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<sup>15.</sup> Ibid., 17.

<sup>16.</sup> Ibid., 46.

<sup>17.</sup> Ibid., 49.

through an external cause. For example, for water to be heated there must be sun. <sup>(18)</sup> A re-examination of the work of these classic philosophers has helped me comprehend ‘base processes’. Leonardo wrote:

“Nothing whatever can be moved by itself, but its motion is effected through another. The other is the force”. <sup>(19)</sup>

### **Cycles: Tides, Growth, Fragmentation**

Field research examines tides in two ways. Firstly, as a cyclic and intangible process that is seen rather than touched. And secondly, through physical phenomena that are concealed and revealed through these large movements of water:

“Tides are regular rises and falls in sea level, accompanied by horizontal flows of water, that are caused by gravitational interactions between the moon, sun and earth...The basic daily pattern of high and low tides is caused by the moon’s influence on earth. Variations in the range between high and low tides over a monthly cycle are caused by the combined influence of the sun and the moon.” <sup>(20)</sup>

Field research indicates that the ebb and flow of tides are at times barely perceptible. In other circumstances, tidal movements can be dramatic to include rips, eddies and waves. Low tides make intertidal life and its processes visible. Low tide reveals shrinking pools, draining streams, and stranded life. Coral reefs may be fully out of the water for a short period of time. A low tide offers opportunities for close-up studies of life forms. This research informs sculptural concepts for *Reef Lab* 2012.

I observe the ‘turning’ of the tide as a transformational event. At the peak of a high tide the ocean can appear as a huge container, almost brimming over with water. The sky appears larger. Time seems to be frozen waiting for the moment when the tide will reverse. At the point of change the water may become agitated and turbulent. Tidal movement is explored

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<sup>18</sup> W K C Guthrie, *The Greek Philosophers from Thales to Aristotle* (Great Britain: Fletcher and Son Ltd, 1976), 12.

<sup>19</sup> Robert Wallace, *The World of Leonardo 1452-1519* (New York: Time Incorporated, 1966), 107.

<sup>20</sup> Peter Frances and Angeles Gavira Guerrero (snr. eds.), *Ocean: The World’s Last Wilderness Revealed* (New York: DK Publishing, 2008), 78.

and documented through videos and stills, and is discussed in relation to *Tide and Time I and II* 2009–2011 in Chapter Three.

During other field research, I examine plankton phosphorescence that is left behind by an ebbing tide. Their glowing forms are also seen stirred up by the bow of a boat. Dinoflagellate plankton have exquisite sculptural bodies that are so tiny they are best viewed under a microscope. Some types have bizarre forms with sail-like wings. Their ovoid bodies are quite asymmetric. Sections of their bodies are perforated, appearing like an external skeleton. Some flagella propel themselves around in spiral type undulations. It is a push-pull motion.<sup>(21)</sup>

Research on plankton and tides is applied to *Time and Tide II* (2009–2011). I make intricate sculptural forms that are based on highly-altered plankton. These forms are placed within metal tins. The backs of the tins have images of tidal levels that express rising sea levels. These tidal patterns also express the movements that drift planktons around the ocean.

Scientist Rachel Carson writes about the phenomenon of small life forms in the ocean, writing about their seasonal cycles:

“Autumn comes to the sea with a fresh blaze of phosphorescence, when every wave crest is aflame. Here and there the whole surface may glow with sheets of cold fire, while below schools of fish pour through the water-like molten metal... Yet here are lights that flash and fade away, lights that that come and go for reasons meaningless to man, lights that have been doing this very thing over the eons of time.”<sup>(22)</sup>

The scientist James Lovelock has developed a theory that cyclical plankton growth is further stimulated in a warmer world gripped by climate change. This growth contributes to higher levels of Dimethyl Sulphide (DMS) emissions. Lovelock, amongst other scientists, believes that higher levels of DMS may cause more cloud condensation with a result that our planet may cool. Understanding the interconnection between water, plankton and cloud formation may be useful in controlling climate change processes.<sup>(23)</sup>

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<sup>21.</sup> Robert D. Barnes, *Invertebrate Zoology*, 3rd ed. (USA: Press of W. B. Saunders Company, 1974), 13-15.

<sup>22.</sup> Richard Dawkins, *The Oxford Book of Modern Science Writing* (London: Oxford University Press, 2009), 135-136.

<sup>23.</sup> Phillip Ball, *H<sub>2</sub>O, A Biography of Water* (London: Phoenix Books 2000), 65.

Sculptural forms in *Reef Lab 2012* express cyclical life processes within an ocean reef that are disrupted and impacted by climate change forces. Plant and coral forms appear to be damaged, bleached or reduced to fragments.

### ***Forces: Climate Change***

Each of my two major sculptural assemblages addresses climate change forces in different ways. *Melt 2012* expresses ‘movements’ through implied dissolution of, glaciers and icebergs attributed to global warming. Ice-like sculptural forms are implied to be in the process of breaking down and melting into liquid pools. I describe global warming through a visually-poetic language that highlights what is valuable and what could be lost. *Reef Lab 2012* combines scientific laboratory apparatus with sculptural forms that evoke a coral reef impacted by ocean acidity and coral bleaching. Mounds of coral-like rubble represent the process of fragmentation and decay in a once thriving and vital reef.

Ocean acidification, coral bleaching, and global warming are addressed in this research as climate change forces. Climate change is affecting the underlying workings and processes in the ocean. The natural world is currently feeling the impacts. The science is clear on what is happening but not on the repercussions of climate change. For climate modelers it is difficult to predict the precise consequences to the marine world. Academic Robert Manne believes that:

“global warming is happening; that is primarily caused by the emission of greenhouse gases, most importantly carbon dioxide; and that it is certain to have profound effects in the future – the science is truly settled...concerning the precise impact on global temperature and on sea levels, the acidification of the oceans, the rate of melting of icesheets and glaciers, the pace of extinctions, the prevalence and intensity of hurricanes , wildfires, drought and disease – of course the science is not settled.”<sup>(24)</sup>

I have strong environmental values and this is expressed through my visual arts practice. Scientific data on climate change is very important form of communication. As an artist I express climate change in other ways – through immersive installations that communicate through a visual sculptural language.

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<sup>24</sup> Robert Manne, “On a paper trail where science is sidelined”, *The Age*, September 3, 2011.

My material qualities and sculptural forms invite the viewer into an environmental discourse. Through this method, I draw attention to the wonders of the ocean environment, as well as to its threats. Jean Michel Cousteau writes poetically about watery processes:

“Water is the magician, the alchemist, the poet, the cradle, the melody of the elemental universe. Water is often invisible yet everywhere. It hides in the air we breathe as vapor, falls from the sky to quench our thirst, drapes our mountains in crystalline snow, lifts and caresses us in play...This is the stuff of miracles.”<sup>(25)</sup>

### ***Water Earth, Fire and Air Transformations***

I transfigure my observations of the natural world as a transformation of both form and material. Transformational states represented in my sculptural forms imply natural processes that have gone awry due to climate change impacts. As well as this, clay and glaze materials are transformed through the ‘making’ processes.

My studio research explores the foundational elements of life; earth, water fire and air through the materials of clay and glaze. My making processes and investigations are an important expression of ‘base processes’ research.

Through my sculpture I explore the tension between clays inherent fluidity and its transformation through kiln firing into a concrete state. After firing, when all water has dissipated, my fluid curvilinear forms express the memory of this water. Water is a fundamental component of plastic clay. Approximately 35% of the weight of plastic clay is water. If water is increased to around 50%, clay will become a liquid.<sup>(26)</sup> Frank Hamer writes about water and clay interactions:

“clay contains water in the crystal structure called bound water; water in the holes between the particles called pore water; and water to allow the particles to slide past one another called water of plasticity.”<sup>(27)</sup>

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<sup>25</sup> Susan Van Wyk, *Deep Water; Photographs 1860-2000* (Melbourne: National Gallery of Victoria, 2011), 25.

<sup>26</sup> Daniel Rhodes, *Clay and Glazes for the Potter*, 2<sup>nd</sup> ed. (London: Pitman Publishing, 1977), 13.

<sup>27</sup> Frank Hamer, *The Potters Dictionary of Materials and Techniques*, (New York: Pitman Publishing, 1975), 61.

My practice is process driven. I transform clay forms into a durable rock like material through kiln firing. An alchemy of fluxed glazes and textural clay surface is achieved through heat. Similar processes of transformation occur naturally through geological events. For me both processes are compelling.

I am intrigued by the oceans transformational processes. For example, the silica and calcium that is released by rocks and washed out as clay via the rivers to the sea is used by small marine creatures including plankton to build their external shells or skeletons. I also use these types of materials to make my clay sculptures.

The possibility of transforming the most ordinary of materials into expressive objects – that continue to speak of their foundational elements and processes – is what draws me to clay and glaze. Mircea Eliade wrote:

“One could say that the anxious search for the origins of life and mind; the fascination in the ‘mysteries of nature’ the urge to penetrate and decipher the inner structure of matter—all these longings and drives denote a sort of nostalgia for the primordial, for the original universal matrix, matter, substance, represents the absolute origin, the beginnings of all things”.<sup>(28)</sup>

The fifteenth century alchemist Paracelsus saw the extraordinary in ordinary processes. He wrote about transformations:

“For the Alchemist is a baker, in that he bakes bread; a wine merchant , seeing that he prepares wine(...) (sic); so what ever is poured forth from the bosom of nature, he who adapts it to that purpose for which it is desired is an alchemist.”<sup>(29)</sup>

Paracelsus considered the four elements of life as the universal matrix for the world. He understood that complex life comes from the seemingly ordinary elements of earth, water, fire and air. The process of transforming basic materials of nature into a concrete form is intrinsic to my research. Paracelsus poetically describes primordial processes:

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<sup>28</sup>. Mircea Eliade, "The Quest for the 'Origins' of Religion", *History of Religions*, .vol.4. issue 1 (1964): 158.

<sup>29</sup>. Jacob Wamberg, *Art and Alchemy* (Copenhagen: Museum Tusculanum Press; University of Copenhagen 2006), 143.

“Water was the matrix of the world and all its creatures...just as the noblest and most delicate colors arise from this black foul earth, so various creatures spring forth from the primordial substance that was only formless filth in the beginning. Behold the element of water in its undifferentiated state! And then see how all the metals, all the stones, all the glittering rubies, shining carbuncles, crystals, gold and silver are derived from it; who could have recognized all these things in water.”<sup>(30)</sup>

Clay and minerals like many phenomena in the universe, behave in ordered and chaotic processes. When the scientist Richard Dawkins looked at images of clay and other minerals that have been scanned by an electron microscope, he observed tiny crystals that had grown into a surprising range of shapes and patterns. Dawkins discovered that these complex patterns, at higher levels of magnification, revealed flaws in these seemingly ordered patterns. Apparently, all naturally occurring crystals have flaws. Once such a flaw appears it tends to duplicate itself. Clay forms in the waters of our earth and, when fragments break away, acts as seeds for new crystals that will pass on these flaws. Looking at images of clay crystals in Dawkin’s book *The Blind Watchmaker* I can see feather, spiral, angular and flower formations.<sup>(31)</sup>

Water is perhaps the most important catalyst in geological change. Rivers and glaciers grind and break down rock into smaller and smaller particles, until it eventually begins to accumulate and build up as clay. Plants also assist in the weathering process, breaking up rocks and clay with their roots.

The cyclical nature of the clay formation begins with water and dust. Clay is composed of silica, metallic oxides and other minerals. Clay is also alive with microscopic life, water, microbes, and organic materials trapped within clay particles. Clay is the end product from weathering processes erosion and water action. When the conditions are right, rock minerals crystallize out of watery solutions in rivers to make clay. The sea is salty through the leaching of minerals within earth that have been washed out to sea via rivers.<sup>(32)</sup>

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<sup>30</sup> Phillip Ball, *H<sub>2</sub>O, A Biography of Water* (London: Phoenix Books, 2000), Preface Citation.

<sup>31</sup> Richard Dawkins, *The Blind Watchmaker* (London: London Folio Society 2007), 161.

<sup>32</sup> Daniel Rhodes, *Clay and Glazes for the Potter*, 4<sup>th</sup> ed. (London: Pitman Publishing, 1977), 5.

When my clay forms are kiln fired they become resistant to fragmentation and weathering. The hardening process begins through a quartz inversion when the original crystalline structure of the parent rock is resumed. The clay begins to harden, tighten, and partial glassification occurs. The crystal-like structure of this transforming material becomes tightly interlocked. This process is what makes clay strong.<sup>(33)</sup> Fired clay objects survive over time like few other materials, sometimes lasting tens of thousands of years. Ancient clay objects continue to provide much knowledge about past times and cultures.

## ***Making***

Clay is used by internationally recognized contemporary sculptors including Anne Wenzel, Richard Deakon, Tony Cragg, Anton Reijnders, and Antony Gormley. Art historian, Judith Collins writes about clay as an art material.

“As a material for making shapes, clay has a long history. A primal material, messy, sensual and readily available, clay is a universal language of vessels and vases... Until recently, clay was seen as too low a material for fine art, and artists who used it were classified as digressing from their major activities, playing like children making mud pies.”<sup>(34)</sup>

Making for me, is a multi layered approach involving intention, technique and instinct. After many years of working with clay, some techniques have become second nature; however, this research offers creative challenges that result in new skills and conceptual development.

Making clay works by hand is important as it allows time to think through ideas and react to new approaches that are revealed during this slow process. I manipulate the clay qualities, but I also allow it to influence my decision making. I respond to clay's physicality, fluidity and strength. Author, Luciano Fabro writing reveals to me the highly significant 'physical' act of making art.

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<sup>33</sup> Ibid., 17.

<sup>34</sup> Judith Collins, *Sculpture Today* (London: Phaidon Press, 2007), 188.

“Art is doing: it is not only knowing, not only thinking, not only using. It is doing: constructing consciousness by constructing things.”<sup>(35)</sup>

At the studio, I contemplate ideas that have surfaced during the field research activities including observations, drawing and photography. I begin by making small maquettes that are like spontaneous responses to these ideas. Some of these maquettes become a catalyst for larger works produced for my installations.

Making large works requires planning for structural constraints. Considerations include: weight, centre of balance, thickness of walls, interior and exterior supports. Maquette proportions can not just be scaled up as they need to be changed so that works looks right. It’s an intuitive process for me. Maquettes are just starting points – concepts change in the process of making the work.

The large sculptures *Time and Tide I* 2010 are fluid forms that I built from soft slabs of clay that are joined together with liquid clay slurry. All forms are hollow constructions. Clay is a heavy material so curves can flatten out during making, reducing a sense of volume. Heating the clay as I work solves this problem. At ‘leather hard’ stages more clay is added to extend the forms and the heating process is repeated, followed by more clay additions. Proportions are adjusted as work progresses. Some of the forms fork out in two or three directions. Works are shaped and scraped back with metal ribs, to refine the form and surface. This is the most time consuming activity. Layers of colored liquid clay slip are then applied to the surface. Each work will then need several weeks of drying before the first firing.

The kiln’s heat transforms my sculptures into their final state and, in doing so, makes tangible and concrete the expression of ‘base processes’. The first kiln firing (Bisque) is heated slowly to around 1000 degrees Celsius and takes about 13 hours. Firing is a slow process to allow for Quartz inversion and shrinkage of up to 8% as a result of loss of water and compaction of particles. When the first firing is over it is left to cool for twenty–four hours. Colors and glaze are then applied to the work. It is then fired to 1200 degrees during a ten hour firing, followed by twenty–four hours cooling. Temperatures have specific

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<sup>35</sup> Lesley Duxbury and Elizabeth M. Grierson and Dianne Waite, *Art as Research in the Academy* (Melbourne: RMIT University, 2008), 18.

colors during firing. At around 600 degrees, the inside of the kiln is a dull red. By 900 degrees it is orange. By 1200 degrees the heat is yellow/white. Looking through the kiln's spy hole I can check the pyrometric cones, which soften and bend at specific temperatures to indicate heat work. I also see the melting glaze in its fluid state.

## ***Field Research and Photography***

'Base processes' are recorded through my photographic images of phenomena. In everyday life we may look at the ocean environment in a cursory way. My intention is to perceive the environment in new ways that goes beyond appearances and preconceptions. I focus on movements that express the underlying processes in the ocean environment. The camera records changeable, momentary phenomena, things that can disappear in a blink of the eye. This may be the sweep of a fish's tail or airborne foamy water. The camera allows me to freeze motion so that I can study phenomena as static form. Images also capture intangible phenomena like space, wind, light and water reflections. I also take close-up photos that reveal detailed structures and textures. Observation and photographic documentation informs this research about 'base processes'. The hundreds of photographic images I produced over three and a half years are primary documentation of field research. I include in the overall exegetical documentation only those images that are intrinsic to written explanations. A DVD of videos, including those used in installations, is incorporated in this documentation.

### MATRIX OF LIFE (fig. 1.1)

Field notes (Western Australia 2010). At Hamelin Pool I am looking down into the water at one of the earliest life forms on earth. When the sun slips from behind the clouds, the sea bubbles with oxygen production caused by photosynthesis. I am at Shark Bay, a world heritage site and I am looking at stromatolites in a hyper-saline pool. Stromatolites first appeared on earth about 3.5 billion years ago, before any plants or animals as we know them existed. These structures are formed by the cyanobacteria which cement particles of rock together.<sup>(36)</sup> They are domed structures that grow very slowly, at about 0.3mm a year. This is one of the best examples of the few colonies that exist in the world. From this

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<sup>36</sup> Peter Frances and Angeles Gavira Guerrero (snr. eds.), *Ocean: The World's Last Wilderness Revealed* (New York: DK Publishing, 2008), 233.

experience, the interaction between foundational elements of fire (sun in proxy), earth, water and air, is made visible. I contemplate the beginnings of life and the elements and processes that formed this early form of life, billions of years ago. It is humbling to reflect that the human presence has only been around for two million years.



fig. 1.1

## FIRE (fig. 1.2)

Field notes (Vanuatu 2011): Volcanic phenomena enrich my understanding of ‘base processes’. Working with fire is part of my ceramic practice. I travel to Vanuatu to see volcanic activity. In this region volcanic action plays a part in the formation of islands. At Tanna Island, Mount Yasur volcano is active most of the time. It is possible to climb the volcano to its rim and witness lava bombs flying overhead. Huge sprays of molten rock light up the night’s sky. The hot rocks gravitate to the ground, to solidify as rounded domes. These domes are remarkably light, because of lava’s aerated structure. Body jolting ‘shock waves’ occur every minute or so and I actually see these waves of released energy as spatial ripples that are not dissimilar in appearance to water ripples. I am told by my guide that most of the earth’s volcanic activity occurs under the sea and that it can take up to nine months for the lava to travel from the earth’s core to the surface. I have not seen an active volcano before and find the experience extraordinary. The earth is truly ‘alive’.



fig. 1.2

## MOVEMENT PROCESSES

There are two areas of focus in this part of the field research. Firstly, I explain movements observed in the fluid space of the underwater realm. Secondly ‘other world’ is a term I use in my research to refer to unfamiliar, enigmatic phenomena that I experience as unearthly in this real world. I reference a quote by French poet and author Paul Eluard:

“There is another world but it is this one”<sup>(37)</sup>

The following observations have touched my senses in a lasting way and informed my research on spatial concepts developed for sculptural installations. Field notes (Ningaloo Reef, Western Australia 2010): I am immersed in the ocean, far from the continental shelf and shoreline. As I swim along, the water is very dark and, as there are no fixed points of reference, I can not sense my own movement. Minute bubbles within inky-blue water punctuate the vast depths. The water is warm and soupy with tiny moving plankton – some just visible. I observe the glow around a slowly moving whale shark as its huge frame slowly comes towards me. It appears like a moving shadow. The whale shark’s powerful sweeping tail moves rhythmically from side to side, leaving a trail in an S-form. It is well camouflaged with sun-dappled patterns on its back. As the largest fish in the ocean, the whale shark is awe inspiring. In this case, my underwater photos do not adequately capture this experience of an ‘other world’.

Some days later I come across a large Manta Ray which I am also able to swim with. It moves rhythmically, appearing to fly through a liquid space. Suddenly it stops and very slowly does a series of circular backward somersaults, its mouth wide open as it feeds upon minute plankton. It is the most wonderful movement I have ever seen underwater. Manta rays are also known to literally fly out of the water. I thought of Leonardo da Vinci’s analogy between air and water when he compared the flight movements in birds and fish:

“write of swimming under water and you will have the flight of the bird through air”.  
(38)

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<sup>37</sup> “Paul Éluard”, The Art and Popular Culture Encyclopedia,  
[http://www.artandpopularculture.com/Paul\\_Eluard](http://www.artandpopularculture.com/Paul_Eluard), (accessed January 2, 2013).

Fortunately, Ningaloo Reef is now protected as a World Heritage listed area. It is the most easterly point along the Western Australia coast. This reef runs alongside a wind blown desert. This extraordinary mixture of ocean ecology and hot arid landscape appears as an ‘other world’.

## FROZEN MOTION

Field notes (Mornington Peninsula, Victoria 2011): I observe fleeting, half–seen glimpses of extraordinary underwater movements; back–flips, sidestrokes, duck–dives, darting turns and spiral twists. I document these movements with my camera. Freezing the motion, I examine blurred and abstract images that effectively describe movement processes. The water acts like a lens that veils or breaks up the subjects form. I discover that subject matter is secondary in research about movement types and that these image–ideas could be applied to my sculpture making. My subject is a seal pup swimming nearby as I wade in the water.

