I HAVE WITNESSED A STRANGE RIVER

Re-Placing Non-human Entities within Visual Narratives

of Three Australian Freshwater Sites.

Exegesis with Creative Work
submitted by

VICTORIA PAMELA COOPER

Graduate Diploma Arts (Visual Art), Monash University (2003)
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Australian Institute of Professional Photography

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ABSTRACT

Through the medium of artists books, this study explores the re-contextualisation and repurposing of scientific images within visual narratives of freshwater places in Australia. Aquatic fungi are featured in these visual stories as a representative for the more-than-human inhabitants of these aquatic environments, that lie mysteriously, like the Bunyip, beyond normal human perception. Appearing as apparitions, these natural recyclers metaphorically de-*compose* the detritus of the colonial freshwater narratives to assert the presence of the non-human. Many issues arose from the interdisciplinary work as objectivity of science collided with subjectivity of a physical and metaphysical experience of place. In this contested space, preconceptions of scientific knowledge and values were challenged and then reconciled. In this work I was informed by Gaston Bachelard's deliberations in *Poetics of Space* and the concept of 'science as cultural practice' outlined in the collected writings of Donna Haraway. Yet this was not a *Consilience,* as EO Wilson would prefer, but a montage layering of intervention and flow within site-specific, place-narratives of fresh water.

The study concludes that the visual montage and the narrative offer inclusive and extended potential to deconstruct rigid structures and then recombine or hybridise these elements into an unexpected diversity of ideas. Intentionally, the reader is not offered yet another eco-political environmental narrative of water and rivers. These stories flow from one site to another, from colonial perceptions of progress and production to a natural recognition of absence and presence, and from scientific fact to mythical reality.

TABLE OF CONTENTS

List of Plates

Except where stated Victoria Cooper was the artist, designer and documentor of the books and their installation and photographer of image resource both scientific and all other images including landscape and site details. Further details relating to the contents of each plate are included in the caption with the illustration.

List of Plates appearing in the Appendices

CHAPTER ONE

Introduction

> The water that we have set out to examine is just as difficult to grasp as is space. It is, of course, not the H_2O produced by burning gases nor the liquid that is metered and distributed by the authorities. The water we seek is the fluid that drenches the inner and outer spaces of the imagination. (Illich 1986:24)

1.1 The Source

Water is omnipresent: it flows across all boundaries in every natural cycle and phase of life from the sub-atomic to the microscopic to vast oceans, through cultural myths, social utility and scientific production. Water shape-shifts: as it is transparent it cannot be seen as itself but rather is identified by what it reflects, contains or is contained by, for example: fish, silt, microscopic organisms. But water is also in the stories and history of human habitation of place. As in the opening statement by Ivan Illich, water is about not only matter but also imagination. Illich presents in his book *H_2O and the Waters of Forgetfulness* many examples and stories of water from classical myth to cultural metaphor. This book is centred on the Lake Project of Dallas, USA, where he questions and explores contemporary perceptions of water. He is looking for the *Elusive Waters* (Illich 1986:24); not through the reduction of water to molecules by science but through water's potential: 'As a vehicle for metaphors, water is a shifting mirror' (Illich 1986:25).

Initially I sought to investigate human perceptions of water locally where I live in Toowoomba, near one source of the vast Murray-Darling River System that influences topographically, economically and culturally much of inland eastern Australia. As I navigated through this borderless flow of water, parallel streams of thought and action in both the social and the physical sciences influenced the direction of my exploration. In this work I was drawn to the microscopic matter of water, the stuff that is identified with water through science yet is not a part of the broader social perception. In these hidden depths of fresh water lie a wealth of metaphor and narrative, which hold the potential to expand the narrative space of fresh water.

While camped on the banks of the Murray River, near the New South Wales town of Tocumwal, my partner and I reflected on his childhood experiences growing up in this region near the river. It seemed a surreal notion that our hometown, Toowoomba, over a thousand kilometres upstream, was connected to this place by the flow of water from

this same expansive river system. This reflection informed the early development of the project: to investigate and explore local places of water that were connected with the Murray along such rivers as the Condamine and the Balonne. It was not enough to follow a topographical survey, drawing from my lived experience in science and art. I wanted to go deeper, under the surface of what is normally observed and experienced. In this project I am proposing to build an interface between my knowledge and experience in two streams of thought and practice: biological science and art.

1.2 The Science

From 1975 to 1991 I was employed as a scientific technician mainly working in human pathology but more particularly preparing and staining microscopic slides of human tissue for examination and diagnosis. In this area I have had extensive experience with microscopy and have a long held fascination for the visual and conceptual perspective of this space. In a two-year position at the Department of Primary Industries (DPI), Plant Pathology Herbarium, Brisbane, I began working with microscopic fungi. My work involved growing and nurturing fungal cultures, both pathogenic and beneficial to plants. The maintenance of classification and collection systems of these fungi in my work was as important as the safekeeping of birth and death records in human society. It is proof of existence of the invisible as, when classified and named, the organism then becomes part of the greater knowledge base of human history.

These experiences and knowledge would inform much of the direction for the scientific investigation and was the connective tissue linking with my art production for the project.

1.3 The Art

My art practice is directed towards investigations of places both urban and non-urban. This work is mainly resolved through the construction of visual narratives in single images or as complex digital montages utilising the medium of analogue or digital photography and is resolved mainly as artists' books. In this exploration of fresh water, I was to draw upon my previous study and visual investigation into digital narrative construction. This work was my exploration of small natural spaces within a mainly agricultural environment. I was investigating the potential of the digital photography workspace in the development of non-textual visual narratives. As scrolling was the natural method for moving or navigating through the digital 'landscape', my work at this time was constructed as digital and physical

scrolls. My digital scroll works were presented with an essay on the non-textual visual narrative for the award of Graduate Diploma Arts (Visual Arts) from Monash University in 2002. Through this research and subsequent work with other book forms including concertina and codex, I continue to develop concepts of place through visual narratives.

1.3.1 Shaped by the Narrative

My visual narrative work is underpinned by a childhood love of the imaginary worlds created by Lewis Carroll's classic stories *Alice in Wonderland* and *Alice Through the Looking Glass* (1871). Through Carroll's words, I became fascinated with the detail in small spaces and their unlimited potential to reveal imaginary worlds: I was curious to see what lay beyond the surface of everyday things. Also at this time, I became interested in natural history and the great nineteenth century narrative in science of Charles Darwin and his voyage on the *Beagle.* My curiosity for the world around me was engendered by his story of discovery.

My interests in reading grew to particular styles of writing in science fiction, which were based on scientific principles and futuristic concepts of humanity, for example in the writing of Arthur C Clark and Isaac Asimov. An engaging feature of their books were the social and intellectual interactions between humans and non-humans (including machines and other life forms).[1] Also contributing to my development towards an imaginative view of science and society was the visual symbolism in work of the great surrealist painters, Joan Miró and Salvador Dalí. The visual montages, signs and symbolisms, and their manipulation of time, space and matter cultivated my expanding visual imagination. All of these early influences were fundamental to the development of my approach to constructing visual narratives.

1.4 The Exchange

As I opened the pathway between the science and the art, I found emergent issues that challenged the directions and flow of the narratives. I had to find a balance between the scientific nature of water and the place of water. Science alone for me was only part of the research: I also sought a narrative space that was inclusive of other ways of knowing.

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1 In Arthur C Clark's *Space Odyssey* (1 and 2) series, Clark uses the concept of gravity assist (the gravity pull of planets), to enable machine travel through space. Clark also explores human and non-human interaction in the relationship between Bowman and the supercomputer HAL. Isaac Asimov's *I Robot* and *Foundation* series present scientific and social concepts exploring human and non-human relationships.

To underpin the research I sought to push deep under the surface of the known and seen into darker places of myth and alternative perceptions, to visualise an extended narrative space. In these muddy places between my work in science and in art, I found lurking the presence of the Bunyip. In this challenging and dangerous place I found the poetic work of the philosopher of science Gaston Bachelard, *Poetics of Space* (1994), both a touchstone and a companion. The research of social scientist Donna Haraway (1944-), along with the work of artists Arthur Boyd (1920-1999) and John Reid (1948-), was pivotal to the relocation of science into a wider narrative space. Recent work by researchers in Human Geography on water issues in Australia also extends the discourse to include non-human entities. I found in the mud and rotting detritus of the 'river' a rich milieu that provided essential nutrients for the development of my project.

1.5 The Bunyip Surfaces

While reading *The Ecology of Aquatic Hyphomycetes* by Felix Bärlocher (1992) I was amazed and confounded by a provocative statement made in a scientific paper in 1975. In his final discussion about the need for a holistic approach to understanding freshwater ecology, Bärlocher cites colleague Dr Noel Hynes's statement made to an international conference in 1975[2]. Almost 20 years later, in the 1990s the statement still had relevance.

> . . . streams and their biota extend into the stream bed and beyond the stream banks. The following words, with which Hynes (1975) concluded the Edgardo Baldi lecture at the 19th International Limnology Congress in Winnipeg, Manitoba, remain relevant to anybody working with stream organisms:
> We must, in fact, not divorce the stream from its valley in our thoughts at any time. If we do we lose touch with reality. The real lake is not a basin with two vertical sides as in a textbook. One that is like that, Loch Ness, is so out of line that it harbours monsters. Somewhere, in Australia, there must be a stream with a channel like a gutter, fed by runoff from a landscape paved like a parking lot. There, I predict, will be found the legendary river creature of the aboriginals—the Bunyip. (Bärlocher 1992:32)

The above reference to the uncanny and the mysterious as part of a scientific discussion on the ecology of freshwater streams, calls into question the boundaries between science and myth and how one informs the other. While working on the conception, production and reflection of the art, this statement and the questions that it invoked were never far from my conscious thought. Most of the artwork of my project

2 H.B.N. Hynes (1975), *The Stream and its Valley.* Veth. Internat. Verin. Limnol, 19: 1-15.

originated from my visual resource created using scientific imaging and site photo-documentation. Does the Bunyip have a place in these narratives?

In his book *Imaginary Landscape, Making Worlds of Myth and Science* (1989), William Thompson creates a space where both mythology and science can act as partners contributing to the greater knowledge of humanity. He does not negate or separate the need for scientific investigation but suggests that through the narrative of myth we can expand our contemporary view to incorporate ancient wisdom.

> Just as aesthetics has a role to play in mathematical elegance but still cannot replace the demands of verification, so the mythopoeic has a role to play in sensitizing us to the complexity of narratives and the multidimensionality of existence, but it cannot take the place of scientific research.
> (Thompson 1989:75)

My research was also informed by the unsettling nature of the unfamiliar and the unseen through the mythical narrative of the Bunyip. As I sought to locate the Bunyip within my project I connected with opportunities to extend the scientific work within the legacy of colonial perceptions of water. I examined how this uncomfortable and questionable mix of science and myth can co-exist and be visualised, in order to explore the creative possibilities for the visual narrative construction of the project. In this research, I also investigated the related and sometimes contentious issues of illustration and the imagination in scientific research and the communication of scientific ideas. The presence of the Bunyip is an undercurrent throughout the exegesis, surfacing unexpectedly, as though a Deleuzian rhizome[3], creating possibilities for new information or directions to inform the research.

1.6 The Aims

Drawing upon the relationships between fresh water and post-colonial discourse in Australia, this study seeks to construct visual narratives that express an alternative dialogue in the contemporary discussion on fresh water. Also influential in the research are questions of the contribution of science, mythology and post-colonial historical knowledge to the development of this alternative perspective.

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3 From Giles Deleuze and Félix Guattari (1980), *A Thousand Plateaus*, translated by Brian Massumi, London and New York: Continuum, 2004: a theory Deleuze and Guattari generated from the botanical reference to rhizomes as underground root systems which can surface to form new plant growth. The ‘rhizome’ concept allows for decentralisation of authority, thus providing the space for new ideas to be accepted, included and created within this concept of research and theory.

Initially my aims[4] were broad: I began this project to investigate the potential for my background in science to be included within an artist's 'research' into the visual narrative of fresh water. While they remained focussed on interpreting a role for aquatic fungi, the shape and boundaries of the work were flexible, allowing for unforeseen possibilities that transformed the dimension and outcome of the visual work. In the exegesis I will discuss the challenges and opportunities that I navigated to achieve the outcomes I sought for the visual work.

The collection and documentation of the aquatic fungi and their micro-environments provide the scientific 'data' and raw visual material for translation and transformation within the freshwater sites investigated for this project. This work will underpin the following aims for the research:

1. To assert the non-human presence both scientific and mythical (the Bunyip) as visual interventions within colonial and contemporary place narratives of Australian freshwater through the construction of visual narratives in the form of artists' books;
2. To critique the issues surrounding the use of scientific images as art in the cultural contexts and spaces pertinent to the development of this project;
3. To define a site methodology for the project by assessing the application of photography and digital montage in the visual narrative construction, including references to land art documentation and concepts of place relevant to the development of the visual work; and
4. To install the artists' books within the context of the transportable site in each of three sites: the original freshwater location, the gallery, and the library for ongoing interpretation, dialogue and review of the visual narratives.

1.7 Navigating the Flow: the Latitude and Longitude of the Project

Chapter Two, Dreaming Fresh Water, has seven sections that explore the issues driving the project. I began the work considering the relevance of yet another project amid the milieu of hackneyed visualisations of freshwater issues in Australia. The first two sections provide an overview of the contemporary social 'climate' towards the relevance of new studies into freshwater issues, through the interdisciplinary discourse of human

4 See Appendix A.

geographers and other researchers, for example Dr Deborah Bird Rose[5] (2007) and Dr Michael Cathcart[6] (2009). I highlight a seminal publication by Emily Potter[7] et al (2007) which brings together social sciences, visual artists, physical sciences, and arts theorists that present the contemporary need to continue all forms of research in order to interrogate the established narratives and reconstruct new ways to connect with the issues faced as the environment changes. In this chapter I cite and discuss Dr Rose's call for 'a new ethos' from Potter's book as a driver for my own research in this project.

As central characters for my visual narratives, I then present a rationale for aquatic fungi as agents for restoring and revitalising colonial and contemporary freshwater narratives. Prompted by the Hynes reference to the Bunyip in his scientific article on freshwater ecology, I explore how this mythical creature may influence the development of my narrative work.

Throughout this research, and as I sought to locate and develop my interdisciplinary work in science and art, persistent destabilising issues arose, requiring investigation. In Sections 4, 5 and 6 of Chapter Two, informed by Gaston Bachelard's introduction to *Poetics of Space*, I discuss the tension between the objectivity of science and the subjectivity of imagination that arose as I worked through the early issues of my project. In this discussion I review some investigations into the arguably objective status of scientific illustration utilising photography in creating visual knowledge. I also consider my path through the unified model of the physical and the social sciences by different proponents, for example EO Wilson (1998) and Stephen Jay Gould (2004), and the counter discussion of science and culture by Donna Haraway (1991, 1992, and 1997).

In the final two parts of this chapter, I bring together both the cultural and the science contexts through the non-human discourse. Even though scientific discoveries may provide answers to many of the riddles of nature and life, there are other valued knowledge systems available, including the parables and narratives of myths that have

5 Current Position: Professor, Social Inclusion, Faculty of Arts, Macquarie University, Sydney.

6 Dr Michael Cathcart holds the position of Lecturer in The Australian Centre, School of Historical Studies within the Faculty of Arts at the University of Melbourne.

7 Current position: Research Fellow, Faculty of Arts and Education School of International and Political Studies, Deakin University.

the potential to inform aspects of society. This is exemplified by the Bunyip myth in its many manifestations in Aboriginal Dreamtime and its interpretations by European settlers in Australia. In the conclusion to Chapter Two, I reflect on and explore aspects of contemporary Australian perception of the Bunyip, and seek the relation of these to concepts of the 'non-' or 'more-than-' human that informed the development project. This exegesis and visual work of the project do not claim to study Aboriginal culture but specifically explore the possibilities of an extended space for perceiving the colonial and contemporary context of water and the natural non-human that the inclusion of the Bunyip may provoke. In these sections I refer to 'Contact Zones', as presented by Lucy Lippard in Stuart & Lippard (2010), that evolves over the exegesis as a seminal methodological and spatial concept for the site/place work.

Chapter Three is a discussion around the multi-methodological approach necessary for this interdisciplinary work. The subjective/objective observations arising in Chapter Two were again occurring in the methodologies using digital photography and photomontage. The photographic document, although resolved as a temporal document of a memory, time and place, is also recontextualised into other meanings and contexts. In this research I consider the issues of digital photomontage as a methodology and how it relates to the science and art work in this project. Geoffrey Batchen (1994, 1997, 2005 and 2008), Roland Barthes (1977 and 1984) and Joan Fontcuberta (2001 and 2005) among others, present compelling discussion around the shape-shifting context of the photograph and its layering in the montage.

Aspects of photography and the montage as methodologies in the development of the narrative work are investigated in this chapter. Artists including Jeff Wall (1996) and Joan Fontcuberta (2001 and 2005) are discussed in reference to their use of visual semiotics and aspects of the theoretical framework underpinning these. The discussion also references the origins of montage in film and a critique of a contemporary artist's work that includes the visual interventions of 'jump cuts' and seamless montage. I then relate this analysis to my photomontage work and the development of the narratives. Also covered in this chapter are broader issues on the photographic narrative and documentation of site-specific work relevant to the conceptualisation of my narratives as site-specific art. The work of Land Artists including Richard Long (Philpot 1985) and Hamish Fulton (Wilson 2002) underpin a discussion about how the book can operate as

both documentation and art. Aspects of contemporary theory on ephemeral art and the ‘transportable site’ (Meyer 2000) assist in the discussion of the book as a site for my freshwater narratives.

Chapter Four is divided into five sections and is a report on the visual work including pertinent observations of each contact zone. I report on the visual narratives in chronological order: the first work *Aquabatics*, then *Koolunga Bunyip* and finally the three contact zones: Rio Vista, Bundanon and Myall Park Botanic Garden. These observations and reflections textually reconstruct the environment within which the books were conceived and ideas collected and then subsequently recalled through these memories to produce the final works in the studio. The report then weaves these observations and how they inform the decision-making for the visual work into a report on the conceptual milestones of the project. I reflect on the project development at each site as it then informs the directions of the work within the next site. I conclude this chapter with a discussion of the installation and exhibition in each site and the National Library.

I conclude the exegesis in Chapter Five, with a reflection on the issues and questions I resolved or as yet have left unresolved as they fell beyond the scope of my current research. I will highlight recent trends in which my study can be located and point to future considerations for this research. Finally, I propose that the potential of the narrative to evolve new content is found in the tension of the subjective/objective inclusivity of the montage, breaking free from monocular meta-narratives that seemingly end in the vanishing point that is the destiny of the singluar perspective.

CHAPTER TWO

The Context For and Of the Research

2.1 Shaping Perceptions

The European colonial intervention, its myths and narratives have largely shaped the contemporary Australian landscape and its rivers. For their cultural and physical survival the colonists necessarily imported and imposed European values and expectations within this new environment. The newly settled parts of Australia were soon cultivated, irrigated, mined, mapped, cleared and fenced. Colonial Australians perceived the land and its rivers as commodities to exploit. But in many cases they soon found that living with the rhythms of fresh water in Australia was a challenge to their preconceived approach to the landscape. Their response was to adapt rather than adapt *to* the environment, therefore engendering the approach of 'battling with the landscape', which then sustained growth of these settler Australian towns and their continuing survival to the present. For many, this epic narrative of man against nature is being reconsidered as increasing demand for land and water places pressure on the limited resource. In a statement informed by the writings of Paul Carter, Tim Griffith, Tim Bonyhady[1] and other researchers of the Australian colonial condition, Cathcart says:

> Water is the fundamental limit on how Australians live. It determines where we establish our cities, how we think about country, how we farm it, build on it, defend it and dream about it. (Cathcart 2009:2)

Cathcart then discusses Australian rainfall and river capacities in comparison to the rest of the world and considers opinions[2] about increasing population growth and its ramifications:

> Though the country is dry, Australia has more water per person than any other continent. By that measure, we are not running short of water. Yet many rivers and catchments are in crisis. Our problem is not an excess of people, but a lack of understanding. (Cathcart 2009:2)

Cathcart highlights that the Australian public has been constantly bombarded with the politics and science, fear and scepticism; where confusion and misinformation ultimately negate any progressive change. He notes that it would be unproductive to yield to the 'temptation to write another study of environmental damage'. He then proposes

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1 Cathcart refers to the breadth of writings by these authors that investigate the colonial impact on Australian history.

2 Cathcart footnotes the following: 'Comparative average rainfall: Claus Schonfeldt, *Future Water Resources for South Australia*, ATSE Focus, no. 111, March/April, 2000. Water per head: BL Findlayson and TA Mc Mahon, "Global Runoff" in William A Nierenberg (ed.), Encyclopedia of Earth System Science, vol.2, 1992, pp. 409-22. My remarks ignore Antarctica, which is often described as the "driest continent" because it has almost no rainfall. This is a rather peculiar use of language, since Antarctica consists almost entirely of fresh-water ice' (Cathcart 2009:2).

that knowledge can be gained through an open and inclusive discussion on these issues. Cathcart writes:

> But if we are to learn from our successes and our failures, we must first come to grips with the diverse ways in which Australians have struggled to understand the country. We have to articulate the values, myths, aspirations and anxieties that have shaped our cultural geographies. (Cathcart 2009:2)

In the 2007 publication, *Fresh Water: New Perspectives on Water in Australia*, many of these issues were addressed from an interdisciplinary perspective. The editors and contributors to this publication, Dr. Emily Potter and Dr. Stephen McKenzie[3] introduce topical discussions on perceptions of fresh water in their book. They discuss the 'ambiguity both natural and cultural' of the drought and flood, urban and country, connection with water as a 'contested' issue:

> Moreover, the symbolic role of agriculture in Australian cultural mythology is strong. 'Battling the land' has become associated with virtue, a test of character and even—for settler Australians—the right to claim this land as home.
> (Potter et al. 2007:2)

They contend, as does Cathcart, that if the current demands on land and water are maintained together with the implications of climate change, 'this self image is no longer sustainable' (Potter et al. 2007:2). In the preliminary study for the book these researchers explored the perspectives and stories of the Australian relationship with water. The project brought together scientists and social scientists to 'consider the question of "water justice": the possibility of treating water justly, and allocating this most precious of resources in a fair and equitable manner' (Potter et al. 2007:3). An interdisciplinary workshop[4] was held to discuss the topic, which:

> . . .sought to bring different knowledges to bear on the issues, with the scientific perspectives and the social science research coming into the conversation with insights of cultural and political theory, visual arts and history.
> (Potter et al. 2007:3)

The resulting concerns arising from this study echoed Cathcart's question, 'where did we go wrong?' and 'what can we do?' (Cathcart 2009:2). Importantly, there was a consensus that 'before we can change the future of water in this country, we need to return to the past' (Potter et al. 2007:4).

Potter's reference to understanding and knowledge through a historical context supported the view I held when my project flowed from the scientific, phenomenological

3 Current position: Lecturer, School of Psychology, Deakin University.

4 Held in Adelaide, 2005 and organised by 'members of the Hawke Research Institute for Sustainable Societies at the University of South Australia, and supported by the Academy of the Humanities' (Potter et al. 2007:3).

study into the broader cultural narrative. This direction was more inclusive, enabling opportunities for science to be re-contextualised within a broader, historically and socially informed, human narrative of water. But how can the non-human (organic and inorganic entities other than human) voice be heard, as these forms of life and physical matter also have a stake in the future of fresh water?

The introduction to the book highlights the contributions of academic and author Dr Rod Giblett[5] and noted social scientist Dr Deborah Bird Rose presenting the current 'status of water in Australia' that is 'tied to prevailing conceptions of non-indigenous Australian identity, fashioned in opposition to human and non-human "others"' (Potter et al. 2007:4). Potter references the discussion in their book by Rose and Giblett as highlighting a possible 'way forward' through engagement with 'Indigenous ecological knowledge'. This knowledge comes from intimate experience with the land as is exampled in Rod Giblett's discussion, where:

> . . . water and land cannot be easily separated as legally distinct entities. Water is the life-blood of the land. (Giblett 2007:37)

He continues with:

> Just as water is the life-blood of the Earth, so blood is the life-water of the body. For many Aboriginal groups, land is body and body is land. (Giblett 2007:38)

Other views on management of resources, art and cultural insights and community projects are also presented in this publication. They ultimately make the point in a call for action that water, far from being a resource and commodity, ' . . . is something with which all humans are intricately bound, something that is shaped by and gives shape to our visions and dreams' (Potter et al. 2007:6-7). In this relationship with water there are many voices needing to be heard and included within the post-colonial narrative of the contemporary Australian environment.

2. 2 Re-colonising the Narrative

In her essay, 'Justice and Longing' published in Potter et al. (2007), Dr Rose asserts that 'we live in a time when no one story will answer all the questions'. In her work she explores the 'border zone' where 'Indigenous ecological, Western scientific knowledge and Western philosophical and poetic enquiry converge' (Rose 2007:9). Rose is looking for 'points of connectivity' where she cites from a 1995 article by American ecologists James

5 Dr Giblett is currently the Director, Centre for Research in Entertainment, Arts, Technology, Education and Communications (CREATEC), School of Communications and Arts, Edith Cowen University, Perth.

V Ward and Jack Stanford, 'Ecological Connectivity in Alluvial River Ecosystems and its Disruption by Flow Regulation'[6]. In this article, Ward and Stanford define the connectivity of river ecosystems as 'exchange pathways of water, resources and organisms between the channel, the aquifer and the floodplain'. Through this concept of *connectivity*, Rose finds a relational connection with her interdisciplinary research, where knowledge from a diversity of sources can inform and sustain a 'post-colonial ethos'. However she suggests that this will not be achieved without 'disturbance and perturbation' (Rose 2007:9).

Perhaps to enable this 'new ethos' challenge there may need to be a difficult, critical reflective and reflexive re-assessment of established historical values and narratives in the Australian connection with fresh water since colonisation. One question that arises in the context of my project is concerned with how the daily human requirement for fresh water obscures other demands, including those of the non-human, on Australia's natural freshwater systems. Rose contends that:

> As a consequence, the utility paradigm can be seen as an impediment to our capacity to develop an ethos that embeds humans in webs of life that are sustainable. (Rose 2007:15)

So how can new ways of thinking about fresh water be effected, when the walls of colonial thinking cocoon the settler and their following generations in a comfortable, safe and familiar space? Emily Potter presents a picture of non-indigenous Australians, where they 'largely understood themselves to be ontologically distinct from the non-human world' (Potter 2007:247). Potter contends that:

> Nature has long been considered an opponent of culture: either an unlimited resource to be used for human benefit or an impediment to it, and a kind of theatrical backdrop for human activity. What this means for Australia today, I argue, is an ever-widening gulf between the stories that we tell about ourselves and the world—our place myths—and what is environmentally and socially sustainable. (Potter 2007:247)

There are many stories of water and place: the Indigenous, the colonial, the scientific, the ecological, the human geographic, the cultural, the agricultural and the urban. I embarked on this project so that I could visualise and create stories that were immersed deep in the water and sourced from my response to the *place* of water and my knowledge of biological science. Therefore in this *climate* of *change,* and running parallel to the social sciences' emerging discourse on this topic, I also sought to include

6 In *Regulated Rivers: Research and Management*, Vol. 15, pp 125-39.

the ‘non-human’ in visual narratives of fresh water.

Many questions emerged as I developed the visual narrative space for aquatic fungi in the research. Although my project does not extend into Indigenous perception and knowledge, I do wish to acknowledge its significance whenever possible. As a person with European ancestry it was important for me in this instance to investigate the Eurocentric experience of fresh water within the Australian context. Any extended inquiry involving Indigenous narrative, knowledge and input would necessarily be of a collaborative, participative nature, which would draw upon and extend the understandings gained from this project’s findings.

2.3 The Case for Aquatic Fungi

Although water, as American artist Roni Horn[7] proposes, ‘can still be water and accommodate a lot of different presences’ (Art21 2001-2010), I was seeking to visualise something that was unfamiliar yet ever-present in this aqueous environment; part of everyday human existence yet far from everyday perception. My background in plant and human pathology helped me to understand the role that fungal biology plays in sustaining life. I consulted with scientists[8] with whom I had worked previously and who had an interest in this area. Their advice to look into microscopic aquatic fungi was fuelled by a contemporary paucity of scientific interest in these ubiquitous and essential water-borne organisms. I was motivated by this current lack of interest in aquatic fungi research to seek a role for these microscopic organisms in my project.

Most of the recent work in this area of research in Australia has been published by Dr Kevin Hyde (2003), in the Centre for Research in Fungal Diversity University of Hong Kong, and by Drs Joan and Alan Cribb (1991) as recorded in their contributions to *The Queensland Naturalist* journal. Much of the knowledge that informs the science of aquatic fungi[9] today came from extensive research by mycologist Dr Cecil T Ingold (1905-2010) in the 1970s. His 1975 publication*, An Illustrated Guide to Aquatic and Water - Borne Hyphomycetes (Fungi Imperfecti) with notes on their biology*, is an

7 Roni Horn is an American-born artist working with photography and visual books. She has explored water as a visual narrative in the context of a larger body on place, for example the Thames River in the UK, and community issues on climate change and water in Iceland. See <http://www.libraryofwater.is/biography_bibliography.html>.

8 I have listed these scientists in the acknowledgements.

9 In this work I am referring to the form of aquatic fungi that is taxonomically known as aquatic hyphomycete/s.

important guide to my identification of this group of organisms. The seminal text in my foundation research is *Ingoldian Fungi: Field and Laboratory Techniques* published by Enric Descals in 1977.

Aquatic fungi's role in the ecological cycle of life on Earth has been and continues to be re-defined by the work of these scientists. The vital role played by fungi includes 'conditioning dead leaves and making them palatable to detritus-eating invertebrates' (Kendrick 1992:188). Fungi are the decomposers, recycling important elements and materials to provide the basic nutrients for feeding new life. Aquatic fungi are known to have forms that are amphibious and these have adapted to the vagaries of water availability in the riparian environments in forests. Felix Bärlocher (1992) notes the ability of fungal organisms to survive periods of drought: 'desiccated mycelium can survive for up to one year' (Bärlocher 1992:1). Overall, these and other functions fulfilled by fungi parallel the all-encompassing cycles of life and death in fresh water. They have evolved and adapted to the changing conditions of nature from drought to flood with their amphibious characteristics forming a vital link between land and water.

Although there is a small, dedicated group of scientists working in this field internationally, there has been little or no recent scientific research on Australian aquatic fungi published. Bryce Kendrick (1992) highlights a common concern among mycologists for fungi in general:

> Many of the food webs illustrated in ecology textbooks miss out more than half of the organisms involved in the transfer of energy and nutrients. They often stress macroscopic organisms, while omitting microscopic organisms. (Kendrick 1992:191)

Rivers as Ecological Systems: The Murray Darling Basin published in 2001 by The Murray Darling Basin Commission does provide an illustration which includes the role of fungi in the ecological cycle of fresh water, but later reports that:

> Although it is known that fungi are important in the decomposition in the rivers of the basin - especially of dead aquatic plants - very little is known about the specifics of their biology or ecology, or how they may be affected by physical changes in the riverine environment. (Young ed 2001:174)

In their book, *Freshwater Mycology*, editors Clement Tsui and Kevin Hyde (2003) also point out that 'Our knowledge of freshwater fungi is patchy with most work having being carried out in Europe, UK and USA', and further suggest that:

> There is obviously a need to further examine these fascinating groups of fungi [aquatic], which are important in ecosystem functioning, and may have unusual probagules adapted for a lifestyle in water. (Tsui & Hyde 2003:1-2)

Fresh water researchers and ecologists Stephanie G Suter, Gavin N Rees, Garth O Watson, Phillip J Suter and Ewen Silvester published a scientific paper on aquatic fungi in 2011. In the introduction they point out that there are noticeable gaps in current scientific understanding on these organisms: 'There are few studies on aquatic hyphomycetes in southern hemisphere habitats' (Suter et al. 2011:841). They cite an international journal article[10] discussing the need for more research into fungal ecology in aquatic environments in some countries, which included Australia as it 'is still under-represented in aquatic hyphomycete research' (Suter et al. 2011:841). Their work investigates alpine streams and decomposition of leaf litter from native plant species including the slow to decompose leaf material in many eucalyptus species.

Although a few individual scientists have done substantial work on aquatic fungi, this group of organisms has unrealised potential for future study. Considering aquatic fungi's important role as microscopic aquatic recyclers, turning dead material into vital nutrients for life, the fact they have been largely overlooked by recent scientific research is perplexing. Perhaps in the rush and pressure for funding innovation and commercial outcomes, these organisms have not been a commercial priority. In the absence of funding, some Australian scientists pursue their aquatic fungi research outside their daily work. I found this devotion to these life forms along with the narrative potential of their ecological role in fresh water a powerful catalyst for my work in this project. In response to their absence from the meta-narrative of science, I now seek to relocate aquatic fungi within a broader cultural visual narrative.

2.4 Issues around Art as the Image for Science

What can happen to scientific objectivity when the imagination repurposes the grounded information and knowledge gained through this controlled medium? There is no easy answer; as language, perception and authorship may play havoc with the orderly methodologies of science. In this section, I investigate some of the issues in the subjectivity of visual observation and imagery in science as they apply to or underpin the visual work of my project. I also critiqued the cross-disciplinary relationships of science and art that were relevant to my project. In this research I was informed by the French philosopher Gaston

10 Shearer, CA, Descals, E, Kohlmeyer, B, Kohlmeyer, J, Marvanova, L, et al. (2007). 'Fungal biodiversity in aquatic habitats', *Biodiversity and Conservation* 16, 49–67. doi:10.1007/S10531-006-9120-Z.

Bachelard's (1884-1962) insights into the human imagination explored in his book *Poetics and Space* (1994)[11]. Bachelard's discussion in his introduction to this book also covers the tension between subjectivity and scientific objectivity—a salient issue in my work.

