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Collecting The World: Nature In Museums, Gardens and Art

Author:
Ellison, Rachel

Publication Date:
2011

DOI:
https://doi.org/10.26190/unsworks/15111

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COLLECTING THE WORLD:
NATURE IN MUSEUMS, GARDENS ANDART

RACHEL ELLISON

MASTERS OF FINE ARTS

UNIVERSITY OF NEW SOUTH WALES

COLLEGE OF FINE ARTS

2010

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Introduction

The following paper is presented in order to explore the conceptual frameworks that underpin the artworks presented as part of my Masters of Fine Arts candidature. This includes the installation titled *The Perfect Specimen*, which is made from etched glass, wood, light, text and shadow, as well as, a collection of porcelain objects grouped under the title *Resemblances*.

These artworks have emerged through an exploration of the phenomena of human representation of the natural world. These concepts can signify diverse meanings, and as such I will endeavour to illuminate some of these discourses as they relate to the particular artworks I have presented.

This project has been focussed within a western context, as this is where my personal experiences have originated. Though, as an artist I am intrigued by the way images and ideas of nature have evolved over time and in different cultures. Representations of nature invoke dynamic relationships between human cultures and the ever-changing phenomena of nature. In representing nature humans can simultaneously understand and express our affinity with the natural world, describe it's characteristics, order it according to our values, and interweave our ideas and experiences into its very fabric.

Bodies of knowledge that have sought to achieve an understanding of nature have morphed under the pressure of collective agreements and disagreements, over time and through dynamic cultural exchange. These debates in a western context have centred on notions of the intrinsic and cultural value of natural phenomena and resources, how and by whom the natural world is to be exploited, preserved or conserved, as well as, how to balance human desires and knowledge with the other living organisms with which we share the environment. However it is ideologically positioned, nature is an iconic, archetypal and defining value in all cultures, and the representation of it has shaped who we are in the world.

Ways of seeing the world are derived from a collection of personal experiences and cultural or social traditions. These impressions and beliefs necessarily change under the burden of scrutiny and through the evolution of experience. As such, the objects of our study in nature have sometimes slipped from our grasp and morphed in something anew, or have been dissected and redefined by the eye and hand of inquiry. Knowledge we have gained can now be seen in the midst of what we have lost in these transactions. Greater awareness of our environment and the interconnectedness of the ecology of life has led to a re-interpretation of established wisdom in light of what we can now recognise as the limitations of our knowledge.

The works I have created reflect on the characterisation of human relations with nature in contemporary culture. The first chapter of this paper relates to the installation *The Perfect Specimen*. The scope of this investigation includes examinations of the collection, preservation and presentation of nature in Natural History collections in light of anthropogenic extinction in the natural world, the relationship of botany to colonial expansion and the subsequent environmental transformation, including the inherent economic power tied to the assimilation of knowledge of nature into European scientific frameworks, and the depletion of environmental systems in light of these exploitative land management strategies, as well as, the development of ecology and conservation movements in contemporary museum culture.

This work utilises several elements in order to introduce these concerns. These include the use of images of extinct Australian flora drawn from herbarium collections that have evolved over the course of European settlement in Australia, the use of specimen boxes reminiscent of vehicles traditionally used to display collections of natural objects in scientific as well as lay contexts, and the use of light and shadow within the work as a metaphor for Western cultural ideologies invoking notions of 'absence' and 'presence', as well as concepts of illumination, truth and rationality. In order to situate this discussion, I will explore how

ideologies of collecting nature have evolved over time. Here I am interested in how encyclopaedic and rational ideologies used to order Natural History collections over the course of their development compare and contrast to contemporary efforts to view nature in a more holistic manner, situated beyond the reductionist order of Natural History collections. Through this I will explore the contemporary recognition of the limitations of our scientific knowledge to date, despite the hundreds of years devoted to encyclopaedic collections of nature. This discussion will conclude with a reflection on how environmental, social and political changes have impacted on the way Natural History collections are viewed today, or indeed added to in the context of current conservationist frameworks of studying nature.

The collection of ceramic objects that make up *Resemblances* have as their scope, an investigation of metaphors of gender, social authority and social values bound up in cultures of plant cultivation, floriculture and decorative practices. The museological strategy of display of these works in a glass vitrine acts as a frame, and is used to link meanings within these objects, and to explore the role of juxtaposition, categorisation and comparison in defining meaning within objects.

The ceramic objects in this work are individually titled and labelled, *Field Guide*, *Fossil*, *Flower Arrangement*, *Blue Rose and Acanthus.* Conceptually these works draw on a variety of ideas including, rational ideologies involved in naturalism and empiricism in Natural History frameworks, concepts of divine or 'natural' order, floral cultivation and notions of taste, decorative practices and floriculture, genetic engineering of flowers, gendered associations of the concept of nature, as well as the use of acanthus leaves in decoration and it's symbolism.

The issues that I will discuss include rational approaches to understanding nature and what is beyond the scope of these reductionist methods, the historical and social alignment in Western cultures of women, feeling and nature in opposition to rational and cultural pursuits, along with how these beliefs in 'objective', 'intrinsic' or

‘natural’ truths have been used to justify gender inequality, the transformation of nature to suit human aesthetic sensibilities through cultivation and genetic engineering, the use of decorative symbols such as the acanthus and their long yet forgotten history of significance in Western cultures along with the cultural entwinement of human identity and experiences into natural materials.

Chapter One

The Perfect Specimen

The Installation *The Perfect Specimen* consists of a collection of 60 works each representing an image of an extinct species of native Australian flora. The form of representation is that of an image of a herbarium specimen, with the earliest dated 1820 and the latest dated 1966. Individual images have been etched onto glass panels and are framed in a manner typical to natural history specimens. These plant etchings have the appearance of frosted glass, which visually is overlaid with a more dominating yet transient projection of the plant's image in shadow within the specimen box. The boxes are labelled with the Latin binomial that has current scientific acceptance and the date that the plant has last been seen in a living environment, which is subsequently the accepted date of extinction. The ordering principle within the gallery space is chronological and based on this date.

This work was initially intended to create a visually powerful statement about the state of the Australian environment as it has emerged after two hundred years of industrialisation. This work draws on the history of collecting plants and representing nature within scientific and social frameworks in Western culture and urges viewers to recognise the paradoxical effect of human knowledge of nature, in that it is both incomplete and subject to temporal change, sometimes destructive or transformative of the very thing it seeks to know, yet can be used to benefit, not only humans but the whole of nature in our greater awareness and respect for it's diversity.

This work draws on a particular history of representing nature that emerged through Natural History museums and collections. In today's world herbarium catalogues, herbaria, Natural History compendiums, museums and botanic gardens form part of our established wisdom of

nature. Many Westerners assume that this way of seeing the world is an objective, inalienable and intrinsically truthful way of viewing nature, due to the historically authoritative aura of collections of nature still having currency in contemporary society. These kinds of images frame our appreciation and utilisation of the natural world. Yet in this scientifically reductionist approach that seeks to empirically re-arrange individual elements of the world according to human definitions of order, something of the complexity and intangibility of living and unfettered nature can be seen to be missing. This is because no living thing though individual, or indeed a unique species can exist in the isolation that is presented in a catalogue, a definition, a specimen cabinet, or even in the ordered confines of a garden. Rather, the complexity of dynamic relationships in nature must be taken into account in order to understand the natural world more completely.

Undoubtedly collection based institutions impact on our understanding of nature as,

"*these collections have a role in documenting 'global composition, identity, spatial distribution, ecology, systematics and history of known life forms. They provide the raw research material for revealing the pattern, processes and causes of evolutionary and ecological phenomena."*[1]

They can also play an essential role in educating the public about conservation and biodiversity. Though it is important to note that it has taken hundreds of years and billions of specimens[2] to describe the approximately 1.9 million species on Earth known to science[3]. Scientist's estimate that between ten to a hundred times this number of species are not known to science.[4] If changes aren't made in terms of managing

[1] Krishtalka, L. & Humphrey, P. (2000). Can Natural History Museums Capture the Future. BioScience, 50(7), P.612
[2] ibid. P.613
[3] Encyclopedia of life (EOL). Learning and Education Gateway [Website]. Accessed 12/6/2009, from http://education.eol.org/who/biodiversity
[4] Chivian, E. (2001) Environment and health: 7. Species Loss and Ecosystem Disruption-The Implications For Human Health. 164(1) P.66

ecological systems at large then collections based institutions may be running out of time to assist in our understanding of biodiversity.

These collections need to be understood in terms of the historical structures that have defined and dictated their production and consumption by individuals and societies, in addition to how well they live up to their stated missions for this generation. Through an exploration of these collections and collecting practices both historically and currently a wide variety of definitions of nature can be seen to emerge. These varied definitions over time have conditioned a contemporary appreciation of nature and it can be useful to examine some of the inherent assumptions behind these systems of representing, as well as their legacies as we look at 'nature' through the rubric of Natural History today. Throughout this paper I will explore these assumptions that have been interwoven into the phenomenon of Natural History museums and thus our perceptions of nature. Including, the belief that humans can obtain a complete or encyclopaedic understanding of nature, that knowledge of nature is stable and intransient with the signs of nature represented in collections invariably pointing to unchanged and unchanging significations in the wider world, that bringing order through categorisation, presentation and display to what human's perceive as chaos in the real world will invariably enhance our understanding of nature, as well as, the belief that knowledge of nature will ensure our control over it, or indeed that it is morally justifiable to assume a position of dominance over nature.

The strategies of display and scientific images evident in my work draw on these methods and assumptions that are part of a scientific verification of the world, and are intended to remind viewers of the seductive appeal of naturalistic and realistic images in authenticating our ideas of the world. Whilst the fact that these artworks represent images of extinct plants is in turn intended to remind audiences of what is beyond the scope of this vision of the world.

Natural History museums, herbaria and botanical gardens all began as places of learning and authority, and in their accumulation of objects

they were fashioned as visual vehicles of knowing the world, as well as a way of disseminating knowledge about the world. This is also an important element of my work, in that I am intending to disseminate information and ideas through the easily accessible and visually powerful format of the collection.

This emergence of a wholesale collection and investigation of nature has had profound consequences for our world. These investigations into nature have been paradoxical in effect, as they have contributed to biological demise through increased production and consumption, yet have also given us insights into our impact as humans and how we might respect and maintain natural diversity through a historical record that enables us to undertake comparative studies of our environment over time.

The study of nature from which we derive this understanding today has resulted from a succession of very different outlooks on the natural world. Early collections of nature emerging within Renaissance Europe, though reliant on a vastly different definitions and relationships with nature, initiated this fervor for collecting natural materials. Emerging perceptions of nature as a collectable entity have dramatically reshaped Western culture from this time. These early collections initially manifested conceptually as a microcosm of the world at large with the objects within intended to act as signs that could refer to a living and indisputable element in the 'real' world[5]. These early collections termed 'Cabinets of Curiosities', in contrast to how me might see things today, maintained a passion for displaying the freakish, strange, unique and rare as emblematic of the real world. [6] Moreover, with ideological shifts promoting an empirical encounter with nature, a newly fashioned belief emerged that an understanding of nature could no longer be contained

[5] Ed. Impey, O. & Macgregor, A. (1985) The Origins of Museums: The Cabinet of Curiosities in Sixteenth and Seventeenth Century Europe. Oxford: Clarendon press. P.76
[6] S.J, Gould. (1994). Cabinet Museums Revisited. Natural History. 103(1). P.4

within the authoritative ancient texts that had shaped the study of nature up until this point. [7]

Herborising trips and excursions into the 'field' were couched in the rhetoric that the world at large was the first museum from which elements could be brought into the confines of the second representational museum in order to be fully understood.[8] This world in miniature became a point of intersection between the natural world and the human intellect. Through a concept known as Hortus Hyemalis[9], these herbaria came to represent nature suspended in an eternal spring, as a plants colour and shape could seemingly be preserved indefinitely.

Museums today have to actively preserve these specimens and it is a constant battle to arrest their fragility. My artworks in their materiality have a fragility that echoes that of real life specimens. This fragility is reiterated in the method of presentation, as the glass used to make these works is what would traditionally have been used to protect specimens, with only the transient shadow image of each plant remaining inside the confines of the specimen box.

The study, collection and presentation of nature through these measures began to emerge as a unified discipline that aimed to bring all of nature into one space. Early incarnations of the museum defined the study of nature with the goal of understanding the intricate web of relationships that unified the world at large as well as symbolically representing it. Collection and display were undertaken with the hope of bringing order to what the human eye saw as chaos, and with a hope that a total knowledge of nature could be obtained. Collecting became one way of maintaining control over nature and the explosion of materials resulting from increased travel and trade with foreign lands.[10]

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[7] Findlen, P. (1996) Possessing Nature: Museums, Collecting and Scientific Culture In Early Modern Italy. London: University of California Press. Pp.163-66
[8] ibid. Pp.163-66
[9] ibid. P.6
[10] Ed. Jardine, N., Secord, J.A., & Spary, E.C. (1996) Cultures of Natural History. Cambridge University Press: Manchester & New York. P.151

Francesco Calzolari's Cabinet of curiosity in Verona
Source: Arthur. MacGregor, *Curiosity and Enlightenment: Collectors and Collections from the sixteenth to the Nineteenth Century*.
Yale University Press, London. 2007

Ferrante Imperato's Cabinet of Curiosity
Source: Arthur. MacGregor, *Curiosity and Enlightenment: Collectors and Collections from the sixteenth to the Nineteenth Century*.
Yale University Press, London. 2007

Moreover, these collections emerged as fashionable and desirable indicators of an individual *"collectors knowledge and mastery over the world*"[11], and most often indicated *"the heroic and dangerous deeds of a particular collector".*[12] In this framework the organic materials within became images of themselves, or *"similitude's that (were intended to) link the works and the things designated by them"*[13]**,** and in turn were used to authorize and verify the truth of a particular collector's observations of the world. The Prominent Renaissance naturalist Ulisse Aldrovandi (1422-1505) observed, a museum was "*collected in travel"*[14]*.* Curiosity and its display in collections at this time became a specific social attribute that *"only naturalists who belonged to and associated with the patricate could hope to obtain"*[15]*.* This world was only open to an elite few, and as Paula Findlen writes in *Possessing Nature* these wealthy practitioners,

" controlled conditions of access and shaped the meaning of the experience for those whose gender, social standing and humanist credentials made them eligible to cross the threshold"[16]

This surrounding aura of erudition and authority ensured that the museum emerged as a privileged and preeminent site of knowledge, with many Europeans seeing collecting and display as the key to understanding the world. Collecting and in particular collections of nature have been seen throughout much of their historical course as a civilizing process as well as, *"an arena in which to articulate social difference through material possessions*"[17]. This fashioning of the collection as an authentic microcosm of the word at large that also represents a collector's mastery over this world, gave rise to an

[11] Findlen, P. op.cit. P.158
[12] ibid.
[13] Foucault, M. (1970). The Order of Things: An Archaeology of the Human Sciences. London: Tavistock Publications**.** P.42
[14] Findlen, P. loc. cit
[15] Findlen, P. op. cit. P.100
[16] ibid.
[17] ibid.

incessant trade in rare, unique and exotic 'living objects' from nature. Over the centuries boatloads of natural cargo have been shipped back to Western shores from all over the globe to fill personal collections[18], and this practice continues today to endanger the diversity of living ecosystems[19]. My work straddles these worlds of the personal and scientific collection of nature. The language it employs talks of the seductive allure of collections of nature as representative of human hopes, aims and desires.

The emergence of a wholesale collection and investigation on nature, and the presentation of these materials within a museological context, has left philosophical and physical legacies. Though many of the original collections of this time have long since been disassembled or reassembled in various forms, what has remained is a fervor for collecting, removing and displaying the rare and exotic from the natural world. This practice though unabated in elite circles is subject to much more mediation and regulation in current scientific arenas. Moreover, the vision of nature as a use value and cultural value has taken on new characteristics over the course of this history. The disciplines of Natural History, epistemologies and technologies of museum practices, as well as trade in natural objects have become valuable cultural commodities as a result of the pursuit of empirical knowledge of nature. Ultimately the way we see ourselves, as well as our ideas about nature have changed under the weight of the products of collecting since this time.