Field notes (Ningaloo reef, Western Australia 2010): I have a similar encounter with a pod of dolphins. Wading in shallow water, they swim around my legs. I analyze their powerful movements through my camera. The most successful images are blurred by the water movement. I am interested in images that capture my half–seen views of their stream–lined bodies morphing into the waves.

I re–read Herman Melville’s *Moby Dick* and am inspired by his description of the tail movements of a whale:

“Five great motions are peculiar to it. First, when used as a fin for progression; second, when used as a mace in battle; third, in sweeping; fourth, in lobtailing; fifth, in peaking flukes. First being horizontal in its position, the leviathan’s tail acts in a different manner from the tails of all other sea creatures. It never wriggles. In a man or fish, wriggling is a sign of inferiority. To the whale, his tail is the sole means of propulsion. Scroll–wise coiled forwards beneath the body, and then rapidly sprung

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<sup>38</sup> Richie Calder, *Leonardo & the Age of the Eye* (New York: Simon and Schuster, 1970), “Paul Éluard”, 215.

backwards, it is this which gives that singular darting, leaping motion to the monster when furiously swimming.”<sup>(39)</sup>

The Ocean provides glimpses of ‘other world’ processes and movements. Melville writes, “Deep blue, bottomless soul, pervading mankind and nature, and every strange, half–seen, gliding, beautiful thing that eludes him; every dimly–discovered, uprising fin of some indiscernible form”.<sup>(40)</sup>

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<sup>39.</sup> Herman Melville, *Moby Dick or The Whale*, 4<sup>th</sup> ed. (USA: North Western University Press & the Newberry Library, 1988), 411.

<sup>40.</sup> *Ibid.*, 173.

## 2. REEF LAB METHODOLOGY

The ‘sculptural assemblage’ *Reef Lab* 2012 is a major outcome from my studio research. The theoretical methodology investigated over three and a half years culminates in this artwork. ‘Sculptural assemblage’ refers to my mixed media, cross-disciplinary installation practice that offers the viewer visual, physical, conceptual, and tactile experiences. The three core areas in this research investigation are: sculptural form, material qualities and climate change concepts related to an ocean reef.

The key research questions: How will I visualize the underwater environment as though for the first time and perceive it as an assemblage of ‘base processes’? How will I create a ‘sculptural assemblage’ that makes tangible and concrete the changeable and complex underwater processes and phenomena I investigate through field research?

I examine ‘base processes’ in ocean reefs through physical and intangible phenomena that demonstrate movements, forces and cycles. Water, earth, fire (sun) and air are the foundational elements of life and are expressed through water, earth, light, air and CO<sub>2</sub> interactions – that bring life and growth to an ocean reef. Wave and cyclical tidal motions oxygenate the water and distribute nutrients essential for growth. These nutrients include those that have been washed down via rivers into the sea. Carbon dioxide from the atmosphere is dissolved in the sea contributing to the photosynthesis process for coral and plant growth. However, too much CO<sub>2</sub> causes ocean acidification that may damage marine ecology including corals. This research on ‘base processes’ is demonstrated through my installation *Reef Lab* 2012.

In this research ‘base processes’ and the foundational elements of life are expressed through the material properties of clay and glaze used in my artworks. My ‘fluid’ curvilinear forms express the memory of water. When my clay forms are transformed through heat, the water disappears, but an implied water presence is still visible through the form’s fluid and flowing shapes. Glass, glaze and resin are materials I also use in *Reef Lab* 2012. They have fluid qualities that I use to express water.

A large part of this ‘sculptural assemblage’ is ceramic, including coral-like and plant-like forms, as well as structures that imply water formations. Forms are a synthesis of images

developed from my observations and interpretations of coral reefs and other ocean phenomena. Many forms have colored pattern striations to suggest underwater light patterns that interact with surfaces. My underwater digital images and a video of tidal water ripples and sunlight interaction also make up this artwork.

*Reef Lab 2012* is an installation that implies natural growth processes in an ocean reef impacted by ocean acidification and coral bleaching, as a result of climate change ‘forces’. Sculptural forms representing growth, fragmentation and decay suggest natural processes that have gone awry. I also include a lab assemblage as a metaphor for science that tests and measures complex climate impacts that contribute to our understanding of the natural world. However, a chaotic arrangement of mass produced test tubes positioned at the meeting point of the Reef and Lab is a metaphor for industrial processes that contribute to climate change. These two metaphors demonstrate competing scientific and industrial intentions.

Field research is the fundamental research methodology that I use to examine ‘base processes’. My observation based research seeks to re–discover phenomena and interpret it through visual imagery. The intention is to subtilize my senses and see things as though for the first time.

The underwater experience of three–dimensional space offers new perceptions that are insightful. I can view what is below, in front and above me, as well as through the water to the sky or land. I gaze at the fragmentary phenomena, moving to the rhythms of currents. Sunlit water–ripples reflect onto the fish, corals and sandy ocean floor. These moving patterns break up the shapes of plants and corals. The reef becomes a kaleidoscope of ever–changing patterns and forms. There are poetic qualities to these perceptions and experiences.

Visual poetic concepts are explored through rhythmical and fragmented imagery. I investigate aspects of the ocean environment that are half–seen or enigmatic. I see and perceive parts, as well as the whole. After one underwater dive I wrote about water, light and air interactions: schools of fish like vapor clouds moving as one ever–changing pattern...flickering sun–light like a pulse...feathery tentacles stretching out...Seeing through a cluster of light filled bubbles...Each fragmentary perception is captured as a

mental image. I see these perceptions and thoughts as three-dimensional ideas. The similarities and differences within phenomena, establish visual poetic rhythms and contrasts. These experiences are reconfigured sculpturally.

Physical and also intangible ocean phenomena are transfigured through my visual poetic language. This approach is expressive rather than figurative or representational. Kim Dickey writes about poetic quality in visual arts – that gives form to intangible phenomena:

“Poetic quality, an attribute often identified in the visual arts. Both poetry and art share an ability to structure metaphors, juxtapose unrelated images in the creation of new meanings and to give voice to the ineffable, tangible form to the intangible.”<sup>(41)</sup>

Water movement makes ‘base processes’ visible. This is an important finding that results from my field research methodology. Questions include: How will I express sculpturally the momentary interaction between moving water, air and light and express this through static form? Water is examined as a form maker. Field research investigates formations including: waves, ripples, eddies, foam, bubbles and splashes. I examine momentary processes including underwater turbulence and water reflections. I create videos, photos and drawings that captured water qualities. These images are used to set off sculptural ideas. In my studio methodology underwater movements are imaged and expressed through static sculptural form.

I develop a sculptural vocabulary of curvilinear forms to suggest underwater movements including waves and turbulence. *Reef Lab 2012* includes a large quantity of forms assembled as groupings. As part of this ‘sculptural assemblage’ I represent water forms through circular; skeletal and asymmetric structures. This installation makes tangible and concrete the changeable underwater phenomena I observe.

Curvilinear form suggests motion in my forms. Art historian Paul Crowther writes about the sculptural expression of movement and change:

“And what one looks for is a sense of vitality enjoyed and celebrated for its own sake, through visual transformations of subject-matter, and /or material. In the case of non-

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<sup>41</sup> Kim Dickey, *2010 Sidney Myer Fund Australian Ceramic Award Catalogue* (Shepparton: Shepparton Art Gallery, 2010), 5.

figurative works, of course, this involves identifying visual cues, which are suggestive of motion and change... – for example, through an emphasis on curvilinear features”  
(42)

### **‘Sculptural Assemblage’**

*Reef Lab* 2012 (fig. 2.1–2.4) includes a large reef-like foundation that is covered by a great quantity of coral-like forms as rubble. Imbedded within this structure are around fifty sculptural forms arranged in groupings. A quasi lab forms part of the installation. This sculptural assemblage may be moved around, as it occupies a spatially-defined area on the floor of approximately 550 cm x 250 cm. It ranges in height from floor level to 175 cm. This installation is not static and can be re-configured to relate to specific gallery sites.



fig. 2.1

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<sup>42</sup> Paul Crowther, *Phenomenology of the Visual Arts* (California: Stanford University Press, 2009), 94.



fig. 2.2



fig. 2.3



fig. 2.4

This ‘sculptural assemblage’ installation needs to be experienced through physical involvement and must be moved around to be fully seen. The viewer can explore its detail and complexity from multiple points. The scattered coral-like rubble at the edge of this assemblage, also offers a tactile experience.

A video of sunlit water ripples is projected over parts of *Reef Lab 2012* (fig. 2.5–2.6 & Video I, II and III). This video simulates underwater tidal water moving over the reef-like sculptural forms. The flickering light ripples create sensual rhythmic movements. However, on close inspection we may see that the ripple patterns are chaotic. My video is a metaphor for the oceans changing chemistry and the threat of acidification. The subtleties of ‘base processes’ are revealed. I trial a number of methods in the studio including framing the video as a large oval light over a part of the installation. In this way the directed video light is used to both reveal and conceal sculptural form. My further aim is to create a spatial immersion for the viewer that takes them out of their everyday experience into a psychological underwater realm.



fig. 2.5



fig. 2.6

I will briefly explain concepts developed from field research and applied to particular forms in *Reef Lab* 2012. I have titled them for reasons of identification.

*Reef Lab (Water as Form Maker I, II)* (fig. 2.7–2.8) suggests underwater and surface waves and ripples. Curvilinear forms are developed as groupings to express moving water. Asymmetric and circular based shapes interact spatially. Transforming circular forms are poetically expressive of rhythmical and chaotic water motions.



fig. 2.7



fig. 2.8

*Reef Lab (Chaotic Forms)* (fig. 2.9) references my observations of artificial objects underwater and washed up by a high tide. They are unrecognizable yet vaguely familiar. Fragments of things transformed by years of water immersion. The movement of the sea is constantly breaking down organic and artificial things, re-modeling, dissolving, and changing objects into strange things. After years in the water, artificial things may look organic and reclaimed by the sea. Many things get tangled up together in chaotic forms, reflecting the rolling motions in the sea. Tim Winton, the author, is an avid beachcomber and draws much inspiration from the sea. He writes:

“half the pleasure of beachcombing lies in wondering, anticipating the find...everything you find looks ancient and mysterious...Yet however comforting and peaceful beachcombing is, it ends up like the sea, as disturbing as it is reassuring....You will only find the dead, the spilled and cast-off. Things torn free of their life or their place.”<sup>(43)</sup>



fig. 2.9

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<sup>43</sup> Tim Winton, *Land's edge: a Coastal Memoir*, 4<sup>th</sup> ed. (Victoria: Penguin Group Australia, 2010), 97-99.

*Reef Lab (Branching Forms I, II)* (fig. 2.10–2.11) interprets corals and plants with branching structures that suggest growth. Sculptures reflect a simplification, change and rearrangement of elements that I visualize in corals and plants. A grouping of forms suggests underwater rhythms – their bent forms imply the affects from turbulent currents. Colored pattern striations suggest water and light interactions. A number of long forms shaped like enlarged coral polyps are totally white to suggest coral bleaching (fig. 2.21).



fig. 2.10



fig. 2.11

*Reef Lab (Frozen Motion)* (fig. 2.12). Water is an immense force and its movements can quickly transform from ordered to chaotic. This research results in curvilinear forms that interact spatially to represent dynamic water movements as ‘frozen motion’. Sculptural forms also imply colliding waves as well as surging water that over time erode rock formations.



fig. 2.12

*Reef Lab (Intersecting Waves)* (fig. 2.13) reflects the gestural dynamics of intersecting waves as implied motion. I observe these types of movement in rips and sandbars, where waves approach the shore at different angles, colliding and distorting in the process.



fig. 2.13

*Reef Lab (Fin Crests)* (fig. 2.14) is a group of forms that can be read as both fins and waves. I arrange these wave-like fins in an S-composition.



fig. 2.14

## ***Ocean Acidification and Coral Bleaching***

An important research question is: How will my sculptural forms offer the viewer a discourse with climate change issues?

Embedded in *Reef Lab 2012* (fig. 2.15–2.20) are forms that imply an ‘underwater lab’. My quasi lab represents the measuring and testing of complex ‘base processes’ to detect climate change. The lab is a metaphor for the science that benefits our understanding of climate change. This part of the installation includes glass lab apparatus, clay forms, thermometers, and photographic transparencies. These objects are embedded in water-like resin, within ordered metal tins to imply water, shifting, mixing and dissolving substances. Some apparatus have been inverted, with specimens of real corals framed within.



fig. 2.15



fig. 2.16



fig. 2.17



fig. 2.18

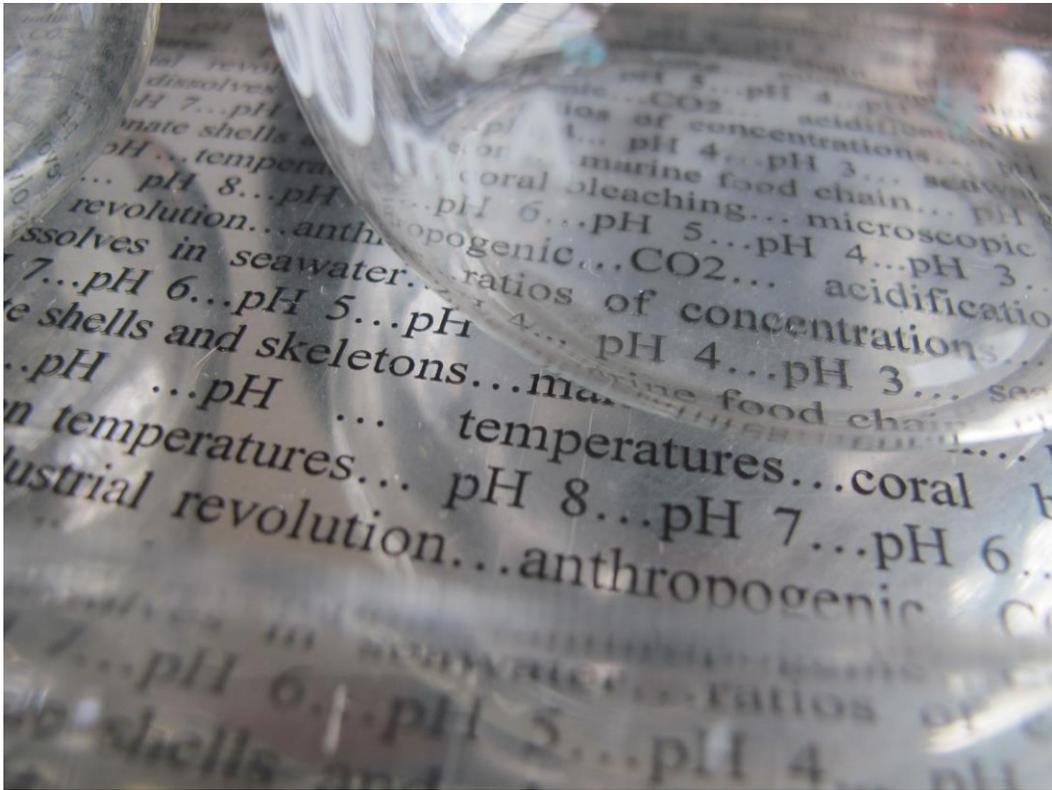


fig. 2.19



fig. 2.20

There are many processes described through *Reef Lab 2012* (fig. 2.21–2.23). Some parts of this installation suggest healthy life processes and growth through colorful vital forms, while other forms appear damaged. Global warming is expressed as a ‘force’ in this research.

My lab arises from the imagination, and signifies both order and chaos. I present a scientific scenario that suggests measuring, and testing for evidence of coral bleaching and ocean acidification. The lab is placed near a large quantity of forms suggesting dead coral and rubble. The lab in this context indicates natural processes that are breaking down into chaos. Efforts to save this reef scenario may be too late.



fig. 2.21

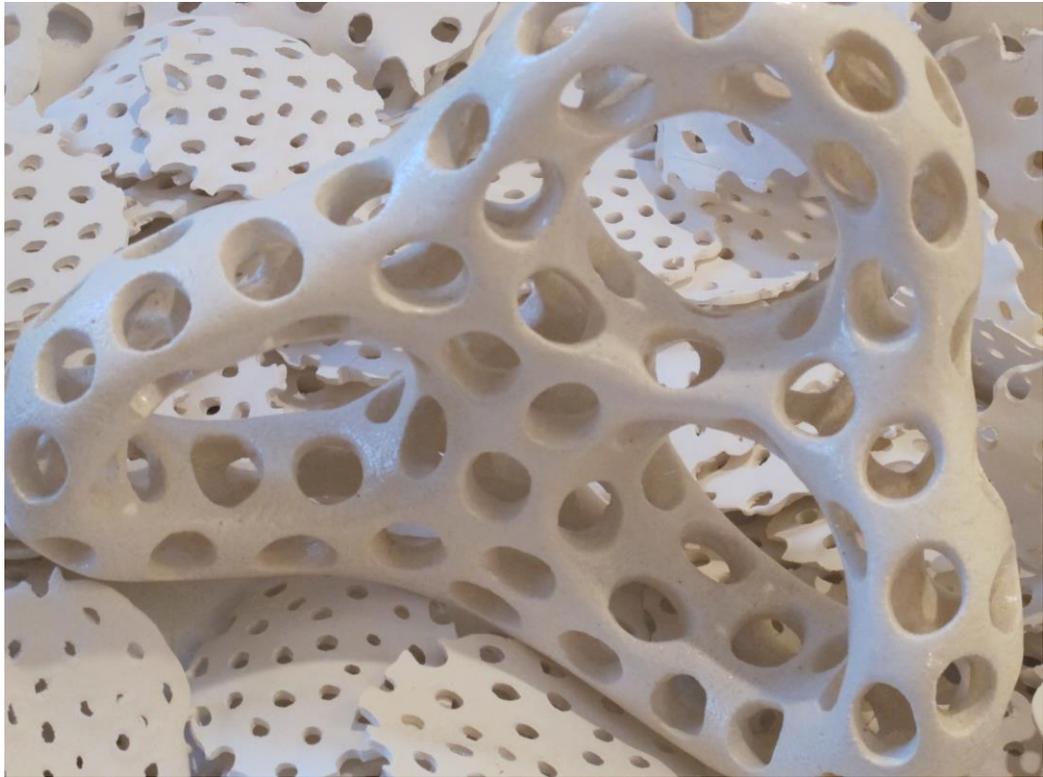


fig. 2.22

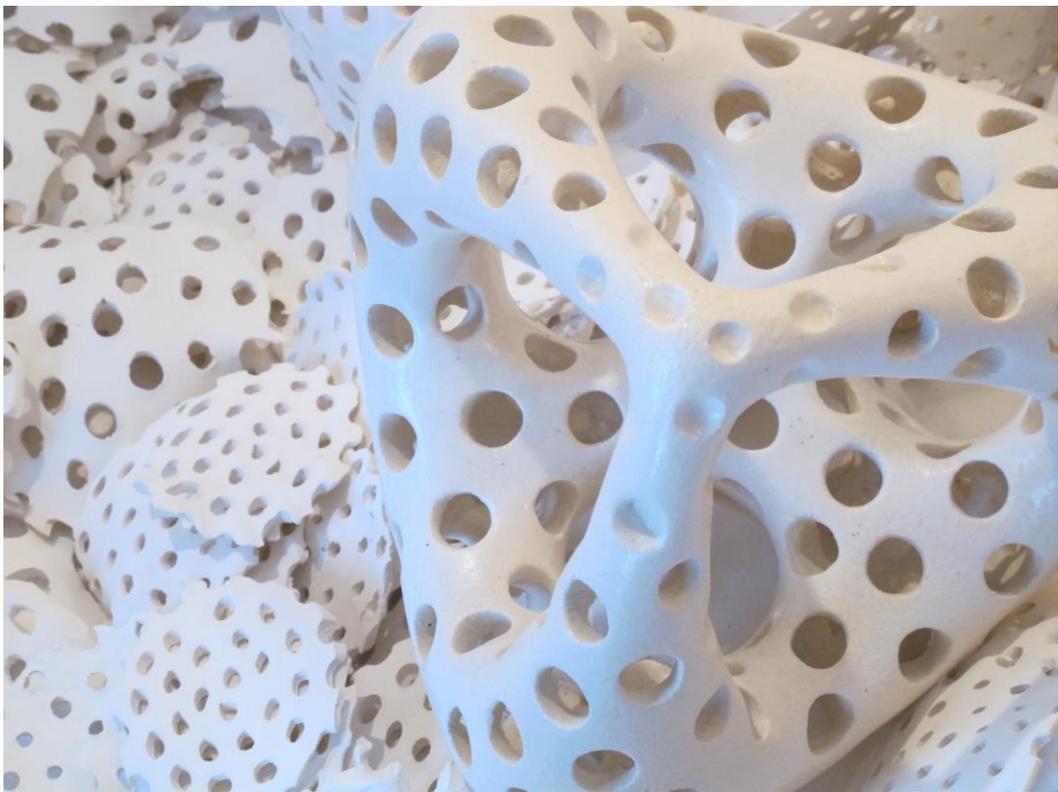


fig. 2.23

The ceramic coral-like rubble within this sculptural assemblage suggests damaged brain and lace corals I observed underwater. Coral bleaching can occur when the algae that lives within a coral vacates it or dies – usually triggered by warming oceans. The ceramic rubble I make is perforated to signify the polyp cavity that is exposed when coral dies.