In her book *Art and Science*, Siân Ede[12] (2005) highlights the point that 'I do not believe that art can directly be "about" science'. She explains further that science does that well enough through its own language. Ede then continues:

> . . . if art is 'about' anything, it is a reflection of human experience in complexity and it emanates from an inventive individual with an unusual and sideways view on things, communicating with vigorous visual acuity and daring, its intellectual content, like that of poetry, conveyed through hints and ambiguities. Artists don't 'do' prettification, product or propaganda for public understanding of science. But they engage with it and create images, which suggest alternative ways of seeing. (Ede 2005:3)

In this framework, I found the work of artist Claudia Fährenkemper (1959-) revealed new insights as she utilised the methodology and technology of science not to record but to transform perceptions of the microscopic environment. In this work she imaged parts of organisms in the electron microscope that connected the viewer to an experience rather like a close encounter with an alien. To contextualise the electronmicrography work of Fährenkemper, Ann Thomas, Curator of Photography at the National Gallery of Canada, wrote an essay briefly discussing photomicrography and how it historically motivated perceptions beyond the objective document:

> Like her predecessors, Blossfeldt and Renger-Patzsch, Fährenkemper has borrowed the tools and analytical values of scientific investigation to make art. In the end it is not the scientific significance that has the meaning for her but the ability of the image to interpret this new relationship with the microcosmic world, to convey to the viewer a sensual experience of the perfect and complex tiny forms that constitute its inhabitants. (Thomas 2004:99-100)

Australian artist Carly Kotynski (1979-) has a fascination for the microscopic environment and incorporates observed forms in her art. Kotynski's sculptural work, which has been inspired by the illustrations of Ernst Haekel, also resonates with the 'sensual experience' of this micro-environment:

> Inspired from microscopic lithographic studies by biologist and artist Ernst Haeckel, they command an empathy with physical identification, perpetuating a sense of the life forms and their natural environment. (Peters 2010)

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11 The original French edition of *Poetics of Space* was first published in 1958 as *La poétics de l'espace*. It was then translated by Maria Jolas and published in 1964 by Orion Press, Inc. The edition referenced in this exegesis is the 1994 edition which includes the 1963 foreword by Etienne Gilson and the 1994 foreword by John R. Stilgoe.

12 'As the former Arts Director of the UK organisation Calouste Gulbenkian Foundation, Siân Ede engineered its Art and Science programme. She is currently the Deputy Director of this UK organisation. Ede is the editor and co-author of *Strange and Charmed: Science and the Contemporary Visual Arts* (2000) and author of *Art and Science* (2008)' Accessed 19 Nov. 2011 from <http://www.gulbenkian.org.uk/about-us/uk-branch-staff/6-Si--n-Ede-.html>.

Another Australian artist, Angela Valamanesh (1953-)[13], has investigated the history of scientific illustration as inspiration for her work. In her recent work, she has abstracted the visual nature of scientific microscope images of nerve endings into watercolour paintings on paper. This work, as discussed by curator Margot Osborne in the exhibition catalogue, *Abstract Nature* (2010), is part of ongoing investigations into human perceptions through scientific visual imaging of the natural environment.

> For Valamanesh there is an enduring fascination in discovering more about the natural history of representation and in finding artistic means to embody her sense of connection between ourselves and the wider natural world. (Osborne 2010:40)

These artists provide a contemporary vision that explores human connections with the natural world. Through these approaches, the artists are investigating and inhabiting the natural world to bring back visual interpretations of the non-human. In my research I also chose to incorporate the inspiration gained from my scientific investigation. Through this work, I sought to locate my microscopic *wandering* and observations in the visual research of the human/water narrative of each place. It is this social framework that I find the most compelling potential for the microscopic work I was creating in this project.

In this context, I found *Viral Landscapes* (1988-9) by British artist Helen Chadwick (1953-1996) strongly relevant to my research in water. This work visually presented microscopic cells and viruses as interventions crossing into a human experience of the landscape. Chadwick pursued a broader interest in breaking down and critiquing the perceived boundaries between art and science, not to unify but to follow her own aesthetic interest in scientific ideas and their interpretation. In reference to *Viral Landscapes,* academic and art historian Aris Sarafianos discusses Helen Chadwick's biological work:

> Chadwick's art reaffirms and actively mediates the processes of metaphor and error according to which the social dispersion of the meanings that bio-medical science generates is conducted. Migrations and crossovers, self-reflexive reinterpretations and misunderstandings, cultural transmissions and disruptions of the bio medical 'soup': this is the stuff of her imagery. The history of medicine is treated as a variable of the history of culture and both demand a re-evaluation of life. (Sarafianos 2005:6)

13 'Angela Valamanesh has found a rich vein for creative investigation and invention in early scientific illustrations of microscopic plant and animal anatomy. This has become the subject of her research for a PhD at the South Australian School of Art and has prompted an evolution in her ceramic practice' (Osborne 2010:41).

More recently Stephen Walker (2010)[14] presents a discussion about Chadwick based on his research of her artwork and notebooks. He comments on her artwork in terms of her research into Newtonian physics, human biology and the development of concepts surrounding the potential for the inter-relationships and flow of ideas across boundaries. Although well-known for Feminist enquiry into the body and identity, for Chadwick[15] viruses became a symbol for the infiltration of new ways of thinking about self and the world—viruses became a symbol for the invasion of art into other landscapes of thought:

> Viral Landscapes provides a very direct manifestation of Chadwick's broader position regarding the interdependence between cell and landscape, micro and macro. She held that the notion of selfhood, approached at a cellular level, draws on a far wider range of potential exchange than more traditional, anthropocentric models . . . her explorations became more concerned with the processes of interaction and interdependency, with exchange across boundaries and the alternate understandings these offered. (Walker 2010:460)

Walker's discussion highlighting the metaphor of micro/macro cellular 'exchange across boundaries' in Chadwick's photomontage work, resonated with the thematic and methodological approaches that I followed in this project. In my work the aquatic fungi, their forms and their function in the life of the river, were investigated and then recontextualised to extend the concept beyond the laboratory into a broader cultural environment. The transformative role that fungi provide in the natural world is relocated across spatial and physical boundaries into human contexts of fresh water. My montages also resonate with Chadwick's viruses as visual expressions of the interdisciplinary medium; traversing across the landscapes of science, the human and the non-human landscape. In this exegesis I draw upon the relevance that Chadwick's work continues to have in contemporary interdisciplinary science/art discourse as mentioned in Walker's conclusion:

> Although many of the scientific developments she explored have already been overtaken, the bigger questions regarding the impact of both science and art on the establishment and maintenance of our identities and epistemologies remain current. (Walker 2010:463)

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14 Stephen Walker teaches architecture at the University of Sheffield, U.K. He is author of *Gordon Matta-Clark: Art, Architecture and the Attack on Modernism* (London: I.B. Tauris, 2009). His book on Helen Chadwick will be published by Tauris in 2013.

15 Helen Chadwick died in 1996, in a strange twist of fate, after contracting a deadly virus while working in a hospital investigating viruses.

2.5 Images of Science as Art

Again, Siân Ede provides a salient critique and questions the scientist's intent when creating art from their scientific work:

> But although 'aesthetic' judgment may go into the selection and creation of such technological enquiry, it is painstakingly uninvested with subjective emotion . . . Can science images be art? (Ede 2005:186-7)

Historical images made originally for scientific purposes, for example the drawings of Robert Hooke in the 17th century publication *Micrographia* are now appreciated for their aesthetic as well as their scientific value. In the 19th century, the invention of photographic processes and technology aided the visual communication and reproduction of scientific ideas and research. Some of these works can now be found equally in art gallery collections as in scientific publications. One notable example is Anna Atkins's (1799-1871) pioneering work[16] in photography where she created visual documents of algae and other plant forms as cyanotype photograms. These images are now held as valuable historical works of art in galleries worldwide and are equally utilised as visual documents of historical scientific interest. Perhaps the context of the work historically and the intent of the images either for science or art will determine the outcome.

2.5.1 Illustration, Photograph, and Objectivity

In the 19th century two Germans, renowned for their documentations/illustrations of natural forms, notably extended the purpose or context for visual information gained from technology mediated images. Ernst Haeckel (1834-1919) and Karl Blossfeldt (1865-1932) are both known for the aesthetic interpretations from or in their natural history illustrations of the late 19th and early 20th centuries.

Blossfeldt, a sculptor, metal craftsman and teacher began taking photographs of botanical specimens to use in his classes as ideas for students to create design forms from nature. Blossfeldt was interested in plants that were 'generally and unjustly denigrated as weeds . . . rather than artificially cultivated roses and noble lilies' (Adam 2004:21). In the manner of a scientific investigation, he carefully documented and dissected each

16 In 1843, Anna Atkins created *British Algae: Cyanotype impressions*, arguably one of the first photographically illustrated publications. Atkins made images for this book by employing the photogram technique where she placed the actual specimens of algae onto paper coated with light sensitive cyanotype solution, then exposed this in sunlight to produce a record of the shape and, if translucent, structure of the algae. This was also recorded with the taxonomical description of the algae.

specimen, preserving details of the plant that he felt were symbolic of the plant and its stages of growth:

> For him [Blossfeldt], the camera served only to bring out and reproduce minute plant details that had hitherto been ignored owing to their size . . . from his negatives he made glass slides to give his students an understanding of nature's forms and structures, he also hung paper enlargements . . . to serve as models for his drawing classes. (Adam 2004:21)

Blossfeldt's work became very influential in the art, craft and design movement that then popularised natural forms as templates for architecture, sculpture and 3D design work. His use of photographic documentation seemed fuelled by the desire to reveal abstract views of unseen natural forms. These photographs transformed the humble everyday roadside plants that would be normally overlooked, into visually interesting structural and aesthetic forms. As a result of this work Blossfeldt's photographic works became renowned as art in their own right.

Zoologist and artist Ernst Haeckel created an immense resource of illustrations using painting, printmaking and drawing techniques. He stylised and enhanced these natural specimens using his observations from the microscope combined with already known data and drawings accepted by science, to illustrate a kind of perfect form or generalised example. These illustrations were, and still are, the subject of much controversy over their reliability as scientific information. In this debate, Haeckel was criticised at the time for not employing the objectivity of photography—an objectivity that in recent years has been under intense scrutiny.

Academic and historian Robert J Richards[17] discusses and contextualises Haeckel's work:

> . . . on the basis of individual examples, they produced through judgement and experience a standard organism; each reproduced what he *thought*, not what he immediately *perceived*. (Richards 2009:311)

Richards continues his discussion, highlighting the question of the use of photography, stylised diagrams and illustrations to represent scientific concepts. Richards' book analyses and questions not only the challenges to Haeckel's work but shows how this debate is relevant today. As evident in the continuing debate over the apparent fraudulence of Ernst Haeckel's illustration of embryonic phylogeny, there is much to be considered when using visual media in factual representations. Even into the 1990s,

17 Richards is the Morris Fishbein Distinguished Service Professor of the History of Science and Medicine at the University of Chicago.

this illustration was challenged on the basis of photographic 'evidence', where individual embryos were found not to reflect the stylised illustrations of Haeckel's work. Rather than describe individuals, Haeckel constructed the interpretive illustration incorporating known characteristics of the entire species.

Integral in this debate was Haeckel's distain for the photograph, as it could only represent an individual rather than fully describe the typical or symbolic form of all characteristics found in the organism. Both the photograph and the illustration were contested, as Robert J Richards presents in his book on the work and life of Ernst Haeckel:

> The question here is not so much of the veracity of Haeckel (and certainly not that of evolutionary theory) but of the 'objectivity' of illustrations and the use of photographs in biological science in the nineteenth century and today. (Richards 2009:308)

In an article reviewing Richards's book on Haeckel, Assistant Professor Alan C Love[18] draws from a similar issue on the topic raised by John Kulvicki[19] to present his claim on the apparent lack of a standard approach to (or possibly ethic for) using images in a scientific evidential role:

> The diverse roles for pictures in science, including their variable standards of evaluation, remain much less studied than the question of how they come to be representational at all. (Love 2011:700)

Both Blossfeldt and Haeckel were part of the broadening influence and interpretation of the scientific visualisation of natural phenomena. The new trends in art and design were also influenced by this perception of nature and its phenomena. It is interesting to note that these images and illustrations of scientific origin or as documentation of natural forms continue to blur the boundaries of aesthetics and objectivity.

Julie Sommerlund[20] (2004) in her paper 'Beauty and Bacteria: Visualizations in Molecular Biology', critiques the use of aesthetics in science and the decisions based on visual data by scientists in their research. In this paper she investigates the following claim made by a molecular biologist about the publication of one of their illustrations of biofilm (a term used for an aggregation of bacteria attached to a surface) in an article, 'Slimebusters', in the November 2000 issue of *Nature*:

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18 Alan C Love, Assistant Professor, Department of Philosophy, University of Minnesota (UMN),Twin Cities, USA.

19 John Kulvicki (2010) 'Knowing with Images: Medium and Message' *Philosophy of Science* pp 77:295–313. Kulvicki currently holds the position of Associate Professor, Department of Philosophy, Dartmouth College, USA.

20 Sommerlund currently holds the position of Associate Professor in the Royal Academy of Fine Arts, Architecture, Design and Conservation, School of Design.

> Having a picture published in *Nature* was somewhat of an event for these researchers . . . the researchers told me [Sommerlund] this would probably be the only time that anything they produced would be published in *Nature*. They joked about it – that their only publication in *Nature* was a picture illustrating an article called 'Slimebusters,' and not a 'real' scientific article. . .
>
> . . . I asked the professor in the group what the problem was, and he replied that the pictures they made had become 'too artistic' . . . the group is becoming famous for the aesthetic qualities of its pictures, not for its contribution to 'hard science'. (Sommerlund 2004:375-6)

Sommerlund presents an interesting discussion that claims aesthetic decisions in science are informed by the process of 'uncovering or discovering facts' (Sommerlund 2004:379), rather than constructed, as in art. She comments on the way in which scientists are required to make decisions about colour and texture to visualise concepts and organisms, not as subjective aesthetic intuitions but as objective choices for illustration of scientific narratives and contrasting observed scientific phenomena. Like the representations of Haeckel, illustrations become the summation of scientific knowledge. Sommerlund surmises that the choices made for the taking of representative photographs are simultaneously both subjective and objective:

> Still, the practice of making the photograph legitimately entails both types of considerations: it is not either aesthetics or science; rather it seems that science in this case could not exist without aesthetic considerations. (Sommerlund 2004:388)

Sommerlund contends that though scientists may be vigilant in their objectivity there is still the question that as the photographic image is manipulated through 'selection, manipulation and editing' then 'photography is also removed from science and pushed toward aesthetics' (Sommerlund 2004:396-7). She then focuses on the tension/ dichotomy between the way images function in science and how the interpretation for the photographic illustration can remain subjective. Sommerlund concludes this discussion by stressing the contentious nature of photographs made from a CSLM, a confocal scanning laser microscope:

> Here is an occasion of 'slippage': the 'double nature' of the image underlines the point that a neat dichotomous split between science and aesthetics is never complete . . . this double nature of the relation between science and aesthetics means that the aesthetically beautiful CSLM photographs function simultaneously as the laboratory's crown jewel and as a back door through which all kinds of muddy, contingent, and 'nonscientific' phenomena can slip in. (Sommerlund 2004:400)

Summerlund's conclusions may also find resonance with the images of the cosmos

created by David Malin[21] and how they changed the way in which astronomy is studied and communicated in science and to the general public. Through his innovation[22] in the photographic capture of cosmic light sources, producing images of great scientific value, Malin also presented aesthetic and arguably spectacular views of the cosmos. His work has been shown in art galleries worldwide as well as in informative scientific documentation. As in Sommerlund's proposition of the duality of science photographic documents, Malin's images have a *double nature* operating to reveal new vistas to both science (as new knowledge) and society at large (as aesthetically inspiring images). This *double nature* has brought intense scrutiny onto the veracity and subjectivity of the photographic medium beyond its scientific context.

As I was working through these issues, I created a photomontage from images I had made of *Tricelopherous sp.* spores, Plate 1. I decided to explore the relationship between the microscope observation and the drawing through a collaborative experiment with the scientific drawings by Dr Malcolm Ryley. The microscopic space is three-dimensional, and high magnification is required for closer inspection of the subject. At this high magnification the entire dimensions of the form are viewed by revealing only small slices of information as the observer scans through the depths of the field of view. The scientist's drawings are two-dimensional plans of the organism; recording the observed features not always seen simultaneously in the microscope.

The scientist is able to transcribe the view as seen through the tunnel of the microscope, to a hand-made drawing from memory taking into account the proportion and spatial attributes of the organism. In effect the scientist is a kind of portrait artist, taking note of the structural components that characterise and symbolise the subject and its form. In this work I explored the visual relationships between what is seen and what is interpreted as knowledge. In this example the photograph can only give one view of this

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21 David Malin was born in England, 1952, studied chemistry and explored photography very early on. For many years he worked for a multinational chemical company as a chemist in optical and electron microscopy. Malin went from exploring the infinitely small to the infinitely far away when he joined the Anglo-Australian Observatory as its photographic scientist in 1975.

22 'Malin has invented new ways of extracting information from astronomical photographs, which lead to the discovery of two new types of galaxies. The novel image enhancement techniques, hypersensitization, unsharp masking, photographic amplification, image subtraction and addition, have been incorporated into a method of making unique three-color photographs of previously unseen deep space objects.'
Information cited 24 August 2011 from Joseph Bellows Gallery, 7661 Girard Avenue La Jolla, CA 92037, USA <http://www.josephbellows.com/artists/david-malin/bio/>.

microscopic life form, whereas the scientist's drawings are the composite of time spent observing many individuals of this group of organisms. As with the artist, there appear to be moments when the scientist is required to make an interpretation based on intuition and experience to form a conclusion[23]. Here again the slippery nature of the image as identified in Haeckel's work arises, where the construction of the illustration is referential to an entire population rather than a document of each individual.

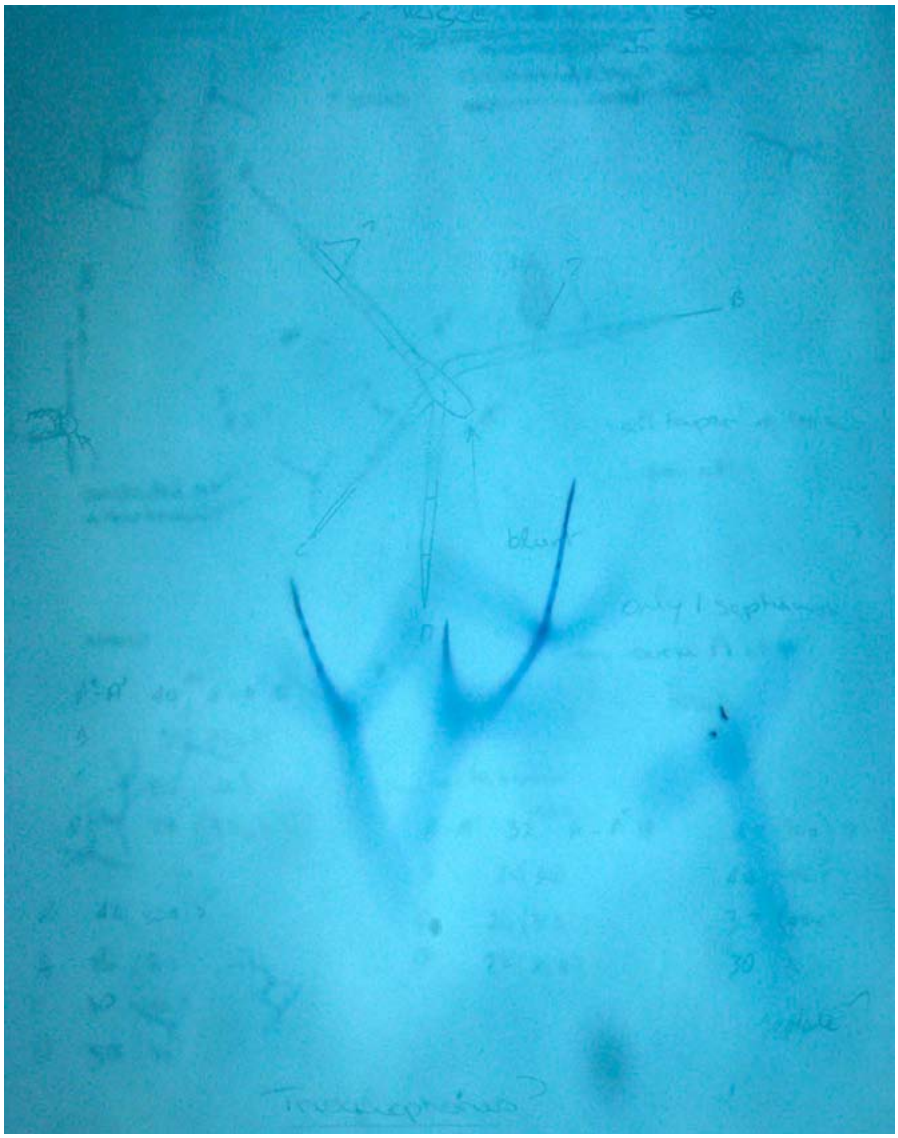

Plate 1. Victoria Cooper (1957-) and Malcolm Ryley (1953-)
Tricelophorus?, 2006
Digital File, variable dimensions

23 As I found my observations and research on the tension created when the scientist utilizes intuition was very compelling, creating a new opportunity for future cross-discipline study utilising the spatial/optical intervention of microscope. The study should also take into account the way technology has now overtaken (even removed) the hand of the scientist in the form of computer algorithms. These programs both digitally image and piece together 3-dimensional, sharply detailed views of the subject under microscopic scrutiny.

In my work as a scientific technician I manipulated appearances of human and non-human structures and matter for scientific research and diagnosis: for example, through the application of dyes and pigments to specific cells. As referred to in Julie Sommerlund's article on scientific illustration presented earlier, these visual representations also had the potential for aesthetic and subjective readings. These images are created on a daily basis in most human and plant pathology laboratories where I, like my science colleagues, was required to remain objective in their production and analysis. As in Gaston Bachelard's claim, to authentically engage with the activity of science, workers require objectivity 'that precludes all daydreams of the imagination' (Bachelard 1994:156). But the line between the subjectivity and objectivity can be blurred, as in David Malin's images of the cosmos and Anna Atkins's cyanotypes—both now held in art gallery collections. These images in these collections may now have extended potential for artistic and cultural meaning.

The contentious nature of the image to illustrate scientific ideas is one that is underpinned by the necessity for context. For me this opened up the complexity of my work in objective scientific study alongside the ability for the imagination to be intuitively responsive in creating a visual space for new ideas to emerge.

2.6 Order, Chaos and Science as a Cultural Practice

> Any interesting being in technoscience, such as a textbook, molecule, equation, mouse, pipette, bomb, fungus, technician, agitator, or scientist, can—and often should—be teased open to show the sticky economic, technical, political, organic, historical, mythic and textual threads that make up its tissues. (Haraway 1997:68)

In the introduction to *Poetics of Space,* Bachelard reflects on the tension and interplay between objectivity and subjectivity within his study of the scientific imagination. In this study he reveals his efforts to remain 'faithful' to his 'habits as a philosopher of science' and that he 'tried to consider images without attempting personal interpretation' (Bachelard 1994:xviii). He then states on pages xix and xx that:

> Little by little, this method, which had in its favor scientific prudence, seemed to me to be an insufficient basis on which to found a metaphysics of the imagination. (Bachelard 1994:xviii)

Bachelard discovers that 'For a rationalist, this constitutes a minor daily crisis, a sort of split in one's thinking' (Bachelard 1994:xviii). He adds that 'habits of subjectivity reference alone' would not be sufficient to understand the 'transsubjectivity of the image' (Bachelard 1994:xviii).

Perhaps in this deliberation Bachelard is suggesting that subjectivity and objectivity need to co-exist where imaginative or original thoughts are developed and understood. He proposes that his study of the phenomenology of the imagination is more a study of the phenomenology of images, where 'the image comes *before* thought' (Bachelard 1994:xviii): and he observes that to 'receive the psychic benefit of poetry':

> ... [the] two functions of the human psyche—the function of the real and the function of the unreal—are made to co-operate. We are offered a veritable cure of rhythmo-analysis through the poem, which interweaves real and unreal, and gives dynamism to language by means of the dual activity of signification and poetry. (Bachelard 1994:xxxv)

In this discussion Bachelard has liberated the potential for my work in science and art to 'interweave' the objective and subjective spaces, the 'real' and the 'unreal' in the invention of narratives for water.

I then sought to bring Bachelard's 'trans-subjectivity', as an exploration of the relations between the real, the imagined, the mythical and the historical, to my narrative construction. In this space, overlapping the non-human and the human, anything can happen. But there still remained an important consideration to the selection and creation of work with aquatic fungi: I wanted to remain faithful to the knowledge gained from years of research into these organisms by significant scientists. Even though at the beginning of my work I was mindful of the importance of, as Bachelard states, 'scientific prudence', I soon departed to a space where I 'have forgotten all [my] habits of scientific objectivity' and I sought 'images of the first time'[24] (Bachelard 1994:156). What kind of 'tissue' (after the epigraph by Haraway) binds yet not tethers the opposing forces of objectivity and subjectivity?

Martin Kemp[25] has explored the long history of art and science to investigate points of overlap and the 'deeper structures which found mutual expression in some kinds of art and some kinds of science' (Kemp 2000:v). In this work he developed

24 Bachelard examples 'images of the first time' – 'If we were to consult psychological documents in the history of science—since the objection may well be raised that, in this history, there is quite a store of "first times"—we should find that the first microscopic observations were legends about small objects, and when the object was endowed with life, legends of life' (Bachelard 1994:156).

25 'Martin Kemp is Emeritus Research Professor in the History of Art at Oxford University. He was trained in Natural Sciences and Art History at Cambridge University and the Courtauld Institute of Art, University of London. He was British Academy Wolfson Research Professor (1993-98). For more than 25 years he was based in Scotland (University of Glasgow and University of St Andrews). He has held visiting posts in Princeton, New York, North Carolina, Los Angeles and Montreal. . . . Kemp has written and broadcast extensively on imagery in art and science from the Renaissance to the present day. Leonardo da Vinci has been the subject of books written by him, including *Leonardo* (Oxford University Press 2004). He has published on imagery in the sciences of anatomy, natural history and optics, including *The Science of Art: Optical Themes in Western Art from Brunelleschi to Seurat* (Yale University Press).' <http://www.martinjkemp.com/welcome.html> accessed 5/12/2011.

a relationship between ‘structuring’ or ‘shuffling’ of ‘intuitions’ and creative thought in science and art, that led to a discussion on holism (the interdisciplinary work of science and the arts in a unified approach). Through a review of various artists across history and genre from Leonardo da Vinci (1452-1519) to Susan Derges (1955-) and Andy Goldsworthy (1956-), Kemp alludes to a ‘leaning, particularly in the artworks, towards patterns that are suggestive of holistic principles of self-organization’. This poetic recognition and then subsequent transformation of the patterning observed in the natural world is referred to in my discussion on Bachelard’s poetics of the imagination. In revealing this insight Kemp also clarifies that he is not demonstrating or proclaiming that ‘holists are striving towards a better truth than the reductionists’; which he feels is more a ‘philosophical and ethical question, not a scientific one’ (Kemp 2000:180).

Kemp is inclusive: as with Bachelard, he extends rather than blends the space for many points of view to overlap and interplay. In locating UK artist Cornelia Parker’s work *Cold Dark Matter: An Exploded View* (1991), Kemp proposes that Parker is not in the service of science through mere illustration of scientific ideas. He relates Parker’s work to David Bohm’s *implicate order* as the poetic embodiment of an abstract idea. Kemp proposes:

> Parker is not *illustrating* the scientific concept in her title. Rather she is realizing the metaphorical poetry inherent in science’s calculated but often suggestive acts of naming. (Kemp 2000:147)

In Susan Derges’s continuing body of work in large-scale photograms of natural water flows (1990-), Kemp sees both the representational and their transformative potential to reveal new ways of thinking about the world as ‘they aspire to reveal scaleless commonalities in nature’ (Kemp 2000:153).

In this investigation I also considered some of the concepts raised in Edward O Wilson’s book, *Consilience* (1998). Wilson was a critic of the postmodernist’s deliberation to break down and critique the institution of science as a utopian vision of human activity. In his *consilient* space, art/humanities would work the similar reductionist methodologies of the sciences to underpin progression and innovation. As a biologist of considerable experience and note, Wilson brings a deep understanding of biological systems to assist in developing his concept. In the following statement he proposes the fundamental concepts underpinning his theory:

> The central idea of the consilience world view is that all tangible phenomena, from birth of stars to the workings of social institutions, are based on material processes that are ultimately reducible. (Wilson 1998:266)

Wilson then proposes a consilient state that is 'wholly accepted by the brain sciences and evolutionary biology' and that these 'disciplines are best poised to serve in turn as bridges to the social sciences and humanities' (Wilson 1998:266). He has confidence in support of this concept through claims of an apparent lack of counter evidence. Wilson acknowledges that the social sciences do not find his theory palatable but in attempting to be inclusive he continues to present scientific methodologies. Again he presents a view that if it is good for science to be considering new, more holistic theories to explain physical phenomena then these strategies can also have a wider application in the humanities.

But Wilson does not have the only claim to the theory and explanation of consilience. Evolutionary biologist, historian and writer, Stephen Jay Gould, in critique of Wilson's theory, presents a different approach to Consilience where there is:

> a "jumping together" of science and the humanities into a far greater and more fruitful contact and coherence—but a *consilience of equal regard* that respects the inherent differences, acknowledges the comparable but distinct worthiness, understands the absolute necessity of both domains to any life deemed intellectually and spiritually "full", and seeks to emphasize and nurture the numerous regions of actual overlap and common concern.
> (Gould 2004:259)

In this holistic space Gould suggests that both the arts and science are equally placed where both work together in consensus on shared concerns. But as Siân Ede[26] comments in her book *Art and Science* (2005) that advocates of the ideals of unity, even though 'well-meaning' and present compelling cases, can overlook the fact that:

> Very many different groups of people in the world also seek a Unity of Knowledge and a mending of misconceived gaps, but on their own terms, through different religious beliefs, spiritual, fundamentalist or otherwise, or through varieties of totalitarian rule, or paradoxically, through visions of anarchy and disorder. (Ede 2005:193)

These notions of unity and consensus may seem initially seductive or even utopian but as Ede points out there also needs to be recognition of the importance of difference

26 'Siân Ede, Deputy Director of the Calouste Gulbenkian Foundation, has responsibility for delivering on the UK Branch's main strategic themes and manages the Branch's major arts partnerships. Formerly Arts Director, Siân pioneered the Foundation's Art and Science programme and commissioned research and support for encouraging greater public participation in music-making within its Participatory Music programme. She is editor and co-author of *Strange and Charmed: Science and the Contemporary Visual Arts* (Gulbenkian 2000) and author of *Art and Science* (IB Tauris, 2nd edition 2008) and occasionally speaks at or chairs art-science events in the UK and internationally. She is a regular panel and committee member at the Royal Society.' Accessed 19 November 2011 from <http://www.gulbenkian.org.uk/about-us/uk-branch-staff/6-Si--n-Ede-.html>.

and instability in this debate. In this context, I was particularly interested in the critique of the science meta-narrative by the work of the French philosopher Jean-François Lyotard in his book *The Postmodern Condition* (1979). In the foreword to Lyotard's book Fredric Jameson makes the salient point on Lyotard's work that:

> Lyotard's ultimate vision of science and knowledge today as a search, not for consensus, but very precisely for "instabilities," as a practice of *paralogism*, in which the point is not to reach agreement but to undermine from within the very framework in which the previous "normal science" had been conducted. (Lyotard 1979:xix)

Although seemingly counter-productive to progression of science and knowledge, this approach has its merits in the ethics and questioning of this progress. Such questioning of the institutional structure can also extend the parameters of knowledge to give a voice to things other than science. Postmodernism provided alternative discourse, as Ede discusses:

> Postmodernist thinking which brings loosely together the discourses of post-structuralism, psychoanalysis, Marxist philosophy, post-colonialism, historicism and many other strands of thought which oppose the idea of absolute truth-claims, encourages cultural critics to 'deconstruct' the many potential meanings that are latent in all cultural products, especially where imposed value judgments have disguised the evidence of hidden power relations and impositions. (Ede 2005:41)

Therefore the hidden, the differences, the chaotic and the anarchistic became 'excellent medicine for epistemology, and for the philosophy of science' (Feyerabend 1975:17).

Alternatively Wilson critiques the postmodern chaos where he suggests that in the attention paid to looking at the gaps in evidence 'it is blissfully free of existing information on how the mind works' (Wilson 1998:214). When acknowledging the achievements of the Feminist movement, he regresses into a biologist's argument on the differences of women and men. Wilson then continues to search for reconciliation between what he describes as:

> Apollonian and Dionysian impulses, cool reason against passionate abandonment, which drive the mood swings of the arts and criticism.
> (Wilson 1998:206)

Wilson's critique of postmodernism and psychoanalysis is harsh and he gives these ways of thinking little credence towards 'understanding the material processes of the human mind', as he believes:

> These approaches, which are guided largely by unaided intuition about the way the brain works, have fared badly. In the absence of a compass based on sound material knowledge, they make too many wrong turns into blind ends. (Wilson 1998:216)

The above statement infers that ‘sound material knowledge’ can only emanate from the thinking and methodologies presented by science. In his critique of the social sciences and humanities Wilson creates a dilemma where he proposes unity, but on his terms.

Perhaps it could also be said that the postmodern shaking of the corridors of the institution of science was the catalyst to now creating a contemporary interdisciplinary space for alternative approaches to knowledge through the mixing of art and science. Feminist and renowned theorist of science, technology and culture, Donna Haraway contends that ‘science is cultural practice and practical culture’ (Haraway 1997:66). This statement immediately recognises the extended boundaries and potential for new paradigms to exist in the cross-linking of science, art and culture.