Natural History as a form of inquiry has been designed to record the knowledge of the world for the use and betterment of humanity. The museum as it emerged from the 'Cabinet of Curiosities' became a symbol of this new 'science' of improvement. Natural History came to mean an account of nature based on information acquired by inquiry, observation, dissection, vivisection anatomy and experimentation[20], as

[18] Ed. Jardine, N., Secord, J. A. & Spary, op.cit. P.76
[19] Australian Government. (n.d).Wildlife Trade and Conservation: Convention on International Trade in Endangered Species of Wild Fauna and Flora. [Website], Accessed 11/2/09 from, http://www.environment.gov.au/biodiversity/trade-use/cites/index.html
[20] Ed. Jardine, N., Secord, J. A. & Spary, ibid. P. 108

scientists searched for a natural order to place the parts of nature within. Through vast collections aimed at taking inventory of the world it was hoped that the sum of nature could be understood and harnessed. From the 17th century onwards concepts of observation and objectivity along with a belief in progress and cultivation have became enmeshed in discursive practices surrounding collecting for scientific collections, as practitioners have sought to espouse a belief in a human hierarchical separation from nature and control over natural forces[21].

In this arena taxonomy and classification couched in a search for new products became central to the work of Natural History. 'Enlightenment' science hoped to differentiate itself from earlier forms of display through the ordering of collections and the search for natural orders. Though because of ideological links between these collections and the framing of collecting as a moral occupation pursued in appreciating God's first museum, collectors attempted to display as much material as possible. An example of this can be seen with the statement by a founder of *The Ashmolean Society*, Reverend Richard Gresswell (1800-1881), in May 1853 when he wrote, that fellow Oxonians needed to build an encyclopedic museum, in order that each specimen occupy *"precisely the same relative space",* that it did in *"the physical universe in which it moved and had it's being"*[22]. This urge to display took on other more disturbing forms in instances in which prolific collectors such as Lord Rothschild in England, displayed *" zebra's and antelopes in kneeling positions or even supine, so that two extra rows could be inserted to include all specimens in floor to ceiling displays at his museum"*[23].

Belief in human mastery over nature persisted in the age of colonial expansion and provided the framework in which vast sums of natural wealth were extracted and brought back to Europe through an array of

[21] Coutts, G. & Jockela, T. (2008) Art, Community and Environment. London: Intellect. P.35
[22] Yanni, C. (2005) Nature's Museums: Victorian Science and the Architecture of Display. New York: Princeton Architectural Press. P.64
[23] S.J, Gould. (1994). loc. cit

unregulated channels[24]. Collecting in this era retained and expanded on its aura as civilizing and improving with museums coming to be invested with moral authority, both in their aura as a civilizing recreational pursuit and in the moral authority of the 'objective truths' housed within. The museum not only housed objects, over the course of its growth it became a place where relationships were formed, as materials inside became exponents of cultural ideas, ideals and social goals.

During the Victorian era, the museum came to represent a meta-narrative of evolutionary progress, from simple to complex and primitive to civilized. In this era it retained its ideological function as representative of the world at large, but instead of just the wonder and strangeness of life, it came to represent a faith in territorial expansion, progress and nationalism clothed in the rhetoric of objective and rational truths. The museum in this way became a vehicle of scientific legitimacy that while presenting organic 'facts' could also promote analogies of social hierarchies through presenting notions of 'natural' truths[25].

In terms of the Australian story, classification of early specimens was undertaken in Britain and Europe until the mid 19th century, with most "*early specimens of flora and fauna held and continuing to be held by foreign museums*" [26]. Typically of the time their arrangement in these museums represented the belief that Australian species occupied the bottom of an evolutionary scale[27]. Despite a fascination with the curious nature of the Australian continent, within the scientific climate of the time there was no push to preserve the natural environment or its unique species. With "*most scientists of this time accepting the inevitability of change, as Western 'civilization' 'tamed' the 'savage' landscape*"[28]. Museum curators of this era

[24] Brockway, L. (1979). Science and Colonial Expansion: The Role of the British Royal Botanic Gardens. New York: Academic Press. P.48
[25] Yanni, C. op. cit. P.164
[26] Ed. Kaplan, F. (1994). Museums and the Making of Ourselves: The Role of Objects in National Identity. Chapter Three: Anderson, M. & Reeves, A. Contested Identities: Museums and the nation in Australia. London and New York: Leicester University Press. P. 83
[27] Ed. Kaplan, F. ibid. P.84
[28] Ed. Kaplan, F. ibid. P.84

saw their role as one of recording for posterity, as one report from the Board of the *South Australia Museum* in 1857 highlights with the statement,

" It is highly desirable, and, indeed, almost a national duty, to preserve for posterity the forms and semblances of the various singular and beautiful birds, reptiles, and insects now inhabiting Australia, ere they shall have finally disappeared before the footsteps of the white man"[29].

Despite declines in the abundance of native mammals being identified soon after the colonization of Australia[30], little was done to remedy these drastic consequences of 'progress'. In another example the naturalist Sir Thomas Mitchell who described the Pig-footed bandicoot which is sadly now extinct[31], wrote that it would be pre-dated soon by "*flocks of Sheep and herds of cattle*" and that collections should be made promptly as *"it would soon be more difficult to procure specimens for our national collection"*[32].

Rational ideologies have promoted a faith in science and scientific frameworks of viewing the world that have been premised on notions of an eventual unfolding of natures secrets. These belief systems despite obvious evidence to the contrary during their development, have failed to take into account the transient and fugitive elements of nature, or what is beyond the scope of human vision.

In Enlightenment ideologies light has been offered as a metaphor for this illumination of the truth, and within these dichotomous hierarchies shadow in turn has been analogised as representing *"the stage furthest away from truth"*[33], or something duplicitous, irrational and oppositional to knowledge[34]. Shadow is an important element in my work as it also indicates a presence of a mediating body, as something must be there in order to cast a shadow, in other words *" the shadow is*

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[29] Ed. Kaplan, F. ibid. P. 84
[30] Letnic, M. (2000). Dispossession, Degradation and Extinction: Environmental History in Arid Australia. Biodiversity and Conservation: Kluwer Academic Publishers. (9).**)** P. 302
[31] Australian Government. (n.d). EPBC Act. List 1999: listing for Pig-footed bandicoot. [Website]. Accessed 13/7/09 from, http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=297
[32] Letnic, M. loc. cit
[33] Stoichita, V. (1997). A Short History of the Shadow. London: Beakton Books. P.19
[34] Stoichita, V. (1997). ibid. P.16

an indispensible quality of the body"[35]. Though this shadow in my work has been cast through a process of removal of the surface of the glass panels. Metaphorically this materiality relates to the removal of these plants from the living world and suggests that the Illumination of knowledge offered is now that of our own limitations as humans. Shadow in this work provides a further metaphor for concepts of illumination of truth as the shadow is fixed within the gallery space and is contingent on these circumstances. The shadow within a domestic space would not be fixed by this outside source and would move within and outside the frame of the specimen box with the changing relationship to the sun or a variety of domestic light sources. This is also a metaphor for the contingent circumstances of knowledge. Early metaphysics of shadows have aligned it with death[36], and this poetic history also forms part of my intention with the use of shadow. As with extinction in that now these 'facts' evidencing the real world are only seen in the illuminative context of human representation, so to when the lights are switched of the image in my work of each extinct plant also disappears.

The faculty of sight in this framework that attempts to 'objectively' view nature has been seen as the least fallible of the senses[37]. Who has not heard of the old adage 'seeing is believing'. Today we have inherited a very different world where seeing is not necessarily believing, in our highly visual culture sight is seen for its subjectivity and its vulnerability to manipulation, and representation in a Natural History collection is no longer evidence an indisputable signification in the real world. Much is still beyond our vision, looking may change what is being looked at through interaction and encounters, and a dawning realisation has emerged that we are inherently a part of nature and not as may have been hoped, an objective observer.

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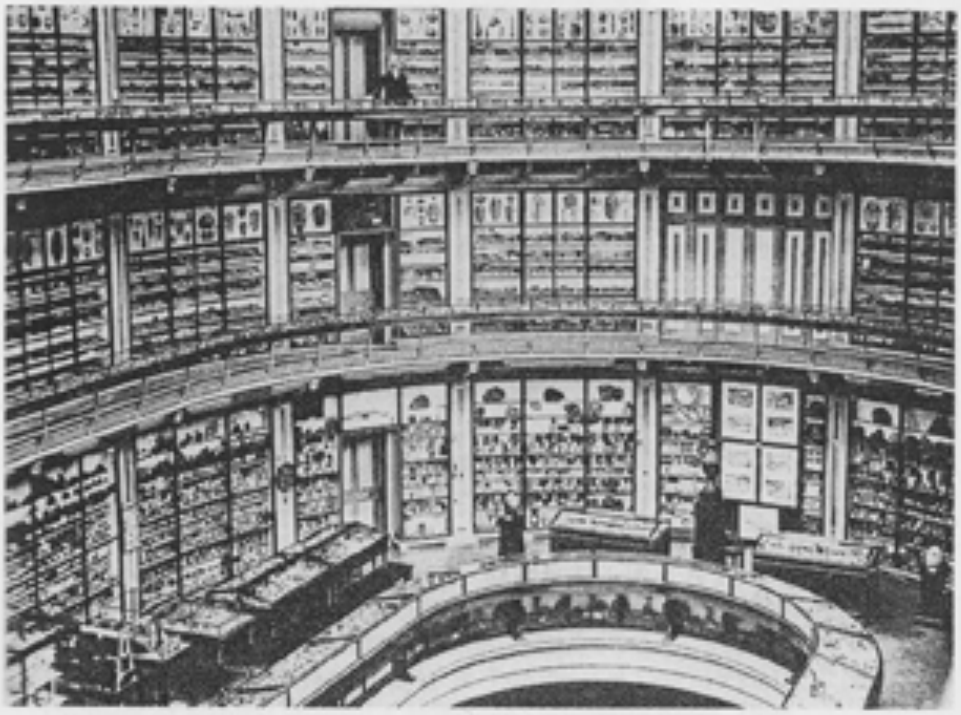
[35] Stoichita, V. (1997). ibid. P.45
[36] Stoichita, V. (1997). ibid. P.16
[37] Ed. Jardine, N., Secord, J.A., & Spary, op. cit. P.100

The Natural Science Museum (Today the Oxford University Museum of Natural History), built 1850-60; photograph of c. 1870 Source: Arthur. MacGregor, *Curiosity and Enlightenment: Collectors and Collections from the sixteenth to the Nineteenth Century.* Yale University Press, London. 2007



James Pennethorne, Museum of Practical Geology, interior of main display area. Source: Carla Yanni, *Nature's Museums: Victorian Science and the Architecture of Display*, Princeton Architectural Press. 2005

Dodo display at the *National Museum of Natural History, Paris*

Photo: Rachel Ellison (2011)

Images of plants displayed under glass at *National Museum of Natural History, Paris*

Photo: Rachel Ellison (2011)

This realisation of the impossibility of truly objective knowledge and vision is also reiterated in my work as to encounter it is to also become a part of it, as viewers shadows and reflections intermingle with the work and alter its presence.

Though these images in my work are aesthetic and appealing they represent plants that are not necessarily of use to humans. At a time of increased exploration through colonizing expeditions during this 'enlightenment', the role of Natural History came to be filtered through ideologies of utility, with the search for applications and utilities becoming its primary goal. In term of things that did not seem to fulfill an immediately utilitarian function for Western humanity in this era, little effort was put into recognising its value for its own sake. Ideologies of cultivation and progress enmeshed trade, science, commerce and nature within emerging museums aimed at teaching how natural resources were transformed into commercial products[38]. This progressive and aggressive push for economic and cultural development promoted the idea that knowledge should be focused on utility and productivity, as well as enshrining in popular culture an image of human mastery over nature. The study of and trade in natural objects filtered through ideologies of utility became deeply enmeshed in political and commercial networks. Nature in the age of discovery and colonial expansion came to be seen as a standing reserve of resources, as well as evidence of the vastness, wealth and the authority of empire.

In an age when Western cultural attention was focused on the discovery of the world in its entirety and was harnessed to a faith in progress, Natural History became a means of economic growth for colonizing countries. Superintendant of *The British Museum,* Richard Owen, underscored this link between British imperialism and Natural History in 1858 when addressing *The British Association for the Advancement of Science at Leeds,*

[38] Yanni, C. (2005) op. cit. P.92

" Our colonies include parts of the Earth where forms of plants and animals are the most strange. No empire in the world had ever so wide a range for the collection of various forms of animal life as Great Britain…Naturalists consequently visit England anticipating to find in her capital and in her National Museum the richest and most varied materials for their comparisons and deductions. And they ought to be in a state pre-eminently conducive to the advancement of philosophical zoology, and on a scale commensurate with the greatness of the nation".[39]

Similarly the naturalist Carl Linnaeus in 1887 spoke of his science as improving the states economic needs,

" Nature has arranged itself in such a way, that each country produces something especially useful. The task of economics is to collect plants from other places and cultivate such things that don't want to grow at home, but can grow there"[40].

Linnaeus' traveling companions on what he labeled voyages of discovery, included Daniel Solander and Joseph Banks, significant to Australians as the botanists on Captain Cooks' 1768 circumnavigation of the Earth. The discovery and colonization of Australia was part of this expansionist ethos and Joseph Banks' botanical activities in terms of identifying resources were instrumental in establishing the potential for new British settlements and a penal colony. Histories of science and the environment have been closely entwined in Australia since this time. The year 1788 when Arthur Phillip claimed Sydney Cove in the name of Great Britain also saw the launch of the Linnaean society in London. Australia became one of the first 'post-Linnaean colonies as *"naturalists looked with interest to what they saw as these curious and "strange" lands"*[41], and immediately began sending native flora and fauna to European shores for classification. This enshrining of European scientific authority over Australian materials continued during the nineteenth century with the

[39] Yanni, C. (2005) op. cit. P.114
[40] Ed: N. Jardine, J.A. Secord, & E.C. Spary. op. cit.. P.151
[41] Ed. Kaplan, F. op. cit. P. 83

establishment of Sydney's first botanic garden in 1816, followed by a Philosophical Society in 1821 and a museum in 1827[42].

Botany in this era is one of the most obviously imperial sciences. Humanist ideals that were hoped for in its foundation of progress and improvement have not necessarily been aimed at universal equality, but more generally towards industry, trade, colonial expansion and annexation, and the utilization and extraction of natural resources from foreign lands. New colonial wealth and economic strongholds were obtained from exploiting nature, and large exotic objects entering museums also acted as the tangible signs of imperial expansion[43]. Great emphasis was placed in this era on collecting the native flora and fauna of far-flung territories and bringing them back to Europe for cataloguing and assessment, with travel in this era becoming a mark of patriotism and an important venture in identifying new resources in order to increase national reserves and private wealth. [44] Notions of natural and national economies became and have remained closely linked.

In an Australian context this belief in the morally valid, improving or cultivating function of natural historical science most often meant land clearing and agriculture[45]. As Tom Griffiths and Libby Robin write in *Environmental History in Australasia*, it also *"means doing everything that a man can to make it look like "the old country"* [46]. Nature in this schema of scientific 'progress' has been presented as a cornucopia of unlimited resources, with environmental costs of 'development' either not recognized, not regarded as important or even seen as a hindrance, as seizing and clearing land, damming rivers and blindly exploiting mineral riches has defined both economic development objectives and concepts of social progress of Australia. The privileging of science in environmental management in Australia has been a result of British imperialism, and was intended to bring Australia into the realm of European trade, with settlers

[42] Griffiths, T. & Robin, L. (2004) Environmental History in Australasia. Environment and History (10) 2004. The White Horse Press. P.441
[43] Findlen, P. op. cit. P.76
[44] Brockway, L. op.cit. P.67
[45] Griffiths, T. & Robin, L. op. cit. P.444
[46] Griffiths, T. & Robin, L. op. cit. P.458

"*using the panoply of people, animals, plants, and, less intentionally, pathogens"*[47] in order to conquer the landscape.

The last two hundred years has resulted in a rapid period of environmental decline resulting from what can now be viewed as ill-conceived land management strategies condoned under the banner of improvement. Leaving Australia with the unenviable legacy of having the highest rate of mammal extinctions in the world[48].