Making thousands of pieces of coral-like rubble is a carefully considered process. I make each piece by hand in respect for corals unique qualities; the physically-laborious process of making the coral-like forms is my way of honoring the natural world. Studio processes also include the deliberate breaking down of circular shaped rubble into further fragments to signify damage and fragmentation associated with environmental impacts. (fig. 2.15)

Order and chaos are important concepts in *Reef Lab* 2012 (fig. 2.16). The ordered metal tins in this installation contain ‘close up’ images of brain corals that have a repetitive cell like structure. A first impression may assume an ordered structure in nature. However, close examination reveals the corals to have an irregular pattern. These subtleties demonstrate to me the natural chaos and asymmetry of nature and its processes.

A media image and article about the Heron Island Research stations underwater laboratory is a reference for my research methodology. Their lab is very different to mine as it is made up of tanks, tubes, cables, pumps and high-tech instruments. The Heron Island research centre is operated by the University of Queensland. Their laboratory has been set up in a real fringing coral reef to specifically test for ocean acidification. High levels of carbon dioxide emissions in the atmosphere are being absorbed into the oceans, affecting ocean acidity. The article states that the chemistry of the ocean is changing at an unprecedented rate. Their underwater laboratory measures the CO<sub>2</sub> levels and its effect on corals. The article explains this process:

“Ocean acidification occurs when carbon dioxide dissolves in naturally-alkaline sea water, forming a weak carbonic acid...the process lowers the overall pH of seawater – by about 30 per cent over the past 200 years. It also soaks up carbonate ions, which

are crucial to marine organisms making their calcium carbonate shells and skeletons.”<sup>(44)</sup>

Professor Ove Hoegh–Guldberg states in a scientific paper:

“The rise of CO<sub>2</sub> leads to more corrosive , making it more carbonate Also, the threatened status and ecological to .” <sup>(45)</sup>

A pH of 7 is neutral and lower numbers indicate acidic levels. Ocean acidity causes the pH level in seawater to fall. According to Professor Ove Hoegh–Guldberg, ocean acidity is detrimental for any marine organism that makes calcium carbonate shells or skeletons, including corals. He states:

“If these organisms can’t compensate for that...reef growth will slow until the reef superstructure begins to crumble. If coral populations disappear you put at risk about a million or so species, and all the beautiful benefits to humans such as fisheries, coastal protection...” <sup>(46)</sup>

I am impressed by the science of testing for ocean acidity. I am also concerned at the harm CO<sub>2</sub> does to fragile coral reefs. Our dependence on fossil fuels is having an impact as CO<sub>2</sub> emissions continue to rise.

“Half of our greenhouse gas emissions are lofted into the atmosphere and a third are absorbed by the sea, rendering the water more acidic,...Greenhouse gas emissions from human energy consumption rose by 70 percent between 1970 and 2004, and are continuing to rise: eleven of the last twelve years have been the warmest since the beginning of the industrial revolution.” <sup>(47)</sup>

All sea life using calcium carbonate is under threat. For example, carbonate corals can dissolve in very acidic water. Planktonic organisms have calcium carbonate skeletons so

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<sup>44</sup> Jo Chandler, “Underwater lab the first to plot impact of climate change on reefs”, *The Age*, May 24, 2010.

<sup>45</sup> Alain F. Vézina and Ove Hoegh-Guldberg, “Effects of ocean acidification on marine ecosystems”, *Marine Ecology Progress Series*, Vol 373 (2008), 200.

<sup>46</sup> Jo Chandler, “Underwater lab the first to plot impact of climate change on reefs”, *The Age*, May 24, 2010.

<sup>47</sup> Deborah Cramer, *Ocean. Our Water Our World* (New York: Smithsonian Institution and HarperCollins Publishers, 2008), 211.

they are also vulnerable. They are a major part of the ocean food chain and therefore contribute significantly to marine biodiversity. Findings on ocean acidification from the US National Research Council indicate that:

“the current rate of change exceeds any known change in ocean chemistry for at least 800,000 years.”<sup>(48)</sup> <sup>(49)</sup>

### ***Reef Lab (Spatial Installation)***

This part of the research focuses on the spatial experience of *Reef Lab* 2012. This installation cannot be fully realized through an image in this exegesis, as it needs to be physically explored through its three dimensions, in space. This is a close-up and middle-range spatially-immersive exploration. Closely positioned sculptural forms suggest fluid spatial dynamics where water, plant and coral appear to morph together as one. Through this artwork, psychological space may be activated for the viewer whereby the reef structure becomes the physical activity and the gallery space becomes the implied ocean.

*Reef Lab* 2012 is an installation that is not static and can be adapted to various gallery spaces. This is one installation scenario. The lighting and video is focused on the assemblage so that the gallery walls dissolve into the background. The viewer may move into the space to see a complex reef-like structure made up of curvilinear forms. They may sense the free-flowing space from the interior to the exterior of the artwork.

One part of the assemblage signifies growth and vitality within a reef. Closer inspection reveals intricacies of form, texture, color and pattern. This sensory experience as we move through the work may also involve handling the fragmented rubble around the edges. A video projection of water and light patterns moves over sculptural objects (as well as the viewer). We may sense water flowing, circulating and shifting through this fluid space. This physical and intimate encounter may cause the viewer to think of their own underwater experiences. Further along the assemblage the color palette is subdued with seemingly-dead, mainly-white, coral-like bleached forms. Through these observations the viewer may reflect on what they know about coral bleaching and ocean acidification. They

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<sup>48</sup> Washington Bureau, “Emissions changing ocean balance”, *The Age*, April 25, 2010.

<sup>49</sup> National Research Council, *Ocean Acidification: A National Strategy to Meet the Challenges of a Changing Ocean* (The National Academies Press, Washington, 2010), 1.

may also wonder about the lab assemblage and consider what testing is implied. This may lead them to think about what is measurable. With close observation we see thermometers, and other measuring objects that signify quasi-testing processes for ocean acidification and coral bleaching. We may also find objects inscribed with Ph data that indicates ocean acidification levels. The viewer's participation completes the meaning in the work. They may reflect on this expression of growth, fragmentation and decay and consider what may be lost due to climate change impacts. They may also sense that scientific testing in this reef scenario has come too late to save it.

Author Paul Crowther discusses spatial concepts in his book *Phenomenology of the Visual Arts*. His ideas have parallels with the way I transfigure my field research into this sculptural installation. He describes how sculpture opens out spatial depth through its physical presence. Space becomes a site for three-dimensional sculptural activity.<sup>(50)</sup> He also explains the viewer's interaction with three-dimensional sculpture as a spatial experience that is not fixed: shape, size, surface and implied movement are realized differently for each viewer. Views change as we approach from different angles.<sup>(51)</sup> Crowther explains space and movement dynamics in sculpture:

“As a three dimensional medium the basic perceptual effect of sculpture is to solidify organic form, or motion, or to fill out empty space with material.”<sup>(52)</sup>

### ***Underwater Spatial Immersion***

Spatial concepts demonstrated in *Reef Lab 2012* are informed by underwater field research. In the context of this research there are three forms of spatial dynamics I am exploring: real space, physical space and psychological space. Physical space is made visible by the object, such as coral. Physical space heightens our sense of reality because it makes real space visible. There is also an immersive psychological space where senses are heightened and intensified promoting creative visualization.

My underwater dives offer multi-layered spatial explorations. A coral reef has many types of structures to explore including terraces, micro-atolls, caves, trenches and drop-off side

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<sup>50</sup> Paul Crowther, *Phenomenology of the Visual Arts* (California: Stanford University Press, 2009), 97.

<sup>51</sup> *Ibid.*, 74.

<sup>52</sup> *Ibid.*, 86.

elevations. Trenches and caves lead to a maze of transforming spaces within spaces. Navigating through close-up and mid-range spatial geographies is an intensely conceptual and sensate experience. Phenomena are literally close up and ‘in the face’. As I move towards different parts of a reef it becomes apparent there are ways of traversing through space and structures. A shoal of fish might part to reveal another level of space spreading out, full of plants and corals. Further on, I see a faint outline of a separate domed reef – its top illuminated by flickering sunlight. I swim towards it. The vast ocean space suddenly become real and present, when a reef shark appears from the darkness then disappears just as fast. Reaching the micro-atoll reef I dive under and discover it conceals a cacophony of marine life moving in and out of itself like a singular pulsating biomass. Beyond, the outer reaches of this reef the ocean floor suddenly drops away into complete darkness.

Field research involves physical perceptions such as touch. I feel things so that I can ‘know’ them through their form, multiple angles, texture and weight. Touch connects me to the underwater world and makes me feel part of it.

‘Looking’ is also a form of touch. Through field research observation and photography I examine marine phenomena close up to analyze their structures and movements – things missed by a casual glance. I also photograph middle distance underwater scenes to capture spatial depth. Sometimes images are blurred to capture water moving over phenomena including plants and corals. I am not intending a literal translation of phenomena. I am intent on expressing the essence of particular movements. “Haptic visuality” is a term used by author and video/film curator Laura Marks to describe a close-up and tactile way of looking at the world. In her book *Touch: Sensuous theory and Multisensory Media* she explains that this method is not the same as touching:

“In haptic visuality, the eyes themselves function like organs of touch...Because haptic visuality draws on other senses, the viewers body is more obviously involved in the process of seeing than is the case of optical visuality.”<sup>(53)</sup>

My intention is to visualize and image phenomena as though for the first time. For me, photographic images are much better at describing sensate qualities than words.

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<sup>53</sup> Laura U. Marks *Touch: Sensuous Theory and Multisensory Media* (USA: University of Minnesota Press, Minneapolis, 2002), 2-3.

Photographic images may suggest associations with the sense of touch for the viewer. We may feel that we are touching with our eyes. The aim of my images is to signify processes within this environment that go beyond the outer appearance of things. “Haptic visuality” draws out a subject’s uniqueness. Laura Marks explains how haptic visuality is different from normal vision. (Haptic visuality) “...is distinguished from passive apparently pre-given vision in that the viewer has to work to constitute the image, to bring it forth from latency.”<sup>(54)</sup>

The ocean environment is an immersive space where normal points of reference are altered. When I experience underwater turbulence, visibility can be greatly reduced. In response “haptic visuality” is more active. “Smooth space” is a term Laura Marks uses to describe this type of perception in a changeable environment. “...a space that must be moved through by constant reference to the immediate environment”.<sup>(55)</sup> In my research, close-up investigations and spatial experiences are a free flowing mix. My perceptions create mental images that are a synthesis of many observed forms and phenomena.

Making sculpture gives a concrete form to sensory perceptions and findings gathered from field research. Photographic images prompt memories. Making is a contemplative process that connects me with the ocean environment. Back in the studio with my hands in clay, touch is the way I express myself through the act of creating things. Thinking connects with hand movements in this physical engagement.

My field research methods include, observation, snorkeling, and walking. I prefer free-diving rather than scuba diving. The latter restricts my movements and the associated breathing bubbles can be distracting. My perceptions through physical engagement with environments provide the fundamental knowledge for my research. After some time in an ocean environment I tune in and start to see, feel and think more deeply about research ideas. In this way, a type of knowledge is found that could only be acquired through physical/bodily participation in such places. “Experiential knowledge”<sup>(56)</sup> as coined by Lesley Duxbury, is an important methodology.

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<sup>54</sup> Ibid., 13.

<sup>55</sup> *ibid.*, xii.

<sup>56</sup> Lesley Duxbury, “Lunch Time Forum”, Monash University Art and Design, Melbourne, May 5, 2010.

Artist, Lesley Duxbury explains this participation based knowledge seeking, as an experience that is not accessed through language. Duxbury writes about her relationship to the environment and how she physically responds. This becomes an essential part of her research methodology.

“Walking provides a natural pace to move through the natural world, and its speed allows for contemplation affording a unique experience of time...My thoughts when I am walking connect me to what I know, to what I have experienced and to what I have seen.”<sup>(57)</sup>

Through field research, physical engagement with the ocean environment heightens my powers of perception. Mental faculties are made more receptive to information gathering. “Experiential knowledge” is the outcome.

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<sup>57</sup> Lesley Duxbury and Elizabeth M. Grierson and Dianne Waite, *Art as Research in the Academy* (Melbourne: RMIT University, 2008), 20.

## ***The Essence of Experience***

My research intention is to investigate the essence of ‘base processes’ in ocean environments. My research looks beyond the everyday appearance of things. I visualize phenomena without pre-conceived views, conventions and rationalizations. Sensory experiences influence my thinking processes. Merleau-Ponty’s philosophy proposed in his book *Phenomenology of Perception*, published in 1945, informs my research. There are a number of his theories that I do support. This research selects those parts of his philosophy that focus on experience based knowledge and the perception of three-dimensional form in space.

I experience phenomena through many things including; processes, events, objects, and also occurrences of consciousness. When I am in the environment my senses present me with a conscious experience. What then follows is a process of cognition that results in the ‘essence’ of this experience. Merleau-Ponty explains how perception lays down the foundation or essence of an experience. Merleau-Ponty’s definition of Phenomenology is as follows:

“What is Phenomenology?...Phenomenology is the study of essences; and according to it, all problems amount to finding definitions of essences: the essence of perception, or the essence of consciousness, for example.”<sup>(58)</sup>

From my reading of *Phenomenology of Perception*, the body is explained as the primary vehicle in which to perceive and experience the world and its phenomena. Importantly, the body shapes the mind. The mind and body are not two distinct entities, because of the way they function together. The Cartesian separation of mind and body, as two different existences, is therefore rejected in this philosophy.

I believe that through our bodies the world is ‘described’ to us rather than explained. Our bodies experience the environment through eyes, ears and skin as we move through it, as a sensate awareness of the world. This experience can also be mediated by certain expectations presented by the mind. I understand that Merleau-Ponty is implying that there

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<sup>58</sup> Maurice Merleau-Ponty (Translated by Collin Smith), *Phenomenology of Perception*, 1st (english) ed. (London: Routledge & Kegan Paul Ltd., 1962), vii.

are three states involved in the ‘experience’ of phenomena: consciousness, the world and the body. In this way we perceive our world through a state of consciousness that is unique to the individual but, at the same time, the world also exists independently of our consciousness.

“In so far as I have hands, feet, a body, I sustain around me intentions which are not dependent upon my decisions and which affect my surroundings in a way which I do not choose... If the mountain appears high and up–right, the tree appears small and sloping; and furthermore in the sense that they are not of my own making, they originate from out–side of me”.<sup>(59)</sup>

Many things affect my ‘physical’ perception and experience of phenomena. I explore three–dimensional qualities in the underwater realm. For example, I can only understand the intricacies of form found in corals by swimming around them, to observe their depth, width, and height. I immerse myself within watery spaces that may be open or enclosed by a reef. I move my body to gaze, touch, and listen to all the activities around me. I can only really know an object if I see it from all angles. For example, I can only see one side of a coral at a time. I do not ‘know’ this coral unless I explore it through all of its three dimensions. I am interested in the unique qualities found in phenomena and objects.

Perception is a fluid state where spatial relationships are not fixed. Momentary perceptions fuse together with more concrete ones. For example, through underwater dives I perceived things in the distance flowing into things close–up. My aim is to capture these types of observation through photography as a means of informing this research. Merleau Ponty also appears to be writing about similar perspectives:

“If I walk along a shore towards a ship which has run aground, and the funnel or masts merge into the forest bordering on the sand dune, there will be a moment when these details suddenly become part of the ship, and indissolubly fused with it.”<sup>(60)</sup>

A poetic statement by Merleau–Ponty lays down his belief that our conscious existence cannot be understood without the mediation of the bodily experience. These experiences

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<sup>59</sup> Ibid., 440.

<sup>60</sup> Ibid., 17.

can form meanings and associations. In this way the subjective and objective experiences are united:

“Our own body is in the world as the heart is in the organism: it keeps the visible spectacle constantly alive, it breathes life into it and sustains it inwardly and with it forms a system”.<sup>(61)</sup>

I believe that a scientific analysis or explanation of phenomena will have no meaning unless experienced in a bodily way first. For me, I can only imagine the idea of not seeing and therefore not knowing the ocean and its phenomena. A scientific concept about ocean acidification, for example, would be meaningless and abstract if I had not seen the shell-based organisms that would be impacted by acidic seawater. Merleau-Ponty implies that unless we have had bodily experience and interaction with an object, thing or phenomena we cannot know it. Merleau-Ponty writes about the need to rediscover the natural world:

“We shall, therefore have to rediscover the natural world too, and its mode of existence, which is not to be confused with that of scientific object.”<sup>(62)</sup>

Through our technologically-driven lifestyle we are increasingly disengaged from the natural world. We cannot deeply know the natural world without perception of three-dimensional qualities through bodily interaction. We cannot really understand our world through ‘virtual’ digital experiences alone. The previous quote by Merleau-Ponty connects with my thinking about environmental issues. My position is that we need real interactions with the natural world so we can lay a foundational base for scientific knowledge – so, for example, we can begin to understand climate change.

Merleau-Ponty explains the process of perception through bodily experience. He has attempted to simplify a very complex concept. I respect his approach because in my experience simplification is challenging. Simplification involves minimization and reducing things to their essence. What is left is the essential knowledge or qualities in phenomena.

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<sup>61</sup> Ibid., 203.

<sup>62</sup> Ibid., 24.

## ***Field Research: Images, Notebook, Videos***

Field Research provides the primary references for *Reef Lab 2012*. Importantly, it is the fundamental methodology I used to explore ‘base processes’ in an ocean environment. Research for *Reef Lab 2012* is conducted in varied ocean environments in Australia and Vanuatu, including fringing and outer coral reefs. Environments are examined as a whole as well as for their parts. Ocean cycles, processes and movements are observed and interpreted poetically, as a visual language.

Field notes, observations, drawing, photography and video are my research methodology. Photography is mostly used to document field research. However, *Reef Lab 2012* includes a video as an important part of this installation together with photographic transparencies within tins.

Over the centuries many artists, authors and scientists have valued first-hand experience as an important field research methodology. The underwater experience of three-dimensional space offers me new perceptions that are essential in this research. There is a poetic quality to this experience that goes beyond the physical world. Author, Alphonso Lingus describes his underwater experiences:

“The diver who descends into the coral seas abandons the breast and crawl strokes she has learned to cover distances at the surface of a pool or lake, and drifts with the currents using her finned feet as fish steer with their fins. Though she is returning to the warm oceans from which all life and she too came, she is only a visitor, freed from the upright posture and surface-strokes, freed from all appropriation. And yet, in the rapture of the deep, we find we can be at home, here with the coral fish, the octopus, the gorgonians.”<sup>(63)</sup>

Germano Celant in his book *Art Povera* explains how an artist can experience the environment’s universal rhythms and the way in which it can be communicated to an audience:

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<sup>63</sup> Alphonso Lingis, *The Imperative* (Indianapolis, USA: Indiana University Press, 1999), 44.

“the discovery, the exposition, the insurrection of the magic and marvelous value of natural elements. Like an organism of simple structure, the artist mixes himself with the environment, camouflages himself, he enlarges his threshold of things. What the artist comes in contact with is not re-elaborated, he does not express a judgment on it, he does not seek a moral or social judgment, and he does not manipulate it. Among living things he discovers also himself, his body, his memory, his gestures...”<sup>(64)</sup>

Most of my research is conducted in remote ocean environments that have rich biodiversity. However, places closer to urban developments are also valuable for research. Practical skills are needed for field trips that involve camping in very isolated places, including islands of the Australian Great Barrier Reef. In these circumstances I needed to provide my own water and shelter. These environments can be unpredictable, and at times this research has been physically challenging.

The following excerpts from notebooks were recorded as field research over the past three years and track my thinking process and concept development for *Reef Lab* 2012. I also include post-experience reflections and references when needed. Videos for this research are supplied in the DVD accompanying this exegesis.

#### REEF AND CYCLICAL TIDES (fig. 2.24–2.27)

Coral reef ecology and its processes are hidden under water for large periods of time as dictated by tides. Cyclical water movement both conceals and reveals phenomena. I use the camera to record momentary tidal processes and phenomena. Close-up observations are important as I ‘see’ things in new ways. Focusing on structure, pattern and texture reveals new insights that inform my sculptural research.

Field note extracts (Lizard Island, Queensland July 2009): A research trip to Lizard Island is where I experience the lowest tide in this region for 2009. It occurs on 23 of June, at 3pm. An hour-long reef walk from Lizard Island to nearby Palfrey Island is planned and achieved during an extremely low tide (0.12 meter). My intention is to photograph the exposed corals that are usually covered by up to three meters of water. (Underwater turbulence and poor visibility can be a hindrance to close examination of phenomena).

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<sup>64</sup> Germano Celant, *Art Povera* (London: Studio Vista Publishing, 1969), 225.

These corals can be examined closely through sight and touch. Close up photography describes this detailed method of examination. Images include structural and textural representations of brain corals, soft corals and branching corals.

Brain corals have intricate polyp structures, within their rounded forms. These cell-like structures are randomly shaped. The patterns are absorbing. I also examine the rubble mounds of dead brain coral exposed by the low tide. I study their perforated cavities that once contained live coral polyps. (Some months later I develop ideas for coral rubble forms in *Reef Lab* 2012.)

