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Art and Attention Restoration Theory:

How landscape-themed art may contribute to a restorative environment in windowless workplaces.

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Table of Contents

List of Figures iii

List of Tables vi

Glossary/Abbreviations vii

Acknowledgments viii

Abstract ix

Chapter 1 Introduction 1

Chapter 2 Attention Restoration Theory and Nature Connection 11

2.1. Nature Connection and Biophilia 12

2.2. Attention Restoration Theory and Attentional States 16

2.3. Restorative Effects of Landscape 21

2.4. Landscape Art: Restorative Effects of Representations of Nature 25

Chapter 3 Landscape Art: a framing of the world, how visual perception works and representations of landscape 29

3.1 Landscape: Framing of a Part of the Environment 30

3.2 Landscape Art and Visual Perception; to Look, to Observe 31

3.3 Artefacts/Artists 37

Chapter 4 Methodology and Methods 51

4.1. Methods 54

4.1.1. Application of the Framework 56

4.1.2. The Work of Art as a Cultural Probe 56

4.2. Study 1 57

4.3. Study 2 59

4.4. Study 3 60

4.5. Evaluation Processes 62

4.6. Ethics Protocols - Research with Human Subjects 62

Chapter 5 Art Practice Methods and Artefacts 64

5.1. ART Framework and Conceptualisation of the Artworks 66

5.1.1. Fascination; an absorbed interest 66

5.1.2. Being Away; a momentary release from a prior mind state 66

5.1.3. Extent: the scene appears to be a whole other world 67

5.1.4. Compatibility; congruence with the viewer's preferences 67

5.2. Art Practice: Making and Materiality 68
5.3. Tacit Knowledge 75
5.4. Research Outputs 77
Chapter 6 Results of the Studies 80
6.1. Studies 1 and 2 80
6.1.1. Restorative Effect: Compatibility 82
6.1.2. Restorative Effect: Being Away 83
6.1.3. Restorative Effect: Fascination 84
6.1.4. Restorative Effect: Extent 86
6.1.5. Imaginative Multiplicity 86
6.1.6. Unintended Effects/Insights 87
6.1.7. Work Environment 90
6.1.8. Study 1 and 2 Post Study Survey 93
6.2. Study 3 96
6.2.1 Restorative Effect: Compatibility 98
6.2.2 Restorative Effect: Being Away 99
6.2.3 Restorative Effect: Fascination 99
6.2.4 Restorative Effect: Extent 100
6.2.5 Imaginative Multiplicity 101
6.2.6 Unintended Effects/Insights 102
6.2.7 Work Environment 103
6.3 Summary 105
Chapter 7 Discussion 106
Chapter 8 Conclusion 117
Section 9 Bibliography 123
Section 10 Appendices 130

List of Figures

Figure 1: Windowless office, university campus. Photograph by author. 1

Figure 2: Bridgette Minuzzo. *River Trail, Portal Series*, 2016. Acrylic on board, 400 x 400 mm. Study 1 artwork. Photograph by author. 6

Figure 3: Diagram of the multidisciplinary approach and mixed-methods. Diagram by the author..... 7

Figure 4: Thesis Outline. Diagram by the author. 10

Figure 5: B. Minuzzo, *Greeting the Dawn, Oratunga*, 2018. Acrylic on Cedar board, 130 x 930 mm. Photograph by author. 11

Figure 6: B. Minuzzo, *Sky Portal*, 2018. Acrylic on card, 1200 mm dia. Study 3 artwork. Photograph by author..... 14

Figure 7: Yayoi Kusama, *Obliteration Room* 2011. Installation detail; furnished white room, stickers17

Figure 8: Diagram of the neural networks engaged for directed and involuntary attentional states. Diagram by the author. 19

Figure 9: B. Minuzzo, *The Hills*, 2018. Acrylic on paper, 220 x 440 mm. Photograph by author. 21

Figure 10: B. Minuzzo, *The Farm*, 2016. Acrylic on board, 300 mm². Photograph by author. 23

Figure 11: B. Minuzzo, *Portals to the Ranges*, 2016. Acrylic on board, 250 mm dia. Study 1. Photograph by author. 26

Figure 12: Diagram of the two ways that attention restoration can occur. Diagram by the author.... 28

Figure 13: B. Minuzzo, *Untitled*, 2017. Watercolour on paper, 160 x 250 mm. Photo by author. 30

Figure 14: B. Minuzzo, *Leaving the Ranges,* 2018. Watercolour on paper, 230 x 420 mm. Photograph by author. 32

Figure 15: JMW Turner, *Dawn of Christianity (Flight into Egypt)*, 1841. Oil paint on canvas, 790 mm dia. National Museums Northern Ireland. Collection Ulster Museum. (Copyright expired) 33

Figure 16: B. Minuzzo, *Portal #7*, 2017. Acrylic on board. Detail of Figure 69, Chapter 8. Photograph by author. 36

Figure 17: JWM Turner, *View of Orvieto, Painted in Rome,* 1828-30, Oil paint on canvas, 914 x 1232 mm. Tate Collection. CC-BY-NC-ND 3.0 (Unported). Photo © Tate. 40

Figure 18: JMW Turner, *Sun Setting over a Lake,* 1840-45. Oil paint on canvas, 911 x 1226 mm. Tate Collection. Turner Bequest 1856. CC-BY-NC-ND 3.0 (Unported). Photo © Tate. 41

Figure 19: JMW Turner, Bamburgh Castle, Northumberland c.1837. Graphite and watercolour on paper, 459 x 769 mm. Tate Collection. Turner Bequest 1856. CC-BY-NC-ND 3.0 (Unported). Photo © Tate. 41

Figure 20: Paul Cézanne, *The Gulf of Marseilles seen from L'Estaque,* 1878-79. Oil paint on canvas, 580 x 720 mm. Collection of the Musée d'Orsay, Paris. (Copyright expired). Photo by the artist. 42

Figure 21: Paul Cézanne, *Mont Sainte-Victoire*, 1902–6. Oil paint on canvas, 572 x 972 mm. Collection of the MET, New York. (Copyright expired). 43

Figure 22: Clarice Beckett *Evening Light, Beaumaris*, 1925. Oil on canvas on cardboard, 303 × 402 mm. NGV Collection. (Copyright expired)..... 44

Figure 23: Clarice Beckett, *Beach Road after the Rain,* 1927. Oil on cardboard, 357 × 255 mm. NGV Collection. (Copyright expired). 45

Figure 24: Clarice Beckett, *Summer Fields,* 1926. Oil on board, 244 x 340 mm. (Copyright expired). . 45

Figure 25: Gerhard Richter, *Meadowland,* 1986. Oil paint on canvas, 905 x 949 mm. Collection: Museum of Modern Art , New York, USA. © Gerhard Richter 2019 (09102019). Photo by author. ... 46

Figure 26: Gerhard Richter, *Canary Landscape,* 1970. Oil paint on canvas. 120 x 150mm Collection: IVAM, Institut Valencia d'Art Modern, Generalitat, Spain. © Gerhard Richter 2019 (09102019). 47

Figure 27: Gerhard Richter, *Seascape,* 1975. Oil paint on canvas, 200 x 300mm. Froehlich Collection, Stuttgart, Germany. © Gerhard Richter 2019 (09102019). 48

Figure 28: Gerhard Richter *Räume* (*Rooms)*, *Atlas*, page 232, 1970. Photograph by author. © Gerhard Richter 2019 (09102019). 48

Figure 29: Vitaly Komar and Aleksandr Melamid, *America's Most Wanted*, in *Painting by Numbers,* 1999. 50

Figure 30: Diagram of the practice-based research process and methods. Diagram by the author.... 52

Figure 31: Cultural Probe kits from Studies 1 and 2; a landscape painting (Figures 32 and 33), a mobile phone camera and a journal with questions about the artwork, fatigue and work focus. Photograph by author. 55

Figure 32: B. Minuzzo, *The Road to Blinman,* 2017. Study 1, a windowless open plan office at a university with landscape painting installed in a purpose-built frame and Cultural Probe journal on the desk. Photograph by author. 58