Despite a belief that Australia was *"a strange and almost empty land"*, that *"produced no orthodox food and it's soils had never been cultivated"*[49], at the time of British colonisation, Aboriginal people were actively managing the environment through undertaking "*controlled burning of vegetation to capture game, promote the growth of plants that are valuable for food, prevent widespread wildfires that could destroy food supplies and culturally marking the landscape"* [50], indigenous peoples also had an intimate and unique knowledge of the landscape and its flora and fauna. In this era of colonial exploitation many indigenous peoples assisted botanists on their explorations. Naturalists relied on Local knowledge to find particular specimens, as well as employing locals to undertake the difficult and dangerous work of collecting. They were sometimes paid [51], sometime forcefully enslaved, as on many occasions locals were not just consulted but taken captive" [52], though rarely were they given recognition for their knowledge. One of the unfortunate consequences of the chauvinism involved in valuing European scientific frameworks of knowledge over all others is that much of this valuable first hand knowledge of Australia's environment and ecology has been, if not co-opted then ignored, devalued or forcefully eradicated.

Museums of Natural history, at least since Enlightenment Europe have historically defined themselves as institutions charged with

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[47] Griffiths, T. & Robin, L. op. cit. P.443
[48] Letnic, M. (2000). op. cit. P.296
[49] Ed. Kaplan, F. op.cit. P.84
[50] Letnic, M. op. cit. P.299
[51] The Natural History Museum of London (2008). Slavery and the Natural world Project: 2006-8. [Electronic resource]. Accessed 5/2/08 from, www.nmh.ac.uk/research-curation/library
[52] Letnic, M. op. cit. P.298

cataloguing the wealth and diversity of plants and animals in nature. The objective has been to collect as many species as possible with a focus on the rare, exotic or new. In light of declining biodiversity and stresses on the natural world that a contemporary generation is contending with, Natural History Museums have found it necessary to redefine their aims and motivations. In many instances this newly stated mission has been to educate the public in relation to biodiversity and to promote conservation efforts. The search for knowledge is still paramount, though it is no longer framed in the belief in the ascendancy of its civilizing function or that it is necessarily directly aimed at the betterment of human society. It is now well known that nature is finite and that without a stable environment humans will also not survive, let alone thrive. Knowledge of nature has brought great benefits and comforts to those who can afford it or are in a position to enjoy it, simultaneously though it is threatening to destroy the natural systems on which we depend for survival through environmental pollution, biodiversity loss, depletions of finite resources and climate change. Museums of nature who owe their existence to the natural world have had to reframe themselves to ensure that this message of dominance of nature is not promoted through becoming mere trophy halls. Collecting nature especially endangered and at risk species must be undertaken with a questioning of how it will benefit the natural world, as well as how this collection and display will promote positive values in relation to nature and a responsibility for its stewardship.

The phenomena of extinction so prevalent today and the temporality and fragility of living things act's to complicate the definition of Natural History collections, which now can be seen as a historical reference that refers to how dramatically the world has changed. These herbaria that I reference in my work can no longer represent the hope of a precise and unchanging catalogue of nature, or act as signs of human mastery and control of nature. The title of my artwork refers to these scientific and social traditions of collecting nature, as a specimen is a marriage of data with a natural object. The

data that is evident in these artworks is historically located and talks now of the altered circumstances of the environment today, as well as providing an image of the past. The term perfect is used in an ironic fashion that is intended to reference that these images which are halo-types, or archetypes collected because of their perfect indication of a particular species, no longer reference anything except the destructiveness of human agency, and the implications of the emergence of authorities to claim truths about nature, as well as, the responsibilities we have in relation to our knowledge of nature.

In museums of nature over time we can see the emergence of an environmental consciousness and an understanding of the context and consequences of our actions in relation to the natural world. Over time methodologies used to study nature have changed as humans have attempted to come to terms with the shifting and unstable field of knowledge that is the study of Nature. Reflecting in this way also shows us how quickly things have changed and are likely to do so into the future. In addition to examining the role of collections and ideologies of the use of nature, my artwork is reliant on an examination of the phenomena of extinction. In the following paragraphs I will outline the circumstances of this phenomena in order to contextualise my work further and highlight why museums and collectors of nature have had to alter their outlook in order to keep up with a changing world.

In biological and ecological frameworks extinction is the term used to describe the death of every member of a species. The moment of extinction is generally considered to be the death of the last individual of that species. The phenomena of extinction, though naturally occurring is significantly greater than at any other point in history and can be directly related to human activities[53]. Though estimates vary, current rates of species extinctions are many times more frequent than the historic 'background rate', which is the average rate at which species are estimated to have gone extinct before humans became a significant threat to species

[53] The United Nations Convention on Biological Diversity (CBD). (2010) Global Biodiversity Outlook 3. Accessed 7/4/2010 from, http://gbo3.cbd.int . P.74

survival[54]. According to the *United Nations Convention on Biological Diversity: Global Biodiversity Outlook Three (GBO 3, 2010),* rates of extinction and threats to species survival are continuing to increase unabated.

"Species which have been assessed for extinction risk are on average moving closer to extinction… (with) nearly a quarter of plant species (globally) estimated to be threatened with extinction"[55].

This report further indicates that environmental decline continues to put pressure on biodiversity despite conservation efforts to stem this tide, and cites the consistent up scaling of environmental pressures caused by human activities as the cause.

"*Despite an increase in conservation efforts, the state of biodiversity continues to decline, according to most indicators, largely because the pressures on biodiversity continue to increase. There is no indication of a significant reduction in the rate of decline in biodiversity, nor of a significant reduction in pressures upon it"*[56].

Principal drivers of biodiversity loss, including habitat loss due to land clearing for urbanisation and agriculture, environmental pollution, over-exploitation, competition from invasive alien species and climate change are reported to be remaining at a either a constant level of pressure or to be increasing[57]. This widespread environmental decline has created significant loss of biodiversity globally and threatens many environmental systems on which humans depend upon for their survival. Maintaining biodiversity is an essential factor in our survival as it underpins healthy ecosystems, it is the basis of economic stability and food security, provides the potential for new medicines and products, ensures protection from natural disasters through maintaining genetic diversity in the face of climate and environmental

[54] The United Nations Convention on Biological Diversity (CBD). Ibid. .P.74
[55] The United Nations Convention on Biological Diversity (CBD). ibid. P.9
[56] The United Nations Convention on Biological Diversity (CBD). ibid. P.17
[57]The United Nations Convention on Biological Diversity (CBD). Ibid. Pp.54-55

Hall of Endangered Species at National Museum of Natural History, Paris

Photo: Rachel Ellison (2011)

Images of Nature Gallery at *London Museum of Natural History*

Photo: Rachel Ellison (2011)

change, and also ensures climate stability through the cycling of carbon dioxide and the production of oxygen. Though According to the *GBO 3* report, *"humanities ecological footprint",* which is a calculation of the area of biologically productive land and water needed to provide resources and absorb our waste was being overshot by 40% in the 2006calculation and has in 2010 increased by a further 20%[58]. Despite the economic benefits, intrinsic links between natural wealth and prosperous economies and the cultural and social import of healthy ecosystems, their value is often ignored by governments and communities, which remain blind to necessity of diversity. As this report illuminates,

"Taking actions to ensure the maintenance and restoration of well-functioning ecosystems, underpinned by biodiversity and providing natural infrastructure for human societies, can provide economic gains worth trillions of dollars a year. The latest science suggests ever more strongly than better management, conservation and sustainable use of biodiversity is a prudent and cost-effective investment in social and economic security, and in risk reduction for the global community"[59].

Like many places on our planet, biodiversity and natural habitats in Australia have suffered substantial declines in range and abundance through agricultural, industrial and urban development. The Australian governments environmental legislation, the *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act. 1999*) has listed 1342 plants and 444 animals as extinct or threatened with extinction [60]. Australia has been identified by the *International Union for the Conservation of Nature (IUCN)* as a mega-diverse bioregion due to the abundance and uniqueness of native species. As such, it is at an elevated risk for loss of biodiversity because of the high levels of endemic species, meaning that they can be found nowhere else in the world. In Australia,

[58] The United Nations Convention on Biological Diversity (CBD). ibid.P.66
[59] The United Nations Convention on Biological Diversity (CBD). ibid. P.15
[60] Australian Government. (n.d). EPBC Act. 1999: List of Threatened Flora. [Website] Accessed: 4/2/09 from, http://www.environment.gov.au/cgi-bin/sprat/public/publicthreatenedlist.pl?wanted=flora#flora_extinct

more than 80% of plant and animal species are endemic, with 85% of the nations flowering plant species being endemic[61].

In the past two hundred years of European occupation in Australia there have been significant changes in the way native vegetation has been managed. Significant losses in biodiversity of species and ecosystems have resulted from practices of land clearing for agriculture and urban development. The *GBO 3* report lists land clearing as a primary concern in the acceleration of loss of biodiversity. Here it is indicated that,

"*The IUCN Red List assessments show habitat loss driven by agriculture and unsustainable forest management to be the greatest cause of species moving closer towards extinction*.[62]"

In Australia, figures suggest that at least half of Australia's forests and three quarters of its rainforests have been cleared since European settlement, while over 90 per cent of old growth forests having already been logged[63]. Other factors that impact on biodiversity loss include, altered fire and grazing patterns, drought and flooding, competition from non-native invasive species, disease, pesticide use and other forms of environmental pollution, as well as climate change. These factors have all caused degradation, fragmentation and loss of habitat for native Australian fauna and flora.

If humans do not act to alter these circumstances we will be responsible for the destruction of billions of years of evolution. Museums of this current generation despite the ideological failings of the past are in a unique position to educate the public about the importance of the natural world, as well as to undertake collections based research aimed at fostering biodiversity. Examples of this changing mission can be seen in *The Australian Museums* promoting of

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[61]Australian Government Department of the Environment and Heritage. (2004). Threatened Australian Plants Fact Sheet. [Electronic resource]. Accessed 10/2/09 from, http://www.environment.gov.au/biodiversity/threatened/publications/plants.html .P.3

[62] The United Nations Convention on Biological Diversity (CBD).op. cit. P.55

[63] Australian Government Department of the Environment and Heritage. (2004). op cit. P.4

conservation research focused on understanding diversity and how the rate of climate change affects the distribution of animals[64]. Through the operation since 1973 of the museum's *Lizard Island Research Station* focussed on coral reef research[65], through pest identification, as well as through public education campaigns, publications and exhibitions aimed at promoting the importance of biodiversity and the richness and uniqueness of Australian native flora and fauna[66]. Other examples of this new environmental consciousness include *The American Museum of Natural History (AMNH), Interdisciplinary Center for Biodiversity and Conservation*, which opened in 1993 and promotes research into species loss and habitat degradation around the world[67]. Initiatives of the *AMNH* also include conferences, symposia, exhibitions, publications and the development of community partnerships and networks, such as the initiative *Living With Nature* which produced a public program designed to teach broad audiences about what they can personally do to conserve biodiversity[68]. The *AMNH* has also developed *The Biodiversity Informatics Facility*, which is responsible for developing the use of information technology in biodiversity research[69].

The London Museum of Natural History (NHM) is also taking its conservation mission into account with measures such as the *UK Biodiversity Portal*[70] and the *Angela Marmont Centre for UK Biodiversity* aimed at involving local communities in biodiversity research[71]. In

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[64] Australian Museum. (n.d). Biodiversity Portal. [Website]. Accessed 16/1/09 from, http://australianmuseum.net.au/Biodiversity

[65] Australian Museum. (n.d). Lizard Island Research Station. [Website]. Accessed 16/1/09 from, http://australianmuseum.net.au/Lizard-Island-Research-Station

[66] Australian Museum. (n.d). [Website]. Accessed 16/1/09 from, http://australianmuseum.net.au

[67] American Museum of Natural History. (n.d). Center for Biodiversity and Conservation. [website]. Accessed 16/1/09, from http://cbc.amnh.org/

[68] American Museum of Natural History. (n.d). [Website]. Accessed 16/1/09 from, http://cbc.amnh.org/center/features/lwn.html

[69] American Museum of Natural History. (n.d). Biodiversity Informatics Facility. [Website]. Accessed 16/1/09 http://biodiversityinformatics.amnh.org/

[70] London Museum of Natural History. (n.d). U.K. Biodiversity Portal. [website]. Accessed16/1/09 from, http://www.nhm.ac.uk/nature-online/british-natural-history/uk-biodiversity-portal/index.html

[71] London Museum of Natural History. (n.d. The Angela Marmont Centre for UK Biodiversity [website]. Accessed16/1/09 from,http://www.nhm.ac.uk/visit-us/darwin-centre-visitors/marmont-centre/

addition to this the *NHM* have opened *The Biogeography and Conservation Lab's Research Program* as a specific response to the *Convention on Biological Diversity* with the mission *"to develop and apply appropriate, explicit and accountable methods to tackle problems in biogeography and in biodiversity assessment to meet conservation needs at any spatial scale"*[72]

The educative function of museums in this era has become paramount to stated missions, though they are still spaces aimed at containing and ordering nature and captivating audiences. They are aesthetic objects herbarium specimens and one can't help but admire their beauty, and images even stuffed, pressed or preserved ones of exotic animals or plants from far away lands, can't help but ignite awe at the beauty of the natural world. There is nothing like a collection of nature to inspire desire in the viewer to possess or know. However, the representation of images of extinct plants derived from earlier ideologies of collecting the world have now been reconfigured, they can no longer stand for a static value in the real world, but rather can only remind us of the change that has erased these aspects of a living past forever. Moreover, that an ephemeral and changing nature is not easily revealed behind the static signs of human knowledge. Though collections of nature fail in this hope of knowing the world in its entirety beyond their walls and parameters, they can help remind us of the need for a more physical and respectful relationship with the natural world at large. Though to this end Collections must be presented to promote a positive value towards nature, with recognition of the right of all things to be valued on their own terms and not just for what we as humans can gain from them.