Soft corals are examined for their unusual appearance and structure. They look like strange, ‘other world’ flowers. Some have lobed, wavy structures that become inflated and voluminous when submerged underwater. Out of the water, these corals appear flat and lifeless on the reef. As the cyclical tide begins to rise, the corals become restored. Masses of tiny flower-like polyps emerge from these corals to feed on plankton drifting by. The sinuous arms of the polyps undulate to moving currents. (Later I develop ideas for flower/polyp forms in *Reef Lab* 2012.) Walking back to Lizard Island the incoming tide flows in more quickly than expected. Chest deep in water, I find myself amongst reef sharks and sting-rays swimming near by!

Lizard Island is a continental island with fringing reefs, platform reefs and outer ribbon reefs. Coral reefs provide the richest biodiversity in the ocean. This remote island has a high mountain peak which enables me to view the surrounding reef system. Lizard Island is the most northerly island of The Great Barrier Reef. This ancient reef is about 18 million years old, but most of what is visible today has been developing for the last two million years. It is only the outer skin of the reef that is alive. The under-lying reef structure is made up of dead coral as accumulated limestone. <sup>(65)</sup>

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<sup>65</sup> Clifford Frith and Dawn Frith, *Australian Tropical Reef Life*, (Queensland: Tropical Australia Graphics, 1987), 2.

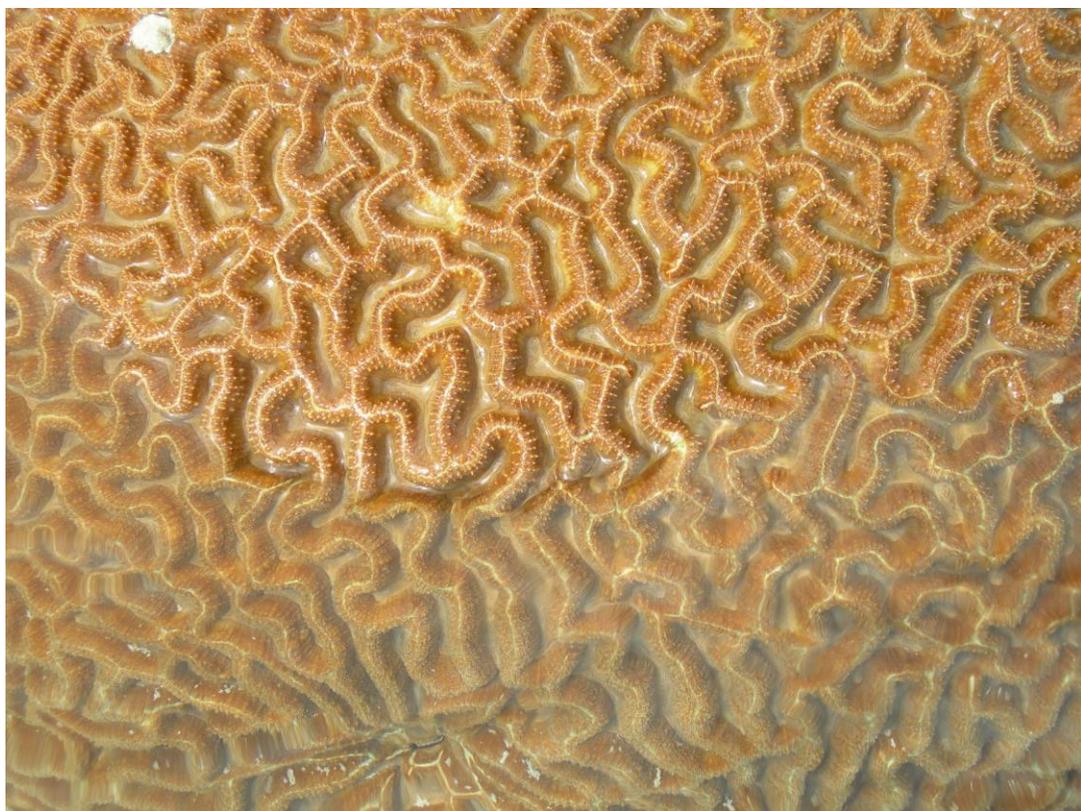


fig. 2.24



fig. 2.25

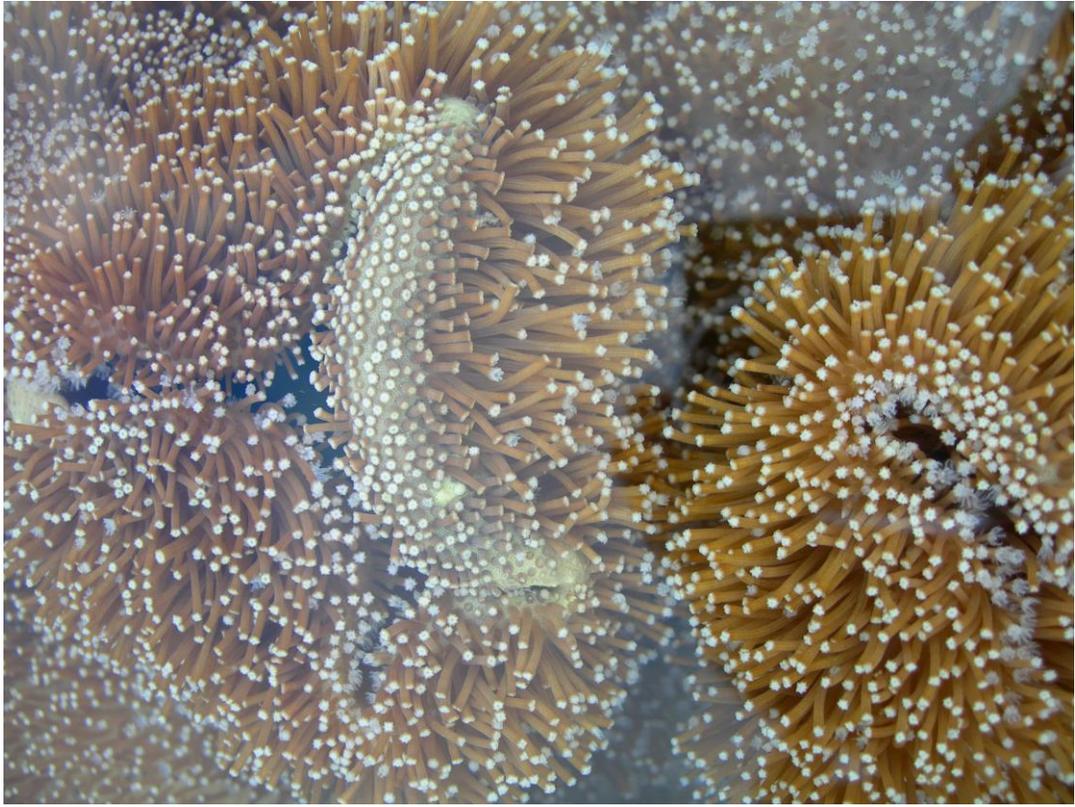


fig. 2.26



fig. 2.27

## UNDERWATER OTHER WORLD (fig. 2.28–2.30)

Field notes (Lizard Island, Queensland. 2009): In the context of underwater research ‘other world’ refers to my experience of half–seen enigmatic phenomena in a fluid space that is constantly changing and moving. Our salty blood and tears remind us of our watery origins millions of years ago, but nothing prepares for the primal sensation of underwater. Particularly in the depths of the ocean around the edges of outer reefs it is a seemingly unearthly experience.

My underwater explorations of coral reefs are a rich resource, for research about movement types, growth, patterns and form. Thoughts and mental images are expressed as fragments: Water currents rock my body back and forth...a face mask frames the images...sunlight moving like a pulse...fins like wings...opening and closing spaces...pop and click sounds...waving fans...hair–like vibrating cilia...sand ripples as a memory of passing currents...spiraling tube worms...tails moving in S–formation...bubbles in the wake of darting slivers of silver...hatching...retreating...in space...shadow of itself...surfacing.

The tide is well in when I swim over the top of a fringing reef. My view is at times partially obscured by bubbles and flickering light. Fish suddenly appear and disappear, in and out of a vast space that descends into darkness beyond the reef. Sunlit water–ripples flicker over the fish, corals and sandy ocean floor. These moving patterns break up the shapes of plants and corals. Dissolution and distortion of form is the result. The whole reef becomes a kaleidoscope of ever–changing patterns and forms.

Patterns become absorbing whilst underwater. I dive down into the depths and encounter a curious cuttlefish. It flashes its luminous colors that imitate the tones and patterns of coral around it. The patterns change so that it can maintain its camouflage. A tiny Nudibranch swims by: the wing–like membrane around its body undulating in rhythmic waves. These colorful and patterned creatures reminded me of butterflies. Eventually I reached the clam gardens. I find some of these clams to be an astonishing one and a half meters long. Their mottled patterns and glowing colors are wonderful.

The *Spirobranchus Giganteus* coral is commonly seen in this region. These colorful spiral-shaped creatures pop in and out of their holes. Their feather like arms, move to the rhythms of the currents. Ideas for spiral based sculptural forms surface from this encounter.

Ocean processes also unfold through the cycles of day and night. Diving at dusk brings new insights. Everything seems to ramp up to a new level of activity. Imagine a garden, where all the flowers open at once. It is somewhat like that. Night time is an important time for feeding, when the polyps emerge from the coral. I come across strange flower-like anemones, shaped like transparent balloons. It is possible to see their internal structure. Their bodies pulsate as the water moves around them.



fig. 2.28



fig. 2.29

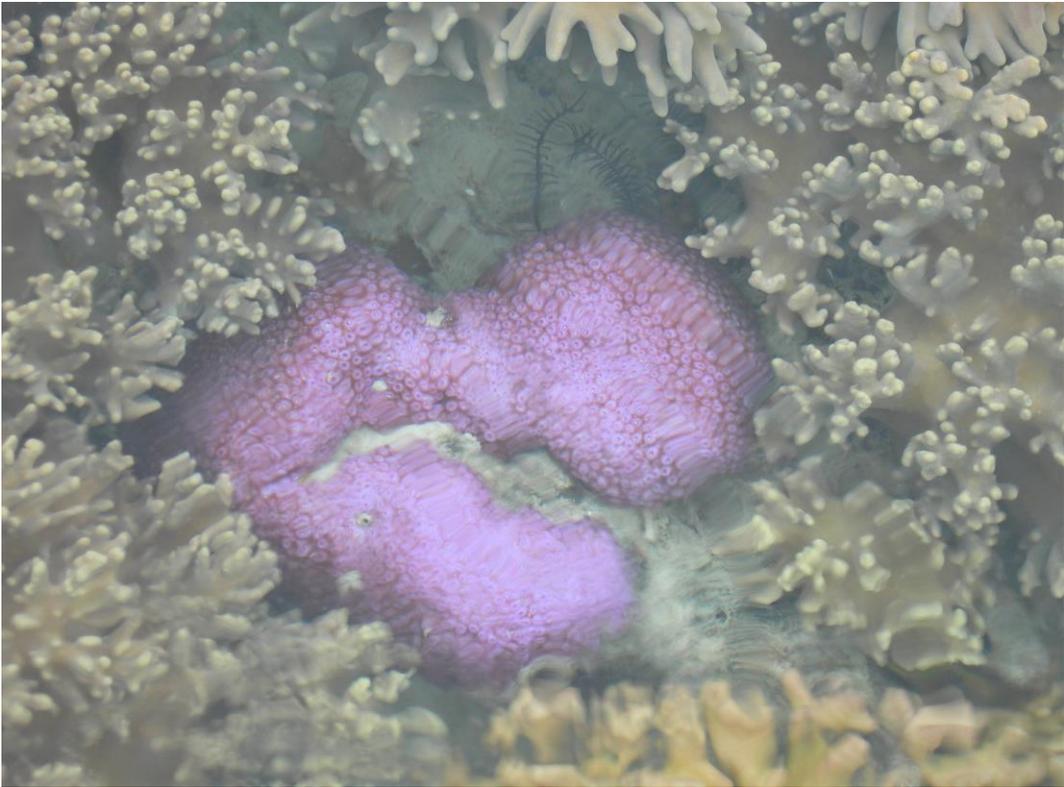


fig. 2.30

## WATER, LIGHT, DISTORTION (fig. 2.31–2.32)

Field notes (Lizard Island, Queensland 2009): I am starting to perceive and visualize the different movements and rhythms in the ocean after eleven days, camping on Lizard Island. During the night I hear the tide ‘turning’ with its gurgling, whooshing sounds. From within the tent I am listening to the sound of the morning sea and imagining what watery shapes are forming. I walk into the turquoise water with my camera. Ripples, which sometimes form into wavelets, are moving around my legs. Sunlight catches the edges of these ripples and refracts them on to the sandy bottom. Within the blink of an eye the moving patterns transform into new configurations.

I make videos and take stills of the rippled water so that I can examine its structures as frozen motion. Patterns are made up of irregular oval rings that transform to become pinched or stretched in the middle. It is like a chaotic chain-mail structure. In bright sunlight the water acts like a lens, magnifying these structures on to the sand. I later incorporate a video as a projection over the sculptural forms in *Reef Lab 2012* to evoke tidal movements.

Water’s reflective and refractive qualities are examined. It appears that sea foam and bubbles floating on the surface act as a lens sending down projected lights and shadows on to the ocean floor. Under the water I observe that sun beams penetrate the water to some depth, illuminating the watery depths in long spikes of light.

A finding is that my eye does not fix on the surface of the water, but on the movements of reflected images. Crouching down low to observe reflections on still water, it is like a mirror that reflects the sky, clouds, overhanging plants, flying birds and surroundings. Through photography I investigate mirror images of sky and space as they occur on water. Reflected cloud images become fragmented in zig zags as the wind ruffles the water.



fig. 2.31



fig. 2.32

## PROCESSES (fig. 2.33)

More than 2500 marine researchers have recently signed a statement warning of escalating damage to the world's coral reefs and calling for immediate action on climate change to save the world's remaining coral reefs. According to Professor Terry Hughes there are three main dangers for Corals: run-off from rivers and land (pollution and sediments), over-fishing and climate change. Old corals have growth bands that are similar to tree rings. These bands record changing environmental conditions for corals occurring over broad time spans. Scientists access this valuable information that indicates climate change impacts. In Australia corals in The Australian Great Barrier Reef (AGBR) are in good condition, relative to other parts of the world. However, near-shore coral reef cover has dropped by about 40 to 50% over the last 50 years. <sup>(66)</sup>

Field notes (Lizard Island, Queensland 2009): I observe this flourishing system of reefs that demonstrates the interconnections between land, shoreline and ocean. Things grow, decay, change shape, move on or settle. In this environment 'base processes' are always in a state of flux. The foundational elements are visible. Water (waves and currents) distributes nutrients, the sun's energy and oxygen. Nutrients (earth) from the islands mangroves flow via streams to promote growth in reefs. Sun (proxy of fire) brings energy in the form of photosynthesis for corals. Air causes fluctuations in temperature and moisture levels. Air also delivers life-bringing oxygen and carbon dioxide.

Field notes (Vanuatu, 2011) Dead white coral are observed in many fringing reefs in Port Vila, near urban centers. Causes range from over-fishing, boat mishaps, pollution pest invasion and bleaching events. Damaged parts of reefs are like complete wastelands. They appear to be empty of all life. However, I also explore coral reefs off Tanna Island and find that they support rich ecologies and biodiversity.

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<sup>66</sup> Terry Hughes, "Call to Save Coral Reefs" (program broadcast 9th July, 2012), Australia Broadcasting Corporation, <http://www.abc.net.au/radionational/programs/drive/call-to-save-coral-reefs/4119148>, (accessed January 2, 2013). This is a very topical subject, as evidenced by this interview with Professor Terry Hughes (Director of the ARC Centre of Excellence for Coral Reef Studies and Convener of the 12th International Coral Reef Symposium in Cairns).

I record underwater perceptions: bleached white desert...absence... cavities...coral polyp-like flowers...complex...processes...upwelling nutrients...intangible glow...sun-fire...flux...interconnections...interrelations...cause of its own phenomena...ripples... water-glazed forms...wind made visible.



fig. 2.33

## RESEARCH STATION

Parts of AGBR have been bleached eight times since 1979. The last bleaching affected more than half of the reef. The AGBR was subject to mass bleaching in both 1998 and 2002 and a significant percentage of corals died as a result. The severe El Nino event in 1998 contributed to the increased global ocean temperatures, with the result that 50–80% of corals in the Indian Ocean died. <sup>(67)</sup> Corals are very sensitive to temperature changes. According to Paul Marshall, a marine biologist from Townsville:

“...an increase of only 2–3 degrees (1–2 degrees C) is enough to cause a dramatic stress response known as ‘bleaching’. Bleaching results when the symbiotic relationship between the coral and micro–algae living within the tissues breaks down. Corals can change from their normal healthy color to vivid white within days.” <sup>(68)</sup>

When corals are stressed by rising sea temperature they can become more susceptible to disease or pest invasion such as Crown–of–thorns starfish. According to scientist David Obura:

“...the increased incidence of coral diseases and plagues of coral predators, such as Crown–of–thorns starfish, are also linked to climate change.” <sup>(69)</sup>

During this research project I explore many reefs in the AGBR – some that appear to flourish and others stressed by damage. It is a privilege to camp on Lizard Island where the study of coral reefs is so accessible. Wonderful fringing reefs are found a short distance from the shoreline.

Field notes (Lizard Island, Queensland 2009): The Research Station run by the Museum of Australia attracts many international scientists. I tour the station, visit the library and speak to scientists about their research. <sup>(70)</sup> I get an overview on current climate change research projects. Overall, the Lizard Island reefs are in good condition as its waters are not polluted

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<sup>67</sup> Laurent Ballesta and Pierre Descamp, *Planet Ocean: Voyage to the Heart of the Marine Realm* (France: Editions Michel Lafon, 2007), 205.

<sup>68</sup> *Ibid.*, 39.

<sup>69</sup> *Ibid.*, 204.

<sup>70</sup> Anne Hoggert and Lyall Vail.

and human impact is minimal. Scientists use these reefs as a ‘comparative reference’ to other parts of the Australian Great Barrier Reef that have been impacted by climate change, over-fishing, pollution or pest invasion. There are important studies on the Crown-of-thorns starfish arising from a population explosion in 1994. From time to time outbreaks still occur and result in damage to coral reef ecology around Lizard Island.

In particular coastal areas along the AGBR, cyclones, floods, storm surges and king tides are predicted to become more frequent events, due to climate change. Reefs do offer some protection to the shoreline from storms but in consequence they can be badly damaged.

#### PATTERN AND SURFACE (fig. 2.34–2.35)

Field notes (Tanna Island, Vanuatu 2011): Under the water I observe warm water bubbling up from subterranean vents and erupting through the reef. Water is like a skin covering the corals and layering the reef with hemispheres and hexagonal bubble patterns. These patterns merge with the shapes of the coral, fusing as one. Almost transparent water reveals only some of the underwater processes below. I catch glimpses of distant corals through turbulent water. Closer up a dense mass of fish, turtles, plants and corals appear to morph together through these watery motions. My lasting impression is of abstract shapes and forms.

On another day the tide is coming in and waves are breaking over the reef. Some corals are half-submerged and barely visible in their entirety. I notice fish that have been stranded by the previous retreating tide. They are dead but their colorful, glossy bodies continue to radiate a sense of life. I also photograph a nautilus bobbing along on the waters surface. The creature within is absent.

I record fragmentary perceptions: water as skin...contemplating...strange fleshy forms ...life-cycle...ancient patterns...soft textures...water expression...turning...razor sharp coral...tide and time...range of sight.



fig. 2.34



fig. 2.35

## WATER AS FORM MAKER: ORDER AND CHAOS (fig. 2.36–2.38)

Observations and my photographs of waves inform my approach to curvilinear forms that make up *Reef Lab 2012*. I investigate the physical structures as well as the rhythmic poetic qualities in water movement. I investigate waves both below and on the surface. There is a circular motion in waves, much of which is hidden under the surface.

“A wave on the surface does not simply raise and lower the surface, nor does the water actually move forward. In fact, as each crest passes, the water particles rise up, advance, descend and move backwards again, describing an almost perfect circle...As waves approach the shelving shore, orbital motion under each wave becomes flattened to an ellipse, and the wave slows down. Crests pile up and eventually break to form surf.”<sup>(71)</sup>

Field notes (Quobba Point, West Australia 2010): I observe along this remote rocky coastline, chaotic water jets, explosive water, colliding waves and surging water. Twenty meter high jets of water erupt out of blow holes. They burst from holes intermittently, coinciding with the largest wave of a set that breaks under the rocky platform. Water, gurgles, rumbles, whooshes and sprays as rain.

Enormous waves slam against the rocks. Water appears like three-dimensional fragments: waves explode, contract, fall, and hang, in a cycle of making and breaking their form. Sometimes waves turn messy, colliding together at chaotic angles. Water is whipped up by the wind into foamy shapes.

Further out to sea I note the formation of ordered wave crests that seem to hover in the air, until they suddenly crash down into a chaotic jumble of shapes. I also study the sea weeds that tumble around and float to the surface in chaotic rhythms. The waves then drag them back to the sea. It is visual poetry in motion.

My photographs of all these phenomena are later studied and imaged for their frozen static forms. Images of water hang in suspended animation. Jets of water make linear formations. Structures also include waves that rear up into space.