Figure 33: B. Minuzzo, *The Ranges,* 2017. Acrylic on board, 800 x 450 mm. A landscape painting installed in a hospital office without windows, Study 2. Photograph by author. 60

Figure 34: B. Minuzzo, *Myriorama Series*, 2018. Each panel is 500 x 700 mm. Acrylic paint on card.. 61

Figure 35: B. Minuzzo, *Portals* and *Fields of View,* 2018. Acrylic on paper and board, timber frames. Dimensions vary. Study 3, university lecture foyer/student break-out space. Photo by author. 61

Figure 36: B Minuzzo, *Untitled*, 2017. Watercolour on card. Material investigation, cutting and reconfiguring horizons. Dimensions vary. Photograph by author. 64

Figure 37: B. Minuzzo, *Petri Dish,* 2015. Watercolour on paper and photocopies, plastic dish, 200 mm dia. Photograph by author. 68

Figure 38: B. Minuzzo, *Walking and Looking,* 2015. Reclaimed timber, photo print on aluminium.300 x 300 mm. Photograph by author. 69

Figure 39: B. Minuzzo, *The Road to Blinman*, 2017. Acrylic on board, 450 mm². Photo by author. 70

Figure 40: B. Minuzzo, *The Road to Clare*, 2017. Acrylic on board, 470 x 450 mm. Photo by author.. 71

Figure 41: B. Minuzzo, *Portal Series*, 2017. Acrylic on board, 80 to 200 mm. Detail of installation, Figure 35. Photograph by author. 72

Figure 42: B. Minuzzo, *The Ranges, Revisited*, 2018. Acrylic and collage on board, 300 to 400 mm². Photograph by author. 73

Figure 43: B. Minuzzo, *Myriorama*, 2018. Acrylic on card, each 500 x 700 mm. Photo by author. 73

Figure 44: B. Minuzzo, *Fields of View*, 2018. Acrylic and mixed media on board, framed. Various dimensions. Photograph by author. 74

Figure 45: B. Minuzzo, *Give Me Shelter,* 2018-19. Acrylic on board, timber, pot plants, seat cushion, found books. 3.2 x 1.8 m. Temporary art commission for existing bus shelter, Prospect, SA. Photograph by author. 78

Figure 46: B. Minuzzo, *The Farm*, 2016. Acrylic on board, 300 mm². Study 1, a windowless office at a university with a landscape painting installed and a Cultural Probe journal. Photograph by author. 80

Figure 47: Study participants who reported a relaxing or calming effect (qualitative responses). 82

Figure 48: Fascination: percentage of qualitative responses mentioning the materiality, colours or content of the landscape artworks. 85

Figure 49: Probe journal Task E1: self-reported instances of looking at the landscape painting over a day. 85

Figure 50: Study 1 & 2, summary of qualitative responses coded for restorative effects and the additional characteristic, Imaginative Multiplicity. 87

Figure 51: B. Minuzzo, *Blue Green Blur*, 2017. Acrylic on board, 600 x 335 mm. Study 2, a windowless office in a hospital with a landscape painting installed. Photograph by author. 88

Figure 52: Post Study Survey: items added to participant workplace since the study. 89

Figure 53: Effect of arts engagement on stress, fatigue and energy levels (See Appendix 3, Task K). 91

Figure 54: Working Day; the hours worked, hours per day mentally fatigued per individual. 92

Figure 55: Preferences for Painting Genre, Post Study 1 and 2 surveys. 93

Figure 56: Participants views on aspects of the artwork, Post Study 1 and 2 survey, multiple choice questions. 94

Figure 57: B. Minuzzo, *Myriorama*, *Portals, Sky Portals, Fields of View*, 2018. Installation view in the University lecture theatre foyer, Study 3. Photograph by author. 96

Figure 58: Summary of quantitative (yes/no) survey responses on restorative effects 98

Figure 59: Thematic coding of quantitative responses, Study 3. 100

Figure 60: Percentage of qualitative survey responses coded with respect to Restorative Effects, Study 3. 101

Figure 61: Imaginative multiplicity: viewers generating 3 or more associations, comparison of all 3 Studies. 102

Figure 62: Students rated how fatigued they felt that morning, Study 3. 103

Figure 63: Caffeinated drinks (coffee/tea/cola/energy drinks) consumed by students in past 4 hours, Study 3. 104

Figure 64: Changes in fatigue and stress, pre/post survey. Study 3 (n=74) 105

Figure 65: B Minuzzo, *Riding by the River*, 2016. Acrylic on board, 340 x 600 mm. Study 2. Photograph by author. 106

Figure 66: B. Minuzzo, *Give Me Shelter*, 2018-19. Acrylic on board. Detail of mural, Section 5.6, 3.2 x 1.2 mm. Photograph by author. 107

Figure 67: B. Minuzzo, *Waitpinga Farm*, 2016. Acrylic on board, 300 mm². Photograph by author. 114

Figure 68: B. Minuzzo, *Portal #7*, 2016, Acrylic on board, 350 mm dia. Photograph by author. 117

List of Tables

Table 1: Participant Characteristics, Studies 1 and 2 81

Table 2: Nature Connectedness Studies 1 and 2 82

Table 3: Studies 1 and 2 Qualitative Responses, Compatibility 83

Table 4: Studies 1 and 2, Effect of Viewing Artworks on Stress, Fatigue and Energy Levels 83

Table 5: Studies 1 and 2 Qualitative Responses, Being Away 84

Table 6: Studies 1 and 2 Qualitative Responses, Fascination 85

Table 7: Studies 1 and 2 qualitative Responses, Extent 86

Table 8: Studies 1 and 2 Qualitative Responses, Imaginative Multiplicity 87

Table 9: Studies 1 and 2, Personalization of the Work Environment before the Study 88

Table 10: Studies 1 and 2 Qualitative Responses, Unintended Effects 89

Table 11: Studies 1 and 2 Qualitative Responses Highlighting Issues 90

Table 12: WEMWBS Participants Pre/Post Survey, Studies 1 and 2 91

Table 13: Studies 1 and 2 Qualitative Responses, Work Environment 92

Table 14: Studies 1 and 2 Qualitative Responses, Work Habits 93

Table 15: Studies 1 and 2 Qualitative Responses, Preferences for Work Environment 94

Table 16: Studies 1 and 2 Qualitative Responses, Artwork Characteristics 94

Table 17: Participant Characteristics, Study 3 97

Table 18: Study 3 Qualitative Responses, Compatibility 99

Table 19: Study 3 Qualitative Responses, Being Away 99

Table 20: Study 3 Qualitative Responses, Fascination 100

Table 21: Study 3 Qualitative Responses, Extent 101

Table 22: Study 3 Qualitative Responses, Imaginative Multiplicity 102

Table 23: Study 3 Qualitative Responses, Unintended Effects 103

Table 24: Study 3 Qualitative Responses, Work Environment 104

Glossary/Abbreviations

APG, Artist's Placement Group, was an avant-garde group from the 1960's and 70's who placed artists within industries in the United Kingdom.

ART, Attention Restoration Theory, is a theory proposing that natural environments have a restorative effect on attention by resting the task focused parts of the brain.

Biophilia is an attraction to living things, an inclination which, when acted on, is known to positively affect psychological, physical and emotional wellbeing.

Cultural Probe is a user-centred consultative tool from product design and urban planning.

Directed attention is a goal-driven cognitive state, typically engaged when we focus on reading and writing tasks, and is easily fatigued.

Involuntary attention is a restful cognitive state; it is stimulus-driven and is also referred to as the 'mind-wandering state' or the 'default mode'.

Imaginative multiplicity is the stimulation of creative thinking by generating many interpretations from one image or artefact.

Journal is used in this thesis in several contexts. It refers to academic publications, an artist's written record of the creative process and the journals used by participants in the Cultural Probe kit.

Mixed-methods refer to the use of both quantitative and qualitative data in a study.

Practice-based research is the knowledge gained from engaging in, and reflecting on processes.

PRT, Prospect Refuge Theory, claims humans have evolutionary-biological survival instincts to seek shelter (a refuge) and to be able to scan the surrounding environment (gain a prospect).