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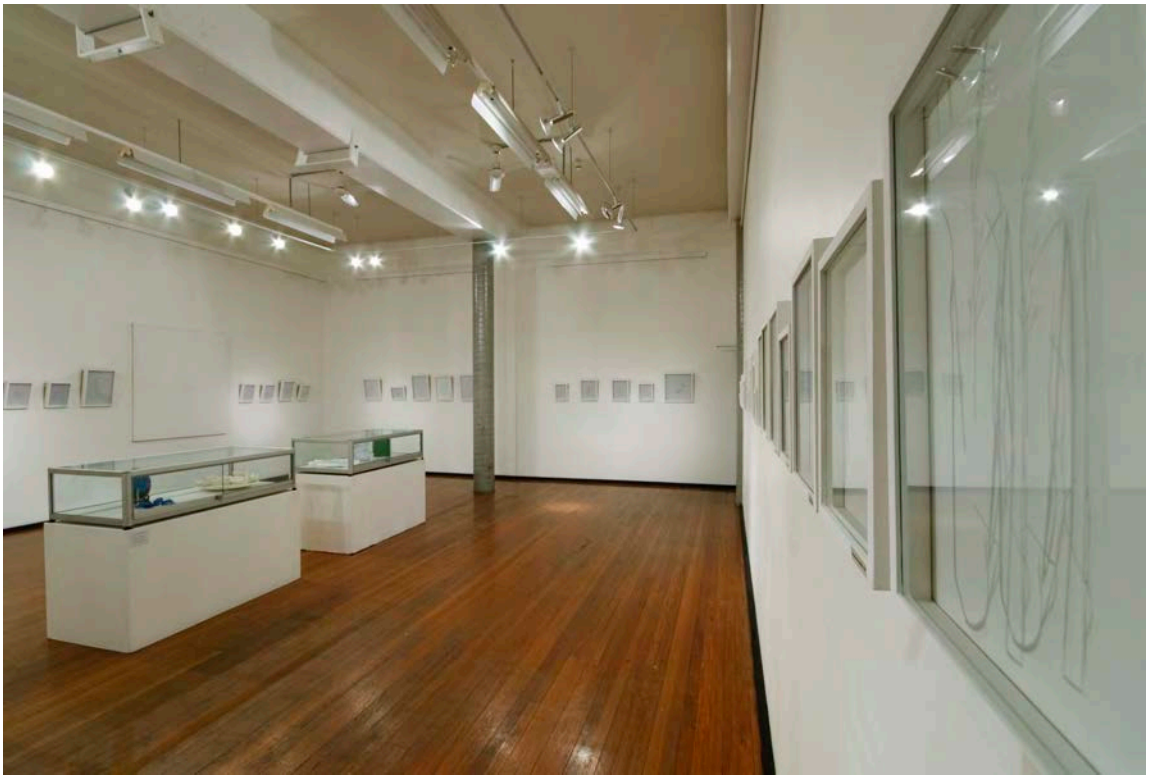
[72] London Museum of Natural History. (n.d). Biodiversity and World Map. [website]. Accessed16/1/09 from www.nhm.ac.uk/**research**-curation/projects/worldmap/

The Perfect Specimen

Medium: glass, light, shadow, wood
Dimensions: variable

Installation view from Cofa Space Gallery



The Perfct Specimem: Detail

Tetratheca gunni, 1843
25cm (w) x 30cm (h)

Hutchinsia tasmanica, 1848
12cm (w) x 15cm (h)

Helichrysum selaginoides, 1849
25cm (w) x28cm (h)

Festuca benthamiana, about 1850
30cm (w) x 40cm (h)

Spyridium microcephalum, about 1858
25cm (w) x 30cm (h)

Microcorys pimeleoides, pre 1859
25cm (w) x 30cm (h)

Acanthocladium dockeri, 1860
30cm (w) x 40cm (h)

Pseudanthus nematophurus, pre 1861
25cm (w) x 30cm (h)

Comesperma lanceolatum, pre 1863
20cm (w) x 25cm (h)

Xanthosia singuliflora, pre 1864
25cm (w) x 35ck (h)

Oleania oliganthema, 1866
25cm (w) x 30cm(h)

Ptilotus pyramidatus, pre 1868
12cm (w) x 15cm (h)

Helichrysum oligochaetum, pre 1868
15cm (w) x 18cm (h)

Verreauxia verreauxii, pre 1869
30cm (w) x 35cm (h)

Hemigenia ramosissima, pre 1870
25cm (w) x 25cm (h)

Hemigenia obtusa, pre 1870
20cm (w) x 25cm (h)

Haloragis stricta, 1870
25cm (w) x 35cm (h)

Henrichuoa mesembryantema, 1897
20cm (w) x 25cm (h)

Tetraria australiensis, 1877
25cm(w) x 30cm (h)

Phlegmatospermum ricardsii, 1879
20cm (w) x 25cm (h)

Comesperma rhadinocarpum, pre 1881
30cm (w) x 40cm (h)

Lepidum peregrinum, 1884
20cm (w) x 25cm (h)

Cassytha pedicellosa, 1892
25cm (w) x 30cm (h)

Hemigenia tysoni, 1893
20cm (w) x 25cm (h)

Muelleraugia timorensis, 1893
25cm (w) x 25cm (h)

Trachymene croniniana, 1894
25cm (w) x 30cm (h)

Hemigenia exilis, 1895
15cm (w) x 18cm (h)

Buchanania mangoides, late 1800s
30cm (w) x 45cm (h)

Trymalium ureolare, pre 1900
30cm (h) x 40cm (w)

Hydatella leptogyne, 1901
15cm (w) x 10cm (h)

Stylidium pseudocaespitosum, 1901
30cm (w) x 40cm (h)

Hydatella australis, 1901
15cm (w) x 10cm (h)

Heteranche baileyi, 1901
25cm (w) x 30cm (h)

Phlegmatospermum drummondii, 1905
20cm (w) x 25cm (h)

Menkea drabcides, 1905
20cm (h) x 25cm (w)

Euphrasia arguta, about 1906
20cm (w) x 25cm (h)

Veronica parnkalliana, 1909
20cm (w) x 25cm (h)

Schoenus natans, 1911
30cm (w) x 40cm (h)

Tetratheca elliptica, 1912
20cm (w) x 25cm (h)

Pultenaea pauciflora, 1914
20cm (w) x 25cm h)

Oleria flocktoniae, 1916
30cm (w) x 40cm (h)

Ptilotus externatus, 1919
20cm (w) x 25cm (h)

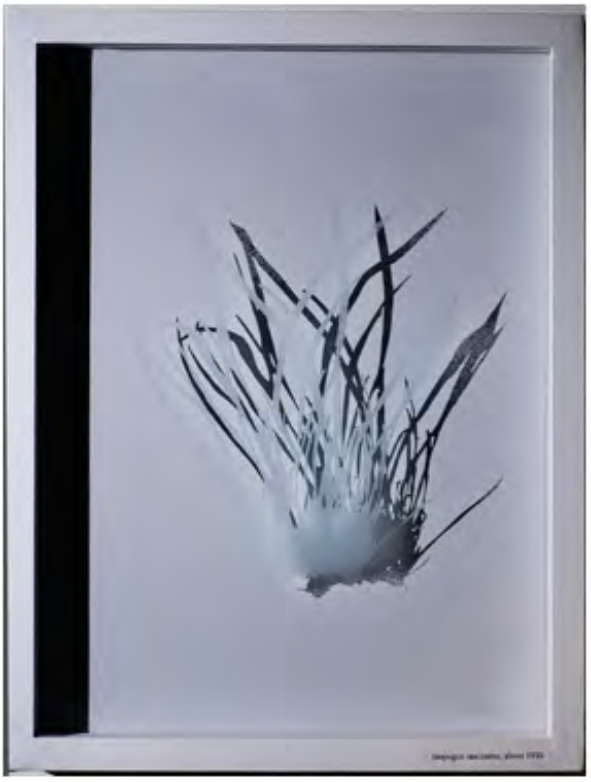
Melaleuca arenaria, 1922
18cm (w) x 20cm (h)

Leptorhynchos gatesii, 1922
20cm (w) x 25cm (h)

Senecio behrianus, about 1925
25cm (w) x 30cm (h)

Haloragodendron lucasii, 1926
30cm (w) x 40 cm (h)

Hexaspora pubescens, 1929
35cm (w) x 35cm (h)



Isopogon uncinatus, 1930
30cm (w) x 40cm (h)

Haloragis tenuifolia, 1930
30cm (w) x 40cm (h)

Prasophyllum subbisectum, 1932
10cm (w) x 15cm (h)

Prasopyllum morganii, 1933
20cm (w) x 25cm (h)

Acacia prismifolia, 1933
10cm (w) x 15cm (h)

Homopholis belsonii, 1934
30cm (w) x 40cm (h)

Croton magneticus, 193
30cm (w) x 30cm (h)

Acacia vassalii, 1939
25cm (w) x 25cm (h)

Prasophyllum concinnum, 1947
30cm (w) x 40cm (h)

Hernigeria podalyrina, 1947
30cm (w) x 40 cmH (h)

Helicherysum s piceri, 1958
30cm (w) x 35cm (h)

Chapter Two

The ceramic works that make up the collection *Resemblances* reflect on some of the values that have been assigned to the concept of 'nature' in Western Culture. These objects through their forms resemble natural materials displayed in a museum cabinet, yet they are representations with the function of describing affinities, associations, metaphors and analogies that guide human relationships with the natural world. These objects draw on a variety of conceptual elements including, naturalism and empirical observation, floriculture, plant cultivation and genetic engineering, symbols and decorative uses of nature, social hierarchies and ideologies aligned with 'objective truths' about nature, as well as tradition's of the collection and display of natural materials in Western culture.

The conceptual frameworks we have inherited in Western culture that condition how we experience the natural world have resulted from the cumulative effects of generations of cultural effort in shaping opinion, access to, and control over the concept ' nature'. This process continues to shape and alter the meaning of our experience through successive generations, yet the past always remains a part of the expression of this concept. Many ideologies are present in our cultural backdrop in contemporary society and act to generate complex representations that shape our views and experience of nature in Western culture, including the study of nature through scientific methodologies, technological products that transform nature, collections of the natural world representing nature classified, categorised and isolated, social stratification through the use of nature as a defining value, remnants of the Antique and Ancient understandings of nature in decoration, and evidence of a variety of world views inherent in assumptions within language and representation.

The natural world and human knowledge of it both exist in a state of flux that crosses cultural, spatial, social and historical boundaries. Natural materials themselves can act as multi-faceted surfaces reflecting many narratives. Nature is a material that we observe, we are free to describe it, name it, place it within our system of order, but we are also a part of it and depend upon it for our livelihoods, making its value and place in our lives a widely debated topic. As time moves on we can see that the meanings we invest or believe to be inherent in natural materials can be as subject to decay as the natural materials themselves. This fluidity of meaning is no more evident than in the changing value and contextual significations of collections of nature, and the variations seen over time and in different social contexts of the physical structures that house them. It is the result of cultural and communal effort to preserve these values or indeed to deconstruct and re-shape the narratives we have come to associate with 'nature'.

To initiate my discussion of how these objects within the collection *Resemblances* represent ideas and ideologies that humans have attempted to embed in natural materials, I refer to the object *Field Guide*. This object represents a three dimensional image of an Australian rainforest within the pages of a book. The title references a particular cultural form of knowledge that is 'drawn from life', or the representing of an accurate description of nature, that has emerged from and evolved since Renaissance Europe. This cultural form developed through a newly emerging acceptance of an empirical encounter with the natural world[73]. Naturalists of this era sought to encounter, describe and collect the world, with this accumulation of nature envisioned as a way of knowing *"matters of fact"*[74], fast becoming an obsession and a culturally preeminent activity at this time[75]. These 'signs' that sought to represent the world, which began to be housed within museums and compendiums, implied a base of evidence about a world at large that

[73] Ogilvie, B. (2006). The Science of Describing: Natural History in Rennaisance Europe. USA: University of Chicago Press. P.1
[74] Findlen, P. (1996) op cit. Pp.99-100
[75] Findlen, P. (1996) op. cit. P.153

was fixed in place and awaiting human discovery and categorization. Empirical natural science evolved in a climate where sight was seen as the least fallible of the senses[76], and this vision was cloaked in a faith in a rationally ordered universe, as Peter Bowler writes in *Evolution in the Enlightenment*, "*Given the faith that there is a divine plan of creation, the naturalists must discover and represent the structure of that plan"*[77]. In this system of thought the natural world was ordered in terms of its relationship to humans and was brought within the museum bound in the philosophical constraints of the concept of 'microcosm', which further denoted a belief in an ordered universe[78].

Constructs of what defined natural history and its accurate depiction have emerged and altered over time. Early naturalists of the Renaissance era creating compendiums aimed at the identification and differentiation of nature, such as Conrad Gesner in the work *Historiae Animalium* published in 1558 and 1587, combined inherited knowledge from authors such as Aristotle and Pliny with, medieval texts, folklore, information on mythical animals, daily and medicinal uses and empirical descriptions. This work showed the natural world and it place in history, literature, art and everyday lives of people[79]. In Michel Foucault's words, natural knowledge of this time pertained to the belief that,

" *to know an animal or a plant or any terrestrial thing whatever, is to gather together the whole dense layer of signs with which it or they may have been covered"*[80].

[76] Ed. Jardine, N., Secord, J.A., & Spary, E.C. op. cit. P.100
[77] Bowler, P. (1989).The History of an Idea. Chapter three: Evolution in enlightenment. Berkeley: University of California Press. P.66
[78] Mauries, P. (2002). Cabinets of Curiosities. London: Thames and Hudson. P.32
[79] Mauries, P. ibid. P.68
[80] Foucault, M. (1970). op cit. P.40

Image of a lion from Conrad Gesner's *Historiae Animalium* in which he claims that the lion is the king of the quadrupeds.

Image from: National Library of Medicine

http://archive.nlm.nih.gov/proj/ttp/flash/gesner/gesner.html

Image of an Indian rhinoceros originally made by Albrecht Dürer from Conrad Gesner's *Historiae Animalium*

Image from: National Library of Medicine

http://archive.nlm.nih.gov/proj/ttp/flash/gesner/gesner.html

This understanding of nature and the role of Natural History in documenting human relationships with nature seems odd in a current context where a world of associations and relationships have given way to a belief in a scientific method that enables an 'objective' and removed understanding of nature, yet it does give us a unique view of the way human relationships with nature are conditioned, as well as, the implicit part humans have in any understanding of nature based on an observation of it.

This belief that the natural world contained a divine language that humans could decipher or read from an external vantage point had held sway in religious doctrine from the middle ages, *"Since the late medieval period nature had been represented as a book that, like the Scripture, had signs, meanings, and secrets for the reader to interpret"*[81]. The metaphor of the book of nature implies that signs in nature are pre-existing, stable and available for discovery. Over the course of the evolution of science as a discipline, scientific forms of inquiry came to be seen as the best-suited way of deciphering these signs. Famously Galileo Galilei (1564-1642) used this metaphor when he wrote that nature is a book written in *" the language of mathematics"*[82]. Other Influential writers such as Francis Bacon (1561-1626) in *Novum Organum* wrote, that *"the secrets written in the 'book of nature' are accessible to us", (and that) "the phenomena we observe can be described and catalogued through imaginative classification"*[83]. This represented a belief that laws and discoveries were a guaranteed and progressive consequence of scientific methodology[84]. The Botanist Carl Linnaeus (1707-1778) often described as the father of modern taxonomy, wrote both that *" the Earth is then nothing else but a museum of the all-wise creators masterpieces, divided into three chambers*[85]*"*, and that, *"the book is garden, the garden a book"*[86]. Rene Descartes in defining his scientific

[81] Stinner, A. (2001). Linking 'The Book of Nature' and 'The Book of Science': Using Circular Motion as an Exemplar Beyond the Textbook. Science and education. 10. P.323
[82] Kosso, P. (1992). Reading the Book of Nature: An Introduction to the Philosophy of Science. New York: Cambridge University Press. P.2
[83] Stinner, A. loc cit.
[84] Stinner, A. op. cit.. P.325
[85] Ed. Jardine, N., Secord, J. A. & Spary, E.C. op. cit. P. 153
[86] Ed. Jardine, N., Secord, J. A. & Spary, E.C. op. cit. P. 157

method and mechanical world-view wrote that *"first he had to explore the great book of the world"*[87].

Over time a scientific methodology has been imbued with an authoritative aura that has promoted a rational and eventual unfolding of the secrets of nature. To many non-scientists unfamiliar with the nature of science it is easy to *"envision the laws of nature as simply 'being out there', ready for picking like fruit from a tree"*[88]. Though the external world does provide constraints on the conclusions of science, it is also true that a listing of facts does not wholly determine claims of knowledge, nor does it alter the contingent circumstances involved in the production of knowledge such as how funds are directed, professional interests, user pay science, or the relationship of knowledge to different social concerns. Not all change is for the better and similarly not all progress is derived from rational pursuits. Moreover, scientists and science cannot escape the fact that this discipline, albeit methodical and methodological is a study of a world of which we are a part rather than apart from.

Like the pages of any book the meaning can also change with the perceptions of the reader. As Foucault writes in the order of things, this human language used to understand nature is far from neutral as it forms part of what it seeks to describe.

> *" The great metaphor of the book that one opens, that one pores over and reads in order to know nature, is merely the reverse and visible side of another transference, and a much deeper one, which forces language to reside in the world, among the plants, the herbs, the stones and the animals"*[89].

This language though it is accepted collectively has no other existence except in the thoughts of the individual[90].

This visual, textual and 'rational' way of knowing the world based on observations and representations, has been seen as the least fallible

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[87] Jacob, M. (1988). The Cultural Meaning of the Scientific Revolution. New York & London: Mcgraw-Hill. P.58
[88] Stinner, A. op. cit. P.332
[89] Foucault, M. (1970). op. cit. P.35
[90] Foucault, M. (1970). op. cit. P.82

methodology. Though examples of the 'cultural' rather than 'natural' bases for knowledge claims can be seen in many instances. Examples of this are clearly evident in the science of taxonomy and systematics where disputes have raged over the validity of different systems of classification based on description, morphology, habit and systems of sexual reproduction[91], and are still in many instances unresolved today. Linnaeus' system of binomial classification that forms the basis of our modern system of binomial taxonomy, though recognized as an unnatural system as it was based on a single characteristic rather than on all characteristics of a plant, was taken up due to its simplicity and practicality[92]. With the invention of genetic systems of classification some of these debates have given way to a belief that this is a more natural system of classification and have resulted in the emergence of many surprises as to the relationships between things despite apparent visual resemblances or dissimilarities[93].