Haraway suggests that for some, this blurring of boundaries may be challenging as it perhaps allows ‘room for a motley crew of interlopers to take part in shaping and unshaping what will count as scientific knowledge, for whom, and at what cost’ (Haraway 1997:67). Haraway presents that in acknowledging the contribution of science, we should consider culture too as an equally important form of knowledge; as she states:

> Far from depleting scientific materiality, worldliness, and authority in establishing knowledge, the “cultural” claim is about the presence, reality, dynamisim, contingency and thickness of technoscience. Culture denotes not the irrational but the meaningful. (Haraway 1997:66)

As in Lyotard’s critique of the meta-narrative, Haraway presents a view that there should be no hierarchy, no sacred cow: all is open to be questioned; context and content require constant revision. The humanities and the social sciences are equal partners with the natural and physical sciences in this open epistemological environment. Here, many new voices can be heard, as Haraway states:

> The fantastic and the ordinary commingle promiscuously. Boundary lines and rosters of actors—human and nonhuman—remain permanently contingent, full of history, open to change. To be meaningful, the universal must be built of humans and nonhumans. (Haraway 1997:67-68)

Haraway’s statement for me does not present a unified model of the world where science is at the epicentre, but one of a fertile and lively space where many perspectives shape and question where and how knowledge is formed and used. It is the space where I find the freedom for the montage of scientific and cultural ideas, experiences and narratives to inform an alternative perspective on fresh water. In this space the interdisciplinary institution can thrive and inclusive discourse can develop.

2.6.1 The Interdisciplinary Institution

Artists like Helen Chadwick, including American Joe Davis[27] and the Australian, Stelarc[28], broke new ground in their methodology and conceptual framework for the artist connection with science. In the new millennium the environment, biotechnology and interdisciplinary research into new technologies and the Internet are strong issues for the artist working in science. Stelarc continues to be an exemplar in this model of research. Through the intervention of his own body, Stelarc has covered such issues as biotechnology and cybernetics in the interface of technological and human machine.

> I wanted to show how the engineering and architecture of the body not only fashions its form, but also its functions. I wasn't interested in the body as a site for the psyche or as an object of desire, but as an object of design.
> We can't completely separate the technical from the artistic. Therefore, when I speculate about redesigning the body, it's not about social engineering or a utopian, perfect body, but rather about alternate architectures.
> (Stelarc & Green 2002:57)

As in Stelarc's work and for many other artists, science offers methodology and language to both visualise and redefine perceptions of being human. The ramifications of this opening of the science cloister to the artist as researcher is exemplified by Stelarc's statement on 'alternate architectures' not only for the body but for the methodological framework for each institution. This pioneering and continuing work has made way for contemporary institutions of science and art to evolve interdisciplinary programmes.

Artists can now be found as co-researchers in science programmes and running self-directed and government funded projects in many areas of science. In Australia

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27 Joe Davis, a self-named genestheticist, has been working with genetically modified DNA in bacteria in artistic enquiry since the early 1980s: 'He convinced molecular biologists at Harvard University and the University of California at Berkley to teach him how to synthesize DNA and insert it into the genomes of living organisms'. He then worked on creating 'an infogene, a gene to be translated by the machinery of human beings into meaning and not by the machinery of cells into protein'. Finally he made a gene, *Microvenus*, that was inserted into an *E.coli* bacterium in 1987. This bacterium was created with the intention of being used as 'a message in a bottle' cultured in vast amounts to be distributed across the universe for 'extraterrestrials' as a symbol of 'human intelligence' (Wayt-Gibbs 2001:41).

28 Details on Stelarc's biography following were cited from his website: 'Stelarc is a performance artist who has visually probed and acoustically amplified his body. He has made three films of the inside of his body. Between 1976-1988 he completed 25 body suspension performances with hooks into the skin. He has used medical instruments, prosthetics, robotics, Virtual Reality systems, the Internet and biotechnology to explore alternate, intimate and involuntary interfaces with the body. He has performed with a Third Hand, a Virtual Arm, a Stomach Sculpture and Exoskeleton, a 6-legged walking robot. His Fractal Flesh, Ping Body and Parasite performances explored involuntary, remote and Internet choreography of the body with electrical stimulation of the muscles. His Prosthetic Head is an embodied conversational agent that speaks to the person who interrogates it. He is surgically constructing an Extra Ear on his arm that will be Internet enabled, making it a publicly accessible acoustical organ for people in other places. He is presently performing as his avatar from his Second Life site'.
Accessed 2010 <http://web.stelarc.org/index2.html>.

there is a strong community in this collaborative structure with such organisations as the Australian Network for Art and Technology (ANAT)[29], SymbioticA[30], and funding bodies for example Synapse, supporting projects. Although much of the attention appears to be drawn towards the new media/technology applications, there are artists also working on bio-ethics, cultural and science informed issues, forging new collaborations for extended methodologies in art making, scientific engagement and research. Australians are working at the leading edge of this research, such as Dr Patricia Adams[31] who worked with molecular scientists to create beating heart cells from her own blood, and Adam Donovan[32] (1974-) developed an 'acoustic lens' with the assistance of physicists. Justine Cooper describes herself as 'an interdisciplinary artist whose work moves between many forms of media—photography, animation, video, installation and medical imaging' and her practice 'investigates the intersections between culture, science and medicine' (Cooper 2009:8).

In 2009 the symposium *ARTSCIENCE@THEINTERFACE* was held at the State Library of Queensland in conjunction with the Festival of Ideas. Its aim was to 'chart the ways in which art and science gravitate towards one another within contemporary culture'[33]. The speakers were a representation from biotechnology and ethics, new media (presumably to mean digital technologies), writers and theorists. The new ideas

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29 ANAT - see website statement <www.anat.org.au> as follows: 'ANAT supports artists and creative practitioners engaging with science and technology, within Australia and beyond. Our innovative program includes immersive residencies, professional development labs, online research tools, publications, seminars and workshops. Throughout its 21-year history, ANAT has strategically incorporated cross discipline collaborations into its programming to increase the benefits for the artists it supports'.

30 See <www.symbiotica.uwa.edu.au>: 'SymbioticA is an artistic laboratory dedicated to the research, learning, critique and hands-on engagement with the life sciences. Under the direction of Oron Catts, SymbioticA's emphasis is on experiential practice. Researchers and students from all disciplines work on individual projects or in interdisciplinary teams to explore the shifting relations and perceptions of life. As a research centre within the School of Anatomy and Human Biology at The University of Western Australia [and] crossing the disciplines of art and the life sciences, SymbioticA encourages better understanding and articulation of cultural ideas around scientific knowledge and informed critique of the ethical and cultural issues of life manipulation. SymbioticA is a recipient of the inaugural Golden Nica in Hybrid Arts at Prix Ars Electronica'.

31 Currently holds the position of a Postdoctoral Research Fellow at RMIT University.

32 'As a participant in the ANAT Scientific Serendipity residency, Donovan chose to work with the Marine Operations Division (MOD) of the Defence Science and Technology Organisation (DSTO), one of the few organisations in Australia working extensively with ultrasound and parametric arrays. The goal of the residency was to develop a prototype acoustic lens, which would operate in a similar way to an optical lens, but instead of focusing light, the acoustic lens would focus sound. Donovan's developmental work at DSTO looked at ways of using high amplitude ultrasound to project a very narrow directional beam of audible sound, which could only be heard within the projected beam'. Accessed 24 November 2010 <http://filter.anat.org.au/in-other-words/scientific-serendipity/adam-donovan-interview/#more-4433>.

33 Currently archived on Pandora, National Library of Australia: <http://pandora.nla.gov.au/pan/97163/20090811-0032/www.ideasfestival.com.au/02_cal/details09f6.html>.

discussed were directed to practice-led research outcomes from artists working within the context of contemporary scientific knowledge and methodologies and their cultural relevance.

But the perceived postmodern influence on this work can still incite debate even in the contemporary notion of a cross-disciplinary environment. Does the spectre of Alan Sokal[34] still haunt the corridors of this fertile open institution?

In a review of the 2001 event, *low-down: recent acquisitions from the Monash University Collection*, Colin Shingleton questions the ethics of some artists exploring science through, as in the prefacing editorial note: 'a postmodern lack of responsibility' (Shingleton 2001:27). While Shingleton concedes 'there is nothing wrong with the artistic exploration of material dealt with in science discourse', he queries the motivation of art's intervention in science:

> However, if the art intends to interrupt the authority of scientific discourse, placing it amongst mystic and prescientific thought, it is not only on thin ice theoretically, but is also gambling with its own status as art . . . What is the status of art which detracts its audience from the 'truth' of Being, replacing it by a diluted and subverted postmodern truth? (Shingleton 2001:28)

The artists[35] in this exhibition, he believed, were 'dangerous through innocence' and that 'Art which assails science in its exploration of the world should be mindful that the ethical application of science and art is fundamental to our survival' (Shingleton 2001:28). Could this be the resurfacing of the debate over authenticity and objectivity of scientific truth that had raged over Ernst Haeckel's contested illustrations and onto Edward O Wilson's critique on postmodern dystopia? What has been achieved in this contentious space in recent interactions of artists with scientists and the institution?

In 2002 British social scientist James Leach (2005) was commissioned by the New Technology Arts Fellowship (NTAF) in the United Kingdom to 'track the interactions of artists and scientists and comment upon the social processes behind creative outcomes' (Leach 2005:143). In the article about this study he states the 'NTAF is one of a number

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34 Alan Sokal, a physicist, published a paper in 1996, 'Transgressing the Boundaries: Towards a Transformative Hermeneutics of Quantum Gravity', in the cultural studies journal, *Social Text*, as a hoax to 'expose' the postmodernist theorist's use of science knowledge and language as questionable.

35 Lauren Berkowitz, John Mead, Vera Möller and Loise Weaver were the artists whose work was recently acquired by the Monash University Collection. These works as shown in this article were in the main constructed from everyday objects, eg Lauren Berkowitz's *Dystrophy*, 1997, was constructed from leather cricket ball cut-offs and fishing line.

of ways in which people attempt to take control over the apparently 'runaway' character of the world around them'. Leach argues that:

> culture and technology have become so interdependent in current perception that the human project of civilization and social development appear, to some, in danger of being hijacked by what Langdon Winner has dubbed 'autonomous technology' . . . the very means that humans have developed for controlling and utilizing the natural world seem to have taken on a momentum of their own. (Leach 2005:143) [36]

With the positioning of the NTAF 'in a kind of cosmological context' (Leach 2005:143), Leach questioned the institution in a position of power over the outcomes of both the sciences and the arts. As projects in this hybrid space rely upon these funding bodies, how will this affect the outcomes? Leach foresaw this problem and therefore also included the NTAF with the artist/scientist collaboration in his social science based study. He also posed the question: 'What is it about the crossover between art and technology that captures the attention of funding bodies and those wishing to develop new institutional spaces for research?' (Leach 2005:145).

Through these questions and other investigations into how a perceived future technological culture will affect social knowledge and development, Leach found that:

> . . . what we have is not a 'runaway technology' but rather a technology that, in its modes of development . . . reflects the 'runaway' society from which arises. It is not technology that alienates, or from which one is alienated, but rather society itself. Technology, as another artifact, is simply an expression of this circumstance. (Leach 2005:149)

In his conclusion Leach suggests that science investigate artists as mediators between society and technology by exploring the artists' connections with and deployment of technology to materialise their concepts in a social context. This could incur a certain amount of responsibility, rather like the 'canary in the coal mine' where he points to the positives for science that the artist provides:

> . . . what the presence of the artist collaborator does for them [the scientist / technologist] is to make apparent the myriad possibilities of their work and also the potential societal dynamic it represents, giving them a new perspective. (Leach 2005:154)

It is interesting to note here that NATF were 'deliberately unclear' (Leach 2005:154) about the outcomes for the collaboration, allowing a kind of freedom in the experimentation. The recognition of this freedom and the interdisciplinary nature of the

36 James Leach cites Winner, L. 1977. *Autonomous Technology*, Cambridge, MA, MIT Press, p.15. Also in this quote James Leach refers to Leach, E. 1968 *A Runaway World? The 1967 Reith Lectures*. London, British Broadcasting Corporation.

artist's approach to and methodology using technology and science, it seemed a bridge could be built to close the gap between these two knowledge structures and society:

> By specifying its workings, the evaluation was to provide a real outcome – knowledge of how to bridge the divide between science and society through the redirection of scientific knowledge in technology. (Leach 2005:156)

Perhaps the results of the interdisciplinary institution will enable art and science to learn from each other and evolve new hybrid spaces and a plurality of, rather than singular 'meta-', narratives. Therefore for the development of my work in this project I am more interested in distancing myself from the monocular vision that unified thought brings to a living culture. I am seeking the potential for my work, as suggested by Siân Ede, that 'challenges the desire of some scientists for a single unified form of human knowledge' (Ede 2005:12).

2.6.2 Recombinant Space

Analogous to the manipulation of life forms by recombinant DNA, the Altermodern and Postmedium are emerging with themes that utilise the hybrid, multilayered, montage *mashup* and sampled spaces to redefine identity and communication:

> Today's art explores the bonds that text and image weave between themselves. Artists traverse a cultural landscape saturated with signs, creating new pathways between multiple formats of expression and communication. (Bourriaud 2009)

In this milieu anything is possible, as many debates that have shaped the visual communication of science and the transsubjectivity of science still continue.

Peter James Smith, Professor of Mathematics and Art and from 2002-2009 Head, School of Creative Media, RMIT University, Melbourne, in his artist statement posted on his website[37], refers to his work in the development of digital technology, mathematics and art:

> My work gathers together phases of scientific endeavour by placing data, text, references and graffiti across an illusionistic visual field. The gathering of data, codes, signifiers and histories into a current woven text is a particularly post-modern stance. It provides the artist with a curator's brief. It sits well with the scientist who creates new work by formally referencing the pioneering work of others in the field. In this sense scientists don't 'appropriate', they build on the past. (Smith 2010)

Smith's work draws together the activities and intent of mathematics and art into a critique on contemporary practice, as the artist/curator in a postmodern sense while at the same time referring to the scientist's research as grounded in knowledge building. Smith

37 http://peterjamessmith.net

reflects on the issues that have perplexed me in my own work as I cross the perceived boundaries of art and science. He presents a kind of synergy between the two, mathematics and art, that celebrates the interaction of both to new ways of perceiving art, science and the world. As with James Leach's identification of the artist's inventive application and interaction with technology, and Peter James Smith's hybrid practice, I also had crossed over the boundaries of the two disciplines. In this work, Helen Chadwick's shifting of and interventions into the boundaries that had separated art and science practice had also created new visual spaces for working through ideas.

But what of the 'contingent' 'boundaries' between human and non-human to which Haraway refers (see section 2.6.1)? The consideration of these issues of science and art as it applies to my work may seem complex and circular, but I do return to Haraway's model where humanity and science are not universal or central to life. In the construction of my visual narratives, I connected with the inclusive model that values the interaction of all things including non-human.

2.7 'Contact Zones': Connecting the Human and the Non-human through Narratives of Fresh Water

> Place, of course, as opposed to the more generalized 'site' or 'land,' is a specific collaboration between nature and people, constantly altered and inevitably defined by narratives from the contact zones. (Stuart & Lippard 2010:11)

Depending on water's local interpretation, from the vernacular and the scientific to the mythical, each place will have the capacity for a multi-centred narrative and connection with water. It is in Deborah Rose's 'points of connectivity' and Lucy Lippard's 'contact zones' that I find a location for the existing freshwater narratives to be extended from the laboratory into a broader context. In this exploration I identify with and refer to nature as the non-human. I do not separate or propose unification but seek places of contact where non-human and human, imagination and objectivity; where 'the function of the real and the function of the unreal—are made to co-operate' (Bachelard 1994:xxxv). I began by identifying aspects of place and water that are both influenced and shaped by the 'contact zones' of human narrative.

Underpinning my understanding of water as a place, I was informed by the Australian philosopher on place and memory[38], Professor Jeff Malpas from the University

38 More details on Prof Jeff Malpas can be found on the University of Tasmania website: <http://fcms.its.utas.edu.au/arts/philosophy/pagedetails.asp?lpersonId=2131>.

of Tasmania, in his essay, *The Forms of Water: in the Land and the Soul*, where he tackles the issues and nature of water and place. Here Malpas looks at how 'places structure themselves' where 'at one level, a more abstract level, I would argue that places are structured and articulated in and through narrative' (Malpas 2006:2). Malpas's reasoning that the topography of place is revealed in how 'places structure themselves' through the narrative of place, is of particular interest to my project. However, he also references other levels of place structuring:

> At another level, places are essentially understood through ideas of pathway and track, of border and crossing, of site and situation. And at yet another level again, our thinking about place takes shape in our thinking about various 'features' or 'elements' of place – building and street, bridge and road, earth and sky, hill and mountain, valley and plain, river and lake, swamp and floodplain, estuary, coast and sea. (Malpas 2006:4)

Malpas highlights a narrative of water that is shaped by both the natural and human rhythms in different places. In this discussion he identifies that there are many forms of water that define and, are expressed within, human and non-human story of place:

> These various forms of water, salt and fresh, transient and permanent, sea and river, are articulated through the actions and movements correlated with them, but those actions and movements, and so the character of those forms of water, and their places, are also articulated through narrative, story, myth, metaphor and image. (Malpas 2006:4)

Malpas proposes that:

> our connectedness to place, and the character of place, is worked out through narrative, and in those narratives of place, narratives of water play as central a role as the forms of water play in the constitution of place. (Malpas 2006:4)

The identification of the integral role that narratives of water play in defining human and non-human places concurs with contemporary human geography studies. It is therefore in the structures, both narrative and physical, of Contact Zones that I seek the metaphorical water for my narratives. I am working to restore the water to which Illich refers. Rose's call for a 'new ethos' and the need to re-envisage water as more than a 'utility' is pertinent to the development of my visual narratives. Malpas proposes that there are other ways of perceiving water beyond the pragmatics of everyday needs. As with Rose, Malpas presents:

> Water is more than just a commodity or resource. To attune ourselves to our essential inter-relatedness to place, and our own entanglement in it, to attune ourselves to the 'spirit' of place, is also to attune ourselves to the 'spirit' of water and to its forms. (Malpas 2006:7)

Does this statement have correlation with the presence of the Bunyip myth in Canadian ecologist Noel Hynes's discourse on the health and ecology of freshwater streams? What role does the non-human play in developing a contemporary narrative of water and place?

2.7.1 The Bunyip spirit: Does the Non-human Lie Submerged Deep within the Dark Swamp?

I sought the answer to my question in a 'river' of literary publications and children's novels. Here, I found Robert Holden's 2001 publication *Bunyips, Australia's Folklore of Fear,* on the Bunyip's influence in Aboriginal and European culture within Australia. He begins by presenting the creature as:

> one of the most enduring and terrifying of Australian Aboriginal beliefs . . . and ever since colonisation, reports have emanated from equally terrified settlers telling of encounters with this Australian nightmare. (Holden & Holden 2001:11)

In 1946 Charles Barrett[39] wrote a book tracing the history of the Bunyip and various sightings, both settler and Indigenous. As with Robert Holden, Barrett presented first hand descriptions and illustrations of the proposed form of the creature. Throughout these reports it was revealed that there are as many different forms as there are names for the Bunyip. The form of the Bunyip is as fluid as water itself, contained only by the imagination of those that allege sighting the creature. Barrett presents an example of a Bunyip from the Blucher Aboriginal community of the Darling Downs called the *Mochel Mochel*. He cited a case during the late nineteenth century in which a Bunyip was seen in the upper Condamine River in the same region as my initial scientific study. This report was described in Thomas Hall's (a settler from Warwick, a town located in Queensland) *Short History of the Down's Blacks* and depicted the creature as having an otter–like appearance:

> With two other white men, Mr. Hall was bringing a mob of brumbies down from Swan Creek, and when some distance ahead of his companions, was startled by a scream coming from the place known as the Gap Creek Junction Hole. Riding over to investigate, he saw an animal in shape similar to a low set sheep dog, the colour of a platypus, head and whiskers resembling an otter, coming from the shallow water across a strip of dry land into deep water. The back of its head was like the bald head of an aborigine, and corresponded with a figure drawn on a tree trunk at the bora ground. The impression made on Mr. Hall's mind was that the *Mochel Mochel* or Bunyip was a kind of otter. The Blacks, he says, had a great dread of it and nothing could persuade them to bathe in, or even go near a waterhole believed to be the home of the Mochel Mochel. (Barrett 1946:29-30)

The Bunyip's appearance consistently tended to be a mix of many known animal parts, a kind of montage combining the colonial domesticated/known animals with that of the native wild animals.

Whatever form it takes, this chimerical creature still has a powerful presence in

39 Charles Barrett was a reputable twentieth century naturalist and author of a number of books about the Australian natural environment.

the contemporary Indigenous psyche. Robert Holden presents in his final discussion a quote by Henry Rankine, of the Ngarrindjeri tribe in South Australia, on his community's ongoing connection with the Bunyip in *The Mulgewongk's Cave*[40]. Rankine discloses:

> So the Bunyip (the Mulgewongk) he is still in our Dreamings. He is still there today, just like we have fast jets in the sky, we still have got that fellow in the river. (Holden & Holden 2001:206)

As water flows both chemically, physically, psychologically and mythically through our lived experience of place, there is a dynamic space where all overlap in a montage of visual, physical and conceptual 'places', and new narratives are formed. As Australian independent researcher on ecological arts issues, Dr. Tamsin Kerr proposes:

> Bunyips change descriptions from what actually happened to a deeper imagining of place - a wordy attempt at participating in the fearsome sublime, the silence of the sacred space. (Kerr 2006:59)

In her PhD thesis, *Conversations with the Bunyip*, Kerr examines the value of myth in contemporary Australian culture and imagination through the metaphor of the Bunyip where Kerr states that 'The Bunyip acts as a metaphor for the subaltern or hidden culture of a place' (Kerr 2006:n.p.). The subaltern is a term arising from the post-colonial discourse of 'the other' that critiqued the imperial and colonising impact on Indigenous populations, their culture and status within these societies.

In the 1990s there was a growing case for the 'non-' or 'more-than-human' to be considered as a methodology and to relocate anthropocentric values of science in research into a more inclusive social environmental theory. This was strongly argued by some social scientists for example Bruno Latour, theorists such as Donna Haraway, and human geographers, in particular the work of Deborah Bird Rose in Australia. They created a focus around other ways of perceiving the world, including manifestations, objects, activities and systems that exist both naturally and as a result of human intervention.

Another prominent advocate for this theory, Australian eco-feminist Val Plumwood (1939-2008), presents the concept that the act of colonisation could be also 'applied directly to non-human nature itself' (Plumwood 2003:52). In her article, 'Decolonizing Relationships with Nature' she teases out an argument that relationally analyses the post-colonial discourse of the subaltern *Other* [41] with human interactions with nature.

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40 First published in the *Journal of the Anthropological Society of South Australia*, vol 29, no.2, 1991, pp 121-123.

41 The 'Other' usually refers to the colonised and marginalised Indigenous or immigrant populations; and in Feminist

Plumwood proposes that this analysis can assist in understanding the dysfunctional aspects of contemporary human relationships with the natural world.

Donna Haraway critiques the discourse that identifies with nature and the need to preserve, conserve and control. Haraway then questions its success suggesting that nature is not something that we can possess, and proposes that:

> Excruciatingly conscious of nature's discursive constitution as 'other' in the histories of colonialism, racism, sexism, and class domination of many kinds, we nonetheless find in this problematic, ethno-specific, long-lived, and mobile concept something we cannot do without, but can never 'have'. We must find another relationship to nature besides reification and possession.
> (Haraway 1992: 296)

As I highlighted earlier, Haraway again challenges the dominance of a centric role of scientific knowledge and relocates it within a more diverse cultural system. In this paradigm, there are many and diverse narratives and ways of knowing nature, that do not need to possess but rather acknowledge and value it in other ways.

To explain his methodological approach to include the diversity of non-human theory to frame the research, French philosopher and social scientist Bruno Latour (1947-) associates it with a contemporary digital software sharing device, the 'plug-in'. This software device enables programs and devices to operate and thus make for a productive interaction. Therefore as Latour presents, the non-human 'plug-in' can enable the theorist or reader to:

> see things and do things on the screen or in research that you couldn't see or you couldn't animate before. It's not a moral point. I'm not advocating horrible things like mixing humans and non-humans. It's not like zoophilia or that sort of thing. It's a very precise question of research. (Barron 2003:78)

In scientific research methods Latour advocates the dissolving of barriers created by the dualist 'subject/object' divide. His ongoing research investigates human relationships with science, scientific outcomes, politics and management; and he is currently a professor at Sciences Po Paris, France.

The non-human or more-than-human theory and research methodology creates a more diverse space for understanding complex ideas and problems. Whereas the existing dominant anthropocentric paradigm leads to, as Plumwood argues, a 'homogenous perception of nature' where nature is reduced and classified as resources or 'replaceable

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theory, women. 'Although largely thought of as the non-human sphere, in contrast with the truly or ideally human (identified with reason), the sphere of "nature" has, in the past, been taken to include what are thought of as less ideal or more "primitive" forms of the human. This included women and supposedly "backward" or "primitive" people, who were seen as exemplifying an earlier and more animal stage of human development' (Plumwood 2003:52).

units'. Plumwood maintains that this can lead to a 'serious underestimation of the complexity and irreplaceability of nature' (Plumwood 2003:55).

Australian human geographer Leah Gibbs from the University of Wollongong presents the importance of a 'more-than-human' approach. In her research on the value and perception of water in Australia, Gibbs explains that she is strongly influenced by the Australian Indigenous view where:

> humans, non-human animals, other living and non-living sentient and non-sentient beings, spirits and Dreamings, exist in dynamic interrelations of responsibility and reciprocity. In this way of knowing and being in the world there is no separation between humans and non-humans. To draw upon this knowledge system challenges some often taken for granted assumptions about the role of humans in the world. (Gibbs 2009:362)

These researchers have shown that the 'non-human' or 'more-than-human' can allow for alternative views and knowledge to be explored in the context of human relationships with other than human contexts. This also allows for a more inclusive and flexible space that accepts the agency or 'voice' of objects, life-forms, concepts and many of the examples as outlined in Gibbs's article.

In this inclusive space the Bunyip as Kerr contends can have a place—an inherent metaphysical presence in water. Rod Giblett in his article 'Black and White Water', also refers to an Indigenous narrative of the Waugal, as 'the presence of "living water" [that] bespeaks Waugal immanence' (Giblett 2007:35). Giblett refers to the Indigenous concept of water 'as both life giving and death dealing' as opposed to the colonial concept of 'good'/'white' water and its opposing 'bad'/'black' water. He then proposes 'the uncanny as a way of re-thinking the counter-aesthetic and the counter-industrial' (Giblett 2007:34) that can be found in colonial and contemporary discourse on water.

In her article, 'Wild Thing: You make our Art Sing, Reconciling Culture and Reinhabiting Nature', Kerr identifies the notion of the Bunyip[42] and the wildness of nature with all forms of knowledge through local community narrative and memory, arts and science.

> The power of community memory is that we remember (or re-invent) our wild connections to place: relying upon the mythic as much as the factual, upon the arts as much as the sciences. Wild thinking creates this archaeology of community memory, and allows it to be more inclusive. (Kerr 2007:n.p.)

Kerr is actively involved in promoting this inclusive approach by supporting local community arts projects for example *Floating Land,* held in the Noosa region. She has

42 In her thesis Kerr argues that 'celebrating place makes a space for the voice of the wild to be heard; and, that creating a space for the subaltern to be heard leads to more creative discourses on place' (Kerr, 2006:31).

with her sculptor partner Ross Annels formed an organisation *Cooroora Institute*[43], that promotes and organizes local performances and art events that explore the issues of nature, Indigenous knowledge, non-human and human:

> The Cooroora Institute is a community place of landscape memoir.
>
> The Cooroora Institute brings together artists and artisans with public intellectuals to celebrate community connectedness to place and environment. Soundscape artists and musicians play us into the more-than-human world. Craftworkers remind us of every object's origin and emotive story. Artists abstract the details of our love of place and express an ever evolving relationship with the environment. Designers and architects build the songs of each place into the material fabric of the everyday. Philosophers and cultural theorists dissolve the strictures of institutionalised knowledge to allow a remerging of human /nature. (Kerr & Annels n.d.)

In this place, Kerr has created space for the free association and development of new ideas. As in Lippard's contact zones, Kerr is collaborating with the Bunyip and the local community through an ongoing narrative of interdisciplinary projects to redefine perceptions of Place.

The art of Australian artist John Reid[44] including his manifestation *Fishman*[45], is an evocative, sensory and in many ways, unsettling meeting with a wilder connection with fresh water and non-human landscapes:

> One never recovers from a journey into wilderness. I return vitalised with clear missions; yet, disorientated in terms of my hitherto enduring personal philosophy. I know all things are a construct of the mind; yet, my mind had constructed in Fishman something that knew me before I knew myself. Through my obsession with this creature, I discovered the power of silence. I discovered the power of advocacy. I attracted as believers people who value imagination as much as knowledge. I aggravated as detractors people who have been suffocated by reason. I repelled in twitches scientists who had lost their sense of wonder. (Reid 1999:195)

Reid's discussion, for me, reveals a sensual and intellectual ongoing narrative evoking a different and deeper connection with things other than human that contribute to a deeper and wider perception of the world we inhabit. Like the Bunyip, *Fishman* comes from deep within a wilder space; one that speaks directly to our imagination. I am reminded of Bachelard's discussion and how the 'poet' engages with the world, not to

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43 See <http://www.cooroorainstitute.org/>.

44 'John Reid is the Co-ordinator of the Environment Studio and Convenor of the Field Studies program at the ANU School of Art' and has: 'a humanities degree from ANU, a Master of Fine Arts from UNSW and professional qualifications in graphic design'. Reid also has 'held an ANU Creative Arts Fellowship (1977-79)'. He 'joined the Canberra School of Art in 1978'. 'As a visual artist, works with photography, performance and collage to address human rights and environmental issues'. See: <http://soa.anu.edu.au/staff/john-reid>

45 See <http://www.fishman.com.au/>.

objectify or imitate, but to wonder, imagine, transform and be transformed—to be open to and look for 'images of the first time' (Bachelard 1994:156).

In her work, Australian artist Mandy Martin[46] engages with layers of human (colonial and Indigenous), and ecological connections with the non-human in the Australian landscape. On viewing Martin's artwork, Tim Griffiths interprets the artist's work as a changed vision of the freshwater landscape from the colonial representations of flood[47] and their inherent promise of water that could be collected and harnessed as a resource. Griffiths notes that through Martin's use of both text and visual interpretations of the flow of water through the Australian landscape she 'inscribes her landscapes with language' :

> As well as the mirage of heat, she depicts the shimmer of history, drawing words for country from explorers' journals, using text rather than figures to conjure a human presence. . .
> She evokes the tensions and mysteries of promise and absence. There is no excess water here. (Griffiths 2002:226)

Both Martin and Reid engage with an inclusive narrative and vision of the Australian freshwater environment. Where Martin works to explore and understand human narratives, Reid through *Fishman* engages with the wilder non-human, challenging the limits of science to understand and speak for nature. Reid made the following notation in his diary:

> As I walked the thin umbilical track from wilderness (a full sensory experience of the world unmediated by artefact) toward culture (represented by the artist's studio, the poet's desk, the scientist's laboratory) I thought of Fishman as a symbol for all that is unknown in the wild. Fishman, I realised, is a fine art discovery not a scientific one. JR. Journal entry: September 1992
> (Reid n.d.)

As in the work of Helen Chadwick's, *Viral Landscapes*, and John Reid's *Fishman,* I am exploring the possibilities to *infect* the human with the non-human and the objective

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46 Mandy Martin is an artist of both national and international reputation. 'Born 1952 in Adelaide she studied at the South Australian School of Art 1972-75. She was a lecturer from 1978 to 2003, then a Fellow until 2006 at the ANU School of Art. Since 2009 she has been adjunct professor with the Fenner School of Environment and Society. As an artist and lecturer at ANU School of Art, she had worked with John Reid on co-ordinating a selection of his Field work projects, including the *The Lachlan: Blue-Gold* with Sarah Ryan in 2003' See <http://fennerschool.anu.edu.au/mandy-martin-scientist-and-artist>

47 Along with references to framed photographs of historical floods hung in 'inland homes and pubs', he cites a painting by colonial artist WC Piguenit *The Flood of the Darling 1890*. Griffiths maintains that these images 'carried several messages: that things could be different, that this was a land of excesses, and that such an abundance of water should be conserved for times of scarcity' (Griffiths 2002:225).

with the subjective, to create extended conceptual spaces. Perhaps in this work, Rose's new 'ethos' can find its Place. Through the metaphorical decomposition of the past, I propose to engage the re-colonising[48] presence of aquatic fungi and their potential role in the revitalisation of freshwater narratives.

48 The term colony and colonisation refers not only to the scientific meaning of the establishment of communities of microorganisms in the environment but also to the irony that it has an analogous significance in the history of Australia.

CHAPTER THREE

Methodology

In his 1968 essay *A thing is a hole in a thing it is not,* Robert Smithson wrote:

> The investigation of a specific site is a matter of extracting concepts out of existing sense-data through direct perceptions. Perception is prior to conception, when it comes to site selection or definition. One does not impose, but rather exposes the site—be it interior or exterior. Interiors may be treated as exteriors or vice versa. The unknown areas of sites can best be explored by artists. (Flam 1996:96)

3.1 Developing the Narrative

My materials and 'sense-data' (as indicated in the Robert Smithson epigraph to this chapter, and will continue to refer throughout the exergesis as 'sense-data') in this project are the sensory observations and photographs made from the scientific study and the documentation of each site. In traditional scientific research on aquatic fungi these images would be considered abstract and open-ended; in the context of my narrative project they provide the visual 'sense-data'[1] or any material necessary for building digital montages. Just as words and sentences are the material for writers bringing context and meaning to ideas, my scientific images of aquatic fungi, the microscopic and the human environments were the material elements of the visual language for the project.

As I integrated the images into the narrative construction, I looked into the relationships between the functions of the materials from science to fit the form and intention of the work. Integral to my visual research both in the laboratory and within each site was the collection of photographic documentation for the projection and digital montage production. In this work I also investigated the issues of impacting on the scientific photographic document in the altered context of the montage (projected image or digital construction). The thought processes, material issues and methodological contexts that underpinned the creation my work required critical reflection and identification. I was constantly refining the relationships between the context of the science and the visual narrative work including the methodological implications for the forward progression of the work.