RRT, Reader Reception Theory, an individual's cultural context is the lens with which that viewer actively interprets the world

Situated Study the research Studies take place in actual work environments, not a simulation of work or study spaces.

SRT, Stress Recovery Theory, argues that the physiological and psychological reactions (positive and negative) we experience in nature are due to evolutionary preconditioning

Study/Studies, the capitalisation are used to denote the three research Studies from the act of studying at university or prior research studies in the literature.

Tacit knowledge is knowledge gained from engaging in processes and with materials.

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Thesis Title: ***Art and Attention Restoration Theory:*** How landscape-themed art may contribute to a restorative environment in windowless workplaces.

Abstract

There are many things vying for peoples' attention in contemporary urban lifestyles; work, study, caring for others, news feeds, advertising and social media to name a few. The exponential increase in the quantity of information we process daily and the disconnection of people in cities from the natural environment are contributing to mental health issues. In Australia over seventy percent of people live in urban areas. Australians in cities spend up to eighty three percent of their day indoors. Yet interior spaces in workplaces often lack window views to nature; to hills, sky or foliage. The presence of landscape art may improve mental wellbeing for people in windowless spaces.

The multidisciplinary project employed Attention Restoration Theory applied as a framework for the practice-based arts research. Quantitative and qualitative methods were used to elicit insights from participants. The complex and multimodal research involved three stages; art making, installing semi-abstract landscape paintings in interior spaces and evaluating restorative effect for participants. Data collected included levels of fatigue, stress and viewers responses to the artwork. Research into Western landscape art and the Study findings influenced the conceptualisation of iterations of landscape paintings. Drawing on theories and preferences for landscape from environmental psychology and evolutionary biology was a novel way to explore the genre of landscape painting and to make artworks.

The research approach generated new insights into the significance of arts engagement for people spending long hours indoors. Apart from cultural and aesthetic values, art can be beneficial for attention restoration. A user-centred consultative tool from product design and urban planning, the Cultural Probe, was adapted for the two longer Studies. The Cultural Probe was a means to collect data and participant responses to the landscape artworks over a month. An online survey was devised for a third, shorter study. In total, over ninety participants were surveyed in windowless spaces at three university campuses and a hospital. The results demonstrate that a landscape painting can contribute to making a windowless room more conducive for work or study by allowing task-focused areas of the brain to rest.

Furthermore, the process of interpreting a visual artwork stimulates other cognitive processes responsible for creative and critical thinking. When engaging with the semi-abstract landscape

paintings, many participants exhibited both a restorative effect and imaginative readings of the artwork. Enriching windowless offices and study spaces with nature-themed artworks is more than a decorative luxury. Art in the office allows workers to take a short 'art break', to contemplate a landscape and thus rejuvenate and refresh their thinking. Participants described this as a 'minute', 'moment' or 'pause', a micro-restorative opportunity which throughout the working day provided an accumulation of restful moments. Investigating the restorative effects of landscape art brings a new evidence base and another way to value and evaluate visual art and restorative potential.

I, Bridgette Minuzzo, declare that this thesis presents work carried out by myself and does not incorporate without acknowledgment any material previously submitted for a degree or diploma in any university; to the best of my knowledge it does not contain any materials previously published or written by another person except where due reference is made in the text; and all substantive contributions by others to the work presented, including jointly authored publications, is clearly acknowledged.

Signed: [redacted] Date: 5th of June 2019

Chapter 1 Introduction

In contemporary urban lifestyles there are many things vying for attention; work, study, caring for others, news feeds, advertising and social media to name a few. The exponential increase in the quantity of information we process daily, and the disconnection of people in cities from the natural environment are contributing to mental health issues.[1] Over seventy percent of Australians are living in urban areas and this urban population is increasing annually.[2] A recent article calculates the population distribution as closer to ninety percent urban.[3] That so many people in Australian cities may be experiencing negative mental health effects from living and working in urban areas is of concern.



Figure 1: Windowless office, university campus. Photograph by author.

Furthermore, in cities, people tend to spend most of the day indoors, often in work spaces without access to views of nature (Figure 1). In this context, the importance of engaging with the natural world, particularly for people living in urban settings, is of considerable interest and reported in the news media and academic journals alike.[4] Recent research, for example, argues that humans have an

[1]Gregory N Bratman et al., "Nature Experience Reduces Rumination and Subgenual Prefrontal Cortex Activation," *Proceedings of the National Academy of Sciences* 112, no. 28 (2015); Richard Louv, *The Nature Principle: Human Restoration and the End of Nature-Deficit Disorder* (Chapel Hill: Algonquin Books, 2011); Daniel J Levitin, *The Organized Mind: Thinking Straight in the Age of Information Overload*, first ed. (New York: Penguin, 2014).
[2]Australian Bureau of Statistics, "Population Estimates by Remoteness Area 2016 to 2017," in *Regional Population Growth, Australia, 2006-17 - Revised* (Australian Bureau of Statistics, 2018). Accessed 19/02/19.
[3] Anne Cleary, "Why Daily Doses of Nature in the City Matter for People and the Planet," *The Conversation* (2018), https://theconversation.com/why-daily-doses-of-nature-in-the-city-matter-for-people-and-the-planet-106918).
[4] Ibid. Also Section 2.1 Nature Connection and Biophilia.

evolutionary predisposition to connect with nature; biophilia.[5] Biophilia is an attraction to living things, an inclination which, when acted on, is known to positively affect psychological, physical and emotional wellbeing (as discussed in Section 2.1 of the exegesis).[6] The literature shows that engaging with nature is an activity that we could well be better off devoting some of our interior-focused time to.

The *restorative* potential of nature connection is the biophilic effect of interest in this study. The specific focus is the restoration potential of landscape artworks for people working or studying in windowless spaces. Attention Restoration Theory (ART) explains how natural environments have a positive effect on attention (Section 2.2).[7] To be restored means to experience an increase in wellbeing, concentration and/or a decrease in stress. It is well documented in the literature that *representations* of nature (photographs, digital images, videos and posters) can also improve cognitive function and mental wellbeing (Section 2.4). Although there has been considerable interest since at least the 1980's on the effects of viewing nature or nature imagery, not much is known about the restorative effects on attention of *artistic* representations of landscape. The research question is: how may landscape-themed art contribute to a restorative environment in windowless workplaces?

Aims of the Study

The aims of the research are threefold. To provide new understandings about: 1) how landscape paintings can contribute to attention restoration, 2) how landscape imagery is utilised by viewers in windowless spaces and 3) what sort of landscapes are considered to be restorative.

My study proposes that installing landscape imagery creates a more restorative environment for people working in spaces devoid of nature, thus reducing mental fatigue and stress and improving wellbeing. Semi-abstract landscape artworks may be effective for the restoration of attention. Understanding how people respond to, and make use of, the landscape paintings, is a key part of the research design.

---

[5] John M. Zelenski and Elizabeth K. Nisbet, "Happiness and Feeling Connected: The Distinct Role of Nature Relatedness," *Environment & Behavior* 46, no. 1 (2014); Van den Born et al., "The New Biophilia: An Exploration of Visions of Nature in Western Countries," *Environmental Conservation* 28, no. 1 (2001).
[6] Stephen R. Kellert and Edward O. Wilson, *The Biophilia Hypothesis* (Washington, D.C: Island Press, 1993).3.
[7] Stephen Kaplan, "The Restorative Benefits of Nature: Toward an Integrative Framework," *Journal of Environmental Psychology* 15, no. 3 (1995).174.

Are you paying attention?

Attention is humankinds' most important capacity, but it is effortful and easily fatigued.[8] There are many ways to improve cognitive function over the course of a day: optimizing sleep, time management strategies, using organizational systems, practicing Mindfulness and reducing distractions (for instance, a digital detox). No matter how well these strategies are applied, directed attention tires easily; people will still experience mental fatigue whilst working or studying.[9] Therefore understanding the effects of a minor intervention, such as introducing landscape art into a windowless room, may provide insights on the benefits of arts engagement for attention management.