Despite these early natural histories representing a fascination and a desire to physically engage with the natural world, ironically scientific knowledge of nature in modern times has often led to a distancing of people from the natural world. The natural world as it is often seen in contemporary dialogues is something to be controlled or harnessed, ventured into, a retreat from the city or something that is located ' over there' away from civilized spaces, though in some ways it seems no longer necessary to venture into the field as its image can be brought to us through museums and other forms of representation.

The concept of the wilderness has come to be defined in opposition to human civilization as a place that is not affected by the human encounter. Field guides to nature represent this concept of wilderness and traditionally do not explore the way nature in the contemporary world has transformed as a result of human migration and exploration. The reality of nature today is that species have been re-distributed beyond traditional territorial lines, and

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[91] Ed. Jardine, N., Secord, J. A. & Spary, E.C. op. cit. P. 164
[92] Bowler, P. (1989).op. cit. P.66
[93] Yates, T., Salazar-Bravo, J., Dragoo, J.W. (2004). The Importance of Knowing the Tree of Life to Society. New York: Oxford University Press. P.7

the ‘real’ world has changed and will likely continue to do so. Making many field guides historical relics rather that handbooks for interpreting and differentiating an existent and unchanging wilderness.

Furthermore, field guides represent a popularization of science and the scientific method of looking at the world. They imply that nature is stripped of cultural and social conventions and presented in its most rational and simple form, though in reality this is a culturally contingent way of viewing the world. This work attempts to examine the notion that nature is containable in a representation as an unfolding text and seeks to explore the notion that nature is an ephemeral and dynamic entity. The representation of a forest inside the pages of my artwork for this reason is not reduced to individual elements but presents a holistic and unclassifiable snapshot of a ‘place’. My work references this hope of knowing the world through representation, and the belief that knowledge can be contained, stored and disseminated within cultural forms of representation such as books, yet the blankness of the page and the representation of unidentified elements aims to present the idea that a textual and reductionist way of knowing the world is only one of many possibilities.

Secondly I will discuss the work *Fossil,* as it also references ideologies of a rationally ordered universe. This work has been made to resemble a fossil in which layers have been stratified with fabric. The image of a fossilised relic embedded in these layers of fabric is of a human artifact, that of a pair of lace gloves. In this manner I am exploring the juxtaposition of notions of femininity and concepts of ‘natural’ truths as they have emerged in Western culture. Furthermore, I am also exploring ideologies of dichotomous hierarchies of nature and culture in Western thought.

Geological discoveries of the 18th century complicated ideas about the origins of life on Earth and brought new elements into the study of nature[94]. Prior to this development creation myths had been adequate in explaining these origins. At the time of initial introductions of fossils into the realm of human knowledge, there had existed a predominant belief that an *“overall pattern of relationships between species follows some easily recognized*

[94] Bowler, P. (1989).op. cit. P.50

structure", a concept known as the *"Chain of being"* which had existed at least since Ancient Greece[95]. In this framework nature was seen as highly structured, existing within a static and closed system, and in Christian discourse, rationally designed by God. The system attempted to link living things *"in a hierarchy of complexity from the highest (man) down to the most primitive"*[96]. With each species assigned a unique position that could not be transgressed and representing creation as it was first formed and as we still see it today[97]. In this arrangement of divine order the extinction of any species was seen as impossible as this would have "*upset the balance and formal plan of nature"*[98]. The concept of the chain of being in its fixity and closedness was particularly vulnerable to the problem of extinction that was being thrown into the light by the empirical evidence provided by fossils. Naturalists of this time attempted to fit newly emerging evidence provided by fossils into this framework and produced arguments of *"a temporalized version of the chain of being"*, in which "*only lower rungs of the ladder of creation existed during the Earth's early history, after which life gradually mounted to higher levels"* [99]. This evolution though was never more than an unfolding of a predetermined pattern[100].

The idea of the chain of being was applied to areas of psychology, biology, and in *"considerations of status or standing in society"*, as it was used as a corollary to suggest,*" any person would have his own (natural) rank or standing in society*[101]*"*. In this cosmology of 'natural' and pre-determined order women and non-Western cultures were lower in the hierarchy of degrees of perfection and were more closely aligned with the physical world of nature and the sensual world of feeling.

Seeing women as natural has more or less fascinated the Western world and it is evident in popular culture in notions such as Mother Nature and the Motherland. Women have also been aligned with nature in biologically

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[95] Bowler, P. (1989).op. cit. P.53
[96] Bowler, P. (1989).op. cit. P.59
[97] Bowler, P. (1989).op. cit. P.59
[98] Bowler, P. (1989).op. cit P.66
[99] Bowler, P. (1989).op. cit. P.55
[100] Bowler, P. (1989).op.cit. P. 52
[101] Oldroyd, D.R. (1980). Three Important Concepts: Animals and Man; Taxonomy; the Great Chain of Being. N.S.W: New South Wales University Press. P.9

reductionist arguments that locate women in realm of procreation as opposed to creation[102]. Women throughout much of Western history *"were the repositories of natural laws' and 'natural morality', but also that which was emotional, passionate, and needing constraint within social boundaries"*[103].

Since the 17th century Enlightenment Western notions of masculinity have been linked to concepts of reason and rationality, and *"rationality has become a critical basis for masculine superiority in social life"*[104], being identified with knowledge, whilst emotion, and feelings have been denied as a source of knowledge. In this manner notions of reason have formed part of the relations of sexual power between men and women[105].

During the Enlightenment concepts of nature became crucial to both political discourse and rise of scientific enquiry[106]. In this era moral and political arguments were routinely brought to bear on problems of natural science[107]. Modern science though it has now presented an idea of a variable and contingent natural world, as it emerged from this history acted to locate women in opposition to the rational pursuits of culture and science. This hierarchical opposition has "*helped to shape a particular social and political context by the same token it evolved in conjunction and helped to shape a particular ideology of gender"*[108].

Enlightenment is the period when the notion of the opposition between nature and the state of society or of education suddenly gains prominence[109]. Cultures project at this time was thought to be in subsuming and transcending nature, with a great deal of moral and political power associated with understanding 'natural forces'[110]. World-views prescribing rational and scientific methods were often replete with sexual metaphor. The philosopher Francis Bacon spoke of science as a *"force virile enough to*

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[102] Ed. MacCormack, C & Strathern, M. (1981) Gender, Nature, Culture. New York: Cambridge University Press. P.16
[103] Ed. MacCormack, C & Strathern, M. ibid. P.6
[104] Barnard, F. & Spencer, J.(1996). Gender: Models of Subordination. London: Routledge. P.83
[105] Barnard, F. & Spencer, J. ibid. P.83
[106] Ed. MacCormack, C & Strathern, M. op. cit. P.20
[107] Shapin, S. (1982). History of science and its Sociological Reconstructions. Cambridge: Cambridge University Press. P.179
[108] Ed. MacCormack, C & Strathern, M. op. cit. P.27
[109] Ed. MacCormack, C & Strathern, M. op. cit. P.27
[110] Ed. MacCormack, C & Strathern, M. op. cit P.186

penetrate and subdue nature, to bind nature to man's service and make her his slave and thus achieve the domination of man over the universe"[111]. Descartes spoke of science and the use of a rational method as promising "*nothing less than mastery over nature*"[112]. Understandings or 'discoveries' of nature within this schema were analogized as masculine and were aimed at gaining control and subduing nature, which in turn was codified as *"passive, inert and female"*[113].

Within the dualistic division of nature and culture and masculine and feminine, lay assumptions that sought to devalue women's bodies and labour, and a sanctioning of the domination of nature. Women have been designated 'nature' and high degrees of morality have been attached to their domination as it has been seen as subduing and controlling nature[114]. Women's identification with the domestic, lower order, and nature also illuminates the representation of a nature, culture hierarchy[115].

Moral assertions about natural and social orders and hierarchies of nature and culture in Western discourse have been used to disenfranchise women within scientific fields and in the public arena. Though in the past as in contemporary Western culture women have contributed a great deal to scientific development, sadly the legacy of disempowerment remains evident in many women's lives, and has also lingered in the evolution of many cultural institutions since this time.

This concept of nature has taken its meaning in part by what it is not, and this opposing force has been seen as a cultural and progressive move away from the state of nature. The object fossil presents two elements, the first is an image of a fossil, which has been designated a natural object but in reality is transformed within the confines of representation and in its removal from the Earth into a cultural artefact. I use the image of a fossil as an analogy of the past and in order to illuminate the role of fossils in acting to destabilise the static world-view I have discussed above. The second

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[111] Stinner, A. op. cit. P.271
[112] Jacob, M. (1988). The Cultural Meaning of the Scientific Revolution. New York & London: Mcgraw-Hill. P.47
[113] Stinner, A. op. cit. P.271
[114] Ed. MacCormack, C & Strathern, op. cit. P.6
[115] Ed. MacCormack, C & Strathern, M. op. cit P.186

representation is of an image of a pair of lace gloves, which in a Western historical context were designated as ‘natural’ to women in that they represented cultural ideals of femininity in notions of passivity, modesty and submissiveness. The lace glove has a uniquely feminine aura in Western culture and is a symbol of a certain kind cloistering of women, as a gloved hand is not as dexterous nor can it engage in the messy work of science. The glove in itself has also become a relic of times past albeit sociological rather than archaeological. The glove in this work represents assumptions about women and the‘ natural’ roles for women in society. The use of these two elements that have both been represented as ‘natural’ and organic truths but in fact are both cultural constructions, act to infer the blurred boundaries between these categories and to illuminate the social and therefore non universal forces involved in the construction of knowledge.

Designations of nature as feminine have conditioned notions of ‘natural’ and morally appropriate roles for women in Western society, and analogies such as these have subsequently controlled access to cultural power and representation, as well as public positions open to women. Through the artwork *Flower Arrangement* I am attempting to explore the way a language of femininity has been defined and embedded within particular materials and activities within a Western context, in particular within the domestic sphere and in images of flowers.

The materials involved in this work, that is the crocheted doilies preserved in porcelain as representations of flowers, and their presentation as a domestic floral arrangement, have cultural associations and an embedded language that reveals itself within a particular cultural context. This impetus to read objects and their meanings in particular ways is conditioned from an early age, and as audiences and participants we make assumptions about gender because of this cultural conditioning. This narrative that denotes femininity in flowers, though not necessarily innate, in this particular social context has taken on the appearance as natural or self-evident.

This Conflation of gender and nature has a long history in Western Culture. Gardens as cultural manifestations have been gendered as feminine

spaces, and flowers that are used to adorn these spaces have been associated with sexual organs and reproduction in humans[116], as witnessed in the use of bouquets in marriage ceremonies. In Western culture in Judeo-Christian traditions flowers have come to represent chastity as in the case of the cult of Mary in which the rose, lily and the enclosed space of gardens represent an un-fallen state of virginity[117]. Whereas flowers in earlier times have leant themselves to notions of women's fertility, simultaneously being seen as symbols of youth, fertility, beauty, love, sexuality, sin and decay[118].

The Association of women with nature and flowers has often been reflected in a gendered division of labor that has traditionally located women within the domestic sphere. Basic assumptions drawn between women, their bodies and flowers have constructed notions of femininity within activities such as botany, floral illustration, flower painting, embroidery, sewing, gardening, floristry and flower making. These associations have offered women opportunities, as women have embraced these pursuits with an amazing array of creative expressions, though these associations have also acted to circumscribe the boundaries of their lives[119].

These arenas of cultural activity have generally been assigned a lower order in cultural hierarchies as belonging to the world of feeling rather than as part of a serious domain of knowledge production. Though women have a history in Western culture of maintaining physic gardens and passing on traditions of herbal lore, medical cooking and midwifery. These 'wise women' passed on skills through oral traditions. However, much of this knowledge was pushed out of sight after the fall of the Roman Empire as a result of the demonizing of nature in Christian doctrine, until it resurfaced in medieval monastic gardens[120]. This knowledge and practice has been a source of pleasure and an economic resource for women. An example of this is seen in the Sir Joseph Banks (1743-1820) remembrance of *"learning his*

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[116] Goody, J. (1993). No Flowers in Africa. New York: Cambridge University. P.2
[117] Ed. Jardine, N., Secord, J.A., & Spary, E.C. op. cit P.38
[118] Ed. Jardine, N., Secord, J.A., & Spary, E.C. op. cit. P.39
[119] Parker, R. (1984) The Subversive Stitch: Embroidery and the Making of the Feminine. London: Women's Press. P.11
[120] Ed. Jardine, N., Secord, J.A., & Spary, op. cit. P.40

botany from women who culled simples for sale to druggists and apothecaries" whilst studying at Eton[121].

The Enlightenment era saw an unprecedented growth of interest in flowers, which can be seen as an aspect of the rise of Western exploration and the expansion of European colonies, with botany involved in the successful introduction of foreign species, the popularisation of the garden, developments in plant breeding and the proliferation of new varieties[122]. In this climate that promoted an improving function of scientific knowledge, botany provided a socially acceptable face of female education, however it has simultaneously been thought of as a way of shaping women for their lives as wives and mothers within a domestic sphere. Young ladies were taught flower painting as an accomplishment and way of passing time. The Victorian era saw flowers became an important part of life and various incarnations were exhibited in drawing rooms, on walls and objects and above fireplaces[123].

These traditions that legitimated some forms of botanical work for women were also used to justify excluding women from positions as scientists[124]. Enlightenment botany was infused with the sexual values of the time. This is clearly evident in designations of natural categories as Kingdoms[125], and in the classification system of Carl Linnaeus, which used categories in which parts of a plant designated as male were given priority over parts of a plant designated female, as well as in the exclusion of women and those not classically educated through the use of Latin in classificatory systems[126].

However, the popularisation of illustrations in botanical publications created a large audience and numerous women contributed to publications. Though typically in relation to women's employment

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[121] Shteir, A. (1996). Cultivating Women, Cultivating Science. USA: Johns Hopkins University Press. P.39
[122] Goody, J. (1993). op. cit. P.1
[123] University of Reading. (2007). Two Women Botanical Artists and Their Most famous Works. [Electronic resource]. Accessed 12/10/2010, from www.reading.ac.uk/nmsruntime/saveasdialog.aspx?lID=12121&sID... P.3
[124] Shteir, A. op. cit. P. 37
[125] Goody, J. op. cit. P.2
[126] Goody, J. op. cit. P. 3

most were underpaid. Examples of this are seen in the women who worked for pennies illustrating William Curtis' botanical magazine[127]. Though some of the most well known botanical artists were men such as Basilius Besler (1561- 1629) and Pierre- Joseph Redoute (1817-1824), an extremely large number of women also contributed to this field. However, during the Victorian era it was common for women artists to sign their works 'by a lady', which contributed to the lack of recognition received by many women artists of the time[128].