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<sup>71</sup> N. C. Flemming (Editor), *The Undersea* (Australia: Rainbow Publishing Group, 1997), 61.

The forceful impact of water has also shaped the eroded rocky platforms. This is the wildest coastline I have ever seen and so different to the east coast of Australia. Forces are immense. Turn your back to the sea and the scene is of desert: dry, still, hot and flat.



fig. 2.36



fig. 2.37



fig. 2.38

### 3. SCULPTURAL ASSEMBLAGE – METHODOLOGIES

In this chapter I discuss the development of concepts for my ‘sculptural assemblage’ *Melt* 2012, as well as earlier developmental artworks. Multiple research pathways are investigated over three and a half years during my PhD candidature. *Reef Lab* 2012 is my first major outcome from research. This immersive installation combines sculptural form with video.

The installation *Melt* 2012 is my second major outcome from research and is the focus in this chapter. This installation is developed from research about global warming induced melting of ice shelves glaciers and icebergs. This artwork demonstrates new ways to express my growing understanding of the complexity of ‘base processes’. Sculptural forms express the dissolution of iceberg-like structures. Secondly, the concepts of ‘other world’ and atmospheric immersion are important and, thirdly, this ‘still life’ installation expresses global warming and its ‘tipping points’. The key question in respect to field research is: How will I visualize a glacier and iceberg environment as though for the first time and perceive it as an assemblage of ‘base processes’?

*Reef Lab* 2012 and *Melt* 2012 form the exhibition component of this doctoral research. Through gallery space constraints, I will not be exhibiting important developmental works created during the candidature. I will, however, explain their significance in my overall research. *Time and Tide I & II* 2010–2012 are earlier works, one of which is further developed with a video in my final year. They contribute to key concepts and new installation methodologies for ‘sculptural assemblage’.

## ***Other World and Atmospheric Immersion***

Field research for *Melt 2012* investigates iceberg and glacier phenomena. ‘Other world’ is a term I use to refer to unfamiliar and enigmatic phenomena that I experience in the real world. My field research demonstrates that I do not need to reference science fiction to find unfamiliar worlds. It is here on earth, and appears as unearthly phenomena. I approach field research with an open mind – with the intention of ‘seeing’ an environment in new ways. I look at details and interconnections between phenomena. My first-hand experience of glaciers is ‘other worldly’. A sense of ‘change’ in these environments is physically experienced: ice fractures, breaks down, melts and then begins to flow as water.

Field research includes immersion within tunnel like ice caves that run beneath glaciers. Semi-translucent glacial ice ranges from white to soft blues and aquamarine colors. Light interaction within ice suggests shifting surfaces where edges are hard to distinguish. Inside the tunnels, it is necessary to use touch to navigate through their formations. Normal points of reference for the sensation of movement are altered. Distance traveled is hard to perceive.

Intangible phenomena are explored through atmospherics. The complexities of light, space, snow and cloud phenomena are investigated through field research. A white-out is an atmospheric process in snow-bound regions in which low cloud and snow interact to produce a uniform space of whiteness, devoid of shadows. Objects within complete white-outs can be barely visible. I recently experienced a partial white-out in alpine terrain. In this scenario, the horizon was not visible; however, I perceived an immersive space within a close- to medium-distance around myself. I saw faint white shapes and snow-scape outlines within this white space. I also closely examined the snow falling in what seemed like slow motion. Snow flakes seemed to fall in sideway oscillations rather than in straight trajectories. Movement through this partial white-out was difficult as I was unable to sense my own motion, as there were no points of comparative reference.

These immersive atmospheric experiences have a parallel with my underwater research experiences. Both are spatial experiences. Real space activates in psychological space. Perception of phenomena within water, ice or cloud spaces is intensified. A sense of time

passing can be altered, slowed or even halted. Moving physically through these environments is a way of encountering it as though for the first time and feeling part of it. It is a way of 'knowing' it.

I employ close-up photography that translates this visual and tactile means of perception. I perceive and experience ice, cloud and snow environments through sensate faculties that create mental images. Physical and intangible phenomena are 'described' to oneself – through eyes, ears and skin. Touching with the eyes describes my close-up imaging and imaginings of phenomena. This finding is demonstrated through photographic documentation of field research. Photography informs my making of sculpture in the studio. Close-up and spatial studies are re-interpreted into 'sculptural assemblage'.

"Haptic visuality" is a term used by author and video/film curator Laura Marks to describe a close-up and tactile way of looking at photographic images and objects. In her book *Touch: Sensuous Theory and Multisensory Media* she explains that this method is not the same as touching. Marks writes about engaging with objects so as to make meaningful connections. I believe this approach looks beyond the everyday appearance of things so as to find an intimate and sensate experience with phenomena rather than an objective interpretation. Marks writes:

“...I intend to restore a flow between the haptic and the optical that our culture is currently lacking...It is timely to explore how a haptic approach might rematerialize our objects of perception...”<sup>(72)</sup>

The experience of sculpture as phenomena is an important concept that informs my thinking for studio practice. *Melt* (2012) is an outcome from this thinking. There is no singular point in which to gaze at this 'sculptural assemblage'. It needs to be physically moved around, so as to experience multiple views which transform as we come close to inspect details and transform again as we stand back to perceive the whole. These concepts are influenced by art theory discourses on perception of three-dimensional form in space. The essence of experience is examined and includes theories by Merleau-Ponty and Paul

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<sup>72</sup> Laura U. Marks, *Touch: Sensuous Theory and Multisensory Media*, (Minneapolis, USA: University of Minnesota Press, 2002), xiii.

Crowther. These theories, as explained in detail in Chapter Two pertaining to *Reef Lab* 2012, also apply to this artwork.

*Melt* 2012 is an installation that invites the viewer into an intimate and immersive space. The sculptural forms represent a physical activity and the space around it becomes an atmospheric phenomena. This is an imaginative space in which to intimately perceive, a scenario impacted by climate change.

### ***Melt Installation (Still-Life)***

The installation *Melt* 2012 stages a ‘still life’ scenario of ice-like dissolution that implicates global warming through sculptural form and lighting. This ‘sculptural assemblage’ offers the viewer an experience that is physical, visual, conceptual, and tactile.

*Melt* 2012 (fig. 3.1–3.11) is developed from research about global warming that result in melting glaciers, ice shelves and icebergs. This installation is made up of a grouping of ice-like forms as larger and smaller fragmented pieces. These ice-like forms appear to be overcome by disintegration, fragmentation and liquefaction. The intention is not to reproduce reality. My sculptural forms are not floating or submerged under water. (In real life, up to ninety percent of an iceberg can be submerged.) I am implying that my iceberg-like forms are no longer in the sea but are marooned in another time and space. These forms are in an ‘other world’ context that makes them simultaneously familiar yet unrecognizable.

The installation of *Melt* 2012 is not static, as it can be reconfigured to relate to specific gallery spaces. How are material qualities and atmospheric affects offered to the viewer as a way of engaging with global warming forces? I will describe one scenario. I direct cool-hued lighting over ice-like forms, within a white atmospheric space. These forms are placed on a series of platforms that appear unstable and propped up. The viewer may move around this precariously-arranged ‘sculptural assemblage’ to contemplate inherent meanings. This mini-installation offers a close up immersion so that the viewer may examine the intricate three-dimensional material qualities including: fluid resin pools, glaze drips, fractured forms, ice textures, translucency and opacity. Solid forms appear to dissolve into liquid pools in a visually-poetic way. The second type of lighting utilized in

this installation is a warm-hued light directed on the wall to evoke the impact of rising temperature and global warming.

As an immersive ‘sculptural assemblage’, how do I suggest through static forms the processes of iceberg dissolution? The installation expresses a ‘still life’ scenario of fragmentation and fluidity. My sculptural forms imply the dissolution of ice through dripping faces, cracking, and melting pools. In places ‘water’ (resin) hangs over the edge of the platform, in suspended animation. My scenario expresses a captive moment in the process of dissolution, as though time has temporarily stalled. Through this implication the viewer may experience a moment of epiphany, when they contemplate a ‘tipping point’ has occurred and the impacts of global warming cease to be reversible. The viewer completes the meaning in the work through this approach of interactive participation.

The viewer may be familiar with images of ice sheets breaking up in the Antarctic and may also have seen graphs and data on global warming. They may be saturated with such valuable, yet at times overwhelming, information. This artwork offers instead a visual and physical engagement with climate change issues.

My ‘still life’ artwork implies unnatural dissolution of icebergs through impacts from global warming. Movement in suspended animation is not possible in real polar environments. Icebergs are always moving due to waves or ocean swells. I imagine that, even when ice freezes over pools and the like, there is always some movement. For example; water may continue to flow underneath the ice or a warm wind may continue to melt the icicles into water droplets.



fig. 3.1



fig. 3.2



fig. 3.3



fig. 3.4



fig. 3.5



fig. 3.6



fig. 3.7



fig. 3.8



fig. 3.9



fig. 3.10

## ***Touch and Making***

The intention is to express dissolution through clay, glaze and resin. New ways of working with materials are developed for *Melt* 2012. Glass, clay and resin have fluid states and can behave in similar ways to water. I use these materials to make sculptural forms that suggest ice; freezing, cracking, dripping and melting. To start the process, I rough out the forms in white clay, to accentuate plastic qualities. I later carve angles and peaks in the forms. I discover that clay can evoke the structural planes that I observe in ice forms. I weather my clay forms by sponging them down with water so that the outer clay surface dissolves into liquid slip. In this way I soften the peaks, planes and edges in the forms.

In the installation there are mounds of fragmented and broken forms that are deliberately made to evoke the remains of disintegrating ice shelves and glaciers. These forms express raw elemental forces that imply the chaos of climate change.

I apply large quantities of liquid glaze that during kiln firing melts and flows down the face of the forms. With most of the glaze applied at the top I use gravity and kiln heat to achieve this process. The heat is reduced at a critical temperature to freeze the liquid drips of glaze in place. As it is not possible to see such detail in a very hot kiln, this is calculated through prior testing of glaze and their fluxing temperatures. I also develop forms made completely from glaze so that they will melt into chaotic misshapen forms. The irony is not lost on me that I need to use extreme heat to make my ice-forms.

## ***Field Research: Images and Notebooks***

My field research in Australia and New Zealand over the last three years results in the development of concepts about ice and snow that are applied to *Melt 2012*. I physically explore glaciers, ice caves and snow in alpine areas as part of my research on dissolution. I include the following notes from field research together with later reflections.

ICE-FORMS (fig. 3.12–3.15)

In Polar Regions, large sections of ice break off from glaciers to form icebergs that float off into the ocean. The Antarctic and its icebergs are far away, so I traveled to New Zealand to examine glacier processes. I observed at the Franz Joseph Glacier, large chunks of ice breaking off and traveling down a river on its way to the sea. They appeared like icebergs. I studied the breaking down and dissolution of fragments of glacial ice as they transformed into liquid.

Field notes (Franz Joseph Glacier, New Zealand 2012): Standing on this glacier I explore ice pinnacles, fractured crevasses, and eroded forms. I also climb through ice caves that are within this glacier. One tunnel formation is difficult to traverse and very slippery, but the metal crampons on my boots grip the ice. This ice formation is blue and semi-translucent. It has been shaped by wind and rain. It looks like a spiraled vortex. Ice is dripping all around, making compelling tactile shapes.

The caves I investigate range from one to three meters in diameter. The ice is very old, but these cave formations are transitory and ephemeral. They may disappear in a day or so, as glaciers are constantly forming and breaking down. This glacier flows for approximately 12 kilometers. Its terminal face descends to within 250 meters of sea level. A glacier such as this begins its life as a cirque high in the mountains. For many hundreds of years this glacier has been forming through snow falls that compact into a body of ice that over time very slowly travels down the mountain. As the glacier moves, it carves out rock and forms a valley. Water flows through ice caves and tunnels beneath the glacier that causes melting. This glacier, like so many in the world, is receding so its future is uncertain.



fig. 3.11



fig. 3.12



fig 3.13



fig 3.14

## DISSOLUTION (fig. 3.16–3.19)

Field notes (Australian Alps 2010): Walking with the aid of snow shoes, I am able to explore rough terrain in this Alpine environment. I undertake trips in early spring, when snow begins to thaw, and I observe flowing streams and iced over pools. In this environment I examine snow for its intricate structures (drips, crystals, layered droplets) as well as in its larger formations. Many shades of white can be seen in the ice and snow. Translucency and opacity influence the color palette. Snow types include; crystalline, grainy, powdery and icy. Snow textures include rippled smooth, sastrugi and shiny. This phenomenon is sculpturally complex and I find it compelling. I develop ideas for ice-forms.

Field notes (Australian Alps 2011): This environment is harsh, wind swept, vast and ‘other worldly’. My water container freezes overnight. The morning sun is bright and I observe Ice crystals formed around water pools that look structurally interesting. Ice has formed on the ponds overnight. The ice behaves like a lens distorting the view of the flowing water underneath. Holding fractured ice shards up to the light, I can see they are full of bubbles, fracture lines and crystalline edges. I place the ice plates together as a horizontal layered construction. I also observe dripping snow forms, breaking down through the action of wind and sun. I record their details using the close-up lens of my camera. These photographs are developed as research ideas.



fig 3.15



fig 3.16



fig 3.17



fig 3.18

## OTHER WORLD: ICE AND FIRE (fig. 3.20)

In Australia, climate change increases the chance of extreme fire events.<sup>(73)</sup> In February 2009 fire devastated large parts of Victoria. The smoke from this and other fires in Victoria reached the Antarctic atmosphere in March 2009 and was still there three months later and may have possibly affected the ozone hole.<sup>(74)</sup> The scientist, Peter Tolhurst explained that these fires produced thunderstorm inducing Pyro-cumulus clouds, as the sap from burning trees was sent up into the atmosphere. These fire clouds were 40% water. Tolhurst looks to future scenarios:

“...in terms of the current trends (with climate change)...I’d say you could well see the same thing happening in the next twenty years”.<sup>(75)</sup>

In 2010 I examine the blackened remains of a severe forest fire at Lake Mountain. Field notes (Victoria 2010): Today, 18 months after the fires, the sun is shining on the snow. This landscape is full of contradictions. Order and chaos sit side by side. New growth in the form of epicormic buds are forming on the trunks of eucalypts. The blackened bark is hanging from the trees like dead skin and the gentle breeze is moving these strips back and forwards. This is the only sound to be heard. This white and black landscape is both dark and beautiful; however, it triggers sad personal memories of fires in my region. I am also reminded that fire is natural and purposeful. Life is beginning again. Chaos is very much part of ‘base processes’ and the foundations of life.

It is spring and the big melt is occurring. Snow is melting around burnt branches lying on the ground. It is as though they are still hot from the fires. Snow is changing to liquid around pink granite boulders, framing their crystalline structure. Some of the granite boulders have exploded as a result of the fires heat. Burnt remains of heath branches are exposed above the flowing streams. They have been bent into swirling shapes by the flowing water. The four elements of life – water, fire, earth and air – resonate in these compelling scenes.

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<sup>73</sup> Tom Arup, “Here’s a hot tip, it’s time for global warming’s just deserts”, *The Age*, December 26, 2012.

<sup>74</sup> “Bushfire aftermath: smoke trapped over Antarctica”, Australia Broadcasting Corporation, <http://www.abc.net.au/news/2009-05-28/bushfire-aftermath-smoke-trapped-over-antarctica/1697886>, (accessed January 2, 2013).

<sup>75</sup> Michael Bachelard, “Anatomy of an Unstoppable Firestorm”, *The Age*, June 7, 2009.

Walking in my snow shoes forces me to move slowly. . I have time to think about ideas, as I contemplate this ‘other world’ scene. I look at the islands of melting snow marooned around the blackened vegetation and learn more about ice and snow physiology. The islands of snow remind me of displaced icebergs. I look at the wind–formed frozen icicles and think about how I might apply these studies to the ice–forms I am planning to make.



fig. 3.19

## ***Icebergs and Dissolution***

My secondary research includes reading and viewing films to study polar processes. Films about icebergs are an important reference.<sup>(76)</sup> Icebergs are examined as three-dimensional forms of fresh water that float on a liquid ocean. From this research I learn that icebergs exist in every possible shape and form, sculptured by the elements into extraordinary shapes by waves, tidal motion, wind, rain and sun. Iceberg types include: melty, irregular, pyramidal, blocky, dry dock, wedge, pinnacle, dome, tabular, and bergy bits. Forms may be: arched, rounded, tabular, conical, smooth, rippled, terraced or peaked. Some icebergs have caves or contain watery pools.<sup>(77)</sup> Icebergs can be as large as a (small) country, other ‘bergy bits’ are of a much smaller scale. From these images, I imagine the types of movements, forces and cycles that occur in a polar environment. I also seek expert background knowledge from scientists. David Thomas, in his book: *Frozen Oceans. The Floating World of Pack Ice*, describes the formation of icebergs:

“Icebergs are not made in the sea, but are chunks of freshwater ice that have been built up over thousands of years by the gradual freezing of snow and ice on glaciers covering land.”<sup>(78)</sup>

Through global warming, glaciers and ice shelves are breaking up at an accelerated speed.

“We do know that the Antarctic Peninsula has warmed by about 2.5 degrees C (27.5 degrees F) over the past 50 years. In the same period, many of the glaciers have begun to retreat by an average of 50m per year over the past five or six years. There has been a loss of about 8000 sq km (3089 sq miles) of ice shelves since the 1950s, and scientists believe both are linked to temperature increases.”<sup>(79)</sup>

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<sup>76</sup> Alastair Fothergill, Martha Holmes, Andy Byatt (producers) *The Blue Planet 4 Disc DVD*. A BBC Discovery Channel co-production. Episode Four: *Frozen Seas*. Publishers BBC Worldwide Limited 2005.

<sup>77</sup> Peter Frances, Angeles Gavira Gueerrero, eds., *Ocean The Worlds Last Wilderness Revealed* (New York: DK Publishing, 2008), 194.

<sup>78</sup> David N Thomas, *Frozen Oceans The Floating World of Pack Ice* (London: Natural History Museum London, 2004), 9.

<sup>79</sup> Andrew Byatt, Alister Fothergill, Martha Holmes, eds., *The Blue Planet A Natural History of the Oceans* (London: BBC Worldwide Ltd, 2001), 222.

In my research I focus on the dissolution of icebergs as a symbol of global warming. Icebergs reveal complex phenomena, such as freezing, melting, dripping or cracking. Every state of water: liquid, snow, ice and vapor can be seen to interact in this polar environment. Author David Clarke discusses the nature of water as having changeable form and suggests it could be seen as an analogy for our rapidly–changing world <sup>(80)</sup>. He refers to our current socio–economic structures but it could equally apply specifically to global warming issues. Dissolution is the process of things breaking down. Water processes are poeticized by the Romanian philosopher Mircea Eliade.

“In water everything is dissolved, every ‘form’ is broken up, everything that has happened ceases to exist: nothing that was before remains after immersion in water, not an outline not a ‘sign’ not an event...” <sup>(81)</sup>

### ***‘Base Processes’ in Polar Oceans***

In my research ‘base processes’ are expressed through the movement, cycles and forces that interact with earth, water, fire and air. Slow moving glaciers form on land from compacted snow that builds up in valleys. Physical processes are clearly ‘seen’ in the breaking down of glaciers, whereby icebergs are ‘calved’. Weathering processes are being accelerated by global warming. Ice shelves develop deep vertical cracks and crevasses that eventually break to calve icebergs that may float around on the ocean for many years.

Over time, through the actions of sun, wind and waves, icebergs break down into smaller masses. Fire (sun in proxy) is a powerful agent of change as is water and air (wind). An iceberg is constantly being re–shaped by the elements. The centre of balance in an iceberg changes over time causing it to go into what is known as the ‘death roll’. They roll over, exposing their large mass that is hidden under water. This is the largest part of a berg, having been sculptured by water currents, is now exposed to the elements of wind, waves and sun. <sup>(82)</sup> According to scientist David Thomas the top of the berg can act as a sail and when caught by the wind it can travel many miles per day. <sup>(83)</sup> The underwater shape may

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<sup>80</sup> David Clarke, *Water and Art* (London: Reaktion Books, 2010), 8.

<sup>81</sup> John Thompson, *Richard Deacon* (London: Phaidon Press, 2000), 101.

<sup>82</sup> David N Thomas, *Frozen Oceans The Floating World of Pack Ice* (London: Natural History Museum London, 2004), 84.

<sup>83</sup> *Ibid.*, 26.

act as a keel to direct its movement. The colors in icebergs include whites, blues, aquamarines, and sometimes black. Due to the presence of air bubbles, icebergs generally appear white and where the snow has compacted it tends to be blue. <sup>(84)</sup>

The breaking up of the Larsen B ice shelf in the Antarctica is a particularly significant indicator that climate change processes are occurring.