The research is concerned with two states of cognitive functioning; firstly, concentration on a work or study task and secondly, letting one's thoughts wander. Attention is a cognitive function discussed in several disciplines, thus clarification of terminology is appropriate. In the field of environmental psychology, the two main attentional states are termed *directed attention* and *involuntary attention*. Directed attention is a goal-driven state, typically engaged when we focus on reading and writing tasks. Involuntary attention is a stimulus-driven state, which is also referred to as the 'mind-wandering state' or the 'default mode'.[10] Involuntary attention, which is a resting state, can occur when we are in a natural environment or looking at a landscape view. Directed attention is mentally fatiguing but can be easily restored by a short period of involuntary attention. In other words, when you are indoors working or studying, and are mentally fatigued, you can feel more alert by simply looking out of a window to a view of trees, hills or sky. If this is not possible, looking at a representation of landscape has a similar restorative effect. Although different terminology is used, the existence of the two attentional states is recognised in the fields of environmental psychology, neuroscience and philosophy (Section 2.2).[11]

---

[8]Daniel Levitin, *The Organized Mind: Thinking Straight in the Age of Information Overload* (Penguin UK, 2015).7; Kaplan, "The Restorative Benefits of Nature."170.

[9] William Sullivan, "In Search of a Clear Head," in *Fostering Reasonableness: Supportive Environments for Bringing out Our Best*, ed. Rachel Kaplan and Avik Basu (Michigan: Maize Books, 2015).

[10] Levitin, *The Organized Mind: Thinking Straight in the Age of Information Overload*. and Marcus E Raichle, "The Brain's Default Mode Network," *Annual Review of Neuroscience* 38, no. 1 (2015).

[11] Kaplan, "The Restorative Benefits of Nature.", Rachel Kaplan, "The Nature of the View from Home: Psychological Benefits," *Environment and Behaviour* 33, no. 4 (2001).,Levitin, *The Organized Mind: Thinking Straight in the Age of Information Overload*. Martin Sarter, Ben Givens, and John P Bruno, "The Cognitive Neuroscience of Sustained Attention: Where Top-Down Meets Bottom-Up," *Brain Research Reviews* 35, no. 2 (2001).,Marc G Berman, John Jonides, and Stephen Kaplan, "The Cognitive Benefits of Interacting with Nature," *Psychological Science* 19, no. 12 (2008).,Maurizio Corbetta and Gordon L. Shulman, "Control of Goal-Directed and Stimulus-Driven Attention in the Brain," *Nature Reviews Neuroscience* 3 (2002).

City dwellers tend to spend the majority of their time indoors, either at work, home or recreating.[12] Australians, like people living in other western cultures, are becoming increasingly interiorly focused. For example, a randomized study of over 200 people in four capital cities (Sydney, Melbourne, Adelaide and Perth) reported that the time spent indoors far outweighs time spent outside. The report found there was 'little difference between the cities in the mean total time spent indoors (83%) and outdoors (6 %)'.[13] The finding is supported by data from the Australian Bureau of Statistics; Australians are working longer hours at the expense of recreational activities.[14] Interior lifestyles and the consequential lack of access to nature, however, are associated with increased mental health issues in cities.[15]

To add to this 'nature deficit' as Louv describes it,[16] personalization of work stations is often discouraged. Although discredited a decade ago by Knight and Haslam, lean office policies persist in many contemporary workplaces.[17] Yet environmental psychology and health sciences have long provided evidence that engaging with nature is beneficial for stress, pain and fatigue reduction, and it increases mental wellbeing (Section 2.1 and 2.3).[18] Window views to nature or the sky, landscape imagery and pot plants are suggested as a means to provide some connection with the outdoors when people spend so much time indoors.

As a case in point: recent hospital designs in Australia prioritize window views, green spaces, art and design with nature themes. Some examples of this approach are found at are the Queensland Children's, Royal Adelaide, Perth Children's and Fiona Stanley Hospitals.[19] Design for nature connection is found in patient rooms and public spaces, however, clean-wall policies are in place for hospital staff areas (see Chapter 2). This is also the case for staff in many university and government

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[12] Andrea L Hinwood et al., "Risk Factors for Increased Btex Exposure in Four Australian Cities," *Chemosphere* 66, no. 3 (2007).
[13] Ibid.536. The 83% time spent indoors does not include time commuting in vehicles.
[14] Australian Bureau of Statistics, "We're Spending Less Time Playing, Sleeping and Eating but Working Longer," in *How Australians Use Their Time, 2006* (Australian Bureau of Statistics: Australian Bureau of Statistics, 2008). Accessed 19/02/19.
[15] Bratman et al., "Nature Experience Reduces Rumination and Subgenual Prefrontal Cortex Activation."
[16] Louv, *The Nature Principle: Human Restoration and the End of Nature-Deficit Disorder*.
[17] Craig Knight and S. Alexander Haslam, "The Relative Merits of Lean, Enriched, and Empowered Offices: An Experimental Examination of the Impact of Workspace Management Strategies on Well-Being and Productivity," *Journal of Experimental Psychology: Applied* 16, no. 2 (2010).168.
[18] Kaplan, "The Restorative Benefits of Nature."; Roger S Ulrich, "View through a Window May Influence Recovery from Surgery," *Science* 224, no. 4647 (1984); Berman, Jonides, and Kaplan, "The Cognitive Benefits of Interacting with Nature."; Marc G Berman et al., "Interacting with Nature Improves Cognition and Affect for Individuals with Depression," *Journal of Affective Disorders* 140, no. 3 (2012); Bratman et al., "Nature Experience Reduces Rumination and Subgenual Prefrontal Cortex Activation."
[19] Queensland Children's Hospital, Brisbane, opened in Nov 2014. Royal Adelaide Hospital, SA opened in Sept 2017. Fiona Stanley Hospital, Perth, WA, was fully operational in March 2015. Perth Children's Hospital, WA, opened May 2018.

buildings.[20] On the one hand, many people still work or study in rooms without a view, looking at blank walls. On the other hand, decades of research and current hospital design practices support study findings that views of nature have a positive effect on fatigue and stress. Furthermore, there is evidence that *representations* of nature can have a similar positive effect on people as window views.[21] This evidence calls into question the perseverance of lean office or clean-wall policies in the spaces we work and study in.

Landscape and Landscape Art

Semi-abstract **l**andscape art in office spaces is the focus of this research as there are few studies which consider either the restorative effects of engaging with original works of art, the allure of aura or appeal of the materiality of works made by hand (see Section 3.3). Landscape is a cultural and imaginative construction.[22] Similarly with the concept of home; the term means different things depending on a person's background and lived experience. A landscape is a part of the environment selected as scenic, or a representation of such a scene (Section 3.1).

To make a landscape painting, keen observation is necessary (example, Figure 2). One must learn to *observe* a scene rather than glimpse it. Visual perception is not only a function of the eyes; it requires the work of the brain as well.[23] What it means to look is pertinent to both the making and the viewing of a painting (see Section 3.2).

Landscape art involves levels of selectivity: 1) a framing of a part of the environment; 2) the act of looking (visual perception); and, 3) the way landscape is visually represented (the work of artists). These levels of selectivity will be discussed in Section 3. Beginning with the premise that people working or studying in spaces without a window view may find that looking at *landscape art* may have a similar benefit for their focus and mental wellbeing as a *landscape view*, my research seeks to understand how people respond to, and make use of, landscape art in those settings. How a landscape painting may be restorative is explored in this research through consideration of Attention

[20] Repurposing existing buildings to create many smaller workspaces can result in windowless rooms. Landlords of leased buildings often prohibit alterations to the building, like hanging pictures in a bare-walled room. Corporations often have a minimalist aesthetic, due to misinformation that this increases productivity.
[21] Edward O Wilson, *Biophilia* (Harvard University Press, 1984); Maura C. Flannery, "Jellyfish on the Ceiling and Deer in the Den: The Biology of Interior Decoration," *Leonardo* 38, no. 3 (2005); Judith H Heerwagen and Gordon H Orians, "Humans, Habitats, and Aesthetics," in *The Biophilia Hypothesis*, ed. edited by Stephen R. Kellert and Edward O. Wilson (Washington, D.C.: Island Press, 1993).
[22] Malcolm Andrews, *Landscape and Western Art* (Oxford: Oxford Paperbacks, 1999).3.
[23] Alva Noë, *Action in Perception* (Cambridge, Mass.: MIT Press, 2004).179.