Page from *William Curtis' Botanical Magazine*

Image from: University of Wisconsin-Madison Memorial Libraryhttp://specialcollections.library.wisc.edu/gardens/imagepages/botindcurtis/CurtisMag_PersianIrisFS.htm

[127] Studio Botanika. Women and the Art of Botanical Illustrtion. [Website]. Accessed 12/10/2010, from http://www.studiobotanika.com/exhibit.php

[128] Studio Botanika. ibid

Anonymous image of 19th century floral art

Image from: http://www.wesellart.com/products/Victorian-Flowers-Floral-Decor-Picture-Art-Print.html

Garden Hyacinth with Metamorphosis of Garden Tiger (Hyacinthus orientalis with metamorphosis Arctia caja) by Maria Sibylla Merian. (1679)
Image from: The J. Paul Getty Museum. (2008). Maria Sibylla Merian and Daughters: Women of Art and Science. http://www.getty.edu/art/exhibitions/merian/

Dwarf Morning Glory with Metamorphosis of Convolvulus Hawk Moth (Convolvulus arvensis with Metamorphosis of Agrius convulvuii) by Maria Sibylla Merian. (1683) Image from: The J. Paul Getty Museum. (2008). Maria Sibylla Merian and Daughters: Women of Art and Science. http://www.getty.edu/art/exhibitions/merian/

Dandelion from Elizabeth Blackwell's *A Curios Herbal*

Image from: British Library Online Gallery.
http://www.bl.uk/onlinegallery/ttp/blackwells/accessible/page4lge.html

Red poppy from Elizabeth Blackwell's *A Curios Herbal*
Image from: British Library Online Gallery.
http://www.bl.uk/onlinegallery/ttp/blackwells/accessible/page4lge.html

Paper collage by Mary Delany. *Passiflora laurifolia*

Image from: The British Museum.
http://www.britishmuseum.org/explore/highlights/article_index/m/mary_delany_1700-88.aspx

Paper collage by Mary Delany. *Crinum Zeylanicum*
Image from: The British Museum.
http://www.britishmuseum.org/explore/highlights/article_index/m/mary_delany_1700-88.aspx

Canotype Impression of *Cystoseira fibrosa* by Anna Atkins
Image from: British Library. Online Image collection.
http://digitalgallery.nypl.org/nypldigital/explore/dgexplore.cfm?col_id=188

Canotype Impression of *Delefseria sinuosa* by Anna Atkins
Image from: British Library. Online Image collection.
http://digitalgallery.nypl.org/nypldigital/explore/dgexplore.cfm?col_id=188

In order to highlight the importance of this contribution by women to the art and science of botanical illustration I will refer to a few of these artists. The German born artist Maria Sibylla Merian (1647-1717) is significant for her accurate depiction of the life cycle of 180 insects and their host plants[129]. Merian was sponsored by the city of Amsterdam to sail to the Dutch colony of Surinam and through the resulting publication *Metamorphosis Insectorum Surinamensium (1705),* which was the first scientific work to be devoted to the region, transformed the study of entomology and helped to disprove the once common belief that insects developed from decaying matter[130]. Merian was seen as an eccentric of the time because it was seen as strange for a woman to work with insects and to venture into the field, especially unknown and potentially dangerous territory[131]. During her career women were forbidden to paint in oil colour, though she became a proficient painter, engraver and embroider[132]. Merian's audience was both the scientific community and the general public as she included Latin names and drawings of reproductive parts in her illustrations. To this end Linnaeus references her in his work *Systema Naturae* (1735)

Today her works command high prices, though despite the popularity of her work with her publication *New book of Flowers* (1675) becoming a pattern book for artists, embroiderers and cabinet makers she died in poverty with little recognition from the scientific community[133].

The Scottish artist Elizabeth Blackwell (1700 -1758) is significant for her publication *A Curious Herbal* (1737-39), in which she illustrated, engraved and hand coloured five hundred plates, and is unique among her peers in that she engraved her own plates. Blackwell was not

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[129] The J. Paul Getty Museum. (2008). Maria Sibylla Merian and Daughters: Women of Art and Science. [Electronic resource]. Accessed 12/10/10, from http://www.getty.edu/art/exhibitions/merian/
[130] Studio Botanika. op. cit
[131] The J. Paul Getty Museum. (2008). Maria Sibylla Merian and Daughters: Women of Art and Science. [Electronic resource]. Accessed 12/10/10, from
[132] The J. Paul Getty Museum. ibid
[133] The J. Paul Getty Museum. ibid

formally trained in Botany but was able to gain access to the physic garden at *Chelsea Botanical Garden* in London. This project was supported by several prominent doctors a well as the *Society of Apothecaries*, who were in need of an updated herbal. Works by women of this era were often published anonymously as it was considered shameful to link a woman's name to a commercial venture[134]. This work though not anonymous was produced in order to free Blackwell's husband from debtor's jail[135], and become a great commercial success as well as an indisputable artistic and scientific contribution.

Women's contributions to Botanical art have also expanded on traditional mediums and have impacted on the scope and expression of contemporary art practice. Examples of this can be seen in the botanical art of the English born Mary Delany (1700-88) who is credited with creating the first botanically accurate paper collages or 'mosaicks' as she termed them[136]. Delany began making these botanically themed collages in 1771 at the age of 71 and these works are remarkable for their beauty and accuracy. Delany talked of this practice as an "*employment and amusement"* and also wrote that her work was intended as an imitation of a "*hortus siccus"* or collection of dried flowers[137]. The naturalist Sir Joseph Banks spoke of her creations as *"the only imitations of nature that he had ever seen from which he could venture to describe botanically any plant without the least fear of committing an error"*[138]. On each of her 'paper mosaicks' she recorded their botanical and common names, the place they were found and the date[139]. Delany created nearly a thousand collages before failing eyesight caused her to stop in 1782. These

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[134] National Museum of Wales. (2007). A Passion for Plants: Botanical Illustration by Women Artists. [Electronic resource]. Accessed 12/10/2010, from http://www.museumwales.ac.uk/en/rhagor/article/passion_for_plants/
[135] Studio Botanika. Women and the Art of Botanical Illustrtion. [Website]. Accessed 12/10/2010, from http://www.studiobotanika.com/exhibit.php
[136] The British Museum. Mary Delany. [Website] Accessed 12/10/2010, from http://www.britishmuseum.org/explore/highlights/article_index/m/mary_delany_1700-88.aspx
[137] The British Museum. ibid.
[138] The British Museum. ibid.
[139] The British Museum. ibid.

compositions filled ten albums, most of which came to be donated by her niece to the British Museum in 1897.

The final artist I will introduce is the English born Anna Atkins (1799-1871) who is considered the first person to publish a botanical work illustrated with photography[140]. Atkins was a knowledgeable amateur botanist and an excellent botanical illustrator, though typically of Victorian gentlewomen she was not encouraged to participate professionally in the science[141]. Atkins though, was supported in her botanical pursuits by her widower father, John George Children who was keeper of the *Department of Natural History and Modern Curiosities* at the *British Museum,* as such the natural sciences had an important role in her life and she had access to the botanical knowledge of the day. Atkins was a skilled illustrator honing her talents with her father's translation of Jean-Baptiste Lamark's *Genera of Shells*, and also providing the visual companion to William Harvey's 1841 *Manual of British Algae.*

Through her father's connections to the *Royal Society* circle, Atkins met Sir John Herschel (1792-1871) and William Henry Fox Talbot (1800-1877) and became aware of the group's experiments with photography.

" Talbot's photogenic drawing technique involved placing a flat object against a light sensitized sheet of paper…and exposing it to sunlight until the area around the object began to darken. Herschel devised a chemical method to halt the darkening and "fix" Talbot's silver-salt image"[142].

Atkins adopted Talbot's *"photogenic drawing"* method and Herschel's blueprinting process, to develop a process termed a canotype photogram in which specimens were placed on photographic paper and exposed

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[140] Victoria and Albert Museum. Victoria and Albert Exploring Photography: Photographers: Anna Atkins. [Website]. Accessed 10/12/2010, from http://www.vam.ac.uk/vastatic/microsites/photography/photographerframe.php?photographerid=ph005

[141] Victoria and Albert Museum. Victoria and Albert Exploring Photography: Photographers: Anna Atkins. ibid.

[142] Victoria and Albert Museum. Victoria and Albert Exploring Photography: Photographers: Anna Atkins. ibid.

resulting in a transferred image that could be generated multiple times[143]. Though it was not for lack of drawing ability that she turned to photographic processes in her botanical work. *Atkins spoke of*

"the difficulty of making accurate drawings of objects as minute as many of the Algae and Confera" as instrumental in inducing her *"to avail (herself) of Sir John Herschel's beautiful process of Cyanotype, to obtain impressions of the plants themselves"*[144].

Atkins self published her photogram's in the first instalment of *Photographs of British Algae: Cyanotype Impressions* in October 1843. Although it was privately published it is considered the first book illustrated with photographic images. In doing so Atkins established photography as an accurate means of depicting botanical specimens. In June 1844 eight months later William Henry Fox Talbot's released *The Perils Of Nature*, considered to be the first photographically illustrated commercial publication[145]. The resulting collections of works by Atkins have both aesthetic and scientific value.

These objects within my work are intended to reflect on these histories of the domestic and public realms of knowledge of nature in that these works hover between the decorative and the descriptive, taking on a resemblance to real life flowers. The flowers in my work appear to be etiolated as if they have ended their days in spirit jars, and this is a method used to invoke their relationship to specimens as well as remaining reminiscent of fabric they are made from.

The image of the flower arrangement and the crotched patterns involved in the found objects of the doilies invoke notions of feminine ideals as they have been manifested within a domestic sphere in Western cultures. Ornament and decoration has further signified socially acceptable roles for women in this context as they have been aligned with social status in providing evidence that women were able to remain in the home. [146]. The

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143 Victoria and Albert Museum. Victoria and Albert Exploring Photography: Photographers: Anna Atkins. ibid.
144 The J. Paul Getty Musuem. Anna Atkins. op.cit
145 The J. Paul Getty Musuem. Anna Atkins. [Website]. op.cit
146 Shteir, A. op. cit. P.183-84

objects reflect their production as part of a particular era that sought to express female piety and domesticity through decoration, in particular of an anonymous and domestic arena. Though I have sought to preserve the intricacy and aesthetic pleasure to be found in them, these works remain anonymous and in economic terms the long hours spent in their manufacture could not be accounted for by what I paid for them in second hand shops. As such the materiality of this work speaks of a certain kind of history in that despite the long hours evident in their manufacture they have lost touch with their authors, though these objects in their narrative expression and phenomenological history remain burdened with the legacies of the past.

The artwork *Blue Rose* similarly explores the culture of flowers and notions of floral cultivation, in particular genetic engineering of flowers. The multi-petalled and multi-coloured rose varieties in gardens today are the result of generations of cultivation. Wild roses or species roses as they are known in botanical terms are generally five petalled and range from red to pink, yellow and white. Attempts have been made since 1840 to create a blue rose when the *Horticulture Societies of Britain and Belgium* offered a prize of 500'000 francs to anyone who could create one[147]. Roses do not naturally contain a pigment to make them blue and attempts to create blue roses through traditional cultivation have always been unfruitful.

However, after thirteen years of research by an Australian company, *Florigene*, and a Japanese company, *Suntory Ltd*., a blue rose was created in 2004 through technologies of genetic engineering. This research has resulted in the insertion of a gene for the plant pigment delphinidin from a petunia into an Old Garden Cardinal de Richelieu rose. *Suntory Ltd*. as of 2009 has been growing genetically modified blue roses in test batches in Australia and the United States[148]. These varieties were presented at the 5th annual IFEX, Asia's largest flower and trade show, along with varieties of glow in the dark roses[149].

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[147] Biology News. (n.d) Blue Roses. [Website]Accessed 30/4/09 from http://www.biologynews.net/archives/2005/04/06/_roses_are_red_and_now_blue_with_the_help_of_csiro_technology.html

[148] Concar, D. (1998). Brave New Rose: Its 2020 You're lying on a Lemon Scented Lawn. The Roses are Blue. New Scientist. (160) 2158. Pp.30

[149] CSIRO. (n.d). World's First Blue Rose.[Electronic resource]. Accessed

The work I have presented represents an image of a blue rose and combines this with an ovate form of display reminiscent of European decorative floral traditions. This image of nature cultivated and contained is also shown to be in the process of decaying. The cultivation of flowers as this practice has emerged in Western culture since the 17th century has been part of the wider 'culture of curiosity', which promoted the collection and cultivation of nature as a celebration of reason and taste[150]. Notions of taste in this context have denoted social and moral virtue, with style and appearances of cultivation becoming important to social structures within elite society[151]. Floriculture has existed in this metaphorical space between the cultivation of the mind and the cultivation of flowers with florists aiming to cultivate rare, unique and expensive flowers that within Western culture spoke of the *"impulse to learn and enabled opportunities to display a reasoned sense of taste"*[152]. Fashions and cultures of curiosity have resulted in flowers of diverse colours and varieties in gardens. In this climate and similarly today, florists sought to make flowers blue, green and black as this was seen as an expression of rarity[153].

Flowers have been cultivated as reflections of social identities, as well as, demonstrations of the ability to resist the seductive forces of nature and success in *"learning how to control 'her'"*[154]. This culture has fostered a belief in the improving nature of cultivation, with social consensus promoting the idea that nature *" was best improved by the arts of man"*[155]. Cultivation has been elevated in hierarchical scale in relation to "the state of nature', as increasingly nature was seen as a state of lawlessness and disorder. Within a highly Christianised framework in Europe the cultivation of flowers was advocated as a path back to Eden, as through the

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20/4/09 from, *www.csiro.au/files/files/p29z.pdf*

[150] Hyde, E. (2005). Cultivated Power. Philadelphia: University of Pennsylvania Press. P.32

[151] Hyde, E. ibid. P.32

[152] Hyde, E. (2005). loc. cit

[153] Hyde, E. (2005). op. cit P.48

[154] Hyde, E. (2005). op. cit. P.43

[155] Hyde, E. (2005). op. cit. P.82

improvement and perfection of nature and the ordered spaces of gardens, social and spiritual order could be re-iterated[156].

It is hard to imagine a world without gardens that have resulted from this intermingling of foreign and native, new and old and natural and cultivated. Though increasingly in the modern world there is growing recognition that introduced species escaping 'over the garden wall' can become problematic to native species through competition for resources, with many of these plants cultivated for aesthetic pleasure deemed weeds outside the cultivated spaces of gardens.

Biotechnology presents further problems in this regard as it interferes with the fundamental building blocks of life, and as yet scientists have not had sufficient time to examine unintended consequences of this technology. Though already some of these consequences are surfacing, such as gene flow between species, genetic pollution of land species which are important in maintaining genetic diversity, novel terminator genes which tell a plant to stop reproducing after one generation, the destruction of habitat and food for worms, insects and native species, as well as possibilities of extended growing seasons only acting to deplete soils of vital nutrients for future generations. In framing this science as improving on nature's flaws and shortcomings, this darker side of technology is obscured and it retains an aura of if it can be done it should be done.

Blue roses due to the expense involved in their manufacture as with traditional ornament are aligned with luxury, and are aimed at a certain strata within society[157]. In the language of Flowers blue roses traditionally signify mystery or attaining the impossible, in Chinese folklore the blue rose represents hope against unattainable love, Blue roses adorn many printed ceramics and have done so since under glaze blue printing became common in the 17th century, During the 1970's the Blue rose also featured as a decorative element on many surfaces[158]. Clearly the image of the blue rose

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[156] Merchant, C. (2003). Reinventing Eden: The Fate of Nature in Western Culture. New York: Routledge. P.16
[157] Concar, D. (1998). op. cit. Pp.32
[158] Biology News. (n.d) Blue Roses. [Website]Accessed 30/4/09 from http://www.biologynews.net/archives/2005/04/06/_roses_are_red_and_now_blue_with_the_help_of_csiro_technology.html

has imaginative appeal to many cultures. The work I have created reflects on this imaginative tradition and now physical reality. This decorative image in my work attempts to explore the natural element of decay within any living thing as petals appear to have begun to fall and wither from this image. In this way I am attempting to explore the intermingling of human aesthetic pleasure, human desires to alter and contain nature, along with the inevitability of processes of decay in the existence of natural things beyond our representations of them.

Processes of decay and renewal in nature have had a place in human consciousness for some time. Growth, birth and death in nature and our relationships with these natural processes have played an important part in human survival. In modern times humans have become somewhat removed from their place in nature and relationship to natural cycles. Though it is something that lingers in the background not least because of the necessity that at least somewhere someone must be paying attention to such things. The object *Acanthus* reproduces the Ancient image of an acanthus sprout on what appears to be a fragment of a building. The Acanthus has been a common decorative element in European culture, and refers not only to the plant but also it's use as a decorative element. This image can be found on the capitals of Corinthian temples from Ancient Greece and Rome, On many secular and sacred buildings throughout Europe on roof bosses, capitals, corbels, fonts, tombs, tympana, screens, bench ends, poppy heads, misericords, arm rests, carvings, manuscripts, metal work, book plates and stained glass[159], it is also found in architectural features throughout Australia, this image is also found in Borneo, Nepal and India, Lebanon and Iraq[160].