“One of the most dramatic ice shelf events in recent years was the collapse and break up of the Larsen B ice shelf on the eastern side of the Antarctic Peninsula in 2002. Within just over a month 32502 km (1255sq miles) of the shelf broke off from the continent and disintegrated into thousands of icebergs...The shelf was estimated to be in the order of 12,000 years old...” <sup>(85)</sup>

“The impacts of this climate change in the polar regions over the next 100 years will exceed the impacts forecast for many other regions and will produce feedbacks that will have globally significant consequences.” <sup>(86)</sup>

Loss of habitat, shelter and breeding habitats for small life-forms, such as krill, occur when ice shelves break down at accelerated rates. This may affect the food chain in significant ways. Ice sheets provide a habitat for Antarctic krill who feed on the algae that grows on the underwater ice. As krill are the main food for all the large whale species this is a serious threat to their survival. Krill numbers are in decline as explained:

“Numbers in the southern Ocean have fallen by 80 percent since the 1970s due to a water temperature rise of 2.5 degrees C (4.5 degrees F ) causing a significant melt of ice” <sup>(87)</sup>

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<sup>84</sup> Peter Frances, Angeles Gavira Gueerrero, eds., *Ocean: The Worlds Last Wilderness Revealed* (New York: DK Publishing, 2008), 194-195.

<sup>85</sup> David N Thomas, *Frozen Oceans The Floating World of Pack Ice* (London: Natural History Museum London, 2004), 9.

<sup>86</sup> M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson (Eds.), Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (Cambridge, UK: Cambridge University Press), 655. Fourth Assessment Report: Working Group 2, Impacts, Adaptations and Vulnerabilities.

<sup>87</sup> Peter Frances, Angeles Gavira Gueerrero, eds., *Ocean: The Worlds Last Wilderness Revealed* (New York: DK Publishing, 2008), 293.

Global warming is increasing the temperature of the oceans. Temperature affects sea levels because warm water expands and takes up more room than cold water. <sup>(88)</sup> The underlying processes ('base processes') in ocean systems may be affected. One of many examples is that coral reefs will be affected by rising sea levels. If they are in deeper water their photosynthesis opportunities will be reduced, which will impact their growth rate.

The earth is warming due to human emissions and the greenhouse effects caused by carbon dioxide entrapment in the atmosphere. The rate at which our climate is changing poses a question. Is the earth also going through a natural climatic warming cycle?

“...a recent computer simulation study by the US National Centre for Atmospheric Research that attempted to uncover why the Arctic was melting faster than models had predicted came up with an estimate that about half of the ice loss between 1979 and 2005 was due to industrialization and half natural variability.” <sup>(89)</sup>

Sea ice in the Arctic is melting at alarming levels. Since the 1950's over half of the Arctic sea ice has melted. Research findings from the University of Washington Polar Science Centre show that the thickness of ice is the lowest ever been recorded. Mark Serreze from the U S National Snow and Ice Data Centre (NSIDC):

“There will be ups and downs, but we are on track to see an ice-free summer by 2030. It is an overall downward spiral”. <sup>(90)</sup>

Further to this will be the breaking up of ice shelves and glaciers in Antarctica and Greenland, leading to significant rises in sea level and affecting large sections of the world's smaller islands and coastline. Will humans and other species be able to adapt in time to continue to thrive? Scientist Tim Flannery discusses current data:

“Over the past 150 years the oceans have risen by 10 to 20 centimeters, which amounts to 1.5 millimeters per year—around a hundredth as fast as your hair grows.

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<sup>88</sup> Tim Flannery, *We are the Weather Makers. The story of Global Warming* (Melbourne: The Text Publishing Company, 2006), 137.

<sup>89</sup> Adam Morton, “On thin ice” *The Age*, September 17, 2011.

<sup>90</sup> John Vidal, “Record Melt will see Arctic ice-free in summer by 2030” *The Age*, July 13, 2011.

Over the last decade of the twentieth century, the rate of sea level rise doubled to around three millimeters per year.”<sup>(91)</sup>

The European Project for Ice Coring in Antarctica has concluded that today’s greenhouse gases are at the highest level for more than 650,000 years.<sup>(92)</sup> Core–sampling measures carbon dioxide trapped within the ice at the time that the original snow fell, hundreds and often thousands of years ago. Single ice cores removed by scientists may represent many tens of thousands of years of history.

Climate Change is now upon us. In fact there is already evidence – severe storms, tidal surges, floods and bushfires. As early as 1993 David Suzuki wrote:

“The rise in sea level as ocean water expands will pose a tremendous hazard to chronically flooded lowland deltas in Bangladesh and Egypt and to the globes thousands of coral islands. Tides and storms will increase in severity and unpredictability as weather patterns become erratic and create large numbers of environmental refugees. A sea level rise of only a few centimeters will be disastrous for all those people that live on marine coastlines.”<sup>(93)</sup>

## **Jörg Schmeisser**

Artist, Jörg Schmeisser made a research trip to the Antarctica in the 1987/1988 summer. He traveled on the supply ship *Aurora Australis* to Mawson station. Schmeisser produced a substantial body of work (drawings and prints) over many years as a result of his experiences. His etching *Diary and Icebergs* 1998 includes text that diarizes his experiences.<sup>(94)</sup> Curator and writer, Peter Haynes writes about Schmeisser’s physical interaction within this environment:

“Schmeisser continues the tradition of the artist–voyager. Yet he is not an illustrator, nor someone who follows anything other than his own direction. For him, the

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<sup>91</sup> Tim Flannery, *We are the Weather Makers. The Story of Global Warming* (Melbourne: The Text Publishing Company, 2006), 138.

<sup>92</sup> David N Thomas, *Frozen Oceans The Floating World of Pack Ice* (London: Natural History Museum London, 2004), 25.

<sup>93</sup> David Suzuki, *Time to Change*, 2nd ed. (Australia: Allen and Unwin, 1993), 151.

<sup>94</sup> David Hansen, *Jörg Schmeisser. Breaking the Ice (Works From The Antarctica, 1988-2003)* (Australia: Tasmanian Museum and Art Gallery, 2003), 8.

landscape (in various manifestations) is a phenomenon that has to be experienced. In order to discover the beauty and inner vitality of any landscape, that landscape must be encountered physically, intimately, before its aesthetic dimension can be articulated in the artist's particular expressive language.”<sup>(95)</sup>

Jörg Schmeisser's prints and drawings of the Antarctic inform this research. His artworks suggest to me the dissolution of three-dimensional ice-forms in a fluid space. His interpretation of polar processes also suggests intangible phenomena. Schmeisser's field notes and drawings, produced in response to his Antarctic experience engage my senses and affect my understanding of polar phenomena.

Examining the catalogue *Jörg Schmeisser (Breaking the Ice. Works From The Antarctica, 1988–2003)* from the 2003 exhibition at the Tasmanian Museum and Art Gallery, I will explain my experience of these artworks. Schmeisser's drawings and prints of icebergs suggest three-dimensional forms. Schmeisser makes visible the climatic processes that both make icebergs and break them down (wind, waves, heat). Schmeisser describes this polar region as a place of “otherness”:

“How do you go about drawing something, presenting something that you see for the first time and for which you have no frame of reference?...to find different ways of holding and presenting the ice; something that showed the otherness of this place, compared with my previous themes; landscapes, monuments, figures and shells. I think I did get somewhere, following a lead that opened...”<sup>(96)</sup>

Schmeisser's artworks demonstrate new ways to express ice through its intangible processes. This is quite different to just ‘describing’ ice in an illustrative or literal way. His art demonstrates a poetic expressive approach. Schmeisser writes about fluidity and structure that go beyond outer appearances:

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<sup>95</sup> Ibid., 25-26.

<sup>96</sup> Jörg Schmeisser, “Jörg Schmeisser 92/93: Antarctic Impression”, Australian Antarctic Division, <http://www.antarctica.gov.au/about-antarctica/antarctic-arts-fellowship/previous-participants/1990-1999/jrg-schmeisser-92-93>, (accessed January 2, 2013).

“...thinking about the bergs and the water rather than describing them...looking for: that balance of fluidity and structure the ‘planned’ together with the ‘accidental’, a lightness of execution and new inventiveness.”<sup>(97)</sup>

The etching *Twister* 1998 depicts a floating iceberg with an eroded honeycombed structure.<sup>(98)</sup> It appears as though consumed by weathering processes. A vast atmospheric space surrounds the iceberg. This image captures the intangible aspects of the Antarctic wilderness: space, wind, light and silence. Scribbled wavy lines sit above the iceberg and suggest wind, rain cloud and seas spray movements and processes. To me the hydrological cycle is represented through this image. It represents the transitional changes in an iceberg through erosion, melting, water evaporation and rainfall.

Schmeisser also made close up studies of ice: *Light Spots* 2002 and *Light* 2003. These etchings show ice details including bubbles, fracture lines and light refraction.<sup>(99)</sup> He captures the qualities of ice and light interaction that produces luminescence, impermanence, transparency and fluidity.

*Big Changes IV* 2002 suggests great forces and tension.<sup>(100)</sup> This etching represents a large block-like iceberg teetering on its edge as it floats within a dark ocean. To me it suggests the very moment a berg begins to collapse. *Iceberg alley* 2002 represents a large group of icebergs floating along an expansive ocean that appear to disintegrate and dissolve into space.<sup>(101)</sup>

*Many Bergs* 2000 is a series of individual icebergs representing a sequence of changed states.<sup>(102)</sup> Schmeisser uses watercolor to achieve a more fluid expression of melting ice. The icebergs appear softer and more vulnerable. To me, they express the transformational occurrences in the life of an iceberg. In my interpretation, these etchings describe a sequence of changes or processes that result in dissolution.

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<sup>97</sup> David Hansen, Jörg Schmeisser (*Breaking the Ice Works From The Antarctica, 1988-2003*), (Australia: Tasmanian Museum and Art Gallery, 2003), 11.

<sup>98</sup> *Ibid.*, 4.

<sup>99</sup> *Ibid.*, 40.

<sup>100</sup> *Ibid.*, 15.

<sup>101</sup> *Ibid.*, 12-13.

<sup>102</sup> *Ibid.*, Back Cover.

*Hurting* (2002) is also a watercolor. <sup>(103)</sup> Schmeisser's underwater view shows us the largest part of the iceberg that is submerged below the waterline. This iceberg has dark colored veins which may represent rock debris. Other parts are aqua green and possibly represent algae growth. In real life, ice bergs that have broken off glaciers contain rock debris and algae. Icebergs calved from ice sheets are usually whiter because they have trapped air bubbles within them that are light reflecting.

### ***Time and Tide I***

A group of nine large sculptures are what I collectively call *Time and Tide I* 2010 (fig. 3.21). My hand-built sculptures express transformation and 'other world' themes through their altered plant-like forms. I change, simplify and re-arrange elements that I visualize in the intertidal environment to be interpreted as sculptural form. Color, detail and pattern are integral to this concept of transformation, rather than decorative. A tracery of lines follows form to emphasize their implied movement.



fig. 3.20

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<sup>103</sup> Ibid., 14.

During field research I examine marine life in tidal rock pools along shoreline areas in Victoria. I handle seaweeds including kelps and discover their complex structures including buoyancy vesicles. I observe the underwater movements of oscillating kelp. I interpret these methods of investigation through close-up photography. These images enable me to study forms and their details back in the studio. The resulting sculptures are a synthesis of what I observe and interpret. These sculptures may appear to the viewer as simultaneously from an ‘other world’, yet familiar in the context of inter-tidal environments. In this research context ‘other world’ refers to enigmatic phenomena that I experience in the real world. Scientist Rachel Carson writes:

“...vast world of sea and sky, it has an eerie and unearthly quality.”<sup>(104)</sup>

In shoreline environments the boundaries between sea and land are not fixed. Water, air, earth and fire (sun in proxy) seemingly mix together in complex ways. Rivers flow into the sea and the sea flows into the land. Organic and artificial phenomena mix together in tidal processes and may be washed up on the shoreline as altered and strange forms. I do not look at compelling shoreline ecologies without thinking of environmental threats. Oil spills and pollution are always a threat to vulnerable coastline ecologies. Environmental impacts are subtly implied through this series of sculptures. They have mysterious forms. Many of these works have a black oil-like glaze that darkens the mood of the works.

In 2010 I develop experimental methodologies for outdoor installations. My intention is to explore ideas about tidal interactions between ocean and shoreline. I take a number of my sculptures out into the Victorian coastline to photograph in carefully selected sites including rock platforms and pools. My aim is to reference space, time, cyclical water flow, light and atmospherics and make my sculptures part of these phenomena. It is important to include real elements of water, earth, fire (sun) and air, because they demonstrate fundamental life processes such as growth and dissolution, which are key concepts in this research. In these installations the environment acts on my constructed forms in time and space. I photographically documented these explorations into site specific installations. The field research images are as follows.

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<sup>104</sup> Richard Dawkins, *The Oxford Book of Modern Science* (Great Britain: Oxford University Press, 2008), 135.

*Other World I* 2010 (fig. 3.22) presents a pair of forms on a seaweed covered rock platform exposed at low tide. Cresting waves loom up from an expansive space. This environment evokes intangible qualities such as atmospherics, time, weather and light.



fig. 3.21

*Other World II* 2010 (fig. 3.23) A pair of sculptural forms is partly submerged in shallow water. They appear as stranded by the tide.



fig. 3.22

*Other World III* 2010 (fig. 3.24): This sculpture is engulfed by exposed kelp fronds that wrap around its spiraled form. The water swirls around in eddies that threatens to overcome the form.



fig. 3.23

*Other World IV* 2010 (fig. 3.25): These sculptures are strange forms in an even stranger natural environment. The rock pools signal the cyclical return of the tide. Through the placement of my sculptures in this scenario my forms look simultaneously related to this location and yet ‘other worldly’ in a playful way.



fig. 3.24

As a development of my still photography I turn to video to investigate the interconnections and interrelationships between ocean, tide and shoreline. Video IV: *Cycles* 2012 is a significant outcome from this research. This is a ‘stand alone’ artwork that I present independently from any sculptural work. This video captures tidal movements and reflected shoreline phenomena. Ploughed-up water movements and plant reflections fold together in circular movements.<sup>(105)</sup> This video expresses in essence of the processes between water air, earth (plants) and light.

Importantly outdoor installation methods, photography and video provide ways in which I can generate synthesized environments. My intention is to apply this knowledge through gallery-type installations. I simulate spatial dynamics, water and atmospheric observed in environments through a combination of methods. This leads to the introduction of videos projected over sculptural objects.

## ***Tide and Time II***

*Tide and Time II* 2009–2012 (fig. 3.26–3.28) is a series of twelve mini sculptural assemblages, each installed within a wall mounted tin. Each tin is a self-contained world that implies a tidal habitat. The tins also frame the sculptural forms that are mostly made up of ordered structures. The hand-built intricate forms take on the appearance of highly-altered marine organisms, including plankton and seaweeds. These sculptures seemingly deconstruct, transform, unfurl, open, close, emerge and retreat to the rhythms of the tides. Further to this, tidal cycles are referenced through graphs and maps placed within the tins.

My research intention is to develop forms that express ‘other world’ themes. I examine intertidal life closely and record its detailed structures through photography. This is an immersive environment. I employ close up techniques because it describes how I closely examine small parts and details visually as well as through touch. Low tide sees inter-tidal life retreating from exposure to the elements. High tide signifies the resumption of life and activity. Most of this field research is conducted on the ocean side of the Victorian

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<sup>105</sup> A remote fiord in New Zealand (Doubtful Sound) is the location for this video. The first few meters in depth of the fiord is fresh water, while the great depths below are saltwater; to create a unique blend of land and sea ecology. Doubtful Sound, Wikipedia. [http://en.wikipedia.org/wiki/Doubtful\\_Sound](http://en.wikipedia.org/wiki/Doubtful_Sound) (accessed January 2, 2013).

Mornington Peninsula. There is much that is extraordinary about common marine organisms and their habitats. My sculptures express this half–seen world that ebbs and flows to cyclical tides.

Another important research topic is plankton. My analysis of photographs of plankton reveals their strange ‘other worldliness.’<sup>(106)</sup> For example, Radiolarians have perforated transparent outer shells that reveal the layers of skeletal structure. They move around assisted by water currents and the moving vacuoles (holes) that make up their bodies. Some plankton use flagella, which are whip–like structures, to propel their bodies around. Dinoflagellates have sail–like wings and propel themselves through spiral undulations. Plankton also relies on tides and currents to drift them around the oceans. Microscopic and small life–forms, such as plankton, are examined because they have unusual forms that lend themselves to sculptural interpretation.

Meaning is created by the materials I use. Ceramic materials used in *Time and Tide II* and the materials that make up some plankton are similar. The silica and calcium that is released by rocks and washed out via the rivers to the sea is used by plankton to build external skeletons. Silica and calcium are fundamental materials that make up clay and glaze.

Artificial interventions and time are referenced by the subtle inclusion of intricate clock parts within the sculptural assemblages. *Time and Tide II* celebrates the wonders of ocean life but also suggests its vulnerabilities through climate change. I develop this theme and make it stronger through an installation methodology that includes video.

In 2012, I create this studio installation using works from the original *Time and Tide II*. A video (*Video V* 2011) of cyclical tidal movements is projected over the wall mounted tins. In this way I introduce chaotic water movements over ordered sculptural structures as a metaphor for climate change. The inclusion of this video signifies extreme tides that impact shoreline communities. This video is made during field research on tidal flow between river and sea along the Otway Coast in Victoria.

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<sup>106</sup> Robert D. Barnes, *Invertebrate Zoology*, 3<sup>rd</sup> ed. (USA: Press of W. B. Saunders Company, 1974), 15-31.

This video shows complex patterns forming from seemingly simple interactions between sand and water. The flowing water shapes the sandy shoreline in changing configurations. This in turn leads to the build up of sand ridges that alter the directional flow of water. This process keeps repeating and changing the movement patterns. Ordered repetitive patterns, morph into chaotic patterns and visa versa. The water flow types includes laminar, turbulent and transitional. Sometimes the water appears to boil up when its flow is disrupted by pointed sand ridges. Tiny variations in the speed of water alter these patterns. My findings indicate that the very systems that form patterns can also lead to chaotic unpredictable behavior. This video in combination with my sculptures juxtaposes chaos over order as a metaphor for climate change.



fig. 3.25



fig. 3.26



fig. 3.27

#### 4. INSTALLATION METHODOLOGIES BY CONTEMPORARY ARTISTS

My studio research and practice is comprised of practical strategies and conceptual directions as discussed in this exegesis documentation. In this chapter, I examine artworks by contemporary artists that use comparable studio or theoretical methodologies, so as to put my research in context. Research themes and methodologies examined in the collective overall comparison study include:

- Cross–discipline and mixed media approach to sculptural installation.
- Sculptural installations offer an immersive physical and spatial experience that may include: walking, touching, and a close up examination of detailed parts. The use of video or specialized lighting in art installations expresses physical and intangible processes in the natural world.
- Field research is a physical and firsthand method of observation. It results in “experiential knowledge”. Field research is explored through studio exploration. ‘Making’ artworks is an expressive interpretation of Field research.
- Material qualities and sculptural forms conceptualized from the environment draw the viewer in, to engage with issues about threatened environments. Artworks celebrate the natural world’s wonders and complexities, but also identify potential losses through climate change impacts.
- Poetic installations staged as a ‘still life’ suggests ‘other world’ scenarios.
- Tangible sculptural form expresses changeable phenomena perceived in the environment. Foundational elements of life and their processes are implied through sculpture or installation (water, earth, fire and air).
- Water as ‘form–maker’ is expressed through sculptural forms. Curvilinear forms simulate movements in the ocean (or other watery environments) and are expressed through static sculpture. Sculptural forms combine together like a three dimensional drawing in space.

## ***Fragile Ocean Ecologies***

When I investigate compelling ocean ecologies, I both observe and handle phenomena including corals and plants to inspect their intricate structure and texture. I cannot see them without being aware of the threats and impacts from climate change. As a result, I cannot make an artwork that focuses on their compelling qualities alone, because this does not reflect my real-life observations of the environment. For example, in my research I noted dead corals as well as flourishing coral reefs – these observations result in *Reef Lab 2012*. This work addresses fragile ocean ecologies and what may be lost through climate change impacts. Environmental values are subtly implied rather than explicit. My research is also informed by scientific data and theories about climate change impacts. This knowledge informs my philosophical and also sculptural response in studio research. My choice of materials creates meaning and relates to the concepts expressed in my works. I make my works in order to transfigure my first-hand and ‘close up’ examination of the ocean environment into expressive sculpture.

Fiona Hall is an internationally acclaimed Australian artist whose cross-disciplinary, mixed media approach has resulted in sculptural installations of interest to my research. *Dead in the Water 1999* <sup>(107)</sup> is constructed using the following materials and objects: PVC pipe, glass beads, mother of pearl, silver wire and vitrine. Marine-like sculptural forms are constructed from perforated pipes and glass beads and are installed in a tank-like vitrine that implies a watery space. A waterline is implied by a glass shelf that separates the vitrine into two sections. Above the waterline are pipes that can no longer hold water because they have been perforated to create intricate patterns. Below the water line, the PVC pipes have been carefully altered with beads to transform them into delicate sea organisms. In real life, these pipes send our discarded waste to the ocean via our kitchen sink or the like.

Hall’s *Drift Net 1998* is made up of the following materials and objects: PVC pipe, glass beads, mother of pearl, silver wire, engraved bottle and vitrine. <sup>(108)</sup> A glass vitrine is divided into two sections to imply a waterline. Above the implied waterline sits an exposed, coral-like sculpture. Its whiteness is suggestive of coral bleaching. Its tubular forms are

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<sup>107</sup> Julie Ewington, *Fiona Hall* (Australia: Piper Press, 2005), 151.