3.1.1 Quote or Code: Reviewing Photographic Meaning

As discussed in earlier chapters, I strove to reconcile the subjectivity of the imagination with the objectivity of science. In this deliberation, Roland Barthes presented a relevant appraisal of the photograph: 'the image is not the reality but at least it is its perfect analogon'. It is the reader that imbues the image with meaning as the photograph of itself is 'a message without a code' (Barthes 1977:17). Barthes then proposes:

> . . . it is that here the connoted (or coded) message develops on the basis of a message without a code. This structural paradox coincides with an ethical paradox: when one wants to be 'neutral', 'objective', one strives to copy reality meticulously. (Barthes 1977:19-20)

1 See Appendix C for a small selection of examples of visual 'sense-data' collected during the project.

Importantly, Barthes then questions the duality of the meaning implied in the photograph: 'How then can the photograph be at once "objective" and "invested", natural and cultural?'(Barthes 1977:20). In the later discourse of *Camera Lucida*, Barthes again explores this notion of inherent duality in the interpretation of the photograph's connection with the reality of the subject:

> The Photograph belongs to that class of laminated objects whose two leaves cannot be separated without destroying them both: the windowpane and the landscape. . . (Barthes 1984:6-7)

He suggests that rather than looking at the photograph we enter into a subjective visual discourse which is dependant on the viewer's preference or conceptual framework 'some technical', 'others are historical or sociological' (Barthes 1984:6-7). To me, this implies that the photograph resists reduction; it is open to manipulation and its application is as diverse as the perception of the reader/viewer.

In agreement with a statement by UK art historian, John Tagg, that inferred photography has no particular intrinsic 'identity', Geoffrey Batchen presents that 'photography has no coherent or unified history of its own . . .' and followed with 'The meanings of any individual photograph are similarly contingent' (Batchen 1997:5-6). Thus the photograph, it seems, is a chameleon taking on the meaning assigned to it by the author or the reader; which in effect produces many 'photographies'. This condition has only been accentuated by the digital re-invention of this medium.

In the advent of digital imaging and the intervention of digital manipulation, and a perceived 'death of photography', Geoffrey Batchen[2] (1994) commented that 'the absence of truth is an inescapable fact of photographic life' (Batchen 1994:48). With the growing use of digital medium in the general reportage and documentary industries there was a new consideration to announce that the images were manipulated, which was 'rhetorical rather than ethical' (Batchen 1994:48). Batchen (2008) then observes that Barthes's discourse in *Camera Lucida* had already laid the foundations for a consideration of the photographic paradox as an inherent contradiction.

Perhaps the photograph engages each viewer in a kind of uncanny theatre, a subjective *mise en scène* but referent to reality, as Vilem Flusser (2000) suggests in his book, *Towards a Philosophy of Photography*:

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2 Batchen continues to critique computer generated images (CGI) that have a photogenic style or result. Although this discourse raises important issues regarding CGI as not 'direct referent' of reality thus questioning its relationship to a photographic origin, it is not the current issue of this project.

> The magical nature of images must be taken into account when decoding them. Thus it is wrong to look for 'frozen events' in images. Rather they replace events by the states of things and translate them into scenes. The magical power of images lies in their superficial nature, and the dialectic inherent in them – the contradiction peculiar to them – must be seen in the light of this magic. (Flusser 2000:9)

Contradictions continue to appear—it seems that the photograph's meaning lies in its subjective potential for contradictory realities.

Spanish conceptual artist and art historian Joan Fontcuberta, through his photomontage narratives, has played upon this unstable nature of the photographic document. In his book *Contranatura* Fontcuberta (2003) visually and contextually challenges accepted ideology of the photographic document in historical and scientific meta-narratives. In this book he parodies scientific information in the format of the *National Geographic* magazine, using photomontage and fictional situations which he presents as factual, documentary reportage.

In another publication critiquing the history of photography Fontcuberta proposes that in the digital manifestation of this medium:

> Photography has now become information in the pure state, content without matter . . . Issues of meaning will take precedence over issues of representation . . . in the realm of artistic expression digital photography should be unfavourable to certain developments of a formalist nature while accentuating others of a narrative and conceptual nature. (Fontcuberta 2001:11-12)

His salient comment regarding the changed physical state and perception of photography in the digital medium releases the image from its social requirement to record and allows for new potential visual discourse; and provides for the author/artist the articulation of methodology.

Even in this challenge to photography's connection to reality these 'narrative and conceptual' 'developments' are possibly never far away from a desire to refer in some way to something observed or experienced. As Geoffrey Batchen (1997) succinctly proposes, there is 'a persistent economy of photographic desires and concepts' that:

> include things like nature, knowledge, representation, time, space, observing subject and observed object. Thus, to attempt a momentary definition, photography is the desire, conscious or not, to orchestrate a particular set of relationships between these various concepts. (Batchen 1997:213)

In this 'orchestration', from the initial capture of the digital impression to the final construction, Barthes's 'perfect analogon' articulates the photograph's referential connection to the reality between subject and context. John Berger (1982) in *Another Way of Telling* presents for me the most relevant discussion for the approach I have, to

the use and meaning of photographs. Berger simply states:

> Photographs do not translate from appearances. They quote from them. (Berger & Mohr 1982:96)

So, in this project, the site documentary and scientific images once captured become 'quotations' and form the fundamental components of the visual syntax of the place narratives. They are the raw material, the quotes from a temporal and spatial investigation and thinking of places to be recontextualised into a *mise en page*, a montage of matches and contradictions working through the questions and relationships of the research itself.

3.1.2 The Photomontage: All Images are Manipulated

The photomontage by its nature has also been under scrutiny regarding the ease of digital manipulation and the ever-present critique of the veracity of the photograph as evidence. In the early 1900s noted Australian photographer Frank Hurley created in the darkroom, photomontage orchestrations documenting Australian exploration and war scenes. At the end of the 20th and into the 21st century Mexican photographer Pedro Meyer seamlessly manipulated his photographic images for social agendas. Although in the final decade of the 20th century the notion of the photograph as manipulated reality has been well discussed and has achieved a level of acceptance, towards the end of the decade the advent of digital imaging only served to fan the embers of this issue.

Many photographers were caught up yet again in this seemingly endless recurring argument, as in the discourse around Pedro Meyer's work. Jonathon Green comments that Meyer's 'wry images challenge the essential truths and myths surrounding the documentary aesthetic': 'They seduce us with real evidence, pictorial facts, visual puns, ironic juxtapositions, and political narratives' (Green, J 1994:33). But Green finishes his discussion by noting that:

> Yet, in spite of the photographer's interventions, these images cannot be classified as synthetic media. They are not paintings or drawings. They remain essentially photographic. They draw their strength from a direct relationship to 'photographic reality'. (Green, J 1994:34)

According to Pedro Meyer the context of 'social truth' as in his digital montages, can be assigned by the image's author, thus:

> The credibility of a photograph, he [Meyer] maintains, does not lie in the image itself, but in its context. (Snow 1996:2)

The debate over where the 'truth' lies in the manipulation of digital photomontages

is seemingly circular and full of rhetoric. Ultimately photomontage's authenticity, questionable or not, for me is part of its narrative strength. As a response to all detractors, Joan Fontcuberta in his introduction to Meyer's book *Truths & Fictions, A Journey From Documentary to Digital Photography* (1995) stated that:

> All photographs are manipulated. Framing is a manipulation, focusing is a manipulation, choosing the moment to snap the picture is a manipulation . . . What are subject to moral judgement are the criteria or the intentions that are applied to manipulation. (Meyer, P 1995:12)

As with Haeckel's illustrations[3] and in response to his critique of scientific photography, I utilise the photograph and the photomontage not as an identifier of a specific singular organism in a scientific context but as a generality or as symbolic of aquatic fungi and their environment. The essential characteristics of the subject had been reassigned as it was dissected and implanted into the different context. In this montaged space I reassign the knowledge gained from the science. Spaces and surfaces had been transgressed in order to widen the potential for new discourses on water. To effect this narrative intent I investigate methodologies and conceptual approaches to the montage.

3.1.3 Montage Thinking: Formal vs Seamless

The visual and sound interventions of the montage have historical references arising from the cinema and film. Film-maker Sergei Eisenstein (1898-1948), presented theoretical discourse in *Towards a Theory of Montage: Sergei Eisenstein Selected Works, Volume 2 (*2010) that lay the foundations in the way music, sound and images were worked into the construction of film narratives. While politics was high on Eisenstein's agenda, the need to respond to the introduction of sound into movies in the early 20th century proved to be a practical application for the development of his intellectual and methodological approach to the montage. This conceptual development has contributed to a broader context than just the cinematic for the montage.

In this theoretical and creative work Eisenstein:

> Rather than see the concept of montage limited to that of a special case of film editing, he argues that the montage as he had himself conceived it in his earliest writings on the subject is in fact a special case of montage in general, which is a principle to be found underlying artistic construction of all kinds . . . Eisenstein's original concept of montage was that meaning in the cinema was not inherent in any filmed object but was carried by the collision of two signifying elements. (Norwell-Smith 2010:xiv-xv)

3 See Chapter Two, section 2.5.2

Eisenstein's discourse provided rhetoric around the nature of the intervention of the montage. In the 1920s he contributed to the development of the *Soviet Montage* style in cinema, where he 'favoured juxtapositioning of shots in order to create a concept' in order to create the 'maximum effect would be gained if the shots did not fit together' (Bordwell & Thompson 2010:468). But not all montages at this time were created with the same approach. According to a seminal text on film, *Film Art, an Introduction*[4] (2010) filmmaker Vsevolod Pudovkin (1893-1953): 'believed that shots were like bricks, to be joined together to build a sequence' (Bordwell & Thompson 2010:468).

The principles of continuity and discontinuous editing in cinema inform the way in which visual communication can be manipulated by montage. Jeff Wall in his photomontage work refers to the cinema's natural or continuity approach to montage whereas Nigerian artist Fatima Tuggar is more eclectic in her use of technology assisted montage.

In *Fusion Quisine (2000)*, Fatimah Tuggar employs both:

> At times in *Fusion Cuisine*, the artist emphasizes juxtaposition by displaying the visible seams of her digital composites and making her cuts abrupt. In other scenes she transparently fuses these two narratives together through splicing, layering, and compositing, creating a new narrative that connects postwar fantasies to contemporary technological pursuits. (Fleetwood 2004:1430)

In the essay, Associate Professor Nicole Fleetwood[5] discusses the filmic and photomontage work of Fatima Tuggar and this medium's inherent ability to evoke a visual discourse for the artist. Tuggar's 'art turns our attention to the process and labor involved in constructing visual knowledge about gendered subjectivity, belonging, and notions of progress' (Fleetwood 2004:1430).

Informed by American film theorist Kaja Silverman's (1947-) discourse of 'the suture'[6], Fleetwood argues that:

> Tuggar's work exposes both the seams and fusions of narrative and confuses spectator identification, inserting black female narrative subjects into discordant spaces and addressing and decentering habituated viewing positions. (Fleetwood 2004:1432)

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4 Drs David Bordwell <http://www.davidbordwell.net> and Kristin Thompson <http://www.kristinthompson.net/blog/about/> have extensive knowledge and research output on the topics covered in this text.

5 Associate Professor Nicole Fleetwood is the Undergraduate Director of American Studies at Rutgers University where: 'She researches and teaches in the areas of visual culture and media studies, black cultural studies, gender theory, and culture and technology studies.' <http://amerstudies.rutgers.edu/people-menu/core-faculty/nicole-r-fleetwood>.

6 Fleetwood elaborates her position on the 'suture' in cinematic theory 'Suture is a theory of cinematic identification that accounts for the relationship between ideology, signification, and subjectivity; it explains how classic narratives forge a relationship with the viewing subject through the masking of the process of production, most notably through a shot-reverse-shot editorial relation' (Fleetwood 2004:1432).

It is through the 'visible seam' and the '"impossible" fusion' (Fleetwood 2004:1433) through the digital medium of cinematic and photographic montage that Tuggar imposes her own arguments, concepts and polemics. Tuggar works to overwrite, as a visual palimpsest, the historical and the colonial meta-narratives through her use of technology and the 'visible seam':

> the concept of fusion offers insight into the type of cultural, geographic, and representational intersections that Tuggar aims to construct. This goal is reflected in her practice and in the deliberateness of the visible seam in her video and photographic work. (Fleetwood 2004:1446)

As Fleetwood identifies, Tuggar's work arose from earlier influences where:

> the concepts of suture and gendered identification in feminist film scholarship of the 1970s and 1980s lay the groundwork for examining emergent, non-narrative media productions in the twenty-first century. (Fleetwood 2004:1433)

Many references from the artist Jeff Wall also discuss the influence of cinema in the development of his photomontages. Wall's approach, departing from Eisenstein's notion of the 'collision', recaptured the naturalism he associated with a 'non-Godardian'[7] or even 'counter Godardian' method, where disruptions or disturbances in the image are seamlessly incorporated. Wall proposed that 'by the middle of the 1970s, I felt that the 'Godardian' look of this art had become formulaic and institutionalised that it had completed its revolution and something new was emerging' (Wall 1996:11). In this discussion he discards the 'cut' or the formal approach to photomontage or what Fleetwood describes as 'visible seams', to intentionally mask his manipulation to effect a kind of seditious undermining of meta-narratives. He looked to film-makers that had 'a kind of internalized radicalism' and:

> an almost 'invisibilized' intensity as far as any disruption of classical codes is concerned. What happened was that the 'outside', as you call it[8], did get inside, but in doing so it refused to appear directly as an outside, disruptive element. It disassembled. It appeared to be conventional, . . .
> So, the new form of the threshold was not the drastically broken-up surface, like in Godard, but a self consciously, even manneristically, normanlized surface. (Wall 1996:11)

Jeff Wall's montages are naturalised into the fabric of the image, where his interventions are obvious through the juxaposition or placement of impossible elements. Rather than in the suturing of the surface itself, Wall's montages work beneath the surface of the image:

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7 Godard and Eisenstein employed discontinuity devices such as jump cuts in scenes that disrupted the flow of the narrative in cinema to show time and spatial changes. This was intended to engage the viewer proactively to think about the issues surrounding the scene.

8 The citation is a response by Jeff Wall to his interviewer Arielle Pelenc's reference to the *hors-champs* or off-screen elements of the film that contribute to the narrative, where 'in classical cinema, the *hors-champs*, the outside is open and endless. But with modern cinema the *hors-champs* I transformed by the jump cut' (Wall 1996:10).

> to make visible the discontinuities and continuities – the contradictions – of my subject matter. The picture is a relation of unlike things, montage is hidden, masked, but present, essentially. (Wall 1996:11)

The seamlessly montaged elements freely occupy the space of the image, whereas the cut or collaged elements are imposing separateness within the spatial nature of the image: through the visible seam they limit the space and narrative to the intent of the intervening author. Some cut-ins impose an 'outside' point of view or argument rather than evoking alternate landscapes: or attack the normal perception of the subject from 'within' the context of the image. As in Helen Chadwick's *Viral Landscapes*, the virus enters the 'body' of the subject, passing through the cellular walls and visually effecting the invasive activity; as if viewing her photomontages was analogous to observing the viral invasion of the landscape though a microscope. Chadwick's work passes beyond the superficial into a philosophical space. Is this then a spatial proposal where science and art appear to co-habit independently in two distinct spaces? The use of montage then presents the notion of a seamless flow of viral and cellular information crossing both the cellular and the body walls that separate the internal from the external metaphorical landscapes.

The development of the contemporary digital environment has provided the tools so that artists and photographers—as in the work of Pedro Meyer, Joan Fontcuberta, Andreas Gursky and Jeff Wall—could weave unnatural or unexpected elements into the visual image or narrative. It appears that these naturalised montaged elements act on the narrative to disturb flow by altering or attacking the subject within the photograph or photographic narrative, rather than disrupting the reading of the narrative itself, as in the cut or tear of the formal montage.

I am interested in exploring the fusion of the ideas in science with culture and history in the broader context of the natural within my montage work. Importantly this fusion should blend but not impose any individual way of thinking or associated values. This freedom extends the possibility for the narrative work, as scientists—along with non-scientists—will all have potentially different 'readings'. Rather than cutting or imposing the associations or quotations (although this does create opportunities for extra tension and collisions in the context of the thinking montage) I look for fractures, tears or surface barriers to cross within the existing image as it refers to each place. Once identified, the montaged element is seamlessly inserted and the image surface remains as if undisturbed, while the added elements alter the 'reading'. In the construction or 'orchestration' of these 'quotations' from place-specific[9] documentation

9 Place as referred to in both the methodology and Jeff Malpas's topology of place

into narratives, I explore the mobile state of site-related books as they traverse the duality of the photograph as a paradox of both subject and object, place and non-place.

3.1.4 Montage Thinking: Other Media

I began this project strongly influenced by the art of Lin Onus[10]. The unseen or hidden Indigenous presence, both human and non-human, was communicated through the painting of Aboriginal art styles on these subjects or overlying the entire painted landscape. In response to this work, I visually explored the interplay between surfaces: the water, its reflections of the sky and trees, and the submerged rocks and plant life along the Condamine River. An example of this early developmental work can be seen in Plates 2 and 3.

Plate 2. ***Homage to Lin Onus No. 1***, 2004
Digital File, variable dimensions.

Plate 3. ***Homage to Lin Onus No. 2***, 2004
Digital File, variable dimensions

10 Some of the more influential works for my projects were: the sculpture *Fruit bats*; paintings *Barmah Forest, Morumbeeja Pitoa (Floods and moonlight);* the series of paintings of *X and Ray*; *Stingrays also dream of flying;* and most importantly *(Fish, ferns and rocks)* 1995.

By crossing the boundaries of the traditional European landscape topographical painting with the Indigenous landscape narrative, Onus created a montage of visual languages that critiqued the contemporary cultural landscape of the late 20th century in Australia. His artwork was a convergence of those ideas, life experiences and found objects that informed him: ' . . . like a "cultural mechanic" exploring ideas picked up from both his Aboriginal and his European heritage' (Neale 2000:12). Through the layered meanings and montaged visual messages in the paintings of Lin Onus I discovered a different way of understanding the Australian landscape. This cross-cultural work challenged me to look beyond just the visible and into the depths of the river.

My photomontages were also informed by Ian Burn's (1939-1993) 'value added' landscapes in the context of Australian landscape painting and the visual interplay of ideas. These installations are a combination of text overlying the found-object amateur landscape painting both contesting for space in the reader's imagination and their search for meaning in both. In this way these works challenge the viewer to reconsider the landscape image and the text in a dynamic interplay of meaning. Burn constructed text/ painting collages or montages in order that the: 'text contests the representational limits of the landscape painting, opening it up to other competences of the viewer and "releasing" new qualities of the painting' (Burn 1996:9). Although these works questioned the value of art in both the amateur and professional environments, I was predominantly interested in the interplay of text and landscape image. Burn stimulated my imagination to explore and question alternative meanings through this visual 'reading' between the lines.

Other artists influential to the development of this work are William Robinson (1936-) and John Wolseley (1938-). Both of these artists present different ways of interpreting and considering the Australian landscape and its contemporary environmental experience and condition. Their paintings and drawings utilising many perspectives and the montaging of multiple contexts within the visual construction assisted in the methodological development of my digital photomontage work. Both refer to the knowledge gained from empathy with the landscape, which was integral in the material production of their work. William Robinson's everyday life on the land and deep connection with the daily rhythms of the rainforest were embedded in his landscape painting. As I visually walk through or fly across his multi-perspective views, I see a painted montage of new vistas in both the landscape and its representation.

3.2 The Photograph Within the Book and Relationships to Site

Land Art is communicated 'principally by the photographic report of it in galleries and museums; sometimes the size is such that it can only be known in a photograph' (Sontag 1979:148). Land Artists explored the photographic document as a 'visual experience' (Sontag 1979:148), that was not about the object created but rather its temporary or ephemeral state at the time it was photographed. As Barthes writes: 'What I intentionalize in a photograph . . . is neither Art nor Communication, it is Reference' (Barthes 1984:77). Perhaps photography assists the site-specific work of the artist by referring to the context of the ephemeral artwork in a time and a place; thus as Berger suggests, photograhy 'quotes' from the work.

For some though, the artwork in situ defies photographic documentation. In her article on Walter de Maria, Jane McFadden discusses the complexity for the art gallery/ museum to show this kind of art and how the documentation would be presented. She recounts Diane Waldman, a curator for the *Guggenheim International Exhibition*, 1971:

> Documentation is fragmentary, incomplete and an inadequate surrogate for the reality of the work, leaving the viewer totally unequipped to do more than just barely comprehend the actual experience. [11] (McFadden 2009: 75)

McFadden also brings into the discussion the issue that a lot of artists at this time, including de Maria, were contesting the role of the art gallery along with the commodification of art, and were exploring other options for where art is contextualised and located. De Maria in his gallery works questions further the role of documentation as representation in place of actual experience:

> The experience of the work is extensive in both spatial and temporal terms. It is one of miles and hours or even days. It resists the limits of photography: it cannot be photographed, and therefore cannot be published. (McFadden 2009:71)

Does this fragmentation or the primacy of 'being there' negate the possibilities that photography as a visual language can evoke, and the extended audience for the ephemeral work? As McFadden then notes, there was a growing potential for the conceptual communication through photographic documentation:

> At the time, contemporary vision was extending its reach – across national boundaries, into outer space – and many distinct experiences took on similar form through mediation and documentation. (McFadden 2009: 74)

So in my work, the photographic documentation necessarily mediates and extends the reach of the reader's vision into microscopic land and waterscapes that identify with each

11 Jane McFadden cites Diane Waldman, *New Dimensions/Time-Space: Western Europe and the United States* in Guggenheim International Exhibition, 1971, New York, Guggenheim Museum.

site work. Each of the book works brings these two sites together in unique narratives referent to each place.

In his book *Robert Smithson: Sculpture,* Robert Hobbs discusses Smithson's propositions of site and non-site:

> One might say that in 'Incidents of Mirror Travel in the Yucatan' secondary media becomes primary, the work of art is replaced by the critical essay, and the gallery is supplanted by the periodical. (Hobbs 1981:14)

Hobb's proposition could also extend to the many other works now existing only as the texts, photographs, films or other forms of recording the site-specific work that Smithson found useful in his projects. Jack Flam (1996) discusses the phenomenon of the 'secondary media' as 'images in the mind, memory traces that have come to have an almost mythic resonance' (Flam 1996:xviii). The 1970s film *Spiral Jetty* (1970) by Robert Smithson exemplifies this position: where the photographic and filmic medium appears to operate within a visual discourse between the imagination and interaction of the artist working on site, and the artwork *Spiral Jetty* (1970). Here Smithson offers the non-site as a dialectic solution to the issues of the in situ nature of site-specific work and its broader communication and potential:

> The Non-Site to some degree brings site from the geographical, psychological, and social margins to a 'centre' – be it the artists' studio, an art gallery, a museum, or a page of a book. Smithson's conception of art in general allows for great fluidity between the various incarnations of a work and involves a resistance to a single, simple time and place, even to a single physical form. (Flam 1996:xviii)

Andy Goldsworthy raises the importance of employing photographic documentation in the form of a book or documentary video in his work through a quote from Brancusi: 'As Brancusi said, "Why talk about my sculpture when I can photograph it?"' (Goldsworthy 1994:120). Goldsworthy's books contain evocative photographs of his site-specific sculptural works that were constructed with the photographic document in mind. Clearly the photograph in the book plays an important role in the communication of his art production—here the sculpture is made to be reproduced in a photograph and book, not to replace the sculpture but to refer to the temporal and emphemeral experience of the sculptural object. As Susan Sontag states:

> Finally, photographs have become so much the leading visual experience that we now have works of art which are produced in order to be photographed. (Sontag 1979:147)

In ephemeral performance and video art, the work of art ultimately dematerialises into its documentary image within a catalogue, book, website or video publication.

In the 1985 publication edited by Joan Lyons *Artists' Books: A Critical Anthology and Sourcebook*, Clive Phillpot critiques this issue in *Some Contemporary Artists and their Books*. In referring to Land Artist Richard Long's photographic book works he states:

> It might be thought that Long's books are just documentation, but in his first book he established that his work in the landscape may not be separable from its recorded image or from a book of such images. (Phillpot 1985:114-115)

Further in the essay he then adds that Long's recent books show photographs from many different site works, which are 'simply strung together to make an album. The photographs are frequently astonishing, but the books are only picture books' (Phillpot 1985). Phillpot argues that although some of Long's books may constitute a work of art, there is a question whether they operate as site-specific artworks:

> Regardless of their origin in several countries, these books generally bear a family resemblance, as manifested in the choice of type, the layout of the page, and the images, but the content is rarely dependent upon the book form. (Phillpot 1985:116)

In noting the homogenous nature of the book form and design across Long's site works, Phillpot alludes to the notion that to be site-specific, the book form itself may need to be site referential. For Phillpot it seems, the book as object may need to have some physical and aesthetic relation to the site.

American Land Artist Michelle Stuart has produced diverse and archaeologically informed work in sites across the world and the United States. From the late 1960s, she has collected, handmade, buried, beaten earth into, books. Depending on the site work she incorporated her own photographs or those collected from other sources. These books can also feature natural referential material including stones and feathers, from each site; which all combine to connect with stories and histories of the site. As Lucy Lippard notes:

> Even when they are small in size, their openness can suggest much grander scale—landscape scale, offering a kind of kinetic memory of moving across space or walking over rough ground. (Stuart & Lippard 2010:12)

Stuart does not utilise the book or photograph as a documentation, but rather it is an imprint of the site and the artist's physical experience, working, thinking and memory wrought into a form of '"literary" art' (Stuart & Lippard 2010:12). This reference to the artist's interaction in place and the metaphorical archaeological investigation is relevant to my book works. Although not physically imprinted within the site, the photographic 'analogons' or 'quotations' I montage into visual narratives relate directly to the time spent collecting digital and memory impressions as well as the thinking and working within each place as a form of 'contact zone'.

3.2.1 Installation of the Books

An important stage in the site-specific development of these books was the installation of the works within the original site. Here, the books were and continue to be available for reading within the context of site. But there was a further component that related to the wider communication for the work, that was in some ways similar to the photographic or filmic document of performance and Land Art. This work, as a book, is transportable and capable of bringing the site work to a larger audience through its availability for reading, research and review provided by libraries. Water is an ephemeral, movable site. It can be located in the site-specific work of the scientist, the cultural historian and the artist. By its nature water is not grounded but in constant flux.

The transportability of the artwork has become a broader issue in contemporary site-specific art, with the advent of the World Wide Web (www), YouTube and video. The 1970s approach to the grounded site has been challenged by the nature of the work existing in multi-sites including the documentary narrative, thus transforming a metaphorical or non-site into a mobile collection of sites or even a virtual site.

The notion of the grounded site is still relevant today as seen in much public art wrought into architecture. It is in the dematerialised space of digital and web, that art and communication extend the possibilities of site work. One suggestion, proposed by James Meyer, is to demarcate the site dilemma by separating this new approach to site work as ‘functional’ rather than ‘literal’ or grounded: thus the mobile site becomes an evocative act or object as in ‘an information site, a palimpsest of text, photographs and video recordings, physical spaces and things: an allegorical space’ (Meyer, J 2000:25).

But the question still remains that, as it is mobile and not grounded in site, how can a ‘mobile’ art object like the book be site-specific? Perhaps it lies in the mobility of the site itself as proposed by Meyer when referring to case studies of nomadic artists and their movement through places: ‘they posited a model of place that is, like the subject that passes through it, mobile and contingent’ (Meyer, J 2000:35). For me, this statement refers directly to my concerns with water, its flow through place and from place to place.

Although my artists’ books can be read in the physical site, the contextual site is essentially water, so these books also have the potential to become ‘fluid’ in their context

of ‘reading’. This process also refers to the ubiquitous and invisible nature of water; so for the viewer/reader the site can be referential. Other sites of visual and textual reference where ideas are fluid are galleries and libraries.

3.3 Collaboration Methodology

> Scholars can bring to bear under one collective umbrella ideas about matters of meaning and communication, matters of technique, and matters pertaining to theoretical knowledge that can enrich the environment and yield truly remarkable products. (Eisner 2008:10)

Australian artist and academic Charles Green collaborates on many artistic projects with his artist partner, Lyndell Brown. Green reveals in the introduction to his book *The Third Hand* his choice of a small selection of case studies as exemplars in artistic collaboration from the late 1960s and early 1970s. These artists were responding to the growing influence of the postmodernism critique of authorship. He posits the idea that ‘the demands of contemporary art changed the artist. Artists examined the shape and limits of the self, redefining artistic labour through collaborations’ (Green, C 2001:xvii). The act of collaboration is not simply one of a loss or a disappearance of self; it is a very complex and evolving phenomenon that reveals new insights on the influence and findings of the author. Green suggests that:

> Artistic collaboration is a special and obvious case of manipulation of the figure of the artist, for at the very least collaboration involves a deliberately chosen alteration of artistic identity from individual to composite subjectivity. One expects new understandings of artistic authorship to appear in artistic collaborations, understandings that may or may not be consistent with the artists’ solo productions before they take up collaborative projects.
> (Green, C 2001:x)

The purpose of my discussion is not to attempt a definition or analysis of artistic or any other forms of collaboration in the arts; but as it is part of and shapes my broader practice I do utilise various collaborative approaches in the development of my research. Rather than ‘examine the shape and limits of the self’, I include collaboration in different connections as part of the research to ‘examine the shape and limits of’ certain directions, concepts and methods in the research. The collaboration methods I utilised in the research are cross-discipline, for example: between art and science, human and non-human (inluding the natural environment and my materials), artist/artisan (specialist), and artist/artist (as is commonly found in the medium of artists’ books). Ultimately this approach enables the inclusiveness, as in the montage methodology of my narratives, that I require in the exploration of new perceptions for this project’s outcomes.

3.3.1 Cross-discipline Collaboration

Collaboration with technology, scientific knowledge methods and scientific professionals and projects is a contemporary methodology for the artist engaging with science. Many national and international organisations promote these connections, including in Australia ANAT, Synapse and SymbioticA.

John Reid, apart from his own art practice, has long and significant history in developing cross- or inter-disciplinary spaces for creative dialogue on environmental issues. In this time he has brought together diverse communities of artists, scientists, Indigenous cultural knowledge and the general public to participate in a creative forum about the issues of land and water in local regions. The 2010 publication *Engaging Visions, Engaging Artists with the Community about the Environment* (Reid et al. 2010), documents not only the recent project by the same name but also narrates a history of field work projects that John Reid and the ANU School of Art had conducted. From 2007, I was able to connect with a field trip to the Balonne River and St. George. This enabled an engagement with other artists working with human and non-human issues of fresh water. Although the work I produced for this field trip was not directly part of my research, much was gained by the exposure to this larger project. It re-enforced the continuing connection with local communities and the positive energy created through the free expression of many and diverse narratives of place.

Fundamental to the development of this project I have connected with mentors and professionals in science and the contemporary cross-discipline practice of art. As part of my approach to this project, I have employed collaboration in different ways to inform and extend the outcomes. This extension of the boundaries of my personal research enabled an informed and broader potential for the project. In the development and production of the scientific work I collaborated with scientists with the following relationships: as mentor; scientist as creative thinker; and the scientist as authority in the relevant field of research in mycology.

Drs Mal Ryley, Garry Kong, Dorothy Shaw, John Alcorn and Roger Shivas have special knowledge and networks that have assisted my understanding in aquatic fungi: their collection, imaging and identification. Through their experience of mentoring scientific PhD endeavours and their willingness to see alternative viewpoints, I had many

brainstorming sessions on the direction for the research exploring both the scientific outcomes and the development of the concepts for the artwork. Dr Sally Stowe and Dr Cheng Huang from the Australian National University's Electron Microscope Unit (EMU) also provided suggestions and methods for the processing and imaging of my specimens in the electron microscope. With their assistance and my own practical work I developed a simple process for the collection, laboratory, and imaging work that I employed in the *Bundanon* and Myall Park Projects.

3.3.2 Venturing into New Waters: Utilising the Collaborative Potential of Artists' Books

> I contend though that the book structure – its temporal nature, its presence in time, its ability to roll out ideas, to track and trace their development, and to present them as dialogue, as chat, as very human exchange is one of the reasons that the book is so well suited to collaborative practice. I suggest that it is this very human wish to engage in conversation, to make an utterance and receive a response that is the intent of more collaborative book artists, than any primary wish to make ourselves disappear. (Davis 2004)

By its nature the book is generally a collaboratively produced object, from writer to editor to printer/binder to publisher: very few take on all of these roles. Many form collaborative combinations of collectives including private presses or individuals across such disciplines as writing, poetry, visual art or artisan bookbinders. The artists' book, rich with diversity, is a fertile medium for collaborative projects. The *livre d'artiste*, Surrealist, Dada and Fluxus movements in the 20th century, including such projects as *Exquisite Corpse*, created a history of collaboration to which many contemporary artists and movements now refer. In the Australian artists' book medium there are many practitioners who collaborate with other artists in the same discipline or across mediums: for example, the creative partnership between the printmaker Bruno Leti and the poet Chris Wallace-Crabbe; Peter Lyssiotis, who has a long history of collaborations with other book artists and artisans; and the witty publications that evolved from Stephen Spurrier's work with Ron McBurnie and Jan Davis. It is with Jan Davis that I have resonance in terms of the potential for the 'conversation' to extend the narrative through the collaboration.

In the development and production of the creative work I chose to collaborate with spcialist artisans Doug Spowart and Robert Witthahn. Spowart assisted in *The Apparition* with specialist knowledge in the on-site capture of the digital projections. The boxes that contained the book objects were specially designed by myself with the

construction and design input by Doug Spowart (acrylic work) and Witthahn (folders and non-acrylic box work). Both of these specialists had knowledge of their materials that assisted in the design for these containers.

Integral to the research was an artistic collaboration where I directed Doug Spowart to perform the role of *Fungiman* in the development of *Fungiman* in *The Night Garden*. I intentionally included Spowart as a collaborator in the construction of the *The Night Garden* as I wanted to experiment with the incorporation of his humour and wit as a foil to my introspective nature to extend the narrative potential for the aquatic fungi in this part of the project.