The image in my work follows a medieval tradition in which an image of a human face appears to be emerging from the leaves. This decorative symbol of a human face covered by acanthus leaves bears a striking resemblance to the Jack in The Green images that were part of May Day festivals in pre-Christian Europe. In this context the image was used to

[159] Basford, K. (1978). The Green Man. London: Brewer. P.8
[160] Curren, B. (2007). Walking With the Green Man: Father of the Forest, Spirit of Nature. USA: The Career Press. P.23

convey messages of rebirth and regeneration that came with spring[161]. The image of the Green Man is male, and has often been associated with other dying and rising Gods such as the Egyptian Osiris, the Norwegian, Odin, The Mesopotamian Tammuz and the Christian Son of God, Jesus. This image has maintained a place in Christian ornament, in many cases it has been used to emphasise the base elements of nature symbolising "*the sins of the flesh and wicked men doomed to eternal damnation*"[162]. In my work I have repeated images of a foliate head around the fragment three times, reminiscent of medieval imagery, which could symbolise either the holy trinity or absolute evil.

The foliate head has attracted the attention of artists and cultural producers across the centuries and has been used by many people in different ways. It has lurked and resurfaced in human imagination in various incarnations that range from full faces emerging from the leaves to images of faces that can only be seen with close inspection and a little imagination. There is no definitive answer as to what it means, it can be seen as a symbol of regeneration, as well as death, sin and decay. These changing meanings have reflected the values of the people who have used it as well as the shifting place of nature in human consciousness. This image marks a connection with the surrounding forces of nature that has been used to unify humans with these forces or to emphasise a threat and sense of separateness. Personally the image as I have used it speaks of an anthropomorphic view of nature and the continual urge humans have to inscribe our image in natural materials and to see our identity reflected and remembered in the changeable phenomena of nature. Within this Ancient symbol there also lingers the wisdom that we are a part of nature and the cycle of things and any hope to separate ourselves will always come up against this reality.

Conceptions of the Natural world have changed over time as is reflected in the use of this image, and consequently this image has been relegated to history and to an architectural backdrop from which we have lost symbolic connection. During humanities long process of cultural evolution we appear

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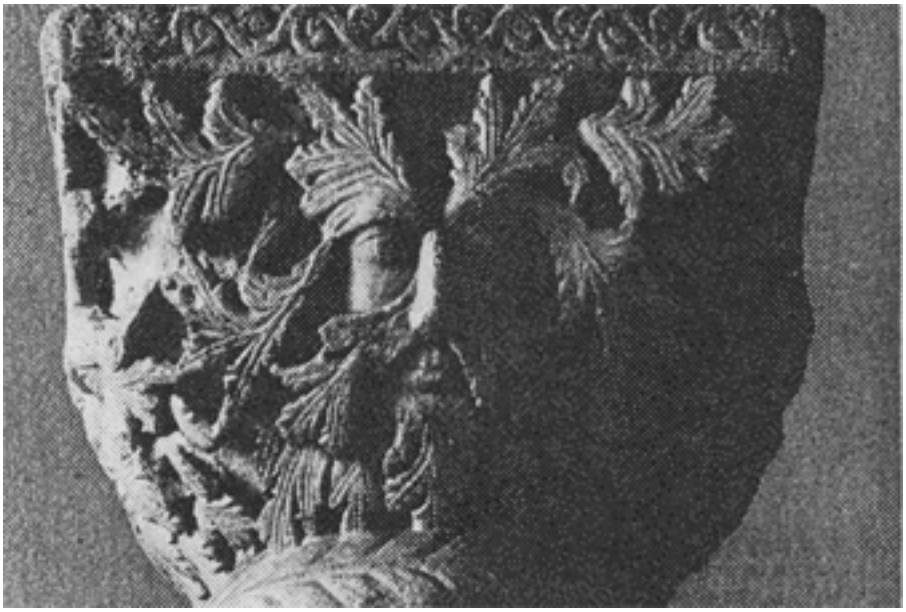
[161] Basford, K. (1978). op. cit. P.12
[162] Basford, K. (1978). op. cit P.12

to have misplaced some of the abilities inherited from our ancestors, part of this loss is that direct connection with nature. This artwork aims to remind audiences of the history lingering in this symbol and to act as a reminder of our part as humans in the natural world.

These works though they involve a variety of different concepts, all reflect on ideas that make up a cultural understanding of 'nature' in Western thought. These works in their presentation are reminiscent of a 'Cabinet of curiosities' as many narratives are brought together under the umbrella that is the collection. The glass vitrine and the method of juxtaposition enable these works to read off each other with the hope that audiences can reflect on the layered ideas invoked by the concept 'nature'.

Medieval misericord; abbey-church of Vendrome France.
Source: wikipedia. Accessed 8/3/2009, from
http://en.wikipedia.org/wiki/File:Etching_of_Vendome_Green_Man_misericord.jpg

Bamberg Cathedral,
acanthus leaf mask
Source: Kathleen Basford (1996).
The Green Man. D,S. Brewer. Cambridge



Istanbul Archaeological Museum, capital. 6th century
Source: Kathleen Basford (1996). The Green Man. D,S. Brewer. Cambridge

Image of the Green man In Stanmore, Australia
Source: Ken Johnson. (2009). www.flickr.com/photos/ken/johnson

Painted wooden roof boss from Rochester Cathedral, Kent
Source: wikipedia. Accessed 8/3/2009, from
http://en.wikipedia.org/wiki/File:RochesterCathedral_Boss1.JPG

Resemblances Series

Medium: Porcelain, glass vitrine

Installation view, 2009

Resemblances series
Title: Field Guide
Medium: Porcelain
Dimensions:21cm (w)
x 18.8cm (h) x 15cm (d)

Resemblances series
Title: Fossil
Medium: Porcelain
Dimensions: 43cm (l) x 32cm (w) x 7cm (d)

Resemblances series
Title: Flower Arrangement
Medium: Porcelain
Dimensions: Variable

Resemblances series
Title: Blue Rose
Medium: Porcelain
Dimensions:
20cm (h) x 15cm (w) x 9cm (d)

Resemblances series
Title: Acanthus
Medium: Porcelain
Dimension; 23cm (h) x 16cm (w) x 16cm (d)

Chapter Three

The representation of nature and its transformation in art has been evident since prehistoric times of at least ten to thirty thousand years ago[163]. Artists and designers along with other cultural producers since have been profoundly influenced by the images, colors, patterns, structures and systems of nature around them. Cultural practices exploring nature through representation have been used to explore the relationship between humans and the natural world in many ways. Terms used to describe at least the most relatively recent facets of this history have included, naturalism which denotes a faithful or accurate representation of the natural world, landscape art which depicts and documents the environment, land art or Earth art which is made outdoors in the environment and incorporates aspects of the environment, site specific art which directly relates and draws meaning from its context, art in nature which is often ephemeral, located in the environment and uses found natural materials, and environmental art or eco-art which is often inter-disciplinary and engages with ecological concerns and social responsibilities in relation to the environment. Many artists working with environmental concerns or in response to nature cross these categories and as such these terms are not useful as definitive boundaries but rather make suggestions about the multiplicity of practices in contemporary art dialogues.

The world of art plays a critical role in provoking thought and generating dialogue. Art is one way of addressing the form of our values and perceptions, psychological and spiritual condition, as well as providing inspiration and enrichment in our everyday lives. In light of Contemporary concerns in relation to the state of our environment it is unsurprising that many artists are turning their attention to approaches that address these concerns of finding a balance between humans and our environment. For the purposes of my paper I have chosen four artists who are concerned with a

[163]Green Museum.(n.d). [Website] Accessed, 2/3/09 from, http://greenmuseum.org/c/aen/Earth/everyday.php

deeper exploration of how we respond to being in the world, and the way we give shape and meaning to environmental significance. In their works they refer to natural, political, historical and social contexts. These artists and the particular works that I will discuss include, Brandon Ballengee and the work *The Ever Changing Tide (2000-2001),* Jason Decaires Taylor and the work *Silent Evolution* (*2010),* Ken Yonetani and the works *Fumie-tiles (2003)* and *Sweet Barrier Reef* (2005), as well as, Fiona Hall and the works *Paradisus Terrestris (*1989-90), *Paradisus Terrestris Entitled* (1996) and *Leaf litter (2000-2002).*

To begin I refer to the American artist Brandon Ballengee who creates multi disciplinary works generated from ecological field trips and laboratory research. Since 1996 he has collaborated with a number of scientists in undertaking biological research and conducting advanced imaging procedures. During this time he has collected specimens for several scientific organisations, including, the *Peabody Museum* at *Yale University*, the *American Museum of Natural History*, and the *Museum of Vertebrate Zoology* at the *University of California*, *Berkeley*. In addition to his artistic practice he promotes ecological awareness through conducting ecology, field biology, genetics and digital imaging workshops open to the general public at urban parks, zoo's, pet stores and fish markets. Moreover as part of his approach Ballengee is involved in wildlife preservation, works as a field observer for the *U.S Geological Survey's North American Reporting Centre for Amphibian Malformation (NARCAM)* and participates in and conducts wetland surveys[164]. Ballengee states that,

"My work attempts to blur the already ambiguous boundaries between environmental art and ecological research. When initiating a project I often solicit technological or theoretical information from field biologists, or zoological organizations. In other cases, I have collaborated with scientists to create a work. As an artist involved in wildlife preservation, global disappearances of biodiversity is both a concern and a focus"[165].

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[164] The Green Museum. (n.d) Brandon Ballengee: Biography. [Website]. Accessed 17/5/09 from, http://greenmuseum.org/content/artist_content/ct_id-28__artist_id-19.html

[165] The Green Museum. (n.d). Brandon Ballengee: Artists Statement. [Website]

These inter-disciplinary strategies are often a part of art practices focused on environmental concerns and in this instance provide Ballengee with a unique and informed perspective from which to produce his works of art. Ballengee's work *The Ever Changing Tide 2000-2001* similarly uses strategies that cross borders between biology, ecology, scientific imaging, sociology and art. This work involved the collection, identification, phylogenic examination and documentation of numerous aquatic organisms available for consumption at various China Town markets in Flushing Queens. Ballengee bottled samples and processed scans of four hundred specimens given to him by vendors. This project highlighted the types of numerous endangered and at risk species of marine life available for consumptions at these fish markets.

This Project was a collaborative effort involving Todd Gardiner of the *Marine Biology Department of Hofstra University*, who assisted with the taxonomic classification, Mercedes Lee of the *National Audubon Society's living Ocean Program*, who helped determine the ecological status of each species, and Peter Warny of the *New York State Museum of Art*. Ballengee also acknowledges that many people have helped him with translating texts and in producing the iris prints[166].

The installation that resulted included over four hundred preserved specimens that were representative of over two hundred and sixty species, and seventy-six iris prints. With each of these elements presented in accordance with the evolutionary relationships among these species. In addition to the installation Ballengee organised tours through the Flushing markets. After this process Ballegee invited twenty fish markets to post bi-lingual panels with the information and images of endangered species available at the markets. The *Hong Kong Fish Market*, which is one of the largest in Flushing, still has this panel up for customers to read. Following the exhibition at the *Queens Museum of Art*, the specimens permanently entered the ichthyology collections of the *American Museum of Natural*

Accessed, 17/5/09 from, http://greenmuseum.org/content/artist_content/ct_id-35__artist_id-19.html

[166] Brandon Ballengee. (n.d). Malamp. [Website]. Accessed 17/5/09 from, http://www.disk-o.com/malamp/bio-diversity.html

History, the *New York State Museum* and the *Peabody Museum* at *Yale University*. In addition to these educative strategies Ballegee has created a website which offers documentation of the project and various links which viewers can access to learn more about ocean ecology and conservation[167].

Through this research and visual outcomes Ballengee is expressing a concern with declining biodiversity, he refers to evidence of declining fish catches despite expanding industrial fleets fishing more extensively. In his discussion of this work he states that annual fish catches in the 1950s were eighteen million tons, which peaked in 1986 at eighty-six million tons, with catches currently falling[168]. His work is not only thematic but works within these varieties of fields in order to remodel them from within, as well as to involve in these arenas the visually accessible format that art can provide. This kind of practice is a move away from object and studio based activities, though his works retain a visual and aesthetically intriguing appeal to them, and represents a move towards an approach that can reach a far larger audience than if it were located in traditional art spaces.

Secondly I will discuss the underwater sculpture *Silent Evolution (2010)*, created by the Mexican based British artist Jason Decaires Taylor. This work is located in the National Marine Park of Cancun, Isla Mujeres and Punta Nizuc, Mexico, and is the first installation in a new underwater museum called *MUSA* or *Museuo Subacuatico de Arte*[169]. *Silent Evolution* is located nine meters underwater and is made up of four hundred life sized sculptures created with a pH neutral concrete, is reinforced with fibreglass that apparently attracts marine life, Taylor also rescues coral damaged in storms or by humans and replants these in his sculpture.

The works intention is to form an artificial reef, and as Taylor states, *"Already, I think there are a thousand different fish living on them. There're*

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[167] Brandon Ballengee. (n.d). "The Ever Changing Tide:
The Ecological Dynamics of the Earth's Oceans as Exemplified through the Biodiversity of the Flushing New York Seafood Markets". [Website] Accessed 17/5/09 from, http://www.disk-o.com/fishsmart/

[168] Brandon Ballengee. ibid

[169] Faerber, F. (2010). Picture's: "Bodies" Fill Underwater Sculpture Park. [Electronic resource]. National Geographic Daily News. Accessed 6/6/10, from http://news.nationalgeographic.com/news/2011/01/pictures/110105-underwater-sculpture-park-garden-cancun-mexico-caribbean-pictures-photos-science/

lobsters, there're big schools of angelfish, and there's a big coating of algae, which is one of the [first] things to settle"[170].

Rising sea temperatures as a result of Climate change are having drastic consequences on the world's coral reefs. These beautiful and fragile ecosystems attract an array of marine life such as colourful fish, turtles, sea urchins, sponges, and sharks, and also provide enclosed spaces for sea creatures to breed or take refuge. Only about ten to fifteen percent of the seabed has a solid enough substratum to allow reefs to form naturally. Artificial reefs are quite a new phenomenon in the scientific community and have proved to be a very good alternative as they are durable, environmentally friendly and offer relief to the natural ones in order that they can regenerate[171]. These reefs appear to have been successful in that they have attracted coral growth, which, in turn, can support an entire marine ecosystem. To this end Taylor hopes that this project will *"discharge people away from the natural reefs and bring them to an area of artificial reefs"*[172], by diverting attention and giving natural reefs time to regenerate, further reducing pressure on these natural ecosystems.

This work employs interventionist strategies, which harness art in an ecologically responsible and productive manner. His works are cultural products that situate themselves in as well as become a part of the natural environment upon which they are commenting, and in this manner he is exploring the intricate and interdependent relationships that have evolved between humans, natural environments and their other inhabitants. These works are never quite finished in one sense and in them audiences can recognise a part in a natural cycle of decay and renewal, as over time coral will continue to grow and alter the surface of this work as a living environment.

As a visual artwork we can comment on its conceptual meaning further as the work, which draws on a figurative tradition in art, presents an image

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[170] Faerber, F. ibid.
[171] Jeppesson, F. (2011). Artist Builds incredible Coral reef From Sunken Statues. Inhabit: Design Will Save the World. [Website], Accessed 12/1/2011 from, [http://inhabitat.com/%E2%80%9Csilent-evolution%E2%80%9D-builds-a-beautiful-coral-reef-from-statues/]
[172] Faerber, F. op. cit

of four hundred bodies clustered tightly together with their eyes closed and appearing reminiscent of a community facing disaster. The people in *Silent Evolution* were created from live casts of a variety of different people including young children and the elderly, most of whom were locals[173]. This eerie and lifeless image of humanity also acts to remind us of the consequences of climate change in rising sea levels as human cultures face the possibility of becoming submerged. Though ultimately the work is hopeful in that it offers a regenerative outcome to human intervention in the environment.

This pressing concern with the anthropogenic damage done to natural environments is reflected in the works *Sweet Barrier Reef (2005),* and *Fumie-Tiles (2003)*, created by the Japanese, Australian based artist Ken Yonetani. These works are made respectively from the delicate materials sugar and ceramics, and both in differing ways reflect on the impacts of human desires and consumption on natural ecologies. Yonetani in an interview in *Artlink* magazine refers to experiences of loss and anxiety in relation to the disappearance and devastation of the natural world that he has experienced during his lifetime. This loss has been witnessed in Japan as he speaks of the disappearance of cicadas and dragonflies that had *" vanished with the trees, and as the concrete increased"*, and through his travels as an adult witnessing the mass environmental devastation of*" the garbage wastelands of the Philippines, and the suffocating pollution of Bangkok. Even in the most remote area of Fiji, I found ninety percent of the coral dead"*. Whilst in Australia Yonetani speaks of the *" devastating"* difference in as little as six years to the health of the Great Barrier Reef[174].