<sup>108</sup> *Ibid.*, 149.

constructed from glass beads and mixed media. Its intricate structure invites inspection and discovery of its multiple angles. Its small size also invites a close-up engagement with material qualities. Below this waterline, an assemblage of suspended pipes floats in an implied liquid space, just like a drift net. Net like holes have been drilled into an assemblage of pipes. In real life drift nets are also called ‘ghost nets’ as they entrap marine life causing them a slow painful death. The PVC pipes also suggest pollution as plastic is a common form of waste found in the ocean.

I first viewed these works as part of Hall’s solo exhibition ‘*Fieldwork*’ at the Roslyn Oxley Gallery Sydney in 1999. Walking around, I engaged with each of these works as mini-installations. Groupings of objects are placed within the defined space of each vitrine. These artworks invite close inspection to immerse oneself in their detailed craftsmanship. I respond to these scenarios that suggests a superficial division between the domestic and natural environments. It also prompts me to consider how nature is being impacted by seemingly insignificant domestic behaviors. I am made more aware of how our actions inadvertently affect the ocean environment.

I examine the sculptural forms in both works and simultaneously discover an underlying ecological message. The natural world is poeticized through forms that evoke changed states. Familiar things such as pipes and beads are transformed into strange marine-like constructions. I respond to the ecological themes and it makes me consider what is at stake and what can potentially be lost. Hall raises environmental concerns in a journal article that discusses her overall philosophy:

“There is an incredible mingling of nature and non-nature – the things that we take from nature to make our urges more comfortable, and then throw back as debris. Now nature is throwing things back at us. The El Nino effect is a perfect example of nature responding to the ways in which we have abused it. For most of us living in a world of manufactured products we tend to think that we are looking out at nature and forget that we *are* nature.”<sup>(109)</sup>

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<sup>109</sup> Fiona hall quoted in Deborah Hart, “*Fertile interactions*” *Art and Australia*, Vol. 36, No 2, 1998, 204.

## ***Cross Disciplinary and Mixed Media Installation***

The aim of the studio research is to express my immersive field research observations and close-up tactile experiences. In the context of this research, what do I mean by immersive?

The medium in which an observer is immersed changes the sensory experience. Our reference medium is the air in which we live everyday, to which our bodies are essentially adapted. However, water is a very different medium. Immersion in water affects how we see, hear, feel and more. In water, it is not possible to see as far or hear as far, so it is easier to be absorbed by what is near and immediate. The medium affects the viewer and their relationship with surrounding objects. Immersion when viewing an artwork, can deliver similar affects: changing awareness of space, light and three-dimensional form. In this way the artwork may come to the forefront of our perception – giving form to the intangible.

My immersive field research involves first-hand experiences, such as underwater explorations and climbing through ice caves in glaciers. Field research is translated visually through artwork. My ‘sculptural assemblages’ offer sensory involvement by walking, touching, and close up examination of detailed parts. The physical and psychological meanings of immersion are relevant in this research and are applied to field research as well as art installations.

I incorporate video in my ‘sculptural assemblages’ that are integral to these specific installation practices. Through *Reef Lab 2012* the intention is to simulate underwater movement through a video of water projected over three-dimensional forms. Together with these sculptural forms, I create an immersive experience for the viewer. This facilitates an opportunity for the viewer to be part of this implied underwater environment.

Pipilotti Rist is a Swiss born video artist. Rist exhibited at the Australian Centre for Contemporary Art (ACCA) in 2012. *Administrating Eternity 2011* <sup>(110)</sup> consists of four videos projected over a network of curtains suspended in a large space. These video projections fall upon and pass through transparent curtains in overlapping imagery.

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<sup>110</sup> Juliana Engberg, *Pipilotti Rist: I Packed the Postcard in my Suitcase* (Australia: Australia Centre for Contemporary Art, 2011-2012), 52-65. (Audio video Installation 4 projections, 2 video mirror units, sound systems, voile curtains, and aluminum mounts. Video loop: 9 minutes 28 seconds (fix) 24 minutes 51 seconds (fix) 5 minutes 40 seconds (moving) 5 minutes 35 seconds (moving).

Projected landscape imagery is changeable and includes wind blown flowers, sunlit reflections, transforming cloud patterns, and flocking sheep.

As I physically move around the room and through the curtains, the projection alters my perception of space and environment. I feel poetically transported to this implied landscape. These poetic fragments evoke the processes that I would normally only experience immersed within a real environment. There are also images that are suggestive of intangible processes – curvilinear light rings (video projections) suggest momentary phenomena such as light reflections on water. I experience this immersive installation as a dream-like environment. It provides a spatial encounter that places me physically within an ‘other world’ that is familiar yet altered and strange.

The video *Gravity Be my Friend* 2007<sup>(111)</sup> suggests the processes and interactions between water, air, fire (sun) and earth. The video features a swimmer who moves horizontally through the water. Sun-rays pierce the water in fingers of light as the swimmer moves to the rhythms of her surroundings. The video includes swirling plants that rise from the watery depths. The swimmer leaves a visible trail of bubbles behind her movement through water.

The video of the swimmer is projected on a ceiling, so the viewer must lie horizontally on a low platform. In this way I identify with this underwater space and feel part of it. I am drawn to what I see as a poeticized vision of an underwater paradise. The detailed imagery is seductive. There is no dark ecological message or ‘flip side’ to this artwork; however, I was left with the sense that our world is indeed paradise.

Both mixed media installations simulate ‘other world’ environments. Space is activated through projected imagery over static objects such as objects and curtains. As a result these objects within her installations become animated through implied processes and movement.

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<sup>111</sup> Ibid., 30-51( Audio video installation 2 projections pointing to the ceiling, 3 players, sound system, 2 wild carpet sculptures, 2 suspended screens. Video Loop: 11 minutes 10 seconds loop (wet) 12 minutes 37 seconds loop (dry) Sound Loop 10 minutes 40 seconds. Sound: Anders Guggisberg & Pipilotti Rist).

## ***Sculptural Installation Investigates Ocean Reef***

Field research is my firsthand method of investigation. I examine the workings and processes of reef environments, as well as the phenomena it produces. I investigate reef structures made up of visually–complex coral and plant life.

My ocean reef research investigates ‘other world’ themes. I demonstrate that I do not need to reference hybrids or biotechnology to find unearthly forms of life. I discover that real–life marine phenomena can suggest ‘other world’ phenomena and I express this through my artworks.

Making works by hand is a creative studio exploration that results in tangible form from phenomena perceived in the environment. *Reef Lab* 2012 is made up of carefully–made multiple ceramic forms that are made durable through kiln firing.

The spatial dynamics in my installation *Reef Lab* 2012 are complex, through a large number of forms being placed closely together. My artwork poetically evokes movements through repetitive and fragmentary curvilinear form. A projected video over sculptural forms simulates underwater motions. With the inclusion of a quasi lab, my artwork also reference science data on coral bleaching and ocean acidification.

Vera Möller is an established sculptor and painter based in Australia. She has a science background, having studied biology at the Universities of Wuerzburg and Munich.<sup>(112)</sup> Möller’s doctoral research in Fine Art focused on biological hybridity and hypothetical life forms.<sup>(113)</sup> Möller’s research resulted in a large installation titled *darkrooming* (2006)<sup>(114)</sup> that was exhibited at Monash Faculty gallery in 2007, as part of her Ph D examination. This artwork references hybrid biology, museum culture and aquarium display. Möller’s exegesis outlines her studio methodology whereby glass cases are constructed together as an installation, to frame her sculptural forms as ‘specimens’:

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<sup>112</sup> Ashley Crawford, “Vera Möller, *The Softmachines*”, *The Age*, May 22, 2006.

<sup>113</sup> Vera Möller, “*DIZZYLAND. A Studio Exploration of Biological Hybridity and Hypothetical Life Forms*”, Volume I & II, (Doctor of Philosophy, Monash University, 2007), Volume I, 6.

<sup>114</sup> *Ibid.*, Volume I, 194.

“...an installation format entitled *darkrooming*, constructed in response to notions of artificiality in biotechnologically created specimens, and fantastical aspects of display in natural history museums and aquariums.”<sup>(115)</sup>

Möller’s science background is evident in her theoretical research. Microbiology is a subject that she writes about.<sup>(116)</sup> The science content in her research is conceptualized through her studio work that explores the relationships between natural and artificial paradigms and how this is playing out in contemporary biology and biotechnology.<sup>(117)</sup>

Möller visited the Australian Great Barrier Reef in 2004 in the latter part of her candidature. Subsequently her research broadened to include reef life that evolves naturally into strange new forms and species, without artificial interventions. In consequence, her studio research references real life. Some of her sculptural forms for *darkrooming* (2006) expresses ocean reef phenomena. She writes:

“The natural environment of fringing reefs have been referenced as a conceptual, visual and formal counterpoint within the installation”.<sup>(118)</sup>

The spatial dynamics that you may see in real fringing reefs such as terraces, cavities and projections have also informed the installation *darkrooming* 2006.<sup>(119)</sup> Coral bleaching is also discussed as a minor topic in the exegesis documentation. Möller identifies it as a climate change phenomena.<sup>(120)</sup>

Möller’s *darkrooming* 2006 is an installation of objects and sculptures placed within multiple glass cases stacked together. Objects are placed as ‘specimens’, within vitrine like cases that reference hybrid biology, museum culture and aquarium tanks. The installation includes a large number of repetitive forms that simulate miniature plant habitats. These sculptural forms are made from a synthetic modeling material (low-tech material) that Möller hand-forms into simple structures. Painted designs (striped patterns and dots) are

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<sup>115</sup> Ibid., 6.

<sup>116</sup> Ibid., 5.

<sup>117</sup> Ibid., 5.

<sup>118</sup> Ibid., 5.

<sup>119</sup> Vera Möller, “Darkrooming”, Faculty Gallery Monash University, <https://blogs.monash.edu/MADAgallery?s=darkrooming>, (accessed January 2, 2013).

<sup>120</sup> Vera Möller, “DIZZYLAND. A Studio Exploration of Biological Hybridity and Hypothetical Life Forms”, Volume I & II, (Doctor of Philosophy, Monash University, 2007), Volume I, 22.

applied to these forms as artificial camouflage patterns. This installation also includes plastic, metal, rubber and metal objects. Some objects are suspended from frames to float within the glass spaces.

Möller has employed specialized lighting effects in *darkrooming* 2006 that seem to suggest an immersive spatial experience. Long fluorescent globes interspersed within the work cast a blue hue over the entire installation. The blue lighting casts interesting shadows and water-like reflections on the walls of the gallery.

The various exegesis images of *darkrooming* 2006 show that this large work is highly complex, with a large number of similar and different parts.<sup>(121)</sup> There are many forms that seem to reference ‘artificial’ concepts, including mutation. Plant-like forms suggest growing processes and structures that are both familiar and strange. Forms include long rod-like shapes, club-like shapes, and rounded shapes.

My interpretation of *darkrooming* 2006 finds multiple meanings. Hybrid plant sculptures are mixed together with artificial objects made from plastic, metal or rubber gloves. To me, ‘artificial’ themes in this installation suggest the nature/culture dichotomy. This artwork does celebrate the complexity and beauty of a fringing reef, but it also draws attention to its inherent fragilities through the inclusion of hybrid biology.

### ***Poetic Interplay Between Stillness and Motion.***

*Melt* 2012 is an installation that is staged as a ‘still life.’ I create a visual tension between the actual stillness in my sculptures and the implied movement. This artwork demonstrates a poetic interplay between stillness and motion that expresses the effects of global warming and the breaking down of ice shelves.

I do not feel defined by clay and glaze as a medium in my artworks. Cross pollination between ceramics and other art disciplines is important for me. Conversely, ideas rather than conventions also drive my approach to what sculpture can be. In Europe, ceramics is acknowledged as an art form. In my experience, it is not unusual to see cross discipline, contemporary ceramic installations exhibited in many fine art galleries and museums in

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<sup>121</sup> Ibid., Volume I, 194 and Volume II images.

European cities. <sup>(122)</sup> Contemporary ceramic practice in Australia that is more conceptual, sculptural or installation-based is a small but growing area. Overall, the largest part of Australian ceramic practice is focused on the ‘object’, usability, and the skill that goes into making it.

Anne Wenzel is a contemporary artist with an international profile, whose studio practice is in the Netherlands. Wenzel applies a cross disciplinary approach to ceramics using mixed media. Wenzel creates large sculptural installations that she makes by hand.

Recently I viewed Wenzel’s installation *Silent Landscape* 2010, a winning entry in the international section of the Sydney Myer Fund Australian Ceramic Award 2010 at the Shepparton Art Gallery, Victoria. <sup>(123)</sup> This artwork implies a burnt landscape, a frozen landscape, and a knocked over landscape as one. Wenzel does not specify one specific cause of this catastrophe. However, the aftermath of a number of destructive events is suggested. Anne Wenzel talks about the meaning in her work:

“Silent Landscape is an installation of a dark landscape after a disaster has happened...Nearly frozen, dark, but also with a certain attraction. I started with this installation when the Tsunami happened in 2004. Afterwards I started collecting pictures of landscape after a catastrophe (sic) had happened. They are cruel, but of a certain beauty at the same time, and they are also timeless”. <sup>(124)</sup>

Viewing *Silent Landscape* 2010 is a spatially-immersive experience. Ceramic buildings and tree-like sculptures in this installation are partially submerged in a large shallow expanse of water in a raised platform. Repetitive tree-like structures imply movement through static form. Many are lying horizontal, as though knocked down by some type of catastrophic process. These forms appear blackened, melted and rock-like. Somber lighting sets a darkish mood. The illusion of deep space and atmospheric is enhanced by real water, reflections and a wall drawing that surrounds the installation. There are connections

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<sup>122</sup> I have been included in 12 international group exhibitions in museums and galleries in the last 17 years. (USA, Europe, and Asia) I have also attended some of these exhibitions. This is my personal perception from these exhibitions.

<sup>123</sup> Kim Dickey, *2010 Sydney Myer Fund Australian Ceramic Award Catalogue* (Australia: Shepparton Art Gallery, 2010), 24-27.

<sup>124</sup> *Ibid.*, 31.

between subjects, material and processes. These ink drawings suggest a distant forest receding into the background

I will explain my perceptions in this encounter that involves walking around and close inspection. I feel I am looking at a scene of implied aftermath from an apocalyptic tsunami or bushfire. 'Stillness' is signified through the sense of an aftermath from some type of catastrophe. Time seems to 'hang' in suspended animation. This work expresses the intangible processes of time and space. The motionless water resonates against the chaotic scene that is 'other worldly'.

As I walk right around this installation, I find that it presents a staged environment through sculpture, lighting and space. This work captures poetically the physical and intangible aspects of a watery world. These fluid mediums (ink, water, clay) poetically express a dissolving watery environment. I also sense the broader expression of foundational elements of life in this installation. Earth, fire air and water are intrinsic elements in the ceramic process. As the trees are ceramic, fire is both a subject and medium. From my experience of the work, fire is implied through the blackened trees that look melted. The element of earth (clay) is expressed through land and trees. The water that fills the platform is both a subject and medium that expresses stillness after past motion. Air is expressed through the illusion of deep space.

*Silent Landscape* 2010 is the staging of sculptural forms as a spatially-immersive installation. Material qualities and sculptural forms in this work draw the viewer in to engage with inherent environmental concepts. The work suggests climate change issues. The world is experiencing more frequent or severe climate related events including; storms, floods, bush fires, rising sea levels and warming oceans. Through this work Wenzel has reflected our culture's awareness, fear and fascination with potential environmental catastrophe.

### ***Field Work Approach***

Field research is my fundamental investigative methodology. I perceive the environment through "experiential knowledge". Field research employs both visual and tactile investigative methods. Research is documented through photography. Firsthand research is

expressed through ‘making’ things in the studio. The foundational elements water, earth, air and fire are intrinsic to my ‘making’ methodology, that involve ceramic practice.

I explore ice and snow as part of field research for my installation *Melt* 2012. Dissolution is a central concept that explores melting states. I explore ‘base processes’ in glacier environments. This research examines the underlying workings in nature that are not always tangible. They include movements, forces and cycles that do not always manifest in things or objects.

Site specific sculptural installations *Tide and Time I* 2010 were installed on coastal rock platforms. As site specific works they become part of this intertidal environment. However, their ‘other world’ plant-based forms signify changed states. Photographs of these sculptural installations make ephemeral phenomena visible, such as moving water, wind, sun and atmospherics.

Andy Goldsworthy is a British sculptor of international standing. The reader may be familiar with his site specific artworks constructed in the outdoors using found natural materials. These environmental sculptures are well documented through his photography in the book: *Hand To Earth. Andy Goldsworthy Sculpture. 1976–1990.*<sup>(125)</sup> As well as this research, I recently viewed his sculptures at Herring Island in Melbourne. *Cairn* 1997 and *Stone House* 1997 are both made from stone and were made specifically for outdoor sites on this island as part of the Melbourne Festival 1997. *Cairn* 1997 is shaped like a cone and sits within a naturally occurring dip in the terrain. This small sculpture is surrounded by a circle of stones that intensifies the intimate experience of the work. *Stone House* 1997 is also a small work and is set into an earth embankment. The Herring Island website states that “the artist believes this work is most powerful from a distance, and that it emphasizes the sense of discovery and concealment that an island holds for him”.<sup>(126)</sup>

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<sup>125</sup> Harry N. Abrams, *Hand to Earth. Andy Goldsworthy Sculpture 1976-1990*, (New York: Harry N Abrams Inc, Publishers, 1993).

<sup>126</sup> Maudie Palmer & John Gollings, “Artworks of Herring Island Environmental Sculpture Park”, Friends Of Herring Island Inc., <http://home.vicnet.net.au/~herring/arts.htm>, (accessed January 2, 2013).

Goldsworthy is currently planning a similar project at the deCordova Sculpture Park (U.S.A) called *Snow House*. According to the website <sup>(127)</sup> this outdoor stone house will explore the interconnections between land and the frozen waters of a pond environment. At this site a stone house will be built to contain a large snowball (that will be sculptured during winter). When summer arrives the stone house will be opened to reveal this physical memory of winter. The snowball will then melt into water, revealing seasonal cyclical processes that include dissolution.

Goldsworthy documents his ephemeral artworks because they are often transitory and may decay or dissolve in minutes or hours. His time-lapse photographs also records cyclical phenomena, such as growth and decay that occur in his works and make them dynamic. Through photography he may also create or signify scale relationships between things in the environment. Photography makes visible ephemeral phenomena such as melting ice, moving water, wind, sun and atmospherics. Goldsworthy photographs are artworks in their own right.

Goldsworthy expresses the ‘physicality’ of natural materials through his artworks. He often makes an artwork from a singular material such as ice or clay that is specifically related to the site of installation. He spoke about his methods (field research) and how it affects his art making to author John K Grande.

“Looking, touching, material, place, making, the form and resulting works are integral; difficult to say where one stops another begins. Place is found by walking, direction determined by weather and season, I am a hunter, I take the opportunities each day offers; if it is snowing, I work with snow, at leaf-fall it will be with leaves...Movement, change, light, growth and decay are the lifeblood of nature, the energies that I try to tap through my work. When I work with a leaf, rock, stick, it is not just material in itself, it is an opening into the processes of life within and around it”. <sup>(128)</sup>

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<sup>127</sup> “Snow House”, deCordova Sculpture Park and Museum, <http://www.decordova.org/snow-house>, (accessed January 2, 2013).

<sup>128</sup> John K. Grande, *Balance Art and Nature* (Canada: Black Rose Books, 2004), 90.

Particular artworks demonstrate the physicality of water in its fluid and solid states. Goldsworthy explains that when he makes outdoor ice works he needs to assess temperature, wind direction and sun intensity, so that he can understand these variable elements. He responds to whatever weather conditions occur during the making of his snow and ice works. Certain types of snow present challenges in modeling or ‘making’.<sup>(129)</sup> Goldsworthy often makes site specific artworks in the countryside, but as a change in direction he installed *Snowballs in Summer 2000* in an urban setting.

Looking at images of *Snowballs in Summer 2000*<sup>(130)</sup>, I can see that these forms are sculptured from snow and plant based materials. The large snowballs were constructed the previous winter and were stored in a deep freeze. He needed very cold temperatures to hold the ice together as he made these multi-layered spherical forms. Snowball installations were ‘sited’ at various outdoor locations in urban London in the summer of 2000. These ephemeral forms were left out in the weather to break down. Gradually, over time, the sun and wind ‘dissolved’ the forms back to water, leaving only fragmentary plant based objects that Goldsworthy had originally placed within the snow.

In my interpretation of *Snowballs in Summer 2000*, this work expresses the foundational elements of life: earth (plants), fire (sun), air (wind) and water (snow). The flux and changes inherent in life are poetically expressed through these elements. This work communicates that elemental forces are natural and occur in urban settings too. The snowballs become a metaphor for the fragility of all life. Goldsworthy’s ephemeral sculptures explore eternal life processes. The urban sites intensify the sense of natural processes of decay.

Goldsworthy speaks about spatial concepts as well as the “energies” that he perceives in the environment. Spatial and energy concepts are developed in outdoor installations as well as sculptures. *Fired Clay Holes 1989*<sup>(131)</sup> are a group of clay forms that look like rocks. Each form has a hole that activates an unexpected interior space. Goldsworthy explains intangible qualities as “energies”:

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<sup>129</sup> Harry N. Abrams, *Hand to Earth. Andy Goldsworthy Sculpture 1976-1990* (New York: Harry N Abrams Inc, Publishers, 1993), 166.