Restoration Theory factors, evolutionary-biological predispositions, biophilic tendencies, and aesthetic preferences.



Figure 2: Bridgette Minuzzo. *River Trail, Portal Series*, 2016. Acrylic on board, 400 x 400 mm. Study 1 artwork. Photograph by author.

Motivations for the research

As an artist working in health environments and in the field of public art, I have an interest in the therapeutic experiences of engaging with both nature and art. Another personal motivation is a concern about continuing cutbacks to arts funding and a desire to find a new evidence base to advocate for arts engagement. The research presented here is an extension of my socially engaged creative practice. For example, in 2008 I established the Art Trolley, a mobile studio created for the Arts-in-Health program at the Flinders Medical Centre.[24] The Art Trolley enabled me to facilitate art workshops each week to patients around the hospital, in situ, in wards and dialysis clinics. Patients would make a watercolour painting or collage to put on their wall, to have something to look at during long hours indoors. This mobile arts engagement model has recently been adopted for the

[24] The Art Trolley at FMC has continued to deliver diversionary art activities to patients on a weekly basis since its inception in 2008.

Perth Children's Hospital artist-in-residence program and at the Royal Adelaide Hospital.[25] My current research is also concerned with people spending long hours indoors; the setting however, has shifted from patients in hospitals, to staff and students in windowless spaces.

Research Design

The project is ambitious in that it employs mixed-methods; visual art practice, consultation, collection and analysis of both qualitative and quantitative data (Figure 3). The research design involves making iterations of landscape paintings, such as Figure 2, and placing them in individual windowless offices and a larger, public break-out space. The eighteen sites in my Studies are located at three university campuses and a hospital in Adelaide, the capital city of South Australia. A user-centred consultative tool from product design and urban planning, the Cultural Probe, is adapted for the first two Studies. The Cultural Probe is utilized here to collect participant responses to landscape artwork over an extended period (one month).[26] An online survey is used to gather data for the third Study.

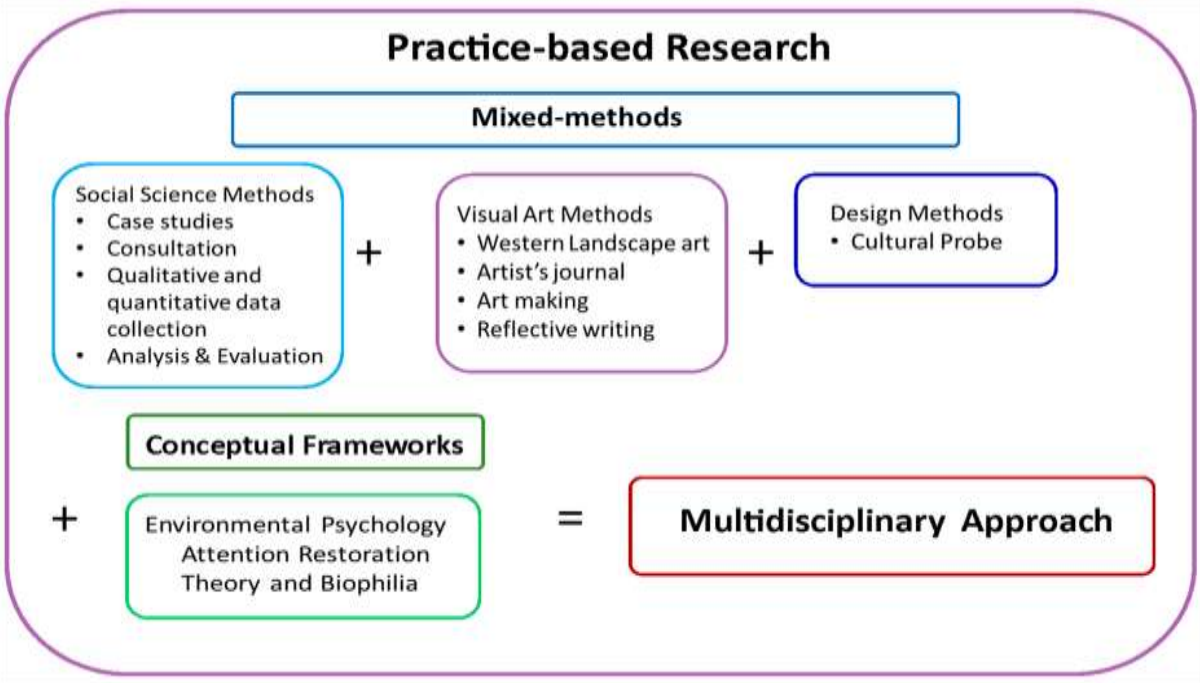

Figure 3: Diagram of the multidisciplinary approach and mixed-methods. Diagram by the author.

The data collected includes participants' reflective responses to the artwork, the work hours per day and week, periods of mental focus and fatigue over a day and week, the number of times the

[25] The Art Cart, Perth Children's Hospital. Personal communication with Arts Curator Belinda Cobby, 27th Sept 2018. The Royal Adelaide Hospital's diversional art program operates from a mobile art cart in 2019.

[26] The Cultural Probe is a user-centred consultative method adapted for each specific task and used to test new designs, technologies and public transport or infrastructure improvements. See Section 4.1, Methods and Figure 31.

participants look at the painting during the day, memories or associations the landscape painting triggers, levels of stress and mental fatigue and self-reported nature-connection. Other particulars recorded are office type (individual, shared, open plan) presence of decorative elements or plants in the space, location of the artwork and demographic information. The analysis of data aims to determine how viewers are engaging with and responding to the artworks and what types of landscape paintings the participants consider restorative.

ART is applied as a framework for the practice-based arts research. In developing ART, Stephen and Rachel Kaplan created a list of criteria which typify a restorative natural environment.[27] The four criteria; compatibility, fascination, extent and being away, provide inspiration for the conceptualisation and creation of the landscape artworks in this Study (see Section 5.1), and a structure for coding the data.

Research into Western landscape art has a specific focus on landscape painting, discussed in this exegesis through the work of historically important artists Paul Cezanne and JMW Turner (focusing on Turner's later works), leading contemporary artist Gerhard Richter and Australian Tonalist Clarice Beckett (Section 3.3). This research into landscape art informs iterations of landscape paintings for the Studies; artworks are made in a cyclic process of research, making, consultation, evaluation and subsequent iterations of artworks. The practice-based process is outlined in Chapters 4 (Methods) and 5 (Art Practice).

Limits of the Study

It is important to state what the study is not about. The research is endeavouring to investigate another means of evaluating and valuing engagement with the arts, however it is not within the scope of this research to enter into a discourse on arts evaluation. Some contemporary approaches to evaluating arts engagement are noted where pertinent in the discussion (Chapter 7). The Study was limited by the small sample sizes; however, the use of a Cultural Probe prioritizes individual feedback and qualitative understanding over statistics.

Attention restoration is a means of ameliorating mental fatigue and stress which shouldn't be confused with the process of Mindfulness.[28] ART and, in this case, arts engagement, is an approach

[27] Kaplan, "The Restorative Benefits of Nature."; Rachel Kaplan and Stephen Kaplan, *The Experience of Nature: A Psychological Perspective*, First ed. (Cambridge Cambridge University Press, 1989).
[28] Mindfulness is a meditative practice of calming thoughts through an individual focusing on the breath and the experience of the present moment.

whereby an individual, when mentally fatigued, can do something about the fatigue by engaging a different attentional state; involuntary attention. As Levitin so aptly terms it, involuntary attention is a 'mind-wandering' state.[29] Rather than actively bringing oneself to the present (Mindfulness), mind-wandering is about allowing one's thoughts to roam, generating free-associations, personal memories and connections to the environment or image being viewed. The benefit of an attention restoration approach over Mindfulness is that the effort of maintaining focus (directed attention) is rested. In addition, when engaging involuntary attention, other areas of the brain are activated, which stimulates creative and critical thinking.