Through the artistic collaboration it was my intention to extend and provide an opportunity for aspects of humour, whimsy and performance in the digital narrative. I also wanted to pursue visual concepts of the presence of the body/human form that was identified from an image at B*undanon*, Plate 4. This work was also influenced by the work of John Reid in his *Fishman* series. Importantly this collaboration was intented to reinvigorate the invention and intervention of the site narratives for this project by disrupting the formation of formulaic patterns and where the work had room to evolve and be open to unpredictability, to fully allow for other unexplored possible narrative pathways.

Plate 4. ***Doug as Fungiman, Bundanon***, 2007
Digital file, variable dimensions

3.3.3 Material Thinking: Collaboration with the Visual Narrative Materials

Paul Carter's *Material Thinking* (2004) assists in the exegesis and discussion of the subjective and metaphorical nature of the artwork and its relationship to the overlying issues of the research:

> Just as human collaborators needed to suspend an irritable desire for control of the project, substituting instead a lover's readiness to be plastically moulded by the other's (intellectual) desire, so with materials: they self selected, those of especial value to enquiry displaying gifts of amalgamation and self-transformation analogous to the emotional environment characteristic of the human exchange. (Carter 2004:xiii)

Each of my books grow organically, informed by the 'sense-data' of place collected in the fieldwork in each site and the montage thinking during the narrative construction in the digital 'site'. For me, Keith Smith (2000) best articulates this generative and sensual process in the following statement:

> When I am making a book it is alive. I speak to it and it responds, perhaps not in words, but it speaks and I listen. I learn. It is my friend and my teacher as it evolves and is clarified. We grow together. (Smith 2000:15)

The construction and form shaping of the montages, narratives, books and their cases all return to this concept. Associate Professor Barbara Bolt[12] has considered how the materials and processes inform the artistic outcomes:

> Heidegger's discussion of responsibility and indebtedness provide us with quite a different way to think about artistic practice. In the place of an instrumentalist understanding of our tools and material, this mode of thinking suggests that in the artistic process, objects have agency and it is through the establishing conjunctions with other contributing elements in the art that humans are co-responsible for letting art emerge. (Bolt 2007:1)

My materials include the objects and subjects of each place made visible to me through the lens of the microscope and my immersion in each place. This extensive list of non-human collaborators taught me about the flow of water through the narrative within and across each site. From the microscope and the laboratory, through the cultural and natural of each site, materials of place were both woven into and the weavers of narratives. As such the materials observed and encountered in each place determined the flow of my research and narrative construction in the form of each book. With the collaboration of these materials, I navigated my path between the science and art, the laboratory and place.

John Wolseley describes his collaboration with the materials of the artist, paint and paper, with the materials of the natural environment:

> More than ever before I found that this process of making a watercolour seemed to be analogous to the action and process by which water moves and forms the landscape itself. I've been laying these huge sheets of paper onto softly descending banks of sand hills, and start in a rather wild and physical way by pouring, brushing, sploshing quantities of watercolour which I have previously mixed up in large bowls. All these watery landscape elements

12 Graduate Research Coordinator (PhD), Victorian College of the Arts, Melbourne, Victoria

> around me are then recreated on the paper. Pools in depressions in the paper overflow in slow winding rivulets and become analogues of what hydrologists call ‘chain of ponds systems’. (Wolseley n.d.)

In this relationship of the artist’s materials and the natural materials, the flow of water was transformed into a cultural agent. Social scientist and philosopher Bruno Latour in his book, *The Pasteurization of France* (1993) appropriated the agency and invisibility of the ubiquitous ‘microbe’ in nature to investigate and extend the methodologies of science and social science. In the cross-disciplinary work, I also sought relations and equivalences that enabled the usually disparate materials, the natural and the cultural, the microbe and the human to make contact and interact. An example of this collaboration was found to occur by the attraction of the aquatic fungi to the *Rio Vista* wallpaper designs. This contact of comparable materials provided in the wallpaper a host for the fungal spores to adhere and metaphorically recycle the fabric of the building, a function they perform in recycling detritus of fresh water.

The development of site methodologies and collaborations are dynamic and as I worked through each place I had to adapt to the differences in the ‘structures’ of each site. The identification of how my ‘materials’ would interact would need to be flexible; from the microscope to human spaces. Thus I applied an approach to material thinking as in John Wolseley’s water work, but my ‘materials’ also included the technologically mediated emanations of nature. More than just inks and paper to materialise this work, I utilised, through collaborative relationships, science, and technology to extend human freshwater spaces: enabling the intervention of the unseen non-human, building the montage and photographic narrative space.

As I created the books for each site, I found that the complexity within each photograph required the emptiness and absence of white space. I also utilised white space to create contemplative and open-ended space for the reader’s imagination. The simple bindings give the sense of fragility of both the ephemeral nature of the site work (the projections) and the montaged bonds of cross-disciplinary concepts. There is space for reflection, needed to allow the conceptual nature of the book to be considered particularly in the close physical space of an intimate reading. Where some books require the concepts to be animated references to the site, the book form becomes the support for the animation (flip book) or three-dimensionality of the narrative (concertina book). I also apply both text and digital photography montage. Here text and image co-habit and

contest for space as each contributes to the thinking and narrative processes. Text also appears as poetic (and one prose) introductions to the visual narrative; and operates in a contextual role to introduce non-visual components of the narrative.

3.4 Walking and Immersion in the 'Contact Zones'

In my visual research I connected with other artists working in environments both beyond and including the studio. John Reid's *Fishman* project was a strong influence in my visual work. I found resonance with Reid's method of working: where he walked in the wild forests and swam in the wild rivers, I too walked and immersed myself in the wildness of the microscopic aquatic environment. I resurfaced to bring this 'knowledge' into human-experienced visual narrative of each contact zone. In a conference paper, Reid discloses his methodology:

> The Fishman of South East Australia is the product of travelling wilderness:
> The Walks which resulted in the profound discovery in the wild rivers of south east Australia of a piscine hominid which I called Fishman.
> And subsequently The Documentations which culminated in my large format photographs of Fishman and its pristine habitat.
> The Swims which took me beneath the surface of wild rivers seeking contact with this creature in places which I perceived unmediated by artefact.
> And subsequently The Returns which sent me gasping back to my culture like a pilgrim, brimming with messages. (Reid 1999:194)

Other artists and researchers also informed me as I developed a methodology for my site work as in the following outline of my final process. Australian researcher in Place, Tamsin Kerr (Kerr 2006) in her PhD thesis *Conversations with the Bunyip* identifies with 'Place thinking', a concept developed by Kerr's research 'about a whole hearted (and whole minded) immersion in landscape' (Kerr, 2006:40). In my past work with the visual narrative inquiry into the landscape, I spent time walking, observing and listening to rhythms of place. I sought visual evidence how 'places structure themselves' (referencing Malpas) through the sensorial and lived experience along with place narratives.

In this first contact I immerse myself in each site in the manner of 'walking' as American Land Artist, Alan Sonfist (1946-) discusses of his work:

> At a new site, immediately upon arrival, I start sensing the land by walking, smelling and feeling. As I absorb the atmosphere and associate with my past experiences, the process begins. I start by creating a series of drawings, bringing my own history to my immediate observations of the site . . . I always start by collecting historical and botanical traces of the site: these eventually become the larger project connecting myself to the land and the forces that shape it. (Field 2004:11)

In each site, the reflexive conceptual connection with walking allows for solitary time in and direct contact with each place. British Land Artist Hamish Fulton has worked on walking in most of his long arts practice. He aptly presents the profound influence of walking as a methodology, as cited by Andrew Wilson in a catalogue of a retrospective exhibition of Fulton's work:

> Walking is not about recreation or nature study (or poetry – or 'stopping' to make 'outdoor sculptures'; or 'take' photographs). It is about an attempt at being 'broken down' mentally and physically – with the desire to 'flow' inside a rhythm of walking – to experience a temporary state of euphoria, a blending of my mind with the outside world of nature. (Wilson 2002: 27)

In this early stage of immersion in the site I do not document or photograph, I normally rely more upon sensorial memory from the awareness of just myself in contact with the environment, without technological mediation: to gather information, seek connections and patterns to begin the building of a narrative space.

In the project of water this proved a little more challenging, as one of my sites in this project was the microscopic depths of fresh water. Clearly a different approach was required to gather visual and other sensory information and knowledge from this hidden place. In this part of the project it was necessary to utilise technology and scientific methods[13] to collect and visualise minute specimens from water to enable a kind of 'walking' and observing in the microscopic environment of aquatic fungi.

3.5 Balancing the Montage of Methodologies: Cycles of Action

Much of my methodology involve a reflective and reflexive approach to questions and challenges as they arose. My main aim was to ensure that I followed up on avenues of enquiry until they could no longer contribute to the gathering of visual and sensory information and knowledge for the construction of the site's metaphorical interventions and narratives. Understanding when data saturation occurs in a visual study is critical and is discussed in Patricia Leavy's book, *Method Meets Art*, in terms of a method of cyclical analysis or review to know when the data collection has achieved its potential and no more is required. Leavy cites other research[14] in narrative inquiry particularly utilising enthographic or autobiographical data:

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13 See Appendix B for disucssion on scientific work.

14 C Tenni, A Smyth, and C Boucher (2003). 'The researcher as autobiographer: Analyzing data written about oneself', *Qualitative Report,* 8(1), 1-12.
A Coffey (1999). *The ethnographic self: Fieldwork and the representation of identity.* London: Sage.

> By analyzing data in cycles, beginning early in the collection process, researchers are better able to recognize when they have reached "data saturation," which is the point at which the collection of more data stops adding to the insights gained and the researcher risks being inundated.
> (Leavy 2009:48)

Although this method of analysis is directed towards the Social Sciences, I found resonance within my own process. My intent was that after a period of time collecting visual data from a site, I would commence analysis by constructing a book or series of books. As I began working the narrative, a cycle of returning to the data then to the analysis and story construction became the natural method for knowing how I was going in the data collection. I then resolved the work on each site in the form of a public exhibition to enable a distancing from the making cycle, where time was spent reflecting on the results. This reflection was cycled into the next part of the project and site work. From the work done over these sites and the reflective/reflexive process of evaluation, I began to see patterns forming in both the site work and in the corresponding book works across the sites.

3.6 Outline of the 'Contact Zone' Methodology

The following outlines the methodology that I applied in each site:

Step 1. In the 'Contact Zone': Walking and Dreaming

Initial immersion and walking to collect sensory and memory information from time spent in touch with rhythms, topology and topography of place.

Step 2. 'Contact Zone' Documentation

On a second visit, informed by the 'sense-data' from the earlier visit/s, I then proceeded to isolate small areas for consideration and scrutiny. It was then that I began documentary photography for its ability to isolate, separate and refer to subjects for memory and/or as in John Berger's 'quotations'[15] of the subject in situ. These 'quotations' 'cite' the observed tears, cracks or visual disturbances of the site. Also collected are memories or notions of the rifts in or possible places for infiltration across the surfaces in the meta-narratives of place.

These were formed into a collection of images with those made from the scientific observation for reference in the projection or montage work.

15 Here I am referring to John Berger's 1982 discussion on documentary photographs.

Step 3. Narrative Construction

Ultilising the outcomes from Steps 1 – 3, a final montage narrative was created to fit the form of the artists' book (flip book,concertina or codex) that was selected to best represent the process and experience of 'reading the site'. These montage constructions were informed by: the documentations from Step 1, the methods, and materials as discussed in the earlier section on digital photomontage[16]. Spatial considerations for the 3-dimensional form (concertina, codex or flip book), the open page, the photomontage and the book containers were explored as each narrative was developed and were related to each site. Here I utilised montage, collaboration, material thinking methodologies. There will be examples discussed in the reporting of the site work.

Step 4. Installation and Exhibition

The installation of the books in situ, even though temporary, created a focus for the work within the context of each place, while also available for public viewing and reading. This enabled reflection on the work and reflexive action for the future work.

16 Note also I used contemporary professional imaging software including Adobe Illustrator and Photoshop in their many versions since 2004.

CHAPTER FOUR

Reporting from the ‘Contact Zones’

4.1 'Contact Zone' Overview

The work made in each site refers to the interdisciplinary and multi-methodological approach outlined in Section 2. In particular I draw upon Jeff Malpas's 'way places structure themselves', Lucy Lippard's 'contact zones' and Tamsin Kerr's 'place thinking' to define the observations and work done in each place. The considerations for water and place are supported by the immersion in place through walking and material thinking (utilising the scientific image collections and place 'sense-data'). The observations in and of place are dealt with separately, and reference how they inform the montage and narrative construction, and the development of the project.

The first study, from the initial laboratory work, culminates in the construction of *Aquabatics.* Here observations and knowledge gained of the aquatic fungi inform the project. Again I refer to Gaston Bachelard's *Poetics of Space*, as the discussion in this book resonates with the progress of my visual research. I also refer to other influences that shaped the development of the water narrative in its early stages.

As stated, the second stage of the work moves away from the science, to investigate the influence that a myth narrative of water and the presence of the Bunyip would exert on my project. In this section, I report on the development of the research, observations and manifestations, and how these impacted on the direction of the narrative project. References are made to aspects of the book and place work of *Koolunga Bunyip* that underpins the project's flow into colonial waters.

The next section is a report on the observations and material responses that were pivotal to the development of the project as the visual narrative space was extended to include science and natural rhythms within three human places of fresh water. To locate and direct the narrative construction, I give a degree of importance to discussing the observations of and knowledge gained from each place. I also reflect on the flow of the project from place to place and how each contributes in different ways to the building of the narrative.

I then identify the implications and influences from these observations that were manifest in and referential to the montages and book forms. I also connect with my approach to book making as it applies to this project's outcomes. As the books and visual narratives operate as site-specific work, I investigate the notion of contemporary transportable site as it applies to my books, their installation on-site and their acquisition

in the Library as a site. This discussion has implications for the communicative potential for the outcomes of this project.

The organisation of this chapter is then based around discussing the observations, 'sense-data', and reflective and reflexive processes during the progression of the project. I begin with a discussion on the preliminary study from the laboratory - *Aquabatics.* The study then continues in research carried out on-site and separate to the laboratory at Koolunga, South Australia to produce the artists' book, *Koolunga Bunyip.*

A report follows discussing the three 'contact zones' of fresh water : *Rio Vista*, Mildura, Victoria at the Murray River; *Bundanon*, Nowra, New South Wales on the Shoalhaven River; Myall Park Botanic Garden, Glenmorgan, Southern Central Queensland near the confluence of the Balonne and Condamine Rivers and Dogwood Creek. The installation of the books from each 'contact zone' on-site and in exhibition spaces and a reflection on the Library as a 'contact zone' concludes this section.

4.2 The Preliminary Study from the Laboratory - *Aquabatics*

a. cover

b. middle detail

c. back detail

Plate 5. ***Aquabatics***, 2004
Concertina bind, 10 pages
Epson Ultrachrome pigment inks on
Epson Radiant White Watercolour paper
Dimensions: 22 x 19 x 1 cm
Edition: 10 copies

Collection:
Australian Library of Art, State Library of Queensland (ref. ALAABCOO)
Photographic documentation of the book by Doug Spowart

4.2.1 Through Bachelard's Looking Glass

Bachelard in his 'study of the imagination' refers to the bringing to life of new concepts, as an initial innocent act: 'when we have forgotten all our habits of scientific objectivity, we look for the *images of the first time*' (Bachelard 1994:156). But, once objectified, these images are then reduced in the need to rationalise and understand as phenomena. In *Shells* Bachelard (1994) considers that there may be a fundamental need to translate and identify with unfamiliar natural phenomena:

> He [the poet] is arrested in his flight towards dream values by the geometrical reality of the forms. And these forms are so numerous, often so original, that after positive examination of the shell world, the imagination is defeated by reality. Here it is nature that imagines, and nature is very clever.
> (Bachelard 1994:105)

I interpret this is a state where perhaps prior knowledge, explanation and language are unable to initially tackle the unfamiliar so, as Bachelard proposes, the mind then searches for associations and relations. In my project, I was initially 'arrested' in the microscopic waters of the aquatic fungi by the 'clever' 'reality' of nature's 'imagination'.

When engaged with the microscope, I begin to recognise how this optical device collapses immense barriers of scale and perception. My mind becomes separate from the familiar and immediate surroundings and is relocated in an unimaginable space and time of an alternate reality. The microscope provides a contemplative space to consider the site and substance from deep within fresh water. Like Bachelard's 'man with the magnifying glass' I 'take the world as though it were quite new':

> Thus the minuscule, a narrow gate, opens up an entire world. The details of a thing can be a sign of a new world, which, like all worlds, contains attributes of greatness. (Bachelard 1994:155)

The books I created are a material response to this interaction in which the microscopic work reveals itself as an unexplained disturbance, an apparition or a myth, appearing at the edge of the everyday. They present a paradox of scale and metaphor within the familiar narrative of site—one within the world and one of the world. Bachelard discusses a botanist's journey from the objective to the imaginative subjective in his explanations of botanical specimens:

> We are inclined to think that the narrator would have been more cautious had he had to describe an object with ordinary dimensions. But he *entered* into a miniature world and right away images began to abound, then grow, then escape. Large issues from small, not the logical law of a dialectics of contraries, but thanks to liberation from all obligations of dimensions, a liberation that is a special characteristic of the activity of imagination.
> (Bachelard 1994:154)

The technological reduction of visual spatial boundaries through the microscope positioned me in a paradoxical space: where I and the microscopic world both share familiar everyday human surroundings and yet both are also alienated and separate. I was initially drawn to the relational narrative potential of scientific nomenclature and its associations with the various structures of aquatic fungal spores. I became interested by the subjective aesthetics observed directly in these microscopic organisms and again in the sometimes poetic taxonomic categorisation assigned by the determining scientist.

4.2.2 Laboratory Observations: Poetics of Naming

In my first book, *Aquabatics*, (Plate 5) I explored the metaphors in taxonomic nomenclature using the Latin (and sometimes Greek) language. The binomial system of naming pioneered by Carl Linnaeus in the 18th century is still a scientific standard, even though DNA sequencing has challenged and changed the landscape of taxonomy. This naming system utilises information about the origins of the organism i.e. the structure; the location of the original discovery; or the name of a person with an interest in the organism or its discovery.

The language of taxonomy assists by description to impose order on the process of investigation in these microscopic environments. This language has a kind of poetry and metaphor in its construction, which I found important to investigate in the development of my early work *Aquabatics*. Both fungi represented in *Aquabatics* have generic names that relate to their form: firstly, *Clavariopsis* relates to its club shape and obconical structure but it is the specific name *aquatica* that is a key reference to water within the production for this book; secondly, *Lunulospora cymbiformis*, refers to its new moon/ boat-shaped spores. In both cases I identified with the expressive rhythmical, lyrical or musical characteristic of the names when spoken aloud. I associated this rhythm to the way the spores floated about in the aqueous suspension on the microscope stage and in the dynamic shapes stilled by the photographic documentation as observed in Plate 6 below.

These non-verbal sensations experienced with the naming evoked a visual interpretation of the original anthropomorphic references in the taxonomical name. No longer an objective observer of the microscopic world, I was an audience of one participant witnessing an aqueous acrobatic performance in the theatre of the laboratory. As with Bachelard's botanist (1994), for me the microscope provides a time and space not just for the visual and analytical but also for poetic, interpretive thinking.

Plate 6. Examples of microscopic images of aquatic fungi taken during the project to illustrate the 'performance' observed through the microscope
Digital photomontage
Digital file, variable dimensions

4.2.3 Narrative Construction: Performing fungi? or, Beyond Objectivity

In the process of microscope 'walking' I noted that the 'field of view' was a circle, thus had an association with the performance space of a theatre or circus. The spotlight follows the performers (aquatic fungi) of the show as they move across the stage[1]. The performance holds me in suspense as I turn the controls of the stage mechanism. As

1 It is interesting to note that the moving part of a microscope, where the specimen slides are positioned, is called the 'stage'.

the magnification is increased to view the fungi more closely I am unable see the entire organism: only a slice is able to be viewed in sharp focus. So the eye, mediated by the machine, follows along the structure of the organism in a kind of visual dance across the stage. Each slice of focus reveals a little more of the story, but you do not see where you are being taken and where you have been. Only through a composite drawing direct from the memory of the visual experience or through the montage of a series of documentary photographs can a detailed visual concept of the entire organism be formed.

In exploring possible human connections with this unreachable non-human place, I was drawn to the performance of these microscopic acrobats as they seemingly moved in resonance with their taxonomic identities. The book concept grew from this anthropomorphic interpretation. The flow of the fungi across the open concertina created a third dimension to the performance. The fungal spores tumbled and turned across the field of view until they broke free into my imagination, becoming identities with limitless imaginative possibilities.

4.2.4 Exhibition and Reflection

Aquabatics was accepted into the *Science meets Art* exhibition at Queensland State Parliament House Brisbane, 28 September - 8 October 2004. (I have included documentation on the exhibition in Appendix D.) This event was curated by the Office of the Chief Scientist and Arts Queensland and coincided with the *Science in Parliament* conference in 2004. The exhibitors included many artists working in science including the work of prominent contemporary Brisbane artist Glen Henderson. The nature of much of the work was reminiscent of a 1995 Smithsonian exhibition, *Science and the Artist's Book*[2], where ideas of science were creatively interpreted or investigated by artists. These works were embedded in a scientific 'reality' or context; and others, like *Aquabatics*, attributed human characteristics to non-human entities. *Aquabatics* was also purchased for the artists' book collection of The State Library Queensland. At this pivotal stage of my project this exhibition offered an important reflective space. Was this the context in which I wanted the research to progress?

As the research proceeded in the laboratory, it was becoming apparent that both I and the microscopic aquatic environment were moving further away from the river.

2 The Smithsonian exhibition can be viewed at the following website: http://www.sil.si.edu/Exhibitions/Science-and-the-Artists-Book/contents.htm

Although important to the exploration, *Aquabatics* did not acknowledge the non-human place of the river. I had made human to non-human connections but only in relation to assigning human values and gathering scientific knowledge. These life forms were fungi, not anthropomorphised acrobats! Although stylised and poetic, had I trivialised the role these fungi play in the environment? Like Bachelard and his botanist, I had succumbed to the 'cleverness of nature's imagination'. I needed to reconnect with the river and the non-human environment.

From the magical depths of the microscope and the ordered cloister of the laboratory, the Bunyip question arose to remind me of the aims of my project. My next step was to reconnect with the non-human in a freshwater place beyond the laboratory, where the Bunyip could be found. I discovered a historical reference to a place in South Australia, Koolunga, as the self-proclaimed *Home of the Bunyip*. Could this place reveal the mythical creature? Would I find in Koolunga a narrative space where the human and the freshwater non-human to co-exist?

4.3 *Koolunga Bunyip*

Plate 7. ***Koolunga Bunyip***, 2007
Book placed on open arylic case: Cover (above), Open detail (below)
Concertina book, Epson Ultrachrome pigment inks on Epson Radiant White Watercolour paper
Dimensions: 22 cm.x 6.74 m. folded to 22 x 26 cm. in acrylic case 24 x 29 x 3 cm
Edition of 3 copies
Collection: Australian Library of Art, State Library of Queensland (ref. ALAAB COO)
National Library of Australia, (Bib ID 5786248)
Artspace Mackay, Artists' book collection
Photographic documentation of the book by Doug Spowart

4.3.1 'Contact Zone' Observations: Beyond the Laboratory

In 2005 as part of a planned field trip to central Australia, I embarked on a side trip to investigate an 1883 colonial settler account of a Bunyip encounter in Koolunga. In the late 1800s, there were anecdotal sightings and reports of uncanny and unexplained events from the waterhole adjacent to this small colonial South Australian village.

I discovered on a web page devoted to the Australian Bunyip (Harrison n.d.) the story of this alleged encounter. The tale references an 1883 report in the *Northern Argus*[1]. It begins in January 1883, with the report that a Bunyip with two young were sighted in the vicinity of a waterhole near Koolunga, South Australia. The creatures' forms were related to the size of a sheep, with scales rather than wool; and it was 'usually seen on a moonlit night'. A Koolunga local recounts the following tale:

1 Previously cited c 2005 on this website as the 1883 *Adelaide Advertiser*. While this story is an unsubstantiated report, it has a resonance with many stories of Bunyip sightings in the 1800s in Australia.

> After the sightings of the bunyip with several young they developed a plan to dynamite the river . . . Unfortunately, after some twenty odd charges nothing come to the surface so the theory was the bunyip was hiding in one of the caves or holes deep in the banks of the river. (Harrison n.d.)

The story revealed that the community, driven by human fear of the unknown, typically responded with excessive force. The townspeople, believing that the Bunyip posed a threat to their lives, dynamited the small pool to kill the beast. In the dark water of the pool lurked all kinds of malevolent monsters with Bunyip characteristics. The colonial settlers may have dynamited the pond—but did they kill the fear? Interestingly there was no body discovered in this alleged report. Did the Bunyip escape? Does it now co-exist with the human community?

Even though I had left the microscope behind[2], I continued the visual surveillance with the digital SLR camera. As I worked on-site to photographically document aspects and collect 'sense-data'[3] of the *Bunyip Park* including its riverbank and the waterhole, I found unexplained objects and places where habitation could occur. While I walked the track to the pond's edges I found myself suddenly alone in the landscape — there was nobody around, not even a birdcall could be heard. There was a silent stillness, except for the occasional breeze rippling across the surface of the water and pushing past the leaves of a nearby peppercorn tree. I felt the uncanny feeling of an unseen presence—was it real or was it my imagination?

4.3.2 Narrative Construction

Koolunga Bunyip (Plate 7) was created in the studio when I returned home, from my memories and collected photo-documents of place. When I recalled my time there, I remembered the unsettling moments alone and the uncanny undertones experienced in this town. The smallness of the aquatic fungi was now replaced by the immensity of the Bunyip. The colonial story of the Koolunga Bunyip was imbued with a sense of fear of the unknown.

The first attempt to create this narrative, *The Hunted and the Haunted* (2005), was a hand-made hardcover codex with a spiral bind, Plate 8.

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2 While I was away in the field, something or someone had removed all of the samples that I had been saving for further study on my return. My scientific colleagues were mystified about this disappearance. It seemed timely that I had resigned to move on from the laboratory work except for the scientific imaging work required to be carried out on the material collected from each of the three sites. Perhaps there was a Bunyip in the laboratory. . .

3 Referencing Robert Smithson's quote in Chapter 3.

Plate 8. ***The Hunted and the Haunted****, 2006*
Closed and open details
Codex, Epson Ultrachrome pigment inks on Epson archival matte, tracing paper, commercial wire binding. Cover, handmade by Doug Spowart with Canson and Fabriano paper
Dimensions: 31.5 x 32.0 x 2.0 cm
Edition: Unique state
Collection of the artist
Photographic documentation of the book by Doug Spowart

The images were interleaved with tracing paper on which the text and graphic elements were printed. The text did not sit comfortably as an overlay on top of the images. My intent for the following book, *Koolunga Bunyip*, was to embed the text and graphics as underlying concepts to the images falling into and emanating from the valley of the concertina pages. These *valleys* are dark unexplored spaces of unknown content and of no specific time or place. The words take the form of whispers surrounding the images of place, as if spoken on the breeze or arising from the ripples on the surface of the pond.

Plate 9. Two open pages of ***Koolunga Bunyip***

The historical account and the memory of walking and collecting 'sense-data' in the contact zone at the park in Koolunga guided the development of the book. In this work there is no scientific-based visualisation to reveal what lay deep within the dark water of fear. As a response to the abstraction of paranoia and fear, images are layered and imbued with areas of focus surfacing from the unsharpness of the unknown or unclear. The textual and graphic elements narrate and present the presence of the chimera outside the image. Beyond a time and a place, these mythical waters flow throughout the narrative construction of this book.

4.3.3 Exhibition and Reflection

Koolunga Bunyip was first shown in the *Lessons in History* exhibition at Grahame Galleries in 2007. This edition (of three copies) now resides in the National Library of Australia, The State Library of Queensland and Artspace Mackay's artists' book collections. The book, while acknowledged as a singular narrative from a historical context of fresh water in Australia and an important achievement in the development of my work, still had to be considered within the larger narrative flow of this research. How did this work inform the development of narratives within the interstitial space of science and art?

I now questioned whether this also, as with the scientific work, would take my project far from the actuality of the river. The book *Koolunga Bunyip* presented a space that seemed to be so far from the laboratory that I had lost sight of aquatic fungi. How could I bring these microscopic aquatic forms with me into the metaphorical river that I envision for my narratives? To articulate my visual dialogue in this difficult space, I found Bachelard's deliberation on the imagination in *house and universe* an important revelation where he presents:

> The image is created through the co-operation between real and unreal, with the help of the functions of the real and the unreal. To use the implements of dialectical logic for studying, not this alternative, but this fusion, of opposites, would be quite useless, for they would produce the anatomy of a living thing. But if a house is a living value, it must integrate an element of unreality. All values must remain vulnerable, and those that do not are dead.
> (Bachelard 1994:59)

In this mutable and fragile 'fusion' I found a space for the aquatic fungi and the Bunyip to interact in my water project; but also refers to the confluence and the turbidity of the interdisciplinary space I inhabit. Through the metaphor of the house, Bachelard discusses how the consciousness can transform the nature of ordinary everyday things

where: ‘consciousness rejuvenates everything, giving a quality of beginning to the most everyday actions’ (Bachelard 1994:67).

As noted in the introduction, I began this study with the intent of visually responding to freshwater issues while also connecting with my science background. My objective for the work was to extend the potential of science to explore the broader human relationship with water through visual narratives. As I delved deeper into the project, the contemporary social science and human geography engagement with the non-human was bubbling to the surface in the Australian post-colonial environmental condition. Professor Noel Hynes’s reference to the Bunyip had opened a pathway for my project to connect with the extended potential in interdisciplinary narrative. Perhaps the Bunyip had crossed boundaries of science and myth, like water as it flows from place to place, non-human to human.

The two books, *Aquabatics* and *Koolunga Bunyip*, evoked more questions and problems for my study to resolve. From this work I was now contemplating how to extend the scientific work to include the investigation of water in a cultural setting and bring this work together in a single narrative of water. At this time Julian Bowron was the Director of the Mildura Arts Centre and offered me an opportunity to connect my research in a site-specific work referencing the adjacent historic house *Rio Vista*, for *Palimpsest* in 2006. Rather like the opportunity to present a paper for publishing, this recognition of my project enabled the formation of site-specific visual books to be created and exhibited. This offer was a pivotal moment in the development of my project: the work done at *Rio Vista* brought the microscopic view into the context of the colonial history of water.

I seek now ‘points of connectivity’ and ‘exchange pathways of water’ (Rose 2007:9) as it flows through the *connective tissues* between science and culture. In building these narratives, I relocated the context of the work from the laboratory to places of fresh water. Here the science and art, methodology and context are interwoven or montaged through the immersion and work in a site and place. As with Giblett (2007), I wanted to decolonise the utilitarian status of water and explore the place of the non-human as it occupies and colonises the same shared water.

The work I had produced for my project also found its ‘contact zones’ in the three sites of fresh water: *Rio Vista* Mildura Victoria; *Bundanon* near Nowra New South Wales;

and *Myall Park Botanic Garden* near Glenmorgan, Central Southern Queensland. The work involved bringing together technology-mediated images from the non-human invisible microscopic environment within human spaces of historical and cultural colonial narratives.

In this work I left behind the contentious debates and sticky questions on the objectivity of scientific illustration and interdisciplinary work as I found in each of the 'contact zones' a fertile space created through the application of the montage methodology. The narratives of fresh water evolved through the 'co-operation' of the 'real' and the 'unreal' (Bachelard 1994:xxxv) that directed the project's flow. Perhaps the Bunyip's influence was always there—just below the surface—pricking and prodding the imagination into new streams of thought.

4.4 *Rio Vista: Aqua Vista*, Mildura, Victoria at the Murray River

Plate 10 **Doug Spowart** (1953-), 2006
Rio Vista, Mildura Arts Centre, Victoria
Digital file variable dimensions

Plate 11 ***Rio Vista: Aqua Vista****,* 2006
Edition: 2 copies
Collections:
Mildura Arts Centre
National Library of Australia, Bib ID 4278405

a. Victoria Cooper (1957-)
and Doug Spowart (1953-)
The Apparition
Single Sheets, 18 pages
Epson Pigment inks on archival paper
Dimensions: 32.0 x 32.0 x 1.5 cm

b. Victoria Cooper (1957-)
Part A: The Excavation (top)
Flip book, 49 pages
Dimensions: 21.0 x 9.0 x 1.0 cm
Part B: The Restoration (below)
Concertina bind codex,16 pages
Dimensions: 21.0 x 29.7 x 1.5 cm

Part A and Part B:
Pigment inks on archival paper

c. Victoria Cooper (1957-)
The Exploration
Concertina book
Pigment inks on watercolour paper
Dimensions: 20.0 x 25.0 x 2 cm
unfolding to 320 cm

All acrylic clamshell cases, 33.0 x 33.0 x 2 cm
were constructed by Doug Spowart

4.4.1 *Rio Vista: Aqua Vista*; Rehabilitation and Restoration

As I began my project with the notion of the flow of water from my region across the eastern side of Australia to the sea in South Australia, now this borderless flow was to be embedded within my study.

Based on my previous experience with digital montage and the construction of the visual narrative[1], I planned my site work. As discussed, the early work in the microscope explored the metaphors of form and function of the studied organisms' adaptations to a mobile aquatic environment. In this work I am utilising this knowledge of aquatic fungi to assist with the decolonising of *Rio Vista* and the renewal of the natural within the narratives created in this place. These forms were to be set loose to invade a new expanded environment, where inside the house *Rio Vista*, scale becomes unquantifiable and irreducible by science. This opportunity enabled the development of a deeper understanding of the project through the colonial/post-colonial issues that arose from the interdisciplinary science/art practice and research.