<sup>130</sup> David Clarke, *Water and Art* (London: Reaktion Books, 2010), 247.

<sup>131</sup> Harry N. Abrams, *Hand to Earth. Andy Goldsworthy Sculpture 1976-1990* (New York: Harry N Abrams Inc Publishers, 1993), 36.

“A rock is not independent of its surroundings. The way it sits tells how it came to be there. The energy of the space around a rock are as important as the energy and the space within. The weather – rain, sun, snow, hail, mist, calm is that external space made visible.”<sup>(132)</sup>

*White Walls* 2007<sup>(133)</sup> (Porcelain clay, dimensions variable) is installed within a gallery space (Galerie Lelong, New York). Looking at images on the Gallery Lelong website, the gallery walls are hidden under a thick application of clay. His photographs (over a number of days) document the changing process of clay shrinking, drying and eventually flaking off, to reveal underlying gallery walls. This process has the affect of energizing the space and also suggests a process of decay.

### ***Water as Form Maker***

‘Sculptural assemblage’ is my method of installation. Multiple parts interact together within a spatially–defined area. Sculptural forms may be relatively small, but when put together make a large installation that offers close inspection of detailed structures and material qualities. In these ways, it offers the viewer an intimate sensory engagement with form and concepts. Importantly, ‘sculptural assemblage’ expresses ‘base processes’ and movement.

Curvilinear form is fundamental to my theoretical and practical methodology for *Reef Lab* 2012. This approach simulates movements in the ocean that are expressed through static sculpture. My intention is to achieve spatial lightness through *Reef Lab* 2012. I create multiple linear parts which form an overall reef structure. Curvilinear forms express water in a state of flux between order and chaos. I exploit the qualities of clay that allows it to be modeled into linear forms with complex compound curves.

My research finds that water makes momentary shapes that can be interpreted through sculptural form. Water states are both ordered and disordered. In real life, water flows, dissolves, and re–shapes or breaks other things down. Water makes compelling forms. For

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<sup>132</sup> Ibid., 150.

<sup>133</sup> “Andy Goldsworthy Selected Works”, Galerie Lelong, <http://galerielelong.com/artist/andy-goldsworthy>, (accessed January 2, 2013).

example, waves are highly–changeable complex forms created from weather processes and interactions between land and ocean.

In this part of the chapter I examine particular works by sculptors who closely observe the forms and structures that water makes. How have they expressed the momentary qualities of water movement? How does installation become part of their sculptural methodology?

I discussed Leonardo da Vinci’s water forms in Chapter One. Leonardo believed that water drives all processes in nature. He strived to understand its movements, states and changing patterns. His drawings included; underwater turbulence, waves, water colliding with static objects and surface reflections. The artwork *A Deluge* 1517–1518 (pen and ink with wash over black chalk) <sup>(134)</sup> is of particular interest as these series of drawings are inspired by real life observations of floods and storms. In these drawings, water is stylized into circular linear shapes to express movement. The clouds he has drawn show great swirling forms of watery moisture. I interpret these drawings as the interaction between foundational elements of life.

Richard Deacon is a contemporary British sculptor. His sculptural installation *UW84DC* 2001 (7 pieces from series; ash, aluminum; dimensions variable) <sup>(135)</sup> explores watery concepts and implied movement. If you speak the title it is heard as: “you wait for the sea”. Art historian, Judith Collins believes this installation looks like a three–dimensional interpretation of Leonardo’s drawings of waves and rain clouds. <sup>(136)</sup>

There are three main parts to this large installation. Each part is constructed from thin panels of laminated wood that are assembled together with metal pieces. Material qualities as well as crafting skills are prominent. Deacon makes his own works. The first part of the installation is a series of curvilinear wave–like forms. Implied waves rear up and down in circular chaotic loops. A second part suggests calmer, rippled water, expressed by a corrugated platform that lies on the floor of the gallery. The third part consists of a triangular form that I interpret as a two–way waterfall. This installation contrasts stillness and motion together as opposite forces.

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<sup>134</sup> David Clarke, *Water and Art* (London: Reaktion Books, 2010), 26.

<sup>135</sup> Judith Collins, *Sculpture Today* (London: Phaidon Press 2007), 184-185.

<sup>136</sup> *Ibid.*, 183.

Looking at images of this multi-part work I will explain my experience of it. I imagine walking around this sculptural installation that suggests varied water motions including stillness and turbulence. This work is physically 'still' yet it implies many different states of movement.

Anthony Caro is a British artist. He is well known for his abstract steel sculpture. Caro's sculptures have fluid curvilinear forms. As well as this, particular sculptures express water movement. I will focus on two 'table top' works that I experience as mini installations.<sup>(137)</sup> In this interpretation, each work is a group of sculptural forms constructed as one, that is placed within a defined (table) space. Caro's 'table top' sculptures are spatially complex. They are of a human scale and invite close inspection by walking around to visualize all angles. 'Table top' sculptures do not have a formal base. The 'table top' is conceived as part of the actual sculpture. These sculptures are made from thin gauge steel. Most importantly, these sculptures suggest water movement expressed through curvilinear form. In this way, spatial qualities interact with linear forms to make three-dimensional drawings in space.

At particular times in his career, Caro looked at natural forms such as waves for inspiration.<sup>(138)</sup> He made drawings of wave formations observed in the Caribbean. These resulted in the abstract sculpture *Billow* 1982 (steel blackened, rusted and varnished; 62x102x64.5cm).<sup>(139)</sup> Caro's earlier steel sculpture, *The Deluge* 1969 (steel painted; 40x63x38cm) is a construction of curvilinear forms.<sup>(140)</sup> Judging by the title, Caro may be referencing Leonardo's drawings *A Deluge*. The sculpture is of a small scale and invites close observation. Looking at images of this 'table top' sculpture I will explain my virtual experience of it. The sculpture is not grounded by a formal base. Loops of thin gauge steel run like ribbons in space. A grouping of curvilinear forms appears to cascade down off the edge of the 'table top', to hang in mid-air. The sculptural forms suggest chaotic, yet rhythmic, water movement. The work implies circular wave energy and water turbulence. In one part, water is implied to rear up into elegant circular loops that float up and activate spatial rhythms. These parts envelope the space, so that the space itself becomes present

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<sup>137</sup> I viewed Anthony Caro's table top sculptures in his exhibition at the Tate Gallery London in 1991.

<sup>138</sup> *Ibid.*, 24.

<sup>139</sup> William Rubin *Anthony Caro* (USA: The Museum of Modern Art, 1975), 152.

<sup>140</sup> *Ibid.*, 101.

and active. The fluid qualities of water are interpreted as line. A gestural, drawing like quality has been achieved using steel. This sculpture has an expressive presence, developed from implied motion. Author Terry Fenton comments on water as a subject matter for Caro's sculpture:

“While water may seem to be foreign to the nature of sculpture, waves, shaped by wind and tide, represent water in its most sculptural manifestation”.<sup>(141)</sup>

*Table Piece CCLXV* 1975 (Rusted, painted and varnished steel; 55.9x205.7x81.3cm)<sup>(142)</sup> is an earlier work by Caro that, according to art historian and author Judith Collins, is inspired by waves breaking over rocks.<sup>(143)</sup> Lines of thin gauge steel twist above a concave shape lying horizontally on the table. This is its central axis. It is a small work that can be walked around to experience its complex multiple angles.

Closely observing images of this work, I will explain my virtual experience of it. This artwork expresses wave forces in an abstract way. This ‘table top’ work is also a fluid curvilinear composition. The lines of steel suggest water interacting with a static object such as a rock. The concave, linear element that rests on the table suggests a scalloped out rock pool shaped by wave action. The whole structure hangs in space lightly, as there is no formal base. I contemplate this work as an interaction between the foundational elements of life. In this way, the earth element is suggested through the rock pool. The air element is expressed in the activated spatial dynamic.

Expressive movement, implied through static form is an important focus in this research. Caro writes about the importance of expressive qualities in his sculpture:

“It is an expression of my feelings. The meaning is implicit, not explicit; and to require explanations suggests a real discomfort with the visual... My job is to do with art, with pure delight, with the enrichment for a short time of those that look at it...Abstract art that is not expressive becomes arbitrary or decorative”.<sup>(144)</sup>

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<sup>141</sup> Terry Fenton, *Anthony Caro* (London: Thames and Hudson, 1986), 24.

<sup>142</sup> Judith Collins, *Sculpture Today* (London: Phaidon Press 2007), 187.

<sup>143</sup> *Ibid.*, 187.

<sup>144</sup> Ian Barker, *Anthony Caro Quest for the New Sculpture* (UK: Lund Humphries, 2004), 240-241.

## CONCLUSION

This art–practice led research proposes a new way of expressing complex ocean processes and phenomena through tangible sculptural installations. My research outcomes are *Reef Lab 2012* and *Melt 2012*. These artworks express ‘base processes’ that are impacted by climate change. Transformational states represented through my sculptural forms communicate the collision between human activities and the natural world. These installations are visually–poetic representation of ‘other worlds’ or unfamiliar processes and phenomena that I experience in the real world. These artworks are informed by literary and scientific references, but contribute differently to the discourse on climate change through visually–, conceptually–, physically– and spatially–engaging ways.

*Reef Lab 2012* and *Melt 2012* extend the parameters of sculptural ceramic practice. These installations demonstrate creative ways of visualizing my research, transfigured into immersive installations, using a multi–discipline and mixed media approach. Clay, glaze, resin, glass and video are sculptural expressions of ‘base processes’. This is a new area of ceramic investigation rather than a study of conventional traditions that focus on the ‘ceramic object’ and its usability.

‘Base processes’ is the central concept in this research that explores the underlying workings in the ocean environment. Field research provides first–hand and original knowledge through physical engagement with selected environments. The findings in the field research show that I am able to visualize the ocean environment as though seeing it for the first time as an assemblage of ‘base processes’. Research findings are demonstrated through my studio explorations and exegesis documentation.<sup>(145)</sup>

As an artist, I investigate the physical qualities of nature and the materials that constitute it. Earth, water, fire and air are both elements and subjects in this research. I examine foundational elements that interact in complex ways, as an expression of ‘base processes’. Importantly, I express transformational states through complex studio processes using clay and glaze mediums.

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<sup>145</sup>. Fiona Murphy “Sculptural Assemblage and Ecological Process Inside Out” Extract from a paper presented September 1, 2012 at ASLEC Conference, Melbourne, *Regarding the Earth: Ecological Vision in Word and Image*.

Through my artwork and exegesis documentation, ‘base processes’ is clearly contextualized and demonstrated as a visually–poetic expression of the ocean environment. I refine this focus to selected subjects: ocean reefs, intertidal zones and iceberg environments.

My research findings point in two directions. Firstly, it asks the viewer to look at the visually–poetic expression of ocean environments through my ‘sculptural assemblages’. Secondly, it asks the viewer to relate that expression to aspects of the real environments that may be lost through climate change impacts.

The three core areas in this research methodology are sculptural form, material qualities and climate change concepts. The major and substantial outcomes in this research project are *Reef Lab 2012* and *Melt 2012*. I explain the key findings in this overall research project in respect to these installations.

### ***Reef Lab 2012***

*Reef Lab 2012* demonstrates a significant sculptural approach to water as form maker. Underwater movements are implied through a large number of rhythmical sculptural forms assembled together in space. In the underwater realm I observe phenomena structured by water movements. For example, plants lift and fall in rhythmic oscillations and swirling soft corals respond to currents, as does the sea–beds shifting sands. These types of phenomena are visualized mostly in terms of their motions rather than their stationary appearance. Water’s formative and eroding movements express the essence of ‘base processes’ and makes it visible. This is an important finding that results from my field research methodology.

*Reef Lab 2012* is a complex ‘sculptural assemblage’ that offers new ways of perceiving ocean processes and phenomena. A large part of a reef remains under water, concealing the climate change processes that impact coral reef biodiversity. My large physically–immersive installation offers a sensory engagement as a way of realizing its concepts. I invite the viewer to put aside conventional rationalizations and pre–conceptions of coral reef phenomena and to ‘see’ in essence it’s underlying ‘base processes’. My investigations

seek a re-discovery of the ocean world that looks beyond the everyday appearance of things. It is a way of re-orientating thinking through the senses.

Through *Reef Lab 2012* cyclical phenomena are represented through coral-based and plant-based sculptural forms. I investigate processes of growth, fragmentation and decay. Colorful forms suggest a vital living reef. Curvilinear structures imply life bringing water and its formations. However, white sculptural forms suggest the breaking down of cyclic processes through climate change. These forms signify coral damage that result in large quantities of rubble. In this way I express ocean phenomena and processes that are impacted by ocean acidification and coral bleaching.

The lab also represents the complexity of 'base processes' in the ocean, but in different ways. This part of the installation is a metaphor for scientific testing and knowledge that informs our understanding of climate change. However, in the context of surrounding dead corals, the lab suggests that testing and interventions have come too late. There is also a separate grouping of generic test tubes placed within the installation. This glassware represents mass produced products and acts as a metaphor for industrial processes that produces CO<sub>2</sub> and anthropogenic climate change. These two metaphors represent competing scientific and industrial intentions.

Climate change is examined as a 'force' in this research. I believe that it is not my role as an artist to moralize about environmental issues. Instead, I offer a visually-rich sculptural evocation of an ocean reef as a sensory means of engaging the viewer with the difficult issues of ocean acidification and coral bleaching. Sculptural and material qualities include: fluid and sensual forms, complex forms, structures that imply movements, tactile surfaces, colorful striated water patterns and transparent and opaque materials.

My field research provides fundamental primary knowledge, gained through physical interaction and experience. I do not experience reef environments without the knowledge of climate change threats. Therefore, it is important to signify specific impacts in this installation. Imagery and forms representing ocean acidification and coral bleaching reveal complex processes and interactions between ocean, land and atmosphere.

*Reef Lab 2012* simulates under water processes through video. My video of water ripples projected over sculptural forms expresses strong movement in an otherwise static sculptural work. The video implies cyclical tidal movements and the changing ocean chemistry. The sensually–moving water ripples are not ordered but made up of chaotic circular patterns. In my installation, they are a metaphor for the cumulative processes of climate change that result in chaos. An important finding from my research is that chaotic ‘base processes’ can be underlying and largely intangible.

The viewer is invited to become a participator and activator through physical engagement with the installation. The video projection over sculptural forms, layers space for the viewer in a series of close–up and middle–distance experiences. The coral rubble offers a tactile experience as they move through the work. They may become intimately absorbed by what is close and nearby. Physical immersion changes our sensory experience. A changing awareness of light, space and three–dimensional form is perceived. This may bring the artwork to the forefront of the viewer’s perception. Theories on the experience of sculpture as a perceptive phenomenon are important concepts that inform my thinking for this sculptural installation.

My findings are that this installation invites the viewer into a spatially–immersive and psychologically–immersive space. The sculptural forms that make up the reef represent physical ‘activity’ and the space around it becomes an implied ocean. This is an imaginative space in which to intimately perceive an impacted environment. We may be familiar with climate change data; however, this installation contributes differently to the discourse on climate change by offering the viewer an immersive physical engagement.

This ‘sculptural assemblage’ is poetically–expressive of an ‘other world’, seen through its processes rather than its familiar representations. I visually poeticize enigmatic processes and fragmentary phenomena observed underwater. My visualizations arise from a synthesis of multiple phenomena, rhythms and interpretations. The artwork is not intended to be a naturalistic and figurative representation of a reef.

Field research in Australia and Vanuatu offers primary research on ocean reefs as an examination of the concept ‘base processes’. Observation and photography transfigures visual, physical and tactile means of perception. Physical and spatial immersion and close–

up ways of visualizing phenomena result in experience-based knowledge. Research themes identify the ways I perceive 'base processes' and include: water as form maker, implied movement, growth, fragmentation, tidal cycles, climate change forces, physical and intangible phenomena, order and chaos, other world and spatial immersion.

Making sculpture gives a concrete form to changeable field research observations. With skill and careful attention to detail, I make sculptural forms that honor the compelling qualities in an ocean reef, while also drawing attention to the wonderful biodiversity that may be lost through climate change impacts.

An earlier series of sculptural forms *Time and Tide I* 2010 installed in outdoor intertidal environments are documented through photography. An important finding from these outdoor sculptural installations is that I can simulate spatial dynamics, atmospheric and 'base processes' through other ways in gallery situations. This leads to new approaches that include the introduction of videos projected over the 'sculptural assemblages': *Reef Lab* 2012 and *Tide and Time II* 2009–2012.

A further related and important outcome is Video IV *Cycles* 2012. It is presented in this research as a 'stand-alone' artwork. This video work demonstrates the essence of 'base processes' expressed through water movement. This video represents the cyclical tidal interaction between sea, land and plants.

## ***Melt 2012***

*Melt* 2012 is a 'sculptural assemblage' that evokes global warming through iceberg-like sculptures and fragmented forms that imply the remains of disintegrating ice shelves and glaciers. Forms imply the chaos of dissolution through a combination of clay, glaze and resin. This mini-installation offers the viewer a close up immersion to view intricate forms. Material qualities include fractured forms, fluid resin pools, glaze drips, ice textures, translucency and opacity.

Through the installation *Melt* 2012 I create a visual tension between the actual 'stillness' in my sculptures and implied movement, as a poetic interplay between stillness and motion. The theme of 'still life' crystallized during the last six months of my research period. It is an important research outcome in *Melt* 2012. My iceberg-like forms are implied as no

longer in the sea but marooned in another time and space. My forms only become a 'still life' when the viewer perceives that all implied movement (dissolution) is in suspended animation. I suggest solid forms breaking down into liquid pools, and water-like flows (resin) that hang in suspended animation as though time is halted. Through these visual cues, the viewer may realize the work's message that indicates a 'tipping point' has occurred. Global warming is perhaps not reversible.

Global warming is addressed as a force in this research. Melting glaciers and icebergs suggested through this artwork draws attention to climate change. The golden-hued light that is part of the installation evokes rising temperatures. Global warming phenomena such as rises in atmospheric CO<sub>2</sub> and dissolution of glaciers are largely intangible, as they are processes that are perceived rather than touched. My artwork offers a physical experience. I make global warming an intrinsic part of this artwork through conceptual realization, sculptural form and material qualities.

*Melt* 2012 offers the viewer an implied atmospheric immersion through mostly white objects positioned in an illuminated white installation space. The lighting over the forms articulates spatial depth and transposes the complexities of cloud atmospherics I observed during field research. 'Other world' is a concept that describes unfamiliar phenomena that I experience in ice and glacier environments. Immersion within atmospheric cloud phenomena is a spatial encounter that occurs in the close-range to mid-range distances. This field research concept applied to my artwork offers the viewer an intimate engagement with sculptural phenomena. They may be engrossed in the experience whereby visual perceptions are heightened. Art theories documented in chapters two and three on the perceptive experience of sculpture, are important concepts that informs my thinking for this installation methodology.

Field research themes are findings in their own right because they identify ways of seeing 'base processes'. These themes include: dissolution, still life, other world, fluidity, implied movement, climate change forces, order and chaos, space, light, and immersion.

Field research explorations of glaciers in New Zealand enable me to examine the types of processes that make icebergs. I also undertake substantial research on ice, snow and atmospheric phenomena in Australian alpine regions. I study the processes between land,

atmosphere and ocean that cause ice sheets and icebergs to break down. I employ close-up photography that translates this visual and tactile means of observation. Observations and photography structure momentary and changeable processes. I visualize these environments as though for the first time and perceive them as an assemblage of ‘base processes’.

*Reef Lab 2012* and *Melt 2012* demonstrate my considerable experience as a ceramic artist over the last 32 years. My skills, knowledge and contribution to art discourse as an educator at tertiary level have also contributed to this Doctoral project. This research consolidates my interest in large mixed media ‘sculptural assemblage’ and results in the development of new research pathways as discussed. The breaking down of particular forms into rubble, fragments and flowing glaze formations becomes a carefully-considered strategy to express environmental chaos. During the course of this project my installations become less formalized in the way parts are positioned together, so as to express a strong sense of process. The materiality of clay, glaze and resin becomes an important expression of raw, elemental processes.

I witness climate change itself as a ‘base process’ that affects the ocean environment. The viewer may be familiar with climate change data; however, my sculptural installations contribute differently to that of scientific data or media discourse on climate change, by offering the viewer a physical and visual engagement with issues.

*Reef Lab 2012* and *Melt 2012* have the potential to broaden my art audience. I believe my combination of mixed media and video brought together as immersive installation offers new ways to understand the natural world. The viewer is invited to become a participator and activator. Through this process the viewer completes the meaning inherent within the installations.

My passion for the natural world is matched by my passion for art making; the two being interconnected. Importantly, these artworks draw attention to the complexity and wonder of the natural world, and to what may be lost through climate change.

The on-going debate on climate change demonstrates reluctance in our communities to seriously respond to climate change impacts. It is timely to address climate change as a current and pressing issue. Immersion of a viewer in something new and removed from

extraneous stimulation offers the greatest likelihood of the viewer experiencing it as though for the first time. The opportunity is provided through my artworks for a discourse on climate change. Will they perceive the 'base processes' that express the underlying workings of nature? That is ultimately for the viewer. Their immersive experience of the artwork parallels the immersion of our Earth in the climate change 'process', which is as much the future for them individually as it is for every environment that exists on this fragile planet.

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