The Research Contribution

A multidisciplinary approach can foster new and unexpected enquiries, as in this artist investigating the links between landscape art and nature connection, organisational curatorial policies and attentional states in the context of work-place environments and employee wellbeing. One benefit of this investigation is that it provides an alternative way to understand and value arts engagement; the restorative effects of art. Furthermore, as a practitioner this research provides a novel approach to conceptualising and making landscape paintings by considering restorative and biophilic qualities of images.

Simulations tend to predominate in Attention Restoration research. Typically, aspects of ART studies are simulated so as to limit variables (as discussed in Chapter 2). Examples are the use of digital imagery in place of actual nature views, offices are fabricated in laboratories rather than real offices, standardized mentally fatiguing tasks simulate people going about their work tasks, and digital illustrations of interiors instead of experiencing an actual room. This research project differs from most Attention Restoration studies as it focuses on situated studies. Set within real workplaces, with individuals going about their daily work tasks and using original landscape artworks, my research adds to the discourse on Attention Restoration Theory.

Outline of Thesis

The Studies and my art practice are described in discrete chapters, as the methods, processes, results and ways of expressing research differs in social science and creative practice. The multidisciplinary nature of the project requires a contextualisation of the literature informing the research from environmental psychology (Chapter 2: Attention Restoration Theory and Nature

[29] Levitin, *The Organized Mind: Thinking Straight in the Age of Information Overload*.38-43.

Connection) and the visual arts (Chapter 3: Landscape Art and Visual Perception). These Chapters are followed by an explanation of the methodology and Study design, Chapter 4, which describes the Cultural Probe, surveys, consultation and data analysis. Chapter 5 outlines the practice-based arts research (Art Practice Methods and Artefacts). The results of the three Studies are outlined in Chapter 6. The contextualisation and methods Chapters are organized in a number of Sections to assist navigation of the thesis. The final two Chapters discuss the Studies in the context of practice, and conclude with a reflection on findings and significance. Supporting data and documents are collated in the Appendices (refer to Figure 4: Thesis Outline).

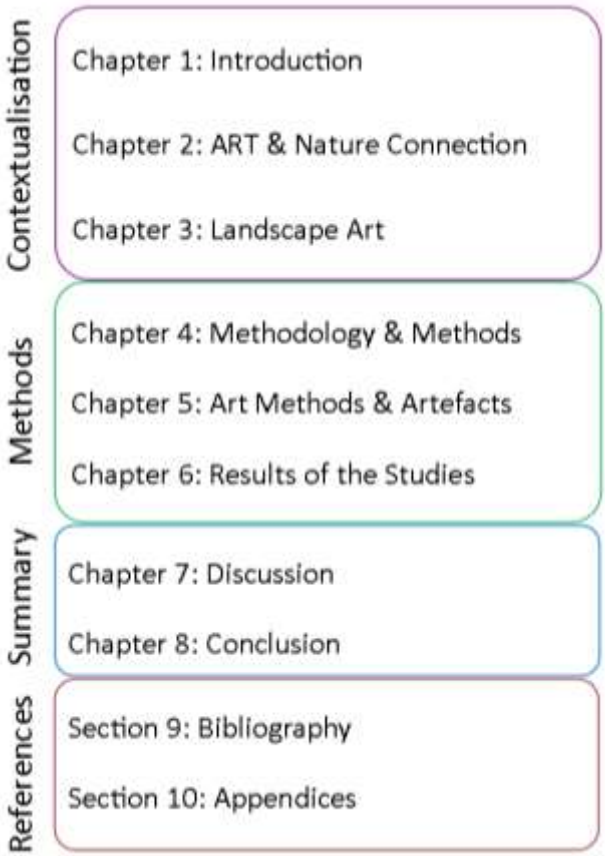

Figure 4: Thesis Outline. Diagram by the author.



Figure 5: B. Minuzzo, *Greeting the Dawn, Oratunga*, 2018. Acrylic on Cedar board, 130 x 930 mm. Photograph by author.

Chapter 2 Attention Restoration Theory and Nature Connection

The purpose of this Chapter is to provide context for the argument that landscape art can contribute to attention restoration by reviewing the literature on the benefits of nature connection, Attention Restoration Theory (ART) and attentional states. The literature is discussed in terms of a context; how these ideas apply to inhabitants of windowless spaces, and a motivation for the research project; that art has benefits in addition to cultural, aesthetic and economic values.

According to proponents of environmental psychology, spending time in nature rather than built environments has three positive effects; it reduces stress, improves mood and improves cognitive performance. Two theories from environmental psychology which explain these outcomes are Stress Recovery Theory (SRT) and ART.[30] SRT has an evolutionary perspective, following the biophilia argument that the physiological and psychological reactions (positive and negative) we experience in nature are due to evolutionary preconditioning. In short, urban environments can cause stress, while non-threatening nature is restorative. ART is a 'psycho-functionalist' theory, based on the predisposition of humans to have a positive reaction to life-sustaining natural stimuli. Urban environments require directed attention which is mentally fatiguing, whereas time in non-threatening natural environments is restorative.[31]

Humans have sustained themselves directly from the land for millennia. In Western Europe, industrialization in the 18th century enabled people to move from subsistence farming to work and live in densely populated cities. The relative length of human evolution spent in natural settings means we respond to natural phenomena more readily than manufactured objects. Humans and other primates display a partially learnt, partially inherited phobic reaction to adverse natural stimuli

[30] Rita Berto, "The Role of Nature in Coping with Psycho-Physiological Stress: A Literature Review on Restorativeness," Behavioral Sciences 4, no. 4 (2014).396. E Dinand Ekkel and Sjerp de Vries, "Nearby Green Space and Human Health: Evaluating Accessibility Metrics," Landscape and Urban Planning 157 (2017).215.

[31] Agnes E Van den Berg, Terry Hartig, and Henk Staats, "Preference for Nature in Urbanized Societies: Stress, Restoration, and the Pursuit of Sustainability," *Journal of Social Issues* 63, no. 1 (2007).80.

(i.e. snakes, spiders, heights and enclosed spaces). Yet at the same time; equally dangerous modern items do not produce such rapid automatic aversive reactions (i.e. guns, trams and electrical wiring).[32] Thus experiencing non-threatening nature directly or indirectly (window views or representations as in Figure 5) evokes an instantaneous calming response, which has a nurturing and reviving effect on mood, stress levels and mental fatigue. ART analyses how nature affects human attentional systems and the characteristics of environments that have this reviving effect. ART is employed in my research as this theory has application for interior spaces and has measurable characteristics for what constitutes a restorative environment (Section 2.2).

Environmental psychology and health sciences provide support for the psychological and physiological benefits of experiencing green space.[33] Yet in cities, people tend to spend most of the day indoors, often in work or study spaces without access to views of nature. Landlords and managerial policies often prohibit attaching pictures to walls. These 'clean-wall' policies, although disproved, have economic and control stratagems rather than a humanistic imperative.[34] Avoiding the cost of wall repairs or dictating a corporate style is apparently preferable to providing staff with more stimulating work environments. The best scenario is if staff members are 'empowered' to personalize their space; workers are able to make choices and arrange pot plants and nature imagery in their work space.[35] To empower the reader with self-regulated intervals for attention restoration or 'art breaks', landscape images are regularly placed throughout this text (see page 20).