4.4.2 'Contact Zone' 1: Observations

I began the work in the winter of 2006. *Rio Vista* (Plate 10) was dark and cold; the house was furnished and its interiors fitted to create the impression of the 19th century Chaffey household. I spent time walking from room to room, looking at details. I noted that the hallway chair had a crease in the leather as if someone had just been seated and left. As the portrait of WB Chaffey was situated on the wall above the chair, this observation suggested some other worldly presence—perhaps that of Chaffey himself? Most of the rooms were dim with just a weak glow of natural light filtering through the lace curtains and the warm glow of an incandescent bulb falling onto the rich dark red brown of the wooden furniture and fittings.

The wallpaper (in the process of restoration) was heavily detailed with organic leaf and flower shapes; some of the paper was inlaid with gold leaf. There were stained glass windows that had motifs of river life, both animal and vegetative, (Plate 12). These windows were not for looking out of—but to look at. The aquatic life in these metaphorical 'aquariums' seemingly swam and floated through the time, space

1 My digital scroll works and a Graduate Diploma thesis on the non-textual visual narrative (Monash University, 2002). I collected an image resource over many visits to the site for the montaged visual narratives in this project.

and fluidity[2] of the glass. Had the river been transmogrified into the structure, *Rio Vista*? All around the house were the details and surfaces that offered other clues.

Plate 12. Detail of stained glass window, *Rio Vista*

Plate 13. Details of wallpaper in *Rio Vista*

2 Glass has in the past been argued to be in a form that is fluid-like, as is it does not have the same state changes that fluids undergo through solidification or crystallisation. Although it behaves as a solid, it still has properties that are not quite solid but not fluid.

I began the work by photographing different spaces and details of the rooms and the walls for reference and future working into the books. I focused on edges of the wallpaper where the layers of flat painted plaster were overlying the richly patterned and textured papers (Plate 13). Connections were emerging from the walls, the dark corners and up the unused stairwells. The excavation exposed a history of the river flowing through the walls. I thought of the fungi, recycling and transforming life from death, replenishing the river. In this reverie, I found my story of the ancient aquatic environment revealed in the microscope, begin to take on a distinct shape within and influenced by the house.

While working on the projection installation in the child's bedroom, the gallery director Julian Bowron came to visit and upon seeing the projection, reported that the house was apparently haunted. The apparition was a ghost of a Chaffey child who had drowned in the fountain while at the early age of nine. Irrigated water had built this house —irrigated water lured this child to its death. Again the life, death and renewal role of fungi had a resonance in this story of water. It is stories and remembrances like these that are the underpinning 'knowledge' and inspiration for the project. In my earlier writing I discussed my determination to remain respectful to the value of scientific knowledge while also relocating it from its familiar central meta-narrative role to a more inclusive knowledge structure within the water narrative.

4.4.3 The Narrative Construction

Throughout my work, I utilise digital photography and image manipulation to construct alternative perceptions of scale and place. Both electron microscope images and light microscope images are utilised in the projections and montages. These images and montages evoke questions and challenges to the status of the photographic image as reliable in the remembrance and evidence of place, which I discuss in the methodological issues of the project.

The patterning in the wallpaper and gold leaf work have a resonance with the living forms I had observed under the microscope and subsequently photographed. These relational observations, hybridising the spaces of science and culture, supported my intent to impose or montage a conceptual layer appearing from the beneath the textured papers. In the juxtapositions and blended images, comparisons and questions can be presented for the viewer's consideration. In this space, behind

the walls an unseen aquatic environment was being created, consumed and destroyed at the microscopic level. Here history exists at a different level and independent of human experience. Perhaps, metaphorically, with this excavation a deeper and more encompassing history has been laid open for inclusion in the restoration of this house. For me, the fungi set out to work on the dead and the necrotic to recycle, renew and refresh the waters of history.

As discussed in Chapter Two, my work crosses and weaves and flows into the cracks of place that is science as culture. In the structure of *Rio Vista* I found that water's potential alternative narrative was becoming both clearer and more elusive at the same time. But in the tension of this duality new things emerged out of the visual and imaginative parley, an activity that necessarily is both objective and subjective. The colonial space of *Rio Vista* was to be renovated and resettled by aquatic fungi to metaphorically reclaim the natural space.

I inhabit the house with these new dreams where unchanging colonial dreams are held captive, frozen in the structure of the building and encrusted by memory. The fungi have broken from the intimate space we shared in the microscope to the scaleless space of my imagination. As in Bachelard's *House and Universe*, *Rio Vista* has lost its geometry and boundaries; where within and without it had seemingly held dominion over the natural: control and order over chaos. The idea of the house has changed, here 'inhabited space transcends geometrical space' (Bachelard 1994:47) and in this dream space it can be set free from the exclusive confines of colonial memory and scientific fact to more fluid 'place'. The dream house, no longer walled in by its remembered values is alive with possibilities as here 'all values must remain vulnerable, and those that do not are dead' (Bachelard 1994:59).

The renovation work, the cracks and the torn surfaces in *Rio Vista* provided the references for the proposal of a post-colonial renovation. The anecdotes and oral history of settler occupation of Mildura, and the introduction of irrigation, reverberated in the spaces of *Rio Vista* as a ghostly presence of the past. As the renovation was taking place it was my task to reveal other more ancient and non-human histories. The statement made by Emily Potter, that 'before we can change the future of water in this country, we need to return to the past' (Potter et al. 2007:4), as referenced in Chapter Two, has become a salient theme reverberating through my *Rio Vista* work.

Thus the three books, *The Apparition*; *The Excavation (Part A)* and *The Restoration (Part B)*; and *The Exploration*, (Plate 11) emerged from the walls, the cracks and dark corridors, tearing the fibres of history to claim new territories. The acrylic boxes that encase *Rio Vista: Aqua Vista* (Plate 14) are austere, rather like the specimen containers of a museum or scientific display aquarium. These boxes give no clues to the three different objects within and the curious reader opens the cases at their peril to the unknown within.

Plate 14. Acrylic boxes for ***Rio Vista: Aqua Vista*** Books

The first book, *The Apparition,* (Plate 15) is in the form of loose sheets which could be shuffled to re-orient (and perhaps disorient) the reader's pathway through the narrative and the house.

Plate 15. ***The Apparition*** in acryllic box for display

I then utilise the flow of a flipbook to animate *The Excavation* (Plates 16 & 17) and then a concertina bind to slow the flip animation for *The Restoration* (Plates 16 & 18).

Plate 16. ***The Excavation*** and ***The Restoration*** on acrylic boxes for installation

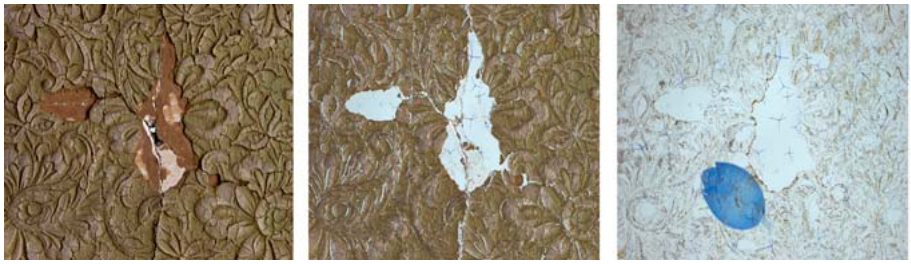

Plate 17. Detail of pages from ***The Excavation*** flip book

Plate 18. Detail of a page from ***The Restoration*** book

In the book *The Exploration*, (Plate 19) I again take advantage of the concertina book's three-dimensional space where the reader could *clamber* their way along the *pathways* and over the *hills* and *valleys* of the story.

Plate 19. ***The Exploration***, concertina installation with a detail of the image below

The construction of the narrative and books was completed in the studio. The next step was to contextualise the reading within the 'contact zone' of *Rio Vista.* I then prepared this work to be installed in the Chaffey house at the Mildura Arts Centre for *Palimpsest* in 2006.

4.4.4 Installation and Reflection

Plate 20. ***Rio Vista: Aqua Vista***, 2006 installation for *Palimpsest* 2006 in the *Rio Vista* part-renovated kitchen

I installed the books in the partially renovated kitchen of *Rio Vista*, (Plate 20). This room for me connected the books to the original building where, in particular, the oven and the flue presented a portal to the inner workings of the old building. The partial renovations

had pared back the internal features of the room where, like a blank page, the space now offered the opportunity for the reader's contemplation. I related to this room's shape-shifting identity—neither kitchen nor gallery—it was a space of change, which fitted within the concept of the narratives in *Aqua Vista*.

I had begun the exploration to reclaim the freshwater narrative back for the non-human. Although I could have stopped here, the Bunyip was still pushing at the edges of my imagination. How does mythology operate within an Australian concept of fresh water? Although the blue stained 'performing' fungi from the light photomicrography were integral in these narrative constructions, the black and white electron microscope images were emerging as strongly evocative of myth and apparitions that I sought in future investigations. It was these images that were incorporated in the montages (both digital and projected) to inhabit the 'contact zones' yet to be explored in the rest of the project.

Would this work be enough to satisfy the aims for the research? Was there still much to learn from this montage of science, culture and myth? To visually research the possibilities for the inclusion of myth in this project I looked for a place where mythology had informed the artist in a site of fresh water. My next 'contact zone' was to be Arthur Boyd's *Bundanon*.

4.5 *Bundanon*, near Nowra, New South Wales

Plate 21. *Bundanon* property, 2007
Digital file, variable dimensions

Plate 22. *Bundanon* books, 2007
Edition: 2 copies
Collection: National Library of Australia, in ***Site Bundanon,*** Bib ID 4605422
Photographic documentation of the books by Doug Spowart and Victoria Cooper

a. ***Images of Metaphor***
Hand stitched pamphlet, 14 pages
Epson Pigment inks on archival paper
Cover, Fabrino paper
Dimensions: 21.0 x 15.0 x 1.0 cm

b. ***The House***
Codex (pamphlet stitch binding), 20 pages
Epson Pigment inks on 100% cotton inkjet paper
Dimensions: 33.2 x 46.0 x 1.0 cm

c. ***The River***
Codex (pamphlet stitch binding), 18 pages
Epson Pigment inks on 100% cotton inkjet paper
Dimensions: 33.2 x 46.0 x 1.0 cm

I applied for and was successful in gaining an Artist-in Residency[3] at *Bundanon*, (Plate 21) in 2007 and again in 2009, to install and document the finished work. I had researched Arthur Boyd and his work at the Shoalhaven River, and the landscape. I anticipated that this residency would enrich my project[4] and assist with the investigation of impact and potential of mythology on the narrative outcomes. Again I immersed myself in this place: its colonial history; its natural history; and studied the philosophy and visual concepts of mythology and classical themes of Arthur Boyd.

4.5.1 'Contact Zone' 2: Observations 2007

After a visit to the then owner of *Bundanon*, Sydney art dealer Frank McDonald, Arthur and Yvonne Boyd were captivated by the place and as soon as an opportunity to purchase land in the region in 1973 arose, they 'wasted no time in seizing the chance and bought *Riversdale*'[5] (McKenzie 2000:169). In 1979, The Boyds then bought *Bundanon*. With the purchase of these two estates they had now a small but significant part of the Shoalhaven River. To them this land represented how the landscape could be managed with sensitivity towards the natural environment.

> The small farming area in the middle is surrounded by virgin bush. The settlers did their best with the knowledge they had and it's turned out, I think, to be a marvellous example of a kind of colonialism, the ideal that the English had . . . What appealed to me about this combination is that it fulfilled a desire to transport an English vision. It also preserved the original concept of a wild Australia or an Australia that was untamed. (McKenzie 2000:170)

Boyd had issues with the apparent lack of planning in the progress of industry and urbanisation and the impact this had on the natural environment. As expressed in an interview with Janet McKenzie[6] in 1993 he spoke of his fear:

> I think Australians have been apt to believe that because this was such a vast land, they couldn't make a mark on it. But a mark has been made and if it continues at this rate, it will soon be too late . . . (McKenzie 2000:170)

Bundanon and the surrounding properties then became a sanctuary, nurtured by

3 See Appendix E

4 At this time I also undertook a joint residency with my partner to extend both our individual and collaborative arts practice.

5 *Riversdale* is a neighboring property, which is part of the *Bundanon* Trust Estate donated to the Australian people by the Boyds.

6 In the book, *Arthur Boyd*, *Art and Life*, Janet McKenzie has inserted texts that come directly from interviews with Boyd and Porter in the early 1990s.

the values that Boyd held deep, for the environment and life within it. As writer and researcher Margaret Pont proposes:

> Boyd, like St Francis, had an artistic vision which went hand in hand with his deeply personal experience of life. He believed in the redemptive possibilities of the creative spirit and also in nurturing these in a protected natural environment. Boyd's gesture of donating the property of Bundanon and Riversdale, a last wilderness, to the Australian people and of building studios and classrooms to cultivate artistic enterprises is ultimately a Franciscan one. Bundanon offers a sacred wilderness in which to contemplate. It also gives one a feeling of expanded possibilities. (Pont 2004:132)

Boyd's empathy, respect for and growing understanding of this rugged Shoalhaven landscape and its Indigenous people were strong influences in the contact I had with *Bundanon*. The major component of my time in the residency was to investigate the methodology and ideas behind his references to classical mythology in the Australian landscape. Boyd wove these classical stories within the Australian landscape to contextualise his environmental concerns and reference the destruction caused by war. Boyd's integration of these ancient stories into his contemporary experience of the natural cycles and rhythms of the river and the surrounding environment were provocative and influential.

Over the residency, I became increasingly aware of the depth of Boyd's environmental concerns and intellectual discourse, in which I found a strong resonance. In the *Narcissus* works, Boyd and collaborator Peter Porter[7] tackled the issue of self-absorption and its connections with beauty, love and desire. This work was created in the early stages of Boyd's new life in *Riversdale* and *Bundanon*. Porter had visited him at *Riversdale* in 1975, where he was led 'to a new appreciation of Australia, which Boyd was already rediscovering for himself' (McKenzie 2000:152). They collaboratively developed their interpretation on the theme of Narcissus over the next nine years.

> It is the self-absorption of Narcissus that interests me. He was more interesting to me than Ajax or Hector or Mars. Conceit is essentially non-productive in all aspects. You only perpetuate your own being.
> In this painting Narcissus only has eyes for the water. I used the river instead of a pond because although the river can be vicious, it is often very, very still and when it is you can see reflections very clearly. Narcissus, I was trying to say, was so non-productive that he doesn't even notice himself – the foetal baby beside him. (McGrath 1982:69)

The combination of the European and the Australian contexts stimulated much debate. There was some criticism towards Boyd and Porter, of the validity in referencing

7 Peter Porter (1929 - 2010) was an Australian poet who emigrated to England in the 1950s. He has made a significant contribution to poetry and literature.

classical mythology in the Australian context. Perhaps it could also be argued that as they were well-educated in the classics and literature, Boyd and Porter drew upon the knowledge that they felt best applied to and expressed the universal issues embodied in their work.

I also observed how much of this visual work operated in a similar mode to the photomontage. As discussed earlier in the exegesis, the photomontage is a flexible medium where complex intellectual ideas can be visually posed, contrasted and contemplated. It seemed that Boyd had montaged in his art not only the provocative contrasts of the subject matter but also the challenges and questions arising from and through his visual and intellectual thinking processes.

4.5.2 The Microscopic Shoalhaven River

As in the Contact Zone Methodology outline, I visited *Bundanon* to collect samples from the Shoalhaven River (Plates 23 & 24) near the property, around six weeks before the residency.

Plate 23. Doug Spowart (1953-)
Victoria collecting leaf litter from the Shoalhaven River at *Bundanon*
Digital file, variable dimensions

Plate 24. Doug Spowart (1953-)
Victoria collecting foam samples from the Shoalhaven River at *Bundanon*
Digital file, variable dimensions

During this time, I cultured and imaged via light and electron microscopes the microscopic forms from the river samples. During the time spent working with the electron microscope (Plate 25), I made observations that informed the collection of the image resource.

Plate 25. Doug Spowart (1953-)
Victoria working at the Scanning Electron Microscope, 2007
at Australian National University
Digital file, variable dimensions

The stories of Arthur Boyd, his work and life, along with the colonial history of *Bundanon*, inhabited my thoughts as I traversed this non-human landscape of water with the aid of the scanning electron microscope. As with *The Exploration* from *Rio Vista*, I made observations relating the microscopic forms to familiar human seen places, structures and organisms.

The book *Images of Metaphor* both records and explores these relational observations and processes of the laboratory and microscope work, (Plate 26). The images created in the electron microscope were identified, and visual references of particular organisms and structures were highlighted for further exploration on-site. Rather than a scientific document of the process, it is a record of the narrative potential for each of the selected forms. The story of their abduction, investigation and subsequent transformation herald the investigation of the inclusion of the science images within the 'contact zone' of *Bundanon* and the Shoalhaven River.

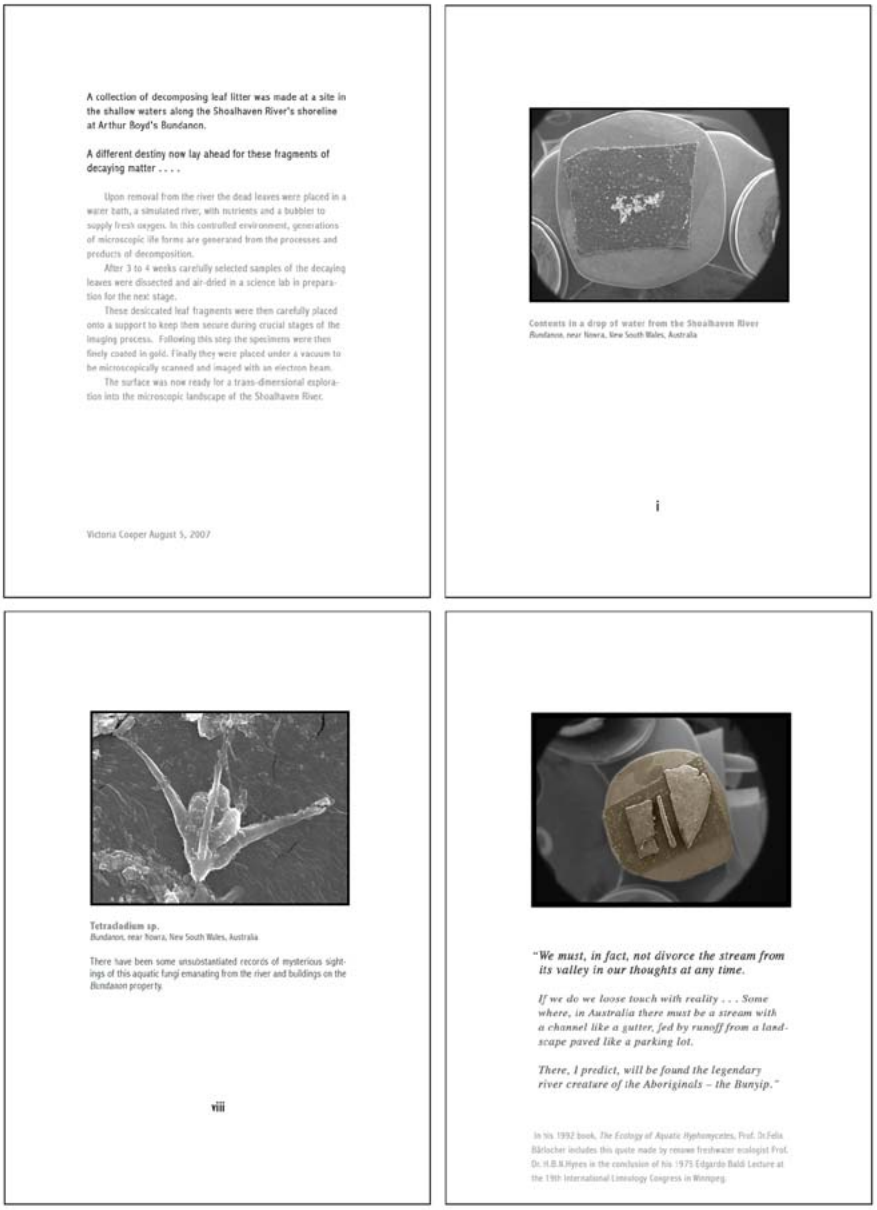

Plate 26. ***Images of Metaphor***, detail of 4 pages

Although in *Rio Vista* I identified associations between aspects of the house and the microscopic aquatic life forms as part of the developing methodology during the 'walking' on site, would these apply to *Bundanon*? As I researched the history and story of *Bundanon,* I soon discovered that I would need to be responsive to a different story of fresh water. My work in *Bundanon* was to locate the aquatic fungi in a different place that was inclusive of not only the science and social narratives as found in *Rio Vista* but also the mythology.

4.5.3 The Shoalhaven River and *Bundanon*

On-site at *Bundanon*, I started again by walking through the buildings, across the fields down to and along the river, along the tracks of the bush land in the hills overlooking the river. My first observation of *Bundanon* was the strong contrast between the 1860's property and the adjacent natural environment. The agricultural landscape surrounding the house seemed to create a familiar, 'safe' and organised pastoral space between the house and the unfamiliar, 'hostile' and chaotic Australian bush. Through a history of floods and fires these structures were maintained as a residence and productive agricultural land. During the residency, I too experienced the floods[8] and the storms, along with the moments of wintery sunshine. While engaged in this activity, the forays into the microscopic waterscapes were a constant companion in my thoughts. Intuition, history and the narratives inherent in the site were to guide much of the direction of this interaction.

I collected memories and 'sense-data'[9] along with the photographic 'quotations'[10] that were informed by the stories of Arthur Boyd and the early settlers that inhabited this place. I noted also that Boyd painted in the landscape initially from life to enable a reference, or to create a visual memory of the reality of the Shoalhaven landscape for his studio work. As he discussed in Sandra McGrath's *The Artist and the River*:

> Doing a landscape out in the open is actually not trying to make a contribution, not even with a view of making a work of art – but, rather, it is to make sure the memory doesn't get too confused when one goes to use the landscape in an imaginative or deliberately inventive or fantasy manner. Going out and doing the landscape with the idea of creating an unusual work of art usually means you lose sight of reality. (Mc Grath 1982:142)

The documentary photographs and 'sense-data' became the foundation for the narrative montages created back in the studio at *Bundanon* and completed over the next four months in Toowoomba. The observations of the topography and the topology of *Bundanon* and the Shoalhaven were crucial to the development of the montage narratives and their connection with my project. Although short (five weeks) I was totally immersed in this place and its rhythms. The narrative was developed through these

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8 For the four weeks of our residency I went for long walks into the bush, across the paddocks, down to the river and when the floods receded I crossed to one of the main islands. The Shoalhaven River rose in flood very quickly but was not a major threat to human habitation.

9 After Robert Smithson's quote on site selection studies the epigraph for Chapter Three.

10 After John Berger's discussion on documentary photography in Chapter Three.

observations, experiences and the research of the colonial history. The montages are the visualisations of this thinking process.

4.5.4 The House Observations

As with *Rio Vista*, I set out to locate in *Bundanon* spaces that showed evidence of mythical water for the aquatic fungi to inhabit. Inside the house at *Bundanon*, I felt close to the presence of Boyd through the art that could be found everywhere: on the walls, shelves and tabletops. In Boyd's studio I sensed and was surrounded by the spirit of the artist and his legacy. The paintings around the walls, his favoured chair, all seemed to echo across the room to the bench thick with paint. There was a long window which allowed a view of a tree outside as if it were a portrait hanging within the space of the room. The last painting he had made, the many finished works around the room, the thick layers of paint that were left as if Boyd would walk in at any moment ready to work—all of this added to the spiritual feel of the artist's presence.

While in the homestead and garden I observed and sensed that these spaces were kept vital with a living history. The flow of creative spirit continues with the injection of each new artist in residence. Would I be able to find a space for the recycling function of the aquatic fungi in this place that is in a constant state of renewal and creative energy? Did the myths and narratives in the homestead have a resonance with this microscopic aquatic environment?

As I worked to locate the fungi in the *Bundanon* residence they flew through the house, around the walls, up the stairs and into the plumbing like ghostly apparitions (Plate 27). Through this metaphorical search, I sought clarity through montage-thinking; working together the science, myth and art issues of my project. In a commentary by Julian Bowron where he discusses the two *Bundanon* books, he observed that:

> *The House* in which, once again, images of fungi were projected onto the interiors of an historic building, and *The River*, in which spectral forms are transposed onto classically beautiful and atmospheric river images, conjuring an ethereal Arthurian mythology. These books are powerfully evocative, but in *The House*, particularly, an apparent romantic reverence for the place and the artist sits somewhat uncomfortably with more subtle and layered meanings related to water. (Bowron 2009:15)

Through these narratives Bowron identified with the issues of my investigation to situate the aquatic fungi and their associations, mythical and functional, in freshwater systems within the context of *Bundanon* and the Shoalhaven River. *The House* narrative

visualised the montage-thinking of science and myth as a strange and unstable place within the house, where ordinary things became mythical as if transformed by an unexplainable quantum-like physical force. As Bowron recognises, my exploration was inspired and informed by Boyd's deeply thoughtful and intellectual visual work within the landscape. In the creative and reflective place and space of *Bundanon*, my narrative project and my captured aquatic microscopic environment were transformed by the connection with the mythological river. Through this thinking, the potential for the aquatic fungi surfaced and was then directed to the mythical and physical Shoalhaven River as the place for transformation.

Plate 27. Detail of four images from ***The House***

4.5.5 The River Observations

I explored the Boyd reference to Narcissus as a metaphor for the human characteristic of self-absorption. I considered the new perspectives and alternative possibilities that lay submerged below the reflective surface of the Shoalhaven River. Can mythic creatures like the Bunyip lie on the other side of the water's mirror?

I had already witnessed in the microscope that in this underwater place, life and death continues its daily cycle of renewal at a level deeply connected with, yet by scale and location, other to our own experience. Periods of flooding in the Shoalhaven River dominated the time spent in the 2007 residency. During and after each event, I went to investigate any changes to the riparian environment. As the rising water flowed past it made the most unsettling groaning and hissing noises. The eddies swirled around floating logs, capturing them from their fast trip downstream, pulling some down into the dark, growling depths of the river to form unseen obstacles to snare even the most experienced navigator.

After the event I observed how the flooding river had erased all marks of animal and human on the beach, so it was interesting to note the visitations on the freshly washed beach surface appearing after the water subsides. The first prints in the sand are those of a wombat on its early morning wander to the water. What does it need at the water's edge? Does it drink the brackish tidal river water? How did it manage to avoid the water as it inundated their abode in the riverbank? Is there an extensive network of tunnels underneath the paddocks to the higher ground?

More animal prints begin to appear; kangaroo and the lace monitor lizard, then the webbed and claw prints of visiting birds and a few crabs, which have been stranded to perish on the grassy banks. I was reminded of a story of a family that lived in *Bundanon* in the 19th century. This story of a tragic event in its early history alludes to the sedimentary layers of settler habitation and their lives within this landscape.

> [In] 1922, Kenneth McKenzie and his daughter Helen were drowned in the Shoalhaven River at the boundary with Lumsden's land to the west. Helen had been to the Nowra Show with her cousin Jean, and was washing her pony in the river when she was swept away. Kenneth went to her help, but both were drowned. The jacaranda tree in front of the house was planted in their memory. (Freeman 2007:16)

It seemed important to note not only how these colonial settlers and their decendants

had altered the land but also that the river had definitely left its mark on the lives of these people.

As I now walk along the banks of the river, fish are easily seen in the still clear water. One jumps about a metre clear of the water surface then another skips along the surface like a skipping stone bouncing off the water surface. As I sit quietly the river becomes alive with acrobatics of the fish . . . while an eel slinks quietly around the edges of an immersed branch . . . Just as in my book (Plate 28) *The River* is quiet for now . . .

Plate 28. Detail of a page from ***The River***

4.5.6 *Bundanon* Narrative Construction

As I have already discussed *Images of Metaphor* as part of the early development, including 'sense-data' collection, of the *Bundanon* books, I will begin this section from the ensuing montage narratives created in the *Bundanon* site. As in *Rio Vista* montages (both on-site projections and in computer constructions), I 'naturalised'[11] the fungi and other microscopic material in each site of the 'contact zone' at *Bundanon*. Initially I was surprised by the visual result from the first photomontage I constructed for *The River* book (Plate 29). Again I was interested in the way I felt challenged by the need for maintaining the objectivity of science.

In the montage space, where I layered the science with the imagined, the mythical Bunyip was still influencing my experiences and challenging my observations. These narrative constructions enable the montage thinking to include mythology as a creative element to 'tease'[12] apart the 'tissues' of science and art. Although they are 'seamless' montages, the images are intended as ruptures in the everyday perception of water.

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11 See montage methodology Chapter 3.1.4 The Formal vs Seamless Montage

12 References Donna Haraway's quote Chapter 2.6.1

There was a fundamental realisation that I found difficult to escape: although these microscopic life forms were not part of a human seen reality, they were also not mythical manifestations. These microscopic organisms are a part of everyday life in nature and yet also alien, beyond the perception of human daily life. In this personal debate I remained focused on my intent for the study to allow for and consider any possible outcomes from the intervention of mythology. There was still so much to be learned from the residency and research of Boyd's visual work and the narrative inclusion of mythology. So I continued to work on and walk in these uncharted waters.

Plate 29. First montage for ***The River*** book

4.5.7 Installation and Exhibition

The Bundanon books were enclosed in simply-made folders within a solander box, a format associated with the archiving of art works and historical documents in libraries and museums. In these books, the turning page of the codex provided temporal space for the contemplation of complex ideas in, and the separation of time between, montages of the developing narrative. *The House* and *The River* were larger books to promote a slower reading through an exaggerated page-turning process requiring the reader to take care with each page. To reflect on my developing project with the fluid site of water[13], I exhibited these works in The Toowoomba Regional Art Gallery

13 See discussion in methodology on the fluid site of the book in section 3.2.2

as part of a collaborative show with Doug Spowart, that included the entire body of work inspired by the *Bundanon* residency (Plate 30).

Plate 30. Exhibition of ***Site: Bundanon***
Toowoomba Regional Art Gallery
Detail showing books installed on tables for reading
Photographic documentation of installation by Doug Spowart

In the Toowoomba Regional Art Gallery, these books were viewed by a local audience, people who were in a contemporary milieu of drought and freshwater issues. But I felt that my particular project needed to be also installed within each 'contact zone' and then again as an entire collection for reflection and review, in the context of the Library.

The books were returned to *Bundanon* as part of my second residency in 2009 for installation on-site and documentation (Plate 22). With the assistance of Doug Spowart, my documentation of process and installation proved to be more comprehensive than previously achievable in this project. I noted that to engage a documentary photographer, with empathy along with the ability for direction, is vital for ephemeral, site-specific work. So with my own documentation and the collaborative work, Spowart's[14] documentary work complimented the vital recording of many parts of the project including the installation of these and the Myall Park Botanic Garden books.

The installation of the *Bundanon* books proved valuable in repositioning the work within the context of the 'contact zone'. Although this documentation was important for the project reporting, it was lacking the interactivity that a viewer/reader provided to reflect on and respond to the content. At the next 'contact zone', Myall Park Botanic Garden, I would again utilise the fluid site of the book in the gallery and on-site installation process. However I was also considering the Library as the final installation, where the transportability of the book's context would enable the reader to engage with the entire flow of the project.

14 My partner Doug Spowart skills in documentary work of site-specific projects were also acknowledged by the Bundanon Trust as he was employed to document the *10 Trenches* project during our 2009 residency.

My work at *Bundanon* and the Shoalhaven River revealed a mythical role for the microscopic water spirits. From the depths of the subaltern layer, from below the reflective surface of everyday perception, the fungi's role in the everyday cycle of renewal in the river has now been transformed. Reflecting on the floods during my residency, I associated with the upheavals and the resulting relocation of the river's contents as a metaphor for the challenges I encountered in my work. My observations of the mythology of *Bundanon* were influenced by the physical and metaphorical presence of the river's flux within the place narrative. These waters ebb and flow through time: from the early settlers' battle to change the landscape; then Arthur Boyd's intellectual visual work and Franciscan values that reconciled the natural and the human narrative; and continue to rejuvenate the physical and cultural landscape with each new artist in residence. The rich experience of the artistic heritage and ongoing renewal of the cultural terrain at *Bundanon* seemed to me to be an ideal nutrient medium to culture the mythical form of these commonplace microscopic aquatic life forms.

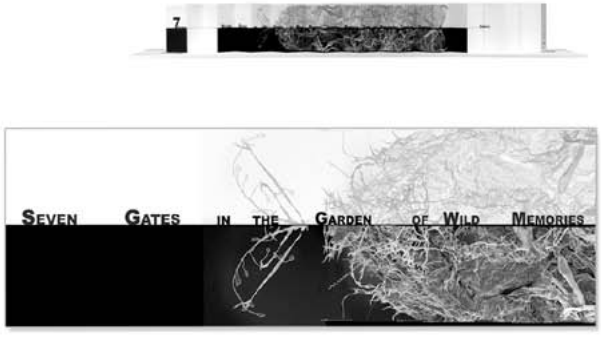
4.6 Myall Park Botanic Garden, Glenmorgan, Central Southern Queensland

Plate 31. Doug Spowart (1953-)
Myall Park Botanic Garden Gallery

Plate 32. Myall Park Botanic Garden books, 2009
Box enclosures constructed by Robert Witthahn, Toowoomba (Plates 33 & 37)
Edition: Unique state

a. ***Day Garden****,* cover image
Codex, 48 pages
Epson pigment inks on
100% cotton inkjet paper
Cover: Stonehenge paper
Dimensions: 23.0 x 33.0 x 1.5 cm
Hand stitching by Doug Spowart

b. ***Night Garden****,* cover image
Codex, 40 pages
Epson pigment inks on
100% cotton inkjet paper
Cover: Stonehenge paper
Dimensions: 23.0 x 33.0 x 1.5 cm
Hand stitching by Doug Spowart



c. ***7 Gates****,* open and detail image
Concertina book, 20 pages
Epson Pigment inks on Epson Radiant White watercolour paper
Dimensions: 26.0 x 13.0 x 2.0 cm, unfolding to 260 cm
Binding by Doug Spowart
Open book extended, documented by Doug Spowart

Myall Park Botanic Garden (MPBG) (Plate 31), created by David Gordon in the mid 20th century is situated around 300 kilometres by road west of Toowoomba, in the flat river country nearby the confluence of the Condamine and Balonne Rivers with Dogwood Creek. This landscape is controlled by the typical drought/flood cycle that naturally occurs across the central and western regions of eastern Australia. It is also situated near the top section of the Murray-Darling Basin, and as the Surat Basin, forms part of the Great Artesian Basin. The water flows deep within, through the ancient underground watercourses, and over this landscape, through its creeks and rivers. Dry riverbeds can become raging rivers in a matter of hours, then back again to just a series of stagnant water holes; but the underground water continues to flow as it has for millennia.