Yonetani's work *Sweet Barrier Reef* has been made from sugar and polystyrene foam, as well as incorporating cake and demonstration models in a related performance. This work represents an image of bleached coral reefs and utilises oceanic hues in lighting the installation to further create this effect. This installation has been made as a result of research conducted at

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[173] Faerber, F. op. cit

[174] Yonetani, J. (2005). Sweet Revenge: An interview with ken Yonetani. Artlink. 25(4). [Electronic version]. Accessed 3/4/09 from, http://www.kenyonetani.com/SweetRevenge.html

the *Reef Research Centre of the Australian Institute of Marine Science*, and at *James Cook University* in Townsville, and represents a collaborative and interdisciplinary approach that is also evident in his work *Fumie-tiles*[175].

Yonetani's use of material is poignant and purposeful here as he is reflecting on the role of the sugar industry in contributing to the decline on marine habitats. In *Artlink* he refers to his experience in Japan of the damage done to coral reefs in large part due to the sugar industry, and of the realisation that in Australia there is evidence of the *" same problem in north Queensland, where sediment run off from sugar cane plantations in bleaching and killing large sections of the Great Barrier Reef"*[176]. In this work sugar becomes a metaphor for desire and consumption as it represents a decadent and desired commodity. Sugar here is presented both as a desired aspect of human experience and as a reminder of the devastating consequences of these desires if left unchecked. At the exhibition at *Artspace*, Woolloomooloo in 2005, Yonetani used 1.5 tonnes of sugar to create *Sweet Barrier Reef*, and in his discussion of the work highlights the contradiction in using sugar to talk about the environmental destruction caused by this product[177]. This work though can also be seen as revelatory as the conditions of the production and consumption of sugar, which is an everyday product in contemporary society very often goes unnoticed by consumers. In the performance component of *Sweet Barrier Reef* audiences were offered coral shaped cake by models dressed as trade show attendants which further references sugar as a desired commodity and a *"luxury item with seductive allure"*[178]. In this way Yonetani acts to raise awareness of environmental problems as well as induce and highlight audience complicity in these acts of consuming and altering the natural world.

Yonetani's art here and in *Fumie-tiles* draws from personal experiences and he sees the role of art as educational, with ethical imperatives. He states that, "*human desires need to be contained through mechanisms such as*

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[175] Yonetani, J. op. cit
[176] Yonetani, J. op. cit
[177] Yonetani, J. op. cit
[178] Yonetani, J. op. cit.

education. Yet by education, I do not mean indoctrination"[179]. *Fumie-Tiles (2003)* is an artwork that lives up to this educative aim. This installation held at the *CSIRO Discovery Centre* in Canberra in 2003 consisted of 2220 ceramic tiles featuring images of ten of the most endangered species of Australian butterflies, and covered the centre's floor. Yonetani also placed a tile of each butterfly on the wall and information panels below each wall tile, which created an effect of a museolgical display. The information presented included the common name of each butterfly, a map of the butterfly's natural habitat, and the indigenous names for each butterfly in the language group of the butterfly's natural habitat. In this way Yonetani references the complex network of structures around knowledge of nature as well as creating a space for dialogue between these different discourses. This work created with the assistance of Kim Pullen of the Discovery Space at CSIRO was created as part of an endeavour to promote the interrelation of science, culture and art, and these facets in Yonetani's work merge and juxtapose further creating tension and depth within the work.

The work took eight months to complete and consisted of tiles purposefully fired to low temperatures to ensure that they were not too brittle or too strong. This site specific and time specific work obliged the audiences to step on and break these tiles as they entered the exhibition. Yonetani refers to his surprise at *"the power of peoples destruction*[180]*"*. As almost all the tiles were destroyed in less than an hour.

Yonetani says that he chose to depict endangered Australian butterflies in this way in response to *"the painful and enduring impact of his experience in seeing numerous butterflies along the roadside when he was travelling by bicycle in central Queensland*[181]*"*. In *Fumie-Tiles* the fragility of these works acts as a metaphor for the fragility of nature, and the act of involving people in the destruction of the tiles further highlights human destructive capacities

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[179] Yonetani, J. op. cit

[180] Doyle, J. (2004). Fumie-Tiles: Ken Yonetani's Installation at CSIRO Discovery, ACT. The Journal of Australian Ceramics. 43(2). [Electronic version] accessed 3/4/09 from, http://www.potteryinaustralia.com/March04/index_fum.html?fumie.html~main

[181] Humphrey (Yonetani), J. (20040 ken Yonetani's Art of Destruction. Ceramics Art and Perception. 57. [Electronuic version]. Accessed 3/4/09 from, http://www.kenyonetani.com/ArtofDestruction.html

in relation to nature. The Japanese term 'fumie' refers to a *"picture on which to trample"*[182], a practice introduced in Japan in order to combat a perceived threat of Christianity, as suspected Christians were made to trample on their images as proof of a renunciation of faith. In using this strategy Yonetani encourages the audience to think about their relationship to the environment and the contradictory desires that inhabit humans through the complicit act of trampling. This role of humans in destroying our environment is further demonstrated, as audiences are unable to see the information presented on the wall unless they trample the floor tiles. Yonetani references this contradiction with the words, *"all humans contain within them contradictory desires towards the environment in which we live, the desire to protect and maintain, and the desire to impact and destroy*[183]*"*. This contradiction and the ephemeral qualities of nature have become clearly evident in the experience of this work.

Finally I will discuss the Australian artist Fiona Hall, who similarly is drawn to delicate and intricate materials and processes in exploring human relationships with nature. Hall's practice has spanned over thirty-five years and in this time she has incorporated many different materials, processes and conceptual strategies within her work. The breadth of her practice and the detailed and rigorous engagement with the layered significance and aesthetic possibilities of materials has helped gain her critical acclaim, as well as, invoking popularity amongst other artists and the public. Her provocative yet delicate, and sometimes humorous works meld material and conceptual concerns. Hall uses non-traditional and everyday materials in her artworks, and renders them into aesthetically beautiful yet unsettling cultural objects.

Throughout her practice Hall employs strategies of inter-textuality in referencing literature, science, museological display and craft based practices. Hall's practice is often collaborative as she participates with scientists, scientific institutions, museum staff and collections, curators, architects, designers and other artists. Many of the strategies that she employs place her work within the conceptual and historical rubric of what

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[182] Humphrey (Yonetani), J. op. cit.
[183] Humphrey (Yonetani), J. op. cit

might be termed postmodern or postcolonial practice, with her critical appraisal within postmodernism relying not on an emptying of meaning of the objects she employs, but on a cultivating of awareness of the historical, political and social implications of these familiar everyday objects. As Stephanie Radock writes in the article *Trade*, Hall

'likes codes and systems, the forms and patterns of knowledge, she likes to study the way learning has been constructed and formed"[184]. Hall herself states, *"I'm fascinated by systems of classification, the disparity between classification or codification of things and the actuality of things as we experience them"*[185].

Hall's practice is also concerned with the histories and language of colonisation. Through her work she comments on the appropriation of cultural knowledge. Hall references colonial legacies in one of her most widely known collection of works, *Paradisus Terrestris, 1989-90*, and *Pardisus Terrestris Entitled, 1996.* These works are made from sardine tins, aluminum, the technique of metal embossing and a jewelry technique known as repousse. In the former she makes reference to plants associated with paradise such as the Pardisus ereestris or grapefruit, and Musa x paradisiacal or banana, and in other works she makes use of plants that reference a European obsession with the exotic such as Araucaria araucana or monkey puzzle and Xanthorrhoea australis or black boy[186]. In doing so she urges us to examine processes of colonial classification, trade and the claiming of botanical knowledge and its associated power. Moreover, the work communicates this history that had sought to reinvent notions of a lost Eden of cultivated Europe within the new world 'paradises' of colonised countries such as those found in the Americas and Asia Pacific regions. This work in its title also refers to the fact that paradise on Earth is the genetic diversity of the natural world which is being lost in the face of industrialization and the commercialization and consumption of nature.

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[184] Radok, S. (2001). Trade: Fiona Hall. Artlink. 21(4). P.51
[185] Morrell, T. (1994). Undermining the Systems in a Post Everything World. Art Monthly. (68). P.9
[186] Museum of Contemporary Art (MCA). (2008). Fiona Hall: Force Field Education Kit. P.6

This series was made whilst on an *Australia Council* residency in New York and in the work Hall combines scientific, botanical illustrative and taxonomical traditions with images sourced from pornographic magazines[187]. This strange juxtaposition makes us look harder at the social and cultural constraints placed around nature, and also draws parallels with the historical sexualisation of flowers and gardens as well as, the anthropomorphisation of sexuality in the plant kingdom seen in Linnaean taxonomic systems[188]. Flowers are the sexual and reproductive part of plants, and these erotic images also invoke notions of fertility and regeneration, with the image of the sardine can further highlighting aspects of consumption of the natural world. This work implies the interconnectedness of humans and nature in that *"human welfare is closely tied to that of plants"*[189]. Fiona Hall comments on this in the article *Fertile Interactions*,

"We share a great deal with plants, and use them frequently as erotic metaphors, the basis of our shared existence is something that, scientifically, we are now fully able and obliged to acknowledge"[190].

In the latter series *Pardisus Terrestris Entitled, 1996*, Hall works with indigenous Australian plants, and uses the botanical name, common name, Aboriginal name of the language group to which it belongs. In this work Hall refers to the replacement of indigenous knowledge systems with those of colonising powers. Hall uses this strategy as *"a deliberate act of acknowledging the indigenous peoples connections with the land and plant life"*[191], and manages to show the longevity and depth of botanical knowledge of indigenous Australians. This use of multiple naming systems also indicates *"widely different outlooks and levels of awareness"*[192] of the plant world.

Hall speaks of these works as coming from *"an on-going fascination with the infiltration of plants into human existence, political, social, sexual,*

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[187] Museum of Contemporary Art (MCA). Ibid.
[188] Hart,D. (1998). Fertile Interactions. Art and Australia. 36(2). P.206
[189] Radok, S. op. cit. P.51
[190] Hart,D. (1998). Fertile Interactions. Art and Australia. 36(2). P.206
[191] Hart,D. ibid.
[192] Hart,D. ibid.

medical, (and) metaphysical"[193]. Exploring the fertile connections between humans, plant life, politics and cultures is also the conceptual basis of the collection of works that form *Leaf Litter, 2002*. This work involving 183 types of plants has been created through intricate paintings of leaves onto bank notes from the countries of origin of each plant. It is extremely fragile in nature as the material of gouache used can be crumbly and flakey. Works are held together with paper tape and are pined to the wall via panels attached to the top of each work allowing them to flex at the bottom[194].

Each component examines vernaculars of botanical illustration, classification and monetary systems through images, colours, graphic styles, watermarks, languages, monetary symbols and Linnaean and local botanical classification[195]. Hall has said of this work, *"Money doesn't grow on trees – or does it?"* [196]. Though this work references a beauty and diversity in nature that no amount of money can replace. *Leaf Litter* highlights the crucial role plants have played in the history of colonisation and the development of world economies, as they are the raw material for generating income. However, these plants in the work have become endangered as a result of economic pressures to grow commercial crops[197]. This work examines the role of commodifying nature and the power surrounding the use and ownership of plants, as well as the price that this commodification of nature has exacted as a result of over taxing the environment. *Leaf Litter* also references the ever-widening gap between rich and poor nations, with many of the most plant resource rich countries now among the poorest.

Human experiences and the natural world are intricately and intimately connected through visual and verbal languages. These vocabularies emerging in twenty first century life invariably are incorporating concern with a degrading environment, as well as social inequity in relation to ownership

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[193] Morrell, T. (1994). op. cit. P.9
[194] National film and Sound Archive. (2006). Hidden Treasures With Betty Churcher: Fiona Hall. Accessed 5/5/09 from, http://dl.nfsa.gov.au/module/841/
[195]Museum of Contemporary Art (MCA). (2008). Fiona Hall: Force Field Education Kit. P.6.
[196] Macdonald, A. (2005). Hall Ways. State of the Arts.[Website]. Accessed 5/5/09 from, http://www.stateart.com.au/sota/hit-list/default.asp?fid=3290
[197] National Gallery of Australia: Federation of Australian Art and Society 1901-2001. Encounters: Fiona Hall. [Website], Accessed 4/5/09 from, http://nga.gov.au/federation/Detail.cfm?WorkID=26201

and access to the natural resources and safe environments. Though the legacies of exploring our environment have brought many benefits especially to the Western world, we are no longer free to simply celebrate the benefits of technology and progress, but rather must take into account the consequences of our actions in relation to the health of the environment. What has become evident in contemporary dialogues is that there can be no representation of nature in which borders of this term don't push against conceptions of the artificial, social and cultural, nor is there a stable inventory of nature or a universal and timeless register of the conception of nature.

There is a contemporary push to remedy the mistakes of the past and improve on how we use and redistribute knowledge of nature through education, community action, co-operation and dialogue. Artists in their role as environmental and social commentators often walk a difficult line when it involves engendering discussion of environmental decline, as art utilises natural materials and technologies of manufacture that are deeply involved within histories of production and consumption, and can often seem contradictory when related to environmental concerns. However as can be seen in the practices I have discussed this line can be walked in order to create discussion and raise awareness, or artists can choose to take a positive angle on human transformation of nature and aim to celebrate and promote a healthy relationship and connection of humanity with nature. Art has its own cultural histories that are now running parallel with concerns for the natural world, and will continue to be a place where social, cultural and personal dimensions merge to create a ground on which debates can be raised about the significance and structure of our relationships with the world around us and each other.

Artist: Brandon Ballengee
Title: The Ever Canging Tide 2000-2001

Medium: Fish samples, glass bottles, isis prints
Dimensions: Variable
Source: Ballengee, B. (n.d). The Ever Changing Tide 2000-2001. [Website]. Accessed 15/3/09 from, www.disk-0/fishmart

Artist: Jason Decaires Taylor
Title: Silent Evolution, 2010
Medium: Marine cement, underwater ecosystem
Source: Decaires Taylor, J. (n.d). Underwater Sculpture. [Website].
Accessed 2/3/2010 from, http://www.underwatersculpture.com/

Artist: Jason Decaires Taylor
Title: Silent Evolution, 2010
Medium: Marine cement, underwater ecosystem
Source: Decaires Taylor, J. (n.d). Underwater Sculpture. [Website].
Accessed 2/3/2010 from, http://www.underwatersculpture.com/

Artist: Ken Yonetani
Title: Sweet Barrier Reef, 2005
Medium: white sugar, icing sugar, polystyrene foam, cake for performance
Dimensions: 6m x 12 m x 1.6m
Source: Yonetani, K. (n.d). Ken Yonetani. [Website]. Accessed 1/2/09 from, www.yonetani.com

Artist: Ken Yonetani
Title: Fumie-Tiles, 2003
Medium: Ceramic tiles
Dimensions: Tiles; 26cm x 26cm
150m sq floor covering
Source: Yonetani, K. (n.d). Ken Yonetani. [Website]. Accessed 1/2/09 from, www.yonetani.com

Artist: Flora Hall
Title: Details from the Paradisus Terrestris series, 1989- 1996
Medium: Aluminium, steel
Dimensions: variable

Atnyem (Ayawa), Acacia kempeana, Witchetty bush

Dunban (Bundajalung), Staghorn, Platycerium superbum

Irigia (Yankunytjatjara), Oldman saltbush Atriplex nummularia

Kura wari (Pitjantyjatjara), Eucalyptus microtheca, Coolibah tree

Artist: Fiona Hall
Title: Details from leaf Litter 2000-2002
Medium: Guoache on bank notes
Dimensions Variable

Philodendron gloriosum- satin leaf

Dioscored esculenta - air potato

Daucus carota - carrot

Adiantum raddianum - maidenhair fern

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