2.1. Nature Connection and Biophilia

Nature connection refers to an individual's relationship with the natural world. This can be a biophilic or biophobic response or a combination of the two, depending on the type of benign or threatening natural stimuli experienced (i.e. a field of lilies or a lion's lair). Biophilia refers to an evolutionary hereditary predisposition for nature connectedness. The term was popularised by socio-biologist E.O. Wilson, who defines biophilia as human-kinds' 'innate tendency to focus on life

[32] Kellert and Wilson, The Biophilia Hypothesis.33-34; Roger S Ulrich, "Biophilia, Biophobia, and Natural Landscapes," in *The Biophilia Hypothesis*, ed. S. R. Kellert and E. O. Wilson (Washington, DC: Island Press/Shearwater Books, 1993).76-86.
[33] Kaplan, "The Restorative Benefits of Nature."; Zelenski and Nisbet, "Happiness and Feeling Connected: The Distinct Role of Nature Relatedness."; Theodore Stephen Eisenman, "Making Meaning of Urban Greening in the Anthropocene," (2015); Magdalena Van den Berg et al., "Health Benefits of Green Spaces in the Living Environment: A Systematic Review of Epidemiological Studies," *Urban Forestry and Urban Greening* 14, no. 4 (2015).
[34] Knight and Haslam, "The Relative Merits of Lean, Enriched, and Empowered Offices: An Experimental Examination of the Impact of Workspace Management Strategies on Well-Being and Productivity."
[35] Ibid.160.

and life-like processes'.[36] Biophilia was first coined by psychoanalyst Erich Fromm as a 'love of all that lives'.[37] However, the idea that humans are instinctually connected to nature is a construct that is difficult to test scientifically as Johnson contests.[38] At the same time biophilia has been acknowledged and written about since 1973 across diverse disciplines such as socio-biology, aesthetics, environmental psychology, ecological philosophy, urban planning and design (Wilson and Kellert et al 1993, Naess 2008, Ward-Thompson 2011, Tam 2013 and Galadza 2007).[39] Some proponents of biophilia consider 'the real issue is not whether biophilia exists, but rather the particular form it takes'.[40] Nature connection is described by some as a basic human need; Shepard and also Louv consider connection to nature as necessary for normal psychological maturation.[41] It is the *restorative potential* of nature connection that is the focus of this study. The proposition in this thesis is that landscape themed-art can prompt biophilic attraction and furthermore that scenes which are non-threatening may be found to reproduce the restorative effects of nature connection for individuals in a nature-deprived environment.

Wilson's use of the term *life-like* is significant.[42] One manifestation of biophilia is the predilection to decorate living spaces and screen-based devices with depictions of landscape, plants and animals. If a person choses as a screen saver on their computer or phone a landscape, a loved one, a pet or sunset (all representations of nature or living things) they are responding to a biophilic impulse.

In western societies we live and/or work predominately in urban areas. In Australia, the urban population is over seventy percent. People increasingly spend a majority of time indoors (83% as reported in Chapter 1), with urbanisation 'associated with increased levels of mental illness' and a 'corresponding decrease in nature experience'.[43] It is noteworthy that some city dwellers are fearful

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[36] Wilson, *Biophilia*.3.
[37] Erich Fromm, *The Anatomy of Human Destructiveness* (New York, USA: Holt, Rinehart and Winston, 1973).
[38] Andrew Johnson, "Love of Life," *Bioscience* May 44, no. 5 (1994).363.
[39] Kellert and Wilson, *The Biophilia Hypothesis*.(1993). An edited series of 20 essays from various disciplines which outline empirical evidence supporting the concept of Biophilia. Arne Naess, Alan R Drengson, and Bill Devall, *Ecology of Wisdom: Writings by Arne Næss* (Counterpoint Press, 2008). Catharine Ward Thompson, "Linking Landscape and Health: The Recurring Theme," *Landscape and Urban Planning* 99, no. 3 (2011); Catharine Ward Thompson and Peter A Aspinall, "Natural Environments and Their Impact on Activity, Health, and Quality of Life," *Applied Psychology: Health and Well-Being* 3, no. 3 (2011). Kim-Pong Tam, "Concepts and Measures Related to Connection to Nature: Similarities and Differences," *Journal of Environmental Psychology* 34 (2013); Sofia Galadza, "Natural Needs," *Contract* 49, no. 3 (2007).
[40] Heerwagen and Orians, "Humans, Habitats, and Aesthetics."(1993).139.
[41] Paul Shepard, *Nature and Madness* (Athens, Georgia: University of Georgia Press, 2011). Louv, *The Nature Principle: Human Restoration and the End of Nature-Deficit Disorder*.
[42] Wilson, *Biophilia*.3.
[43] Gretchen C. Daily Gregory N. Bratman, Paul Hamilton, Kevin S. Hahn and James J. Gross, "Nature Experience Reduces Rumination and Subgenual Prefrontal Cortex Activation," *PNAS 2015 ; published ahead of print June 29, 2015, doi:10.1073/pnas.1510459112* 8567.

of real nature, according to Biello and also Louv.[44] Biophobic individuals might prefer artistic representations of nature to an encounter with nature. In a progressively 'nature deficient' society, as Louv postulates, my project aims to discover how artistic representations of nature may evoke some of the benefits of nature experienced outdoors (Figure 6: *Sky Portal*).



Figure 6: B. Minuzzo, *Sky Portal*, 2018. Acrylic on card, 1200 mm dia. Study 3 artwork. Photograph by author.

Representations of nature are prevalent in cultural expression, in art and design objects. The tendency to represent the natural world around us has continued in almost every culture, from the earliest historical examples, for instance the prehistoric Pech-Merie and Lascaux cave paintings in France (25,000 and 17,000- 15,000 BCE respectively). In Australia, Indigenous rock art depicting people, plants and animals has been dated to 35,000 BCE. The prevalence of depictions of nature themes expresses humankind's biophilic tendency for nature connection. In an article on interior decoration, biologist Maura C. Flannery argues:

[44] David Biello, "Are Americans Afraid of the Outdoors?," *Scientific American* (2008), https://www.scientificamerican.com/article/are-americans-afraid-of-the-outdoors. Louv, *The Nature Principle: Human Restoration and the End of Nature-Deficit Disorder*.

> It is difficult to find a culture that does not use some plant or animal motifs in its decorations.[45]

In writing about replications (life-like things) having a positive impact on an individual's emotional and mental wellbeing, Flannery agrees with other proponents of biophilia. Nature-inspired interior design (and art) can positively affect wellbeing, like being in the presence of nature itself.

> As we have become more separated from the natural world, the value of what contact we do have, minimal though it may be and often in the form of representations, becomes more important.[46]

Interior spaces can be places to connect with nature, an example being the craft and design output of William Morris whose work prompted appreciation of naturalistic themes. Morris, a founder of the nineteenth century Arts and Craft movement, utilized animal and plant imagery extensively in wallpaper, curtain, tapestry, furniture and tile designs.[47] Plants and flowers were also the inspiration for the applied and fine arts of the Art Nouveau movement (popular from 1890 to 1910). The development of higher resolution microscopes (early 20th century) initiated interest in micro-organisms, such as biologist and artist Ernst Haeckel's 1904 illustrations of marine creatures.[48]

Numerous Studies have looked at the health effects of access to nature in hospital environments. Since the 1970s Roger S. Ulrich's extensive body of work has focused on evidence-based improvements to healthcare design. With regard to patient responses to nature, Ulrich reports that nature viewing is more than a distraction, there are measurable physiological and psychological improvements in patient wellbeing.[49] Renowned for his work on participants' responses to, and preferences for, natural and urban environments (via window views, photographic images and videos) Ulrich's findings identify a preference for nature imagery with serene, savannah-like qualities.[50]

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[45] Flannery, "Jellyfish on the Ceiling and Deer in the Den: The Biology of Interior Decoration."240.
[46] Ibid. 242.
[47] Lucia Van der Post, *William Morris and Morris & Co* (London: V&A Publications, 2003).
[48] Ernst Haeckel, *Art Forms in Nature* (USA: Dover Publications, 1974). Haeckel's illustrations recently featured on the cover of the 2014 Adelaide Festival of Arts program.
[49]Roger S Ulrich, "Visual Landscapes and Psychological Well Being," *Landscape Research* 4, no. 1 (1979). "Effects of Interior Design on Wellness: Theory and Recent Scientific Research," *Journal of Health Care Interior Design* 3, no. 1 (1991).
Roger S Ulrich et al., "Stress Recovery During Exposure to Natural and Urban Environments," *Journal of Environmental Psychology* 11, no. 3 (1991).
[50]Ulrich, "Visual Landscapes and Psychological Well Being." "Effects of Interior Design on Wellness: Theory and Recent Scientific Research."