The work to establish a major garden of indigenous plants within a natural context was to sustain David for over fifty years until his death in 2001. In the 1950s he married Dorothy Gemmell, a botanical artist. Renowned ecologist Henry Nix, in his opening speech for a new gallery in the Garden, commented on the significance of this marriage between David and Dorothy, science and art:

> In the garden is a wonderful preserved collection of plants which is important to botanical science, and behind me is a gallery which preserves and displays an artistic impression of that same collection and of other plants in the region. (McKenzie 1999:85 & 86)

Myall Park Botanic Garden is now a continual artwork in progress within the changing landscape of land and water use in that region. It remains to be a place where artists, naturalists and scientists can collaborate in many different ways. Like Arthur and Yvonne Boyd and their family, David and Dorothy and the Gordon family have been generous in sharing the heritage of and vision for the landscape they had acquired, nurtured and protected for the benefit of future generations.

On different occasions, over the last 15 years, I have been involved with the Garden in my capacity as an artist. In this current project—exploring water—I was drawn to the Garden again as a focal point for my investigations in the narrative of fresh water through art, science and myth.

Water's presence and absence, as with all the cycles of the Garden, becomes evident to the visitor over an extended time; bringing the visitor closer to the fundamentals of human existence. There is no shopping mall or evening entertainment for the masses. Technology is for the basic requirements. The Garden is at the end of a road, there is

no passing traffic. There is time to reflect, observe and discover new things about the immediate surroundings and the broader issues that have been embedded in this particular place.

4.6.1 'Contact Zone' 3: Observations

In my search to locate the fungi now made mythical by their flow through my work in this project I look for 'contact zones' of fresh water. In this country the water flows underground and the whole region is known as the Great Artesian Basin. David Gordon recognised the Myall Park property as having geographical landforms that have the capacity to hold water: 'A significant feature of the ridge is the deep grey/ blue water-holding layer of clay which allows for the cultivation of deep rooted large trees' (MPBG n. d.). But I was searching for surface flowing water where I could find physical evidence of aquatic fungi. Around twenty kilometres from the garden I found a junction of the three major rivers in this region, where I collected the necessary specimens of riverine detritus. At this site the Condamine River, which flows from the ranges in the east[15] links with a local tributary, Dogwood Creek, to form the source of the Balonne River: as can been seen in the panorama, (Plate 33). The Balonne then flows south over the Queensland/New South Wales border, ultimately joining with the greater Murray-Darling River System further downstream.

Plate 33. Doug Spowart (1953-)
Confluence of the Condamine and Balonne Rivers and Dogwood Creek (situated from left to right)

When arriving at the confluence, after passing through several paddocks, opening and closing each gate, I found these grey silted rivers were barely flowing from years of drought. My local guide to this remote site told of his life beside the rivers and how in his

15 The eastern ranges at the source of the Condamine connect with the initial study of aquatic fungi in this project. The Condamine River is also the main river for the Toowoomba region as many of the western tributaries running off the Great Dividing Range in this region flow into this river system.

youth there were no feral perch to silt the water, and indigenous fish were plentiful. He spoke of living through the floods and drought that naturally cycled the water through and below the landscape.

I climbed down the friable banks holding onto fallen eucalyptus trees, to retrieve a sample from the muddied water. This place was completely different from both the coastal eastern-flowing Shoalhaven River at *Bundanon* and the upper reaches of the Condamine River where aquatic fungi samples were collected for the initial laboratory work. I wondered what I would find in these murky waters as I returned with my rotting leaf litter to culture, observe and image the microscopic life in the laboratory as I had previously done at *Bundanon*.

Unlike the other collections, I did not find any evidence of the aquatic fungal spores[16] that I had previously studied. I observed other microscopic life forms and tangles of fungal mycelium but not spores. The cause of this absence is unknown and would require further scientific analysis. The answer lies silent in the drought-affected, silted, slow-flowing river waters. Regardless of this result, I decided to prepare samples for imaging in the scanning electron microscope, to magnify the search over this microscopic terrain. The final book for this site and the entire project, *7 Gates*, was created from the questioning arising from this presence (the abundant mycelium) and absence (no spores cultured) of fungi. As I worked within the montage of ideas for this study, *absence* and *presence* surfaced as a compelling concept to explore fresh water and the microscopic aquatic environment in the garden.

4.6.2 Observations in the Garden

I respond to being in the Garden like an urban child encountering the expanded possibilities of the countryside. As I walk around the many narrow roads and pathways I am drawn to its lack of formality, as it was constructed to reflect a bushland habitat. When walking alone I am sensorially and mindfully aware of the imaginative possibilities in the small spaces in the Garden. The reverie of the imagination displaces past and future events and actions, and I am responsive to that moment. What I observe is a sense of drama within the garden as these human-constructed spaces form a kind of

16 As stated early in the exegesis I was searching for particular examples of *Ingoldian* fungi, which are readily found in freshwater environments worldwide.

‘scenery’ for an unrehearsed script. As cultivated by the gardener, a theatre for nature unfolds to me, a receptive audience, while I roam through the garden. By day the sun lights these spaces and reflects a vision of the outside world. One can feel the ground, see the daily and seasonal cycles, and hear the sounds of a diverse living environment resounding within the space. Here also are constant unseen rhythms that underlie the visible cycles of the garden.

By night in the dim light, my mind fills the dark spaces, creating an alternate vision of the garden. The night in this remote bushland is uncanny for the urban child in me. In the darkness of the night, the borders at the edge of the real and the imagined become less defined: much like the torchlight of a nightwalker on a dark and lonely road where all that can be seen is in the path ahead. But occasionally, at the edge of the light, a shadow moves and an uncanny drama unfolds. The invisible and unknowable grow in the imagination as at night the garden loses its scale and perspective. It is formless, no longer grounded — but dimly-lit islands floating in the black sea of the universe.

4.6.3 The Narrative Construction

In *Day Garden* and *Night Garden*, (Plate 32) the turning page revealed scenes framed for the dramatisation of the narrative. I created *Day Garden* as my mind metaphorically ‘walked’ along the paths and spaces of the Garden. The montages reflect the building of a drama within the many remembered scenes. From my work at *Rio Vista* where the fungi were the renovators of the colonial freshwater narrative, to the inclusion of the mythical narrative and the repositioning of science’s meta-narrative in the developing story at *Bundanon*, I now investigate a contemporary montage of science and art within the lived experience of this Garden. Included in this research, I collaborate again with my partner, to weave humour and whimsy into the narrative construction. It was intended that this montage of ideas would extend the narrative possiblities and also reflect the child at play in the Garden. One site that strongly evokes this play is *The Children’s Tree*[17], a place which I have come back to over many years of visiting the Garden.

I also bring to these stories elements of the fear experienced in the dark and silence of night as an urban child. This emotional and psychological response also resonates with the observations made during the investigation for *Koolunga Bunyip*. In the fear elements of

17 *The Children’s Tree* is featured in the site documentation of the *Night Garden*. Plate 38b

these books, I am reminded of the alientated non-human and the 'other' highlighted in the discussion by social science research in Chapter One. The institutions of water that once sustained the colonial population were created as a response to control the fear of drought and the damaging flows of flooding. Does the fear of *unsustainable* water usage along with water's presence (as floods) and absence (drought) now drive the contemporary water narrative?

The final book *7 Gates* (Plate 32) returns to the microscopic confluence of the three watercourses. The concertina form, as with *The Exploration* from *Rio Vista: Aqua Vista*, reasserts the montage narrative of science, myth and culture as a kind of map of the imagination. It is a three-dimensional space for considering the entire collection of books and their origins in the microscopic environment of water. The montage of the image and text in the form of a 'jump cut', reflects on the black and white approach to the issues, while also referencing the difference between the familiar (the Garden) and the 'other' (the Wild) within human perception of water. Are these just opposing forces competing for resources? Or can the imagining of the garden bring the two together, not as unified, but as separate contributing elements of the complex milieu?

4.6.4 The Installation, Exhibition and Reflection

Plate 34. Detail of a box enclosure on a termite mound, with inserts of texture examples from the Garden

To complete the reader's contact with the site and the installation on-site, the books were contained within boxes that reference the sensorial, textural and visual memory of the Garden (Plate 34). The light tan, textured outer surface evokes the 'feel' of a bare wooded table or a seersucker, textured tablecloth found as humble furnishings in the cottages at this site. Inside, the reader encounters a goatskin lining that refers to the land and its colour. The reader will unavoidably touch and leave a mark on this soft inner lining like footprints in the soft reddish brown earth found in this country. These boxes contain the simply-bound books held in place by the inner structure constructed as a box for jewellery or precious objects.

As part of this project's methodology and to extend the reader's connection, the Myall Park Botanic Garden (MPBG) books were shown in a collaborative exhibition with Doug Spowart as part of the Core Artists program of *Palimpsest 7* at the Mildura Arts Centre in 2009 (Plate 35). In 2009 I installed the books in the MPBG gallery (Plate 36) and left them for a short time to enable a connection with the 'contact zone' and the local community.

Plate 35. *Rio Vista*, Mildura Arts Centre *Palimpsest 7,* 2009
Detail showing the ***Night Garden*** (foreground), ***Day Garden*** (centre) and ***7 Gates*** (back)
Photographic documentation of installation by Doug Spowart

Plate 36. Myall Park Botanic Garden Gallery, 2009
Photographic documentation of installation by Doug Spowart

As with the *Rio Vista* project this installation was an opportunity to connect with a wider audience for this work, with the same objective achieved through the methodology of an article published or a paper given at a conference. Many conversations evolved from the showing of this work, that highlighted more questions arising from the reader. From these I have strengthened my resolve that, as with my research in the 'contact zone' itself, a slowing of time through the reading process is necessary to engage fully with the books. The ability for the books to remain in situ for future installation, exhibition and review is vital for the work to reveal its narrative.

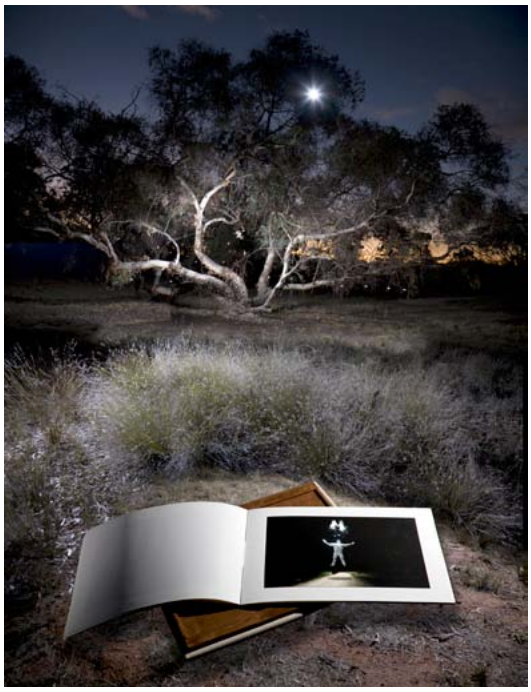


Plate 37. Installation of books at Myall Park Botanic Garden
Top left, ***Day Garden***
Top right, ***Night Garden***
Bottom left, ***7 Gates***
Photographic documentation of installation by
Doug Spowart and Victoria Cooper, 2011

More recently I returned to MPBG with the final books and their containers to install and document the final works in situ, (Plate 37). As with the *Bundanon* books, *Day Garden*, *Night Garden* and *7 Gates* were installed and exhibited on-site. Again this was important documentation to do particularly as a reference for the work within the 'contact zone'. But the installation and documentation of *7 Gates* transformed the connection of this book and the site. The microscopic 'texture' in the image and the three dimensional concertina flowed across and resonated through out the installation site (Plate 38). I have left this copy of the book with the keepers of Myall Park Botanic Garden as it has now been embedded within this site.

Plate 38. Detail of texure
Installation of ***7 Gates*** at MPBG
Photographic documentation of installation by Doug Spowart and Victoria Cooper, 2011

I reflected on the absence in this third 'contact zone' of identifiable aquatic fungal spores like the ones I had found in other sites. My search in the microscope had only yielded strange features from the landscape of a rotting leaf and the tangle of non-specific fungal mycelium. So in the absence of the recognisable form of the aquatic organisms, I invented their presence. In the small spaces by daylight and emerging from the dark of the night I envision a different narrative of water. Although water is not visible in the garden, it is present in the narratives of science and art, life and death, human and non-human. This absence and presence of fresh water resonates throughout the Australian landscape and the colonial narrative. It is an integral and seminal part of the narrative in fresh water and informs the final and seminal visual story of the Myall Park Botanic Garden books, *7 Gates*.

4.7 The Library as a 'Contact Zone'

The initial books, *Aquabatics* and *Koolunga Bunyip*, have been shown at gallery sites, selected for awards and exhibitions and acquired by prominent collections including the National Library of Australia. The three 'contact zone' books, *Rio Vista: Aqua Vista, Bundanon* and *Myall Park Botanic Garden*, were installed in each site and in some cases will remain to be available for the purpose of reading in situ. *Rio Vista: Aqua Vista* has been acquired by the Mildura Arts Centre; *The Bundanon Site Books* will be offered for deposit into their collection; and *The Myall Park Botanic Garden* books, *The Day Garden* and *The Night Garden* will be reconfigured for digital media reading as there is no provision to archive a large collection; but as previously stated[1] *7 Gates* will remain as a site-specific object.

However, I was developing a concept for the final site-specific presentation of the work. As many of the books I was creating were acquired by the National[2] and State Libraries, they became potential secondary 'contact zones' for these works. In this zone, the reader specifically comes to engage with the book in all its forms and manifestations. The books I created require a reading that is facilitated by the space of the Library.

So the final presentation was located in the reader's 'contact zone', the Library. As most of the books are held in the National Library of Australia, I chose this library to bring the entire collection of works together for the first time (see Plates 39 and 40).

Plate 39. Installation of books in Petherick Reading Room, National Library of Australia, 2010
Room view
Photographic documentation of installation by Doug Spowart

1 See section 4.6.4.

2 The *Rio Vista: Aqua Vista* and *Bundanon* books are in the National Library's rare book collection where there is a repository for artists' books.

Plate 40. Installation of books in Petherick Reading Room, National Library of Australia, 2010
Placement of books on table for viewing
Photographic documentation of installation by Doug Spowart

4.7.1 In Summary

What I have observed, as the books moved from the 'contact zone' to other display sites, is that the potential for new readers increases with its movability. At the 'contact zone', the reading is direct and holds its narrative as a direct relationship to site. As the work flows from the 'contact zone' into the Gallery, the work is dislocated from its origin but open to interpretation. As referred to in my methodology, this flow (from 'contact zone' to Gallery to Library) reflects the movement of water through its many forms, from river to sea to clouds and so the cycle continues. The Gallery presents work, but its temporal availability means the artwork/reader relationship is discontinuous. Like the water in clouds, the connection between the reader and the work dissipates after the rain when cloudless skies return.

The Library is the repository for historical or yet to be revealed human and non-human stories. Like undetected objects in a metaphorical sea or lake, the author's work in a library can be resurfaced for review and reforming into new narratives over time. Therefore Library becomes the secondary 'contact zone' for my visual narratives, where an extended number of readers can be linked through the visual metaphor of the river to the original site. These readers may also then be challenged by, or find new opportunities for narrative in, these interventions and visual montage spaces of myth, science and places of water.

CHAPTER FIVE

The Conclusion

5.1 Return to the Source

The original direction for the project was conceived in the imagining of water, its flow through the Australian landscape, its absence and presence, and through the many life cycles of the human and non-human environment that it sustains. The work began in the laboratory to seek knowledge in the microscopic environment of aquatic fungi. As I spent time visualising these alien microscopic vistas I found myself navigating between disciplines; across the borders of science and myth and society. In this interstitial space, I connected with others who were referencing the same issues. These researchers[1] assisted my deliberations in the exegesis with their discussion of the non- or more-than-human and, in particular, the need for considering inclusive narratives. This research was therefore influenced by many different stories of fresh water beyond the meta-narrative of science, including: the historical and the mythical; the irrigator and the Bunyip; the artist and the scientist; the farmer and the environmentalist; laboratory and Place; absence and presence of water.

As I sought to include the aquatic microscopic environment in the developing narratives of freshwater sites, it became clear that there were competing modalities of science and art needing to be reconciled as part of this visual work. In doing so, I located both the issues and the work within the context of a decentralised, montage space. This was not only an intellectual space but one where material thinking, intuition and collaboration were equally important. Throughout, the poetic and imaginative process of working challenged the intellectual, and thus reflective and reflexive cycles drove the progression of the research.

> The work is progress-oriented, and open-ended.
> Each component contributes to a whole that has no internally limiting parameters. The artwork continues to unfold. (Reid 1999:194)

In the quote above, John Reid discusses the development and shape of his work, *Fishman*; but in these words, I have also found the dimensions of my own project. I entered this project not to reduce or limit progress but to navigate an imaginative 'open-ended' path through intuition and grounded knowledge for my contribution to follow in a changing human environment.

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1 These researchers include the human geographers Dr Deborah Bird Rose and Dr Leah Gibbs who are informed by the discourse of Donna Haraway exemplified in her 1997 publication, *Modest_Witness@Second_Millennium. FemaleMan©_Meets_OncoMouse*™, Routledge, New York and the 1992 article, 'The Promises of Monsters: A Regenerative Politics for Inappropriate/d Others', in G Lawrence, C Nelson & PA Treichler (eds), Cultural Studies, Routledge, New York, pp. 295-337. Haraway also cites Bruno Latour's Actor-Network Theory and its references to the non-human in her discussion of technology–human and animal–human relationships. More recently a conference titled *The Non-Human Turn* references the non-human in many contemporary issues and themes, from technology to ecology and metaphysics was held in the University of Wisconsin, Milwaukee, USA, see <http://c21uwm.com/the-nonhuman-turn/>.

The following paragraph concluded the accompanying statement to the visual component of my project shown in the National Library in 2010. Contained in these words are the struggles and the unanswered questions that my interdisciplinary work had encountered. Some of the topics in this statement indicate the expansive potential for the project and as such lie beyond the scope of this exegesis. But in these words lie the Bunyip, the continuum and mystery of the unknown that drove the project and the unidentifiable things that confound and perplex as I navigate the visual work and writing:

> While working in the disembodying space of the electron and light microscopes I have been brought closer to the edge of science and myth, knowledge and truth. This visual research into Water and Place has only revealed more questions and answered none. There is a contradiction of existence and the idea of the everyday. There are questions to the placeness of Place, to what we know, how and where we live our lives. Here, water is beyond culture — indifferent to the human — yet, paradoxically, integral to our every living and dying moment. (Cooper 2010:n.p.)

What I have found is a diverse network of research including the biological sciences, social sciences and the arts that have become increasingly engaged with the relationship between the non-human and the human, in both the natural environment and the 'unnatural' virtual environment. I have explored some of these to both locate and assist in the visual and exegetic work of this PhD. In the following conclusion I reflect on the pathways I navigated and, from this, build a platform for the 'future landscapes'[2] in which this work will evolve and travel.

5.2 Beyond Reduction: Relocating Images from Science

Science provided grounded knowledge and physical space, which enabled the collection, identification and imaging of aquatic fungi. Although initially an engaging vision, this work was limited, as it held little relevance for this project beyond the laboratory. To seek the potential for the non-human intervention in a human context of freshwater narratives required interdisciplinary freedom and flexibility. In this fluid space, I found that I was challenged by my own work in the visual interplay of the different spaces, science, myth and narrative. Could this be attributed to a deep-rooted perception of the centrality of scientific knowledge and research in the human development of understanding about the natural world?

2 After the title proceedings from a 1999 conference, *Visions of Future Landscapes*, held in Canberra. Editor: Ann Hamblin, Publisher: Bureau of Rural Sciences.

Australian environmental consultant John Cameron, in the 2003 publication *Decolonizing Nature*, suggests that the educational institutions of sciences and the humanities:

> have been cordoned off so that the real power of dawning ecological knowledge, working in concert with a poetic appreciation of place, is lost. (Cameron 2003:194)

At an early age in my education I had to make the choice between arts and sciences, and ultimately I was guided towards the more 'noble', progressive and productive opportunities that science provides. There seemed to be no crossing of boundaries and each sector had its own agenda to better serve society.

During this study, I have explored the potential for cross-disciplinary interaction—but was it always a democratic relationship? The popular unified models incorporating the humanities within science were proposed mainly by the thinkers in science such as Edward O Wilson and Stephen J Gould. To fully appreciate and engage with the issues from social and emotional to scientific and technological, I found the unified models like Edward O Wilson's *Consilience* unbalanced and science-centric.

As discussed throughout the exegesis, I found a strong resonance for my struggles and observations in Gaston Bachelard's exploration of the imagination in *Poetics of Space* and *Water and Dreams.* In 2001, Cristina Chimisso published a critique of Bachelard's work following his philosophical journey through science and into the study of poetics. This fascinating journey begins with Bachelard's early philosophy of science and rational thought as distinct from the 'primitive' imagination where the latter created 'obstacles' which the dialectic of science either 'eliminated' or 'transformed'[3]. Chimisso states:

> However, the obstacle was a negation that had to be overcome; for Bachelard irrationality must not have a place in scientific knowledge. (Chimisso 2001:194)

But in the discourse of *Poetics*, Chimisso reveals that 'Bachelard progressively abandoned his own project of a dialectic knowledge of reverie' (Chimisso 2001:210). She continues with the claim that Bachelard presented:

> In the *Poetics*, reverie is not something to be rationalized and to be made somehow innocuous for rationality. Rather, it is something to be accepted and enjoyed as it is. (Chimisso 2001:211)

Chimisso discusses Bachelard as a 'voracious' reader, where he quoted from a diversity

3 These are concepts discussed at length in Chimisso 2001:181-200.

of texts and authors. She notes that:

> Bachelard connected all of these references. In his work romantic poets, modern physicists, philosophers, novelists and alchemists find themselves next to one other. (Chimisso 2001:219)

Chimisso's discussion reveals Bachelard as the thinker and reader who sees the potential for the development of concepts and ideas in a modern interdisciplinary exploration. What I have come to understand through Bachelard and more recenty Donna Haraway (1991&1997) is that vibrant and fertile outcomes can evolve from distinctly different ways of knowing, through the dreams, challenges and inclusivity found in interdisciplinary discourse.

5.3 Culturing Science

In this research I became increasingly engaged with the ideas of a decentralised science in the interdisciplinary debate on human/non-human issues by Donna Haraway. It was in Haraway's extended space to include the non-human as an active and equal partner in human/nature, science/culture relationships, that I found a place for my aquatic fungi work. Human geographer Dr. Deborah Bird Rose's call for a 'new ethos' in perceptions of water to include the non-human developed to be an important reference in considering the social environment of Australian fresh water.

In each of the three sites, differences evolved that determined the narrative montage of each site. The three 'contact zones' contributed by their differences in the freshwater narrative:

1. Mildura. I pursued the 'renovation' and 'restoration' of the colonial conscience and called upon the ghosts of the past and historical waters to recycle and renew the contemporary narrative;
2. *Bundanon*. The visual narrative construction was challenged by the myth of the Bunyip. Here, an intellectual discourse developed between art, science and myth. These deliberations were informed by Arthur Boyd's Franciscan values and his exploration of classical myths and religious themes as he responded to the Australian milieu in the context of the Shoalhaven River; and
3. Myall Park Botanic Garden. The Garden provided the 'ground' for the hybrid to evolve. In this space, water is colonial and postcolonial, objective and subjective, mythical and commonplace, absent and present.

Being responsive to site through the methodological structure was vital for me to recognise the different narrative approaches to fresh water. Lucy Lippard's (2010) distinction between site and place as the 'contact zone' underpinned the flow of the work both on-site and beyond. 'Contact zone' implies the sensory observation and immersion in place that I applied throughout the process, from each place to laboratory to studio and back to the original place.

I still hold the conviction that science held vital grounded and specialised knowledge for this project. But within the evolving technological human paradigm, I am also interested in applying the knowledge from the natural non-human; within a decentralised, regionalised discourse on particular matters of our shared environment. As social scientist Bruno Latour states:

> For those who wish to bridge the gap and fathom the new disconnect, this foregrounding of the instruments of measurement may offer a crucial resource — this time for politics. It is useless for the ecologically motivated activist to try shaming the ordinary citizen for not thinking globally enough, for not having a feel for the Earth as such. No one sees the Earth globally and no one sees an ecological system from Nowhere, the scientist no more than the citizen, the farmer or the ecologist—or, lest we forget, the earthworm. Nature is no longer what is embraced from a far away point of view where the observer could ideally jump to see things "as a whole", but the assemblage of contradictory entities that have to be composed together.(Latour 2011)

Published in 2010, Latour's 'Steps Toward the Writing of a Compositionist Manifesto' suggests there should be more interdisciplinary activities that retain 'heterogeneity' empowering each contributor, however disparate and regional:

> Even though the word 'composition' is a bit too long and windy, what is nice is that it underlines that things have to be put together while retaining their heterogeneity. (Latour 2010:473)

In the final research of this project I have become interested in the multi-disciplinarity of Latour's 'Compositionist Manifesto' (2010) and its application for future outcomes of my work.

In this project, I have challenged my perception of the context of the science image in an altered narrative state as I also strove to maintain a balance between the scientific knowledge of aquatic fungi and the fiction of myth. To create these narratives I was totally reliant upon the underpinning knowledge of the science of aquatic fungi and the application of imaging technology. Although I wanted to remain faithful to scientific knowledge, I was also motivated by Professor Hynes's statement[4] to explore this work within the context

4 As initially discussed and referenced throughout the exegesis, Prof Noel Hynes makes reference to the mythological water creatures, the Loch Ness monster and the Bunyip, in his lecture on freshwater aquatic ecology.

of other ways of seeing and 'reading' water. These were not just narratives of science but were also the investigation of the flow of water through and the role of aquatic fungi in a broader human context. While reflecting on these concepts and the entire project, I have seen from my work in the digital montage the future development and refinement of a *Montage Manifesto*.

5.4 Montage: More than an Image

I initially employed the digital montage as a methodology for the narrative construction. I noted montages in other works across all art mediums, visual and non-visual, digital and analogue. Some montages were imposed as 'jump cuts' collaged over and alongside images, as in the texts and images of *7 Gates,* in order that the 'suturing' is seen. Others were smooth, naturalised and embedded, as in *The River*, as subversive subaltern ambiguities.

Through this research I have come to know the montage as a dynamic collaborative space, where materials and minds contest, contrast and combine to construct and then transform the visual message. In his long career, American artist Keith Smith has well documented his approaches and methodologies to book-making. As cited in the methodology, Smith maintains that the montages and his books evolve through a material process that is both educative and creative. Lin Onus, whom I have already referenced, montages the cultural backgrounds that inform his life and work. John Wolseley's material thinking approach is a collaboration of the natural environment and the artist. As I work with the construction of my montages, and through the collaboration with materials and other professionals: as with Smith, I too have learned.

The more I read and witnessed in art and in the social sciences, I found emergent forms of the montage in the form of a *mashup*[5] of history with contemporary theory. In January 2011, Australian and New Zealand libraries opened up part of their archives for a digital *mashup* competition where the general public was invited to create montages of history, news, images, texts and narratives. American photography historian, AD Coleman in the 1993 *Camera and Darkroom* magazine, predicted this wider use of the montage.

5 Mashup is a term originating in styles of music sampling and video editing and is now currently used in the montaging of music, visual and textual information or data enabled by the contemporary growth computer software programs or apps. For more details see: <http://www.ibm.com/developerworks/xml/library/x-mashups/index.html> for the article, 'Mashups: The New Breed of Web app'.

Coleman discussed the impact of the new digital imaging environment on photomontage and collage and suggests that 'the computer makes the act of image manipulation into literal child's play' and that digital montage had a wider potential in:

> not only the digital encoding of images but the generation of virtually infinite permutations and variations thereof: not merely everyone a photographer but everyone a picture editor, a photocollagist and/or photomonteur.
> (Coleman 1993:69)

After reflecting on the results of this work I now recognise a broader potential for the montage, digital and analogue, as a methodology and a flexible space for dynamic thinking. In future research I am interested in exploring further the digital montage as a space not just for the visual arts but as an interdisciplinary social medium enabling a provocative and stimulating visual parliament of ideas. I have cited the following quote in its entirety as I feel it articulates well the characteristics of the photograph which could be applied to my proposal for the montage as a space for 'difficulty of thinking' and 'thinking aesthetically':

> The thinking that aesthetic presentation can open up for us is thus not meant to explain and, by extension, to explain out of existence, what in fact remains irreducible, singular, and resistant within the work. Rather, learning to think aesthetically, to think with and through the work of art, means learning to see what exactly the enigma or riddle is. Thinking means remaining open to what threatens to make thinking impossible. In other words, it requires a certain humility with respect to the hidden difficulties that gnaw at it—whether they be ossified modes of institutionalized philosophizing, encrusted worldviews that are taken to be self-evident, unexamined ideologies that mistake contingencies for universal truths, or other hidden assumptions that prevent us from seeing the full complexity of what is to be thought and of the task of thinking itself. We could say that the photograph offers us an unexpected mode of seeing that aids us in our task to learn to see the difficulty of thinking.
> (Richter 2007:169-170)

Gerhard Richter, celebrated German artist of the 20th and 21st century, has substantially—visually and intellectually—investigated the materiality and visual concept (rather than content) of the photograph through the medium of painting. In these words he presents a challenge 'to think with and through the work of art': a mode that offers layers of perception that are not limited by language or by 'ossified' and 'encrusted worldviews'. Richter's aesthetic exploration, across the media of painting and photography, utlises interdisciplinary practice not only to create art objects; but to encourage and reflect on the freedom of artistic, material thinking. This discussion, for me, exposes a depth of possibilities and a potential for an accepted process of visual and aesthetic thinking that evolves from interdisciplinary and montaged material thinking.

5.5 The Emergent Discourse

In May 2012 a conference at the University of Wisconsin-Milwaukee, *The Nonhuman Turn*[6], addressed many themes, both natural and technological, in the emergent discourse of non-human theory. This conference explored, through the non-human discourse, many issues facing humanity's place in the world affected by technological advancement and the human-effected changes in the natural environment. The organisers invited a broad spectrum of interest groups to engage within the conference including: sciences, arts, humanities, and the social sciences in the 21st century. Included as potential topics were: Bruno Latour's *Actor-Network Theory*, Donna Haraway's *Animal Studies*, neuroscience, cognitive science, artificial intelligence and *Systems Theory* as it references ecology of the natural environment. I found a high potential for future work from my PhD study to link with this developing discourse.

5.6 But What About the Bunyip?

An important consideration for the study was less about looking at aquatic fungi and their connections with human narratives of fresh water but more working with aquatic fungi to deconstruct and reconstruct these narratives. The water that flows through the research as a metaphor for the development of ideas and visual thoughts is the same water that refreshes and challenges the imagination. As Illich states[7] water is more than its raw element, H_2O, it is a solution—a fluid montage of myth, history and narrative.

As recorded in many historical sightings, the Bunyip is a visual montage of things we know with things that are of the imagination. In this project I identified with the Bunyip as evocative of the non-human presence and other ways of knowing the world beyond the science. As the work and the writing evolved from the challenges and questions arising from the interdisciplinary montage, including considerations for the Bunyip pushed the boundaries for the potential outcomes.

As I had already cited earlier in the exegesis, Ngarrindjeri elder, Henry Rankine (1943-2008), presented a strong argument for the presence of the Bunyip in any discourse or narrative on fresh water in Australia:

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6 See the University of Wisconsin-Milwaukee, Centre for 21st Century Studies: <www.C21.uwm.edu> or <http://www4.uwm.edu/c21/pages/events/conferences.html>.

7 See the epigraph to Chapter One.

> So the Bunyip (the Mulgewongk) he is still in our Dreamings. He is still there today, just like we have fast jets in the sky, we still have got that fellow in the river. (Holden & Holden 2001:206)

It is also my intention to investigate future collaboration opportunities with Indigenous Australians, to deepen the potential for fresh water narratives to flow.

The research in this project has opened a pathway for my own future investigation in the emergent discourse of the *Actor-Network Theory* as in Haraway's discussion on 'the interactions among material semiotic actors, human and not' as cited below. I am also interested to continue the critique on the primacy of scientific knowledge in human cultural networks. In this I intend to traverse and transgress the sacrosanct boundaries between human scientific understanding and the non-human, non-scientific knowing of the environment in which both co-exist. While in these heretic waters, I also seek a 'river' where both objective and subjective knowledge can equally flow to contest and shape the emergent narratives. I finish with a salient quote from Haraway with which I associate strongly: not only as it extends the perception of a human-centric narrative of nature generally but also as it resonates in the work, methodology and outcomes of my project. Nature, including non-human microscopic environments, is not a separate entity beyond everyday perception but an inherent and equal contributor to the complex montage of the developing human narrative:

> Nature is a commonplace and a powerful discursive construction, effected in the interactions among material semiotic actors, human and not. The siting/sighting of such entities is not about disengaged discovery, but about mutual and usually unequal structuring, about taking risks, about delegating competences. (Haraway 1992:298)

Victoria Cooper

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APPENDICES

Appendix A

Rationale for and Aims of the Research in 2005

The study will explore and extend perceptions of the relationship between water ecology and human connections with the Australian environment, through a close focus on the invisible and seemingly remote microscopic environment of freshwater aquatic fungi found in the headwaters of the Condamine River, part of the watershed for the Murray–Darling River system. This unseen underworld will be recreated in the form of a visual parable to alert, inform and evoke dialogue in the general community and encourage new connections with their surrounding environment.

I embark on this quest to capture microscopic aquatic fungi and endow them with the mythological status of the Bunyip. In anthropomorphising this subject I will pursue alternative interpretations that provide a link between that of human perception and the reality of these seemingly alien land and water environments.

Underpinning the research will be the issue of how scientific recording and classification can communicate through the artistic process. The research into and documentation of these fungi within this environment will provide both data for scientific records and raw visual material for translation and transformation by the creative process. The artistic outcomes of the research intend to coalesce the specifics of science with culture and mythology under the influence of that metaphorical free radical, Artistic Expression.

The research aims to collect and identify aquatic fungi at sites in the headwaters of the Condamine River in Southern Queensland located in the Great Dividing Range, specifically:

1. To explore and extend perceptions of water ecology and human connections with and responsibilities for a local environment;
2. To explore the miscibility of visual products generated from scientific exploration within the artistic medium and the potential for the resulting amalgam to ignite consciousness; and
3. To design and construct visual products utilising the medium of artists' books to form exhibitions and presentations for public display.

Appendix B

A Report on the Field and Laboratory Work

This section is divided into a summary of the processes employed and observations made in the collection of the scientific images and material for the development of the visual narratives.

B1 Introduction

In this work I planned to collect, culture and have identified aquatic fungi specimens for imaging towards my artwork and possible inclusion in the Plant Pathology Herbarium at the Queensland Department of Primary Industries (QDPI). I sought support and vital knowledge from Taxonomists and Plant Pathologists as I worked through the scientific work of this project. In 2004, I connected with a project on aquatic fungi in the local region: *A Study of Aquatic Fungi in the Condamine River* (Ryley, Kong and McEwan, 2003), by Drs MJ Ryley and GA Kong (from QDPI) and E McEwan (from the University of Queensland Gatton campus). Through egaging with this work I learnt techniques for collecting and imaging these microscopic organisms.

The scientific work towards creating not just an image resource but also providing specimens for inclusion into the Herbarium collection was a formidable but absorbing task. My expectations required reassessment as I worked towards these goals. My methodology also required simplification to enable the successful collection and building of an image collection for the artwork. Ultimately I was able to develop appropriate processes to fit the scope of the project and the resources available to me.

B2 Sample Collection

From this study and subsequent preliminary work undertaken by me, I have found that the collection of foam samples (Descals 1997:171) along with small amounts of submerged decaying leaf litter and vegetation was the most successful for the following reasons:

1. Good immediate success in retrieving a multitude of life forms including aquatic fungi. Only small samples, around 20 mls of foam and around 5 to 10 leaves and twigs, were required to incubate for image resource. Other methods of collection required at least 2 trips to the site for collection rather than the immediate collection methods as adopted. These longer methods could take a month before the in situ materials (the leaf litter that was originally placed in controlled sample bags) could be retrieved from the river. Although this approach is suitable for more intensive specialist studies of aquatic life, it exceeded the scope and resources of my study. As I mainly required simple identifications and an image resource, the foam and leaf litter sampling was adequate for this study;

2. Foam and decaying vegetation could be found in many sites along the river, which enabled collection in accessible places. Collections were made on the Condamine River at The Head, the Shoalhaven River at *Bundanon* and the junction of the Balonne and Condamine Rivers; and
3. If foam samples were not readily available (usually more prevalent after rain), the submerged decaying material assisted in supplying samples of the aquatic microscopic environment, and there was a good resource of material for my image collection.

B3 Incubation Procedure

1. The collected material was placed in small, aerated aquarium baths for two weeks. River water was used where possible but in the laboratory distilled water was added to maintain water levels. Locally sourced casuarina sp. needles were added to supplement the leaf litter as it decomposed in the water baths.
2. A control of distilled water and added leaf material was also placed in the same laboratory conditions. This was to observe any contamination arising from the added material. This approach proved effective as none of the fungal material found in the collected samples was apparent in the control baths.

I have included images of this part of the process in Plate B1 following.

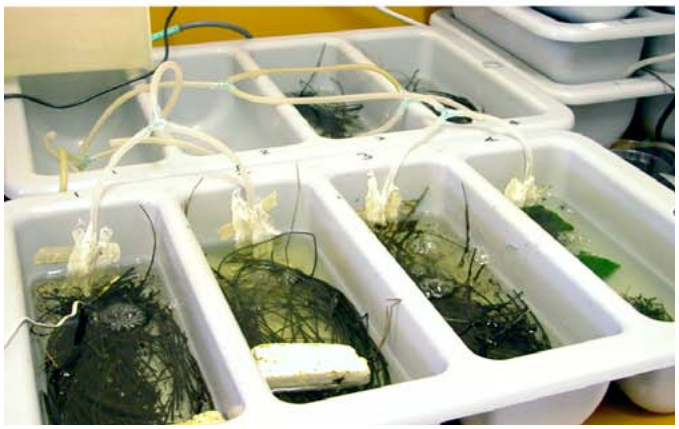

Plate B1. Illustrations of collection and incubation procedures
Top: Doug Spowart (1953-)
Victoria collecting leaf litter from the Shoalhaven River at *Bundanon*
Digital file variable dimensions

Middle: Doug Spowart (1953-)
Victoria collecting foam samples from the same site
Digital file variable dimensions

Below: Victoria Cooper (1957-)
Collected samples in aquarium baths with Casuarina leaves to feed fungi
Digital file variable dimensions

B4 Identification and Imaging of Aquatic Fungi and the Microscopic Aquatic Environment

B4.1 Issues and Observations

After 2 weeks of incubation I sampled the baths for stereo and standard bright field microscope observation. I was able to observe the rise and fall of populations of readily observed and identified aquatic fungal spores within 2 weeks to a month. During these periods I made samples for viewing and imaging through the light and electron microscopes.

Assisted by knowledge gained through the pilot study and my initial collections of foam and leaf litter, I was able to collect, provisionally identify and image many commonly found aquatic fungal spores and life forms. Where possible I referenced in the artwork the taxonomic names of particular fungal spores that either I, or the Mycologists were able to identify. Even though the water from the Balonne-Condamine confluence was extremely turbid and there was much difficulty in identifying and collecting aquatic fungal spores, I was able to image visual evidence of general fungal mycelium and other microscopic forms which informed my visual work in the project at Myall Park Botanic Garden.

Using the collection and incubated material, I attempted some specialised culture techniques to produce living fungi specimens for preservation and deposit into the QDPI Plant Pathology Herbarium (BRIP). I used standard methods in the isolation of fungal spores for culture from plant material, similar to those described in Descals (1997, pp. 183-189), including single spore isolation techniques onto specially prepared agar with streptomycin or similar compounds to reduce bacterial contamination. This work was largely unsuccessful in obtaining definitive taxonomic identification due to the following:

1. The techniques required for this work are an acquired speciality for which I required more time and resources. One major issue was my inability to isolate pure, uncontaminated cultures for taxonomy; and
2. Although the laboratory resources for this work were generously shared and donated, my project was increasingly demanding more time, effort and finances than anticipated.

To fully realise taxonomic identifications and herbarium-ready specimens would require my full attention. I would need to acquire and update more specialised skills and appropriate funding to adequately resource the field and laboratory studies. Although mostly not the aquatic fungi I had found and imaged, other fungal specimens I collected were able to be isolated for herbarium, see the following list:

BRIP 47885 a - Phoma sp.

BRIP 47891 a - Acaulopage sp. aff. tetraceros Drechsler

BRIP 47879 a - Undet. sp.

BRIP 47884 a - Undet. sp.

BRIP 47878 a - Undet. sp.

BRIP 47881 a - Undet. sp.

BRIP 47883 a - Phoma sp.

BRIP 47890 a - Curvularia brachyspora Boedijn

BRIP 47893 a - Undet. sp.

BRIP 47877 a - Undet. sp.

BRIP 47882 a - Undet. sp.

BRIP 47892 a - Undet. sp.

BRIP 47880 a - Phloeospora sp.

BRIP 47886 a - Acremonium sp.

B4.2 Stereo Microscope

Department of Primary Industries (DPI) Toowoomba:

Nikon SMZ1500

Australian National University Electron Microscope Unit (ANU EMU):

Wild M400 photomacroscope

SPOT FLEX CCD camera 14bit 50Mb colour CCD camera.

Initially to review the culture for organisms, leaves and twigs were sampled from the incubation baths and placed in a Petri dish for viewing.

Utilising 'dark field' light source I was able to observe the transparent fungi and other organisms against a dark background.

In this process I made images that were mainly referential for initial observations of activity in the sample but were not of a high enough magnification for use in the artwork.

B4.3 Bright Field Microscope

DPI Toowoomba:

Leica DMLD

Leica DC300 digital microscope capture camera

From the incubation baths I filtered around 50mls of water through a 5-mm-pore filter.

I then made a microscope slide with the filter, placing a drop of Lactophenol Cotton Blue stain to differentiate the hyaline (colourless) fungal spores against the white background of the filter. I noted also that the cotton blue stain was visually evocative of the 'blueness' of water, which was a key characteristic utilised in *Aquabatics*.

Micro-photographs were taken of possible subjects for image resource. Many images were made at this stage, from which final images were chosen for incorporation into the artwork. This decision-making process will be discussed in the exegesis. Using this microscope, much higher magnifications than the stereo-microscope were possible, which achieved higher quality results for photography. But as the magnification increased, the depth of field decreased, which dramatically reduced the ability to resolve the entire organism in a single frame. Although there are digital imaging devices and programs available to montage the sharply imaged slices together, I found that I was able to achieve reasonable results at lower magnifications for particular art works. Ultimately, I found that the electron microscope gave the best image qualities required for the photographic projection and montage work in my books, as referred to in the *Rio Vista*, Mildura 'contact zone' narrative construction discussion. I have included a set of 3 raw microscope images from the light microscopes and the scanning electron microscope (SEM) as examples of the visual 'sense-data' collected in the microscope, see Appendix C.

B4.4 Electron Microscope

ANU EMU:

Scanning Electron Microscope (SEM) - Cambridge S360 (SEM, 1987)

Critical Point Dryer - Balzers

Sputter Coater - (Au/Pd) Emitech

The Scanning Electron Microscope enables a detailed view of the fungi and their environment while magnifying the specimen to well over 50,000 times its size. These imaging devices use electron beams, rather than visible light, to image the specimen. This requires that the specimen is specially coated and prepared for placing in a vacuum. As the electron beam hits the gold-coated surface of the specimen it creates forms of energy that are sensed by specially developed detectors. This information is then digitally translated into a digital video image viewed and monitored on TV screens. These digital images are then captured for use in the artwork back on location and in the studio.

Critical Point (CP) drying methods were advised as the best to prepare biological material for the scanning electron microscope, to ensure preservation of the structures of

the specimen. Even though I had excellent supervision and assistance from the support staff of the ANU EMU, I was unable to realise evidence of aquatic fungi in the final specimen. The loss of the aquatic fungal spores in the final specimen could have been attributed to the many steps of washing and centrifuging in the CP process. Also a highly probable cause of this loss may lie in the inherent nature of the aquatic fungi to attach to surfaces. This meant that there were losses through the transfer of samples across the many steps from the original sample viewed in the Petri dish under the stereo microscope to the final stub specimen for scanning in the electron microscope.

Within the limited time to experiment, I have found that simply air-drying a leaf segment or a drop of the aqueous fungi solution was more successful. This technique was more direct, with few intervening steps, ensuring the presence of fungal spores for imaging in the electron microscope. Although there was some artefact present due to this slower drying method, it did not affect the artistic outcomes, as I found this desiccated form of the fungi and its microscopic topography to be visually beneficial.

The dried leaf samples were carefully mounted onto electron microscope 'stubs' then placed in the Sputter Coater, a vacuum chamber for coating with gold. Once coated, they were then ready for inserting into the vacuum chamber of the electron microscope for imaging. I have included a set of images to illustrate this process, Plate B2 below.

Plate B2 Illustrations of microscope work
Top left: Self portrait at the ANU EMU, Photomacroscope
Top right: Drop of sample water
Middle left: Processing samples in the ANU EMU fume cupboard
Middle right: Specimens in Sputter Coater
Bottom left: Doug Spowart (1953-) Victoria at the ANU EMU, SEM
Bottom right: Specimens placed in the vacuum chamber of the SEM

B5 Conclusions

Ultimately the collection of material and the simulated environment procedure needed to be simple and adaptable from the field to the laboratory to the studio. This enabled aspects of the work to be carried out away from a specialised laboratory, and transportable to other locations: for example at *Bundanon* where I collected the fungi from the Shoalhaven River, incubated in the portable fungal 'aquariums' (Plate B1), and then processed and imaged the fungi at ANU EMU (Plate B2). All of this work was done remote from my studio and the laboratory in Toowoomba. This way I was able to work closer to the *Bundanon* site for the preparation of the images to be utilised in the residency to follow.

As an indicator of how much is still unknown, it is worth noting the herbarium specimens that remain unidentified (undeter. sp.). Perhaps an increased awareness of the importance of funding and supporting knowledge-building of the less-than-cuddly, furry environment will be necessary to remedy these gaps. It is interesting to note that early in my project, I sought advice from researchers in another government department associated with the environment and it was suggested that rather than aquatic fungi I should be working with the more popular green tree frogs or koalas. This statement only served to confirm my choice and final direction for the artwork.

Appendix C

Selection of Visual 'Sense-data'

I have included a small selection from the many hundreds of images collected for the visual work. References to the non-visual 'sense-data', including the physical and psychological experience of the data collection from the microscope to each of the contact zones, throughout the body of the exegesis were relevant to the narrative construction.

This section is divided into the following Plates of selected examples of 'sense-data' from the different 'contact zones'

C1 The Microscopic work

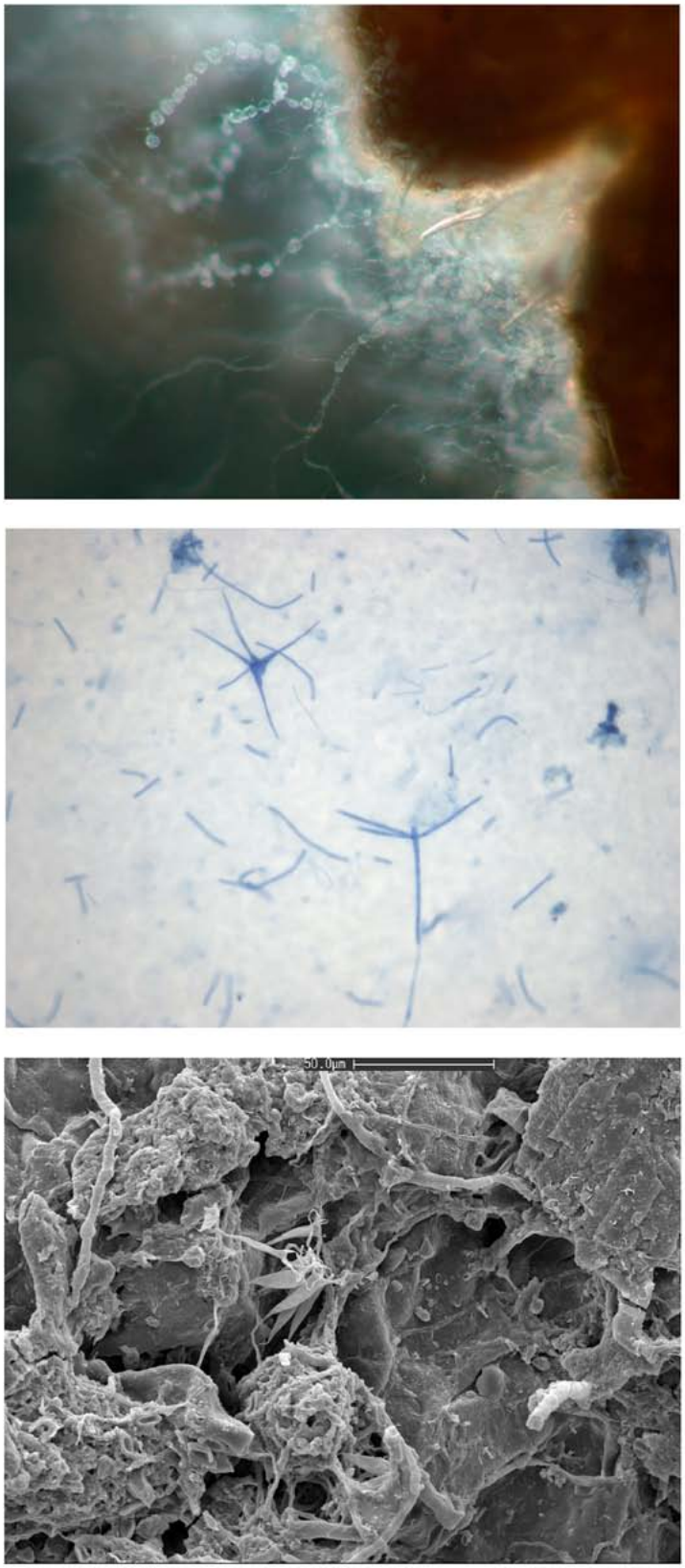

Plate C1. Examples of visual ‘sense-data’ from the microscope work
Top: Image from the ANU EMU: Wild M400 photomacroscope, Spot Flex CCD camera
Middle: Image from the QDPI Toowoomba: Leica DMLD with Leica DC300 digital camera
Below: Image from the ANU EMU: Cambridge S360 (SEM, 1987)

C2 Koolunga

Plate C2. Examples of visual ‘sense-data’ from Koolunga

C3 ‘Contact Zone’ 1: *Rio Vista,* Mildura

Plate C3a. Doug Spowart (1953-)
Image of Victoria photographing in *Rio Vista*

Plate C3b. Examples of visual ‘sense-data’ from the Murray River region near Mildura

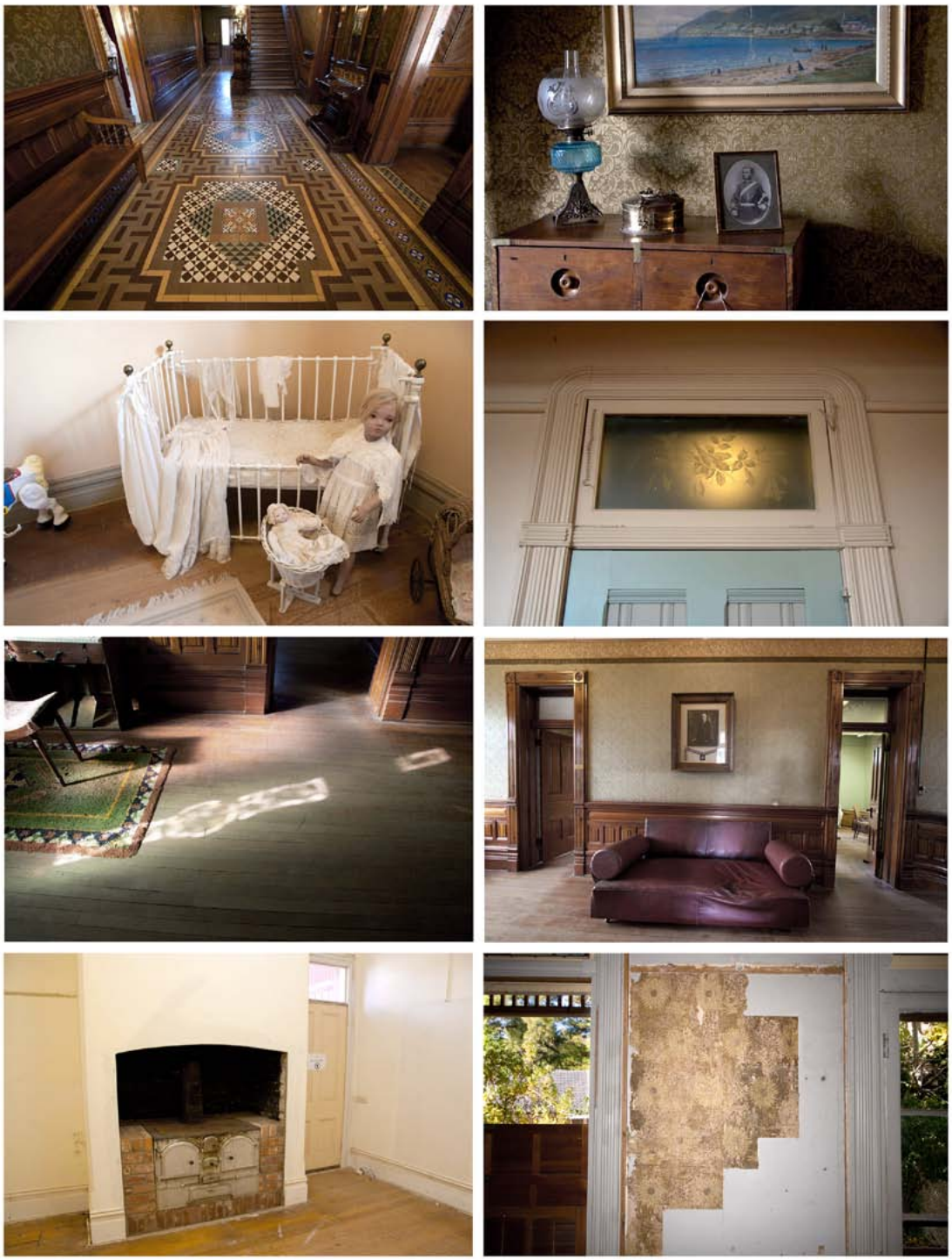

Plate C3c. Examples of visual ‘sense-data’ from *Rio Vista*

C4 ‘Contact Zone’ 2: *Bundanon* and the Shoalhaven River

Plate C4a. Doug Spowart (1953-)
Image of Victoria photographing along the Shoalhaven River

Plate C4b. Examples of visual ‘sense-data’ from the Shoalhaven River and landscape at *Bundanon*

Plate C4c. Examples of visual ‘sense-data’ from the *Bundanon* property

C5 ‘Contact Zone’ 3: Myall Park Botanic Garden

Plate C5a. Doug Spowart (1953-)
Image of Victoria photographing at Myall Park Botanic Garden (MPBG)

Plate C5b. Examples of visual ‘sense-data’ from Myall Park Botanic Garden (MPBG)

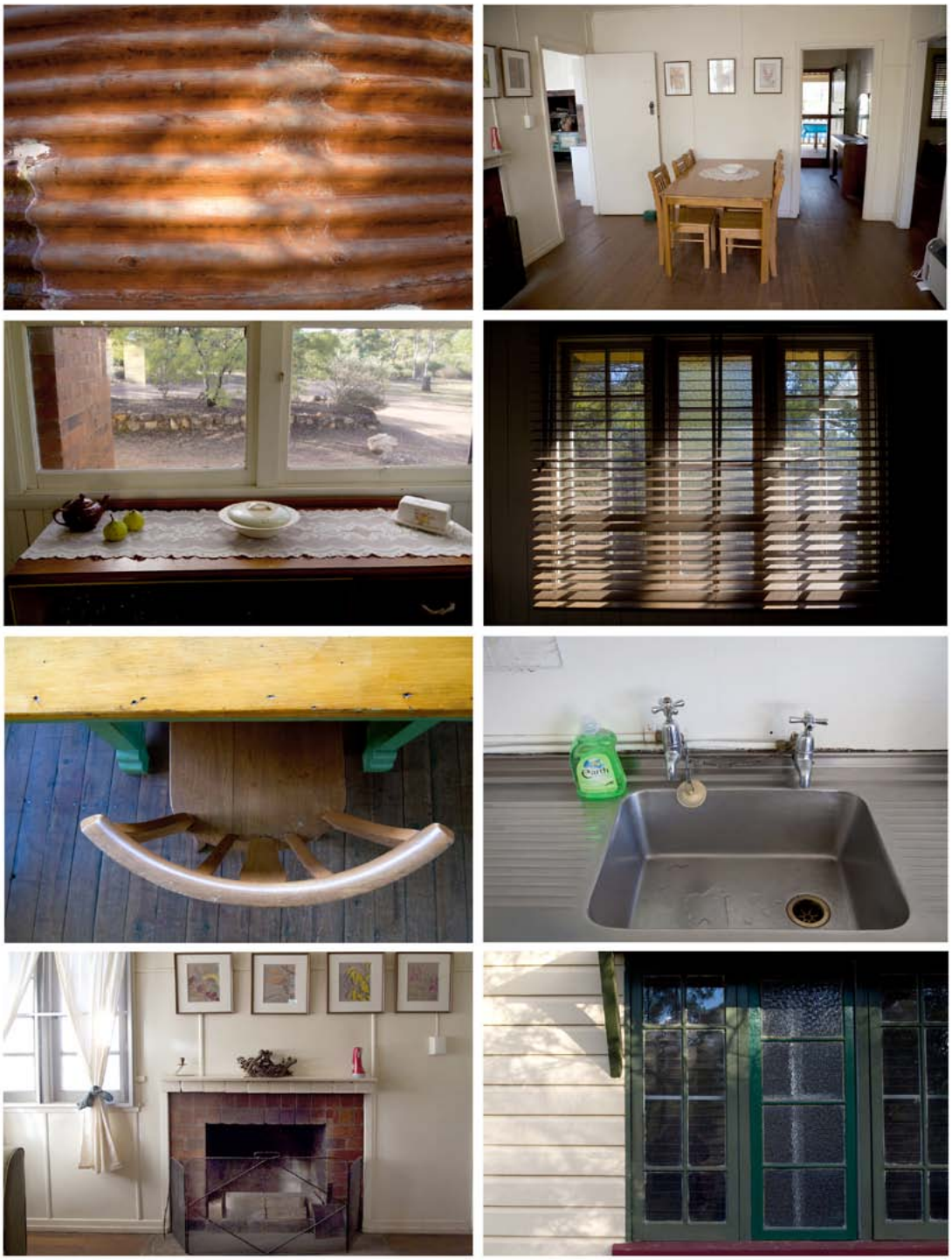

Plate C5c. Examples of visual ‘sense-data’ from *Avochie* cottage situated on the MPBG property

Appendix D

Science Meets Art Exhibition documents as follows:

D1 Catalogue consisting of: cover and inside page, that lists the artists, their work, and a foreword by the presiding Minister for the Arts at that time Anna Bligh.

D2 Media Release outlining the concept of the exhibition and its connection with the *Science in Parliament* programme.

Appendix D1

Confocal Continuum
By John Lock
Sale price: $60.50

Cubist Crystal
By Jenny Martin
Sale price: $60.50

The Book of Clones 3 (2004)
By Catherine Mc Cue Boes
Sale price: $850

The Prickly Pear Circus (2004)
By Catherine Mc Cue Boes
Sale price: $2400

Pyjama Party
Artists: QEMSCAN™ owned by Intellection Pty Ltd
Composition and framing by Anne-Maree Althaus
Sale price: POA

Bauxite Tropicana
Artists: QEMSCAN™ owned by Intellection Pty Ltd
Composition and framing by Anne-Maree Althaus
Sale price: POA

Simplistic Theories I to IV
By Felicity Rea
Sale price: POA

White Faced Heron
By Paul Stumkat
Sale price: $2500

Moon Lizard (Leaf Tail Gecko)
By Paul Stumkat
Sale price: $1400

Ocellus
By Geoffrey Ian Thompson
Sale price: $350

Aoupinia Pseudohelea - a remarkable new Darkling Beetle from New Caledonia
By Geoffrey Ian Thompson
Not for sale

Confocal Continuum and *Cubist Crystal* have been supplied by the Angstrom Art Collection at the University of Queensland's Institute for Molecular Bioscience.

Works from this exhibition can be purchased by emailing jason.steinberg@qld.gov.au or phoning 07 3235 4346.
Works installed by - Daniel Templeman

Science meets Art

28 September – 8 October 2004

Confocal Continuum by John Lock

SCIENCE IN PARLIAMENT Queensland

Queensland Government

Minister's foreword

The *Science meets Art* exhibition highlights and reinforces the importance of interaction between creative societies and knowledge-based industries. Across Queensland the State Government continues to nurture knowledge-based industries as they not only enrich our cultural experience but are pivotal to the success of the Smart State.

I am pleased that Arts Queensland has worked in partnership with the Office of the Queensland Chief Scientist to deliver this exhibition. I look forward to a further partnership in 2005 to develop more *Science meets Art* programs.

Science meets Art is part of *Science in Parliament* which provides scientists, researchers and innovators with an opportunity to discuss contemporary science issues with Members of the Queensland Parliament.

I applaud the artists on their work and encourage you all to enjoy this interesting installation of artwork.

Anna Bligh MP
Minister for Education and
Minister for the Arts

Barium
By Trish Adams
Sale price: $985

Zirconium
By Trish Adams
Sale price: $985

Gymnasts
By Paul Brown
Sale price: $1250
($1000 unframed)

Night Sky
By Paul Brown
Sale price: $1250
($1000 unframed)

AQUABATICS
By Victoria Cooper
Sale price: $600

Problems with Plumbing
By Sybil Curtis
Sale price: $750

Problems with Waste
By Sybil Curtis
Sale price: $950

Exchange Particle
By Norman Dahl
Sale price: $200

Sum over Histories
By Norman Dahl
Sale price: $350

Black Gold
By Jenny Fraser
Sale price: $500

It's all about control
By Jenny Fraser
Sale price: $500

Untitled
By Anthony Gembeck
Sale price: $650

Imagined Land
By Jessica Hall
Sale price: $2400

Future Shock - 106+
By Diana Heath
Not for sale

The Architecture of a Bug' Tall Tables
By Glen Henderson
Sale price: $2400 for three tables

Rust
By Mia Kempel
Not for sale

Appendix D 2

Anna Bligh MP
Member for South Brisbane

Queensland Government

Minister for Education and
Minister for the Arts

Media statement

28 September

Science meets Art in Parliament House Exhibition

An inaugural art exhibition being held at Parliament House in Brisbane reinforces the importance of interaction between creative societies and knowledge-based industries.

Minister for Education and Minister for the Arts Anna Bligh officially opened the *Science meets Art* exhibition today as part of the Science in Parliament initiative.

"Science in Parliament on October 6 provides scientists, researchers and innovators with an opportunity to meet with members of Parliament to discuss present and future science issues," she said, "*Science meets Art* is an extension of this initiative."

"Queensland is one of Australia's fastest growing and most dynamic arts and cultural environments and the Queensland Government is proud to help drive this creative development."

Ms Bligh said Arts Queensland had worked in partnership with the Queensland Chief Scientist, Professor Peter Andrews and his office to deliver an exciting exhibition.

"Arts Queensland works to foster a more creative Queensland through innovative programs and partnerships across Government and with industry," she said.

"*Science meets Art* is a great example of how very different industries can work together for a common aim.

"Building sustainable and viable arts and cultural industries stimulates economic growth and diverse employment opportunities for Queenslanders."

Professor Andrews said the exhibition illustrated the broad impact of science in the Smart State.

"The nexus of science and art is a fascinating area and I'd encourage people to visit the exhibition," he said.

The exhibition will be held from today (September 28) to October 8 in the Level 3 Foyer of the Parliamentary Annexe, Alice St, Brisbane.

It will include 27 works from 18 Queensland artists and some of the works on display will be for sale.

Media contact: **Shari Armistead** **3235 4593**

Appendix E

Bundanon AIR Application

Artist in Residence
Category 1: Artist in Residence (By Application)
Application Form

Office use only

Name: **VICTORIA COOPER**

Address: PO Box 1455

Town: Toowoomba **State:** Queensland **Code:** 4350

Phone: (07) 46394951 **Mobile:** 0412 627 238

Email: Greatdivide@a1.com.au

Main arts practice: Artists' books/ photography **Main occupation:** Freelance Artist

Please briefly describe your proposed residency & what you hope to achieve

My most recent artwork towards a PhD (visual arts) involves engaging with the current status of water issues and the importance of 'Place' to society. More specifically, as this work is informed and defined by my background in microbiology, I am capturing the unseen, microscopic aquatic landscape and its life forms found within river systems. My challenge is to discover how these aquatic micro-vistas can be mythologised to transform the viewer's experience of water. Artists' books and photography provide the medium to communicate my visual narratives which are constructed from connections with reality and the mythical.

Bundanon and the Shoalhaven River have a long history of links with the traditions of art, culture and nature. In particular, I am interested in the allegorical and mythical work of Arthur Boyd's as it displays a deep connection with and concern for the Australian landscape. If successful, I plan to: immerse myself in the visual possibilities influenced by this place, research and solidify concepts to form artistic work from an individual perspective and, with fellow artist and partner Doug Spowart, create a collaborative view of this landscape. I have found that working in this way has its own unique contribution to the process and outcomes of my art making by taking it into new and unchartered areas of investigation and resolution.

Preferred duration/dates of proposed residency (generally 2 - 6 weeks)

5 to 6 consecutive weeks during any one the following options:
December 2006 ~ 11 February 2007 / 29 May ~ 8 July, 2007 / 22 August ~7 October, 2007

Dates you would *not be* available

12 February ~ 28 May 2007 / 9 July ~ 21 August, 2007 / 8 October ~ December 1, 2007

If successful, would you like your material returned after your residency? Yes ☐ No ☐ (please tick)

Signature _____ Date _____ / _____ / _____

Updated 28 August 2007

Bundanon Trust – Supported by the Australian Government
Artist in Residence program assisted by the Australia Council for the Arts

BUNDANON TRUST ABN 72 058 829 217 PO Box 3343 NORTH NOWRA NSW 2541 T 61 2 4422 2100 F 61 2 4422 7190 www.bundanon.com.au

Appendix F

Copyright and Permissions

The author has received copyright permissions from the owners of copyrighted material, Drs Doug Spowart and Malcolm Ryley, that appears in this exegesis.

Note that all photographs, except those otherwise attributed have been made by the author.

Also received are letters of support and permission for the author to work on her PhD project in the following places: *Rio Vista,* Mildura Arts Centre, Mildura Victoria; *Bundanon,* Nowra New South Wales; and Myall Park Botanic Garden, Glenmorgan Queensland.

Copies of these documents are held by Author and the James Cook University Library.

Appendix G

Inserted is a CD-Rom of the books presented as interactive Flash Page-Flip animations.

Note: Flash presentations may not play correctly on Apple computers, tablets and phones.

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