That nature-inspired interior design has a similar effect on people to that of the presence of nature itself is reported in many studies.[51] Photographs and videos of landscape are known to evoke a nature connection response and increase wellbeing. Artistic interpretations of landscape may have a similar effect. This hypothesis is tested by using original artworks in the Studies.

2.2. Attention Restoration Theory and Attentional States

Viewing a landscape painting may contribute to attention restoration by allowing task-focused areas of the brain to rest. In order to explore this hypothesis it is first necessary to understand attentional states and Attention Restoration Theory. ART was developed by environmental psychologists, Stephen and Rachel Kaplan, after decades of studying people and environments.[52] Kaplan and Kaplan conducted research into the positive effects of different landscapes on mental wellbeing, mood and health. In the literature there exists a dose-response relationship between the amount of natural landscape content and increases in wellbeing. Typically a street scene with trees is preferred over a treeless street. Parkland scenes are preferred over the tree-lined city street and the treeless street. Kaplan and Kaplan developed the theory of attention restoration by analysis of the factors that constitute a restorative environment and the discovery of how landscape engagement had an effect on people's mental wellbeing and attentional states.

ART recognises two attentional states; directed focus and involuntary focus, which will be discussed in due course, and has a set of four restorative environment characteristics. A restorative landscape is *compatible, fascinating*, has *extent* and allows one to feel like they are *being away*.[53] ART is often applied to simulacra; to photographs of nature and landscape. If the viewer feels at ease, has a connection to or an affinity with a landscape image, there is a sense of *compatibility*. The landscape may be familiar or familiar looking, may align with the viewer's preferences for an agreeable scene. The landscape has a degree of *fascination* if it encourages absorbed interest; a looking to decipher. The landscape has *extent*, if it appears to be a whole other world, even a miniature one. *Being away* ensues when the person viewing the landscape is able to mentally transport themselves into the scene, or to a memory of being in such a place. Kaplan describes *being away* as someone

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Ulrich et al., "Stress Recovery During Exposure to Natural and Urban Environments."

[51] Flannery, "Jellyfish on the Ceiling and Deer in the Den: The Biology of Interior Decoration."; Heerwagen and Orians, "Humans, Habitats, and Aesthetics." Ulrich, "Effects of Interior Design on Wellness: Theory and Recent Scientific Research."

[52] Kaplan and Kaplan, *The Experience of Nature: A Psychological Perspective*.,Kaplan, "The Restorative Benefits of Nature.", Kaplan, "The Nature of the View from Home: Psychological Benefits."

[53] Kaplan, "The Restorative Benefits of Nature."174.

experiencing a momentary release from a prior mind state, a conceptual shift. These four traits may be present in other, non-natural stimuli, such as an art installation (Figure 7). Having experienced Yayoi Kusama's *Obliteration Room*, I found it an engaging experience, yet highly stimulating and visually tiring. *Obliteration Room* is an interactive conceptual work and not intended to be restful. For an environment to be restorative it is essential to engage the effortless, involuntary attention, which allows directed attention to rest. Kaplan and Kaplan claim that non-threatening natural environments are best able to do this.

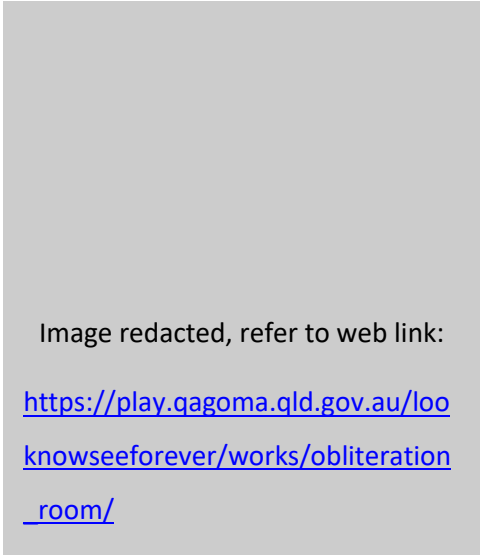

Figure 7: Yayoi Kusama, *Obliteration Room* 2011. Installation detail; furnished white room, stickers..[54]

Links made between attentional states, nature connection and workplace productivity have been made as early as the 1990's; people with a window view to nature had improved productivity.[55] The duration of engagement necessary to have effect is surprisingly short, less than 10 minutes as Berto and also Ulrich have discovered.[56] A recent Australian study found that even micro-breaks can restore directed attention. A mere forty seconds of looking at a picture of a green field is able to improve sustained attention.[57]

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[54] Yayoi Kusama *The Obliteration Room,* 2011, as part of 'Yayoi Kusama: Look Now, See Forever', QAGOMA, 2011 / © Yayoi Kusama, Yayoi Kusama Studio Inc. https://play.qagoma.qld.gov.au/looknowseeforever/works/obliteration_room/
[55] Rachel Kaplan, "The Role of Nature in the Context of the Workplace," *Landscape and Urban Planning* 26, no. 1 (1993); Kaplan, "The Restorative Benefits of Nature."; Stephen Kaplan and Rachel Kaplan, "Health, Supportive Environments, and the Reasonable Person Model," *American Journal of Public Health* 93, no. 9 (2003); Kaplan, "The Restorative Benefits of Nature."; ibid.; ibid.; Carolyn M. Tennessen and Bernadine Cimprich, "Views to Nature: Effects on Attention," ibid., no. 1.
[56] Rita Berto, "Exposure to Restorative Environments Helps Restore Attentional Capacity," ibid.25, no. 3 (2005).255. and Ulrich, "Biophilia, Biophobia, and Natural Landscapes."104.
[57] Kate E Lee et al., "40-Second Green Roof Views Sustain Attention: The Role of Micro-Breaks in Attention Restoration," *Journal of Environmental Psychology* 42 (2015).187.

Understanding attentional states is essential to comprehending how nature views or imagery have this restorative effect on mental fatigue and on wellbeing. The existence of the attentional states is recognised in the literature in the fields of environmental psychology, neuroscience and philosophy, although with discipline specific terminology. ART uses the terms directed attention for task-orientated working focus and involuntary attention for an effortless focus. ART claims that directed attention is rested when engaging with a restorative environment, as the brain switches over to the involuntary attention mode when there is a stimulus that is easily absorbing. Examples are looking out of a window to a view of countryside or clouds in the sky, watching trees sway in the wind or the swirling movements of water.

In the scientific literature directed attention is often termed the task-positive network and involuntary attention is called the task-negative network. Others use the labels goal-driven state and stimulus-driven state respectively. Neuroscientist Professor Ian Gibbins explains that

> Directed and involuntary attention modes exist and these concepts are used in the neuroscientific/cognitive science literature. Directed attention is also known as 'goal-directed attention', whereas involuntary attention is known as 'stimulus-driven attention'. These behaviours are driven by separate but interacting brain networks.[58]

Cognitive neuroscience, the study of the working brain, is an imprecise science. There is not yet a consensus as to the areas of brain that are activated for different stimuli, yet there is acknowledgement of discrete areas engaged with directed attention and involuntary attention (Figure 8). Viewing nature or nature imagery engages different parts of the neural network, the inferior frontal cortex and temporoparietal regions, which allows the directed attention (prefrontal cortex and intraparietal regions) to rest.[59]

How the brain works is of interest to thinkers from many fields, and multi-disciplinarians like Daniel Levitin (a cognitive psychologist, neuroscientist, and musician). Levitin differentiates four attentional states; the two main cognitive states are the central executive functioning and mind-wandering modes, with the two others being functions that assist with maintaining focus and attentional switching.[60]

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[58] Personal communication: email correspondence with Neuroscientist Ian Gibbins, 30th March 2018.
[59] Corbetta and Shulman, "Control of Goal-Directed and Stimulus-Driven Attention in the Brain."
[60] Levitin, *The Organized Mind: Thinking Straight in the Age of Information Overload*.16-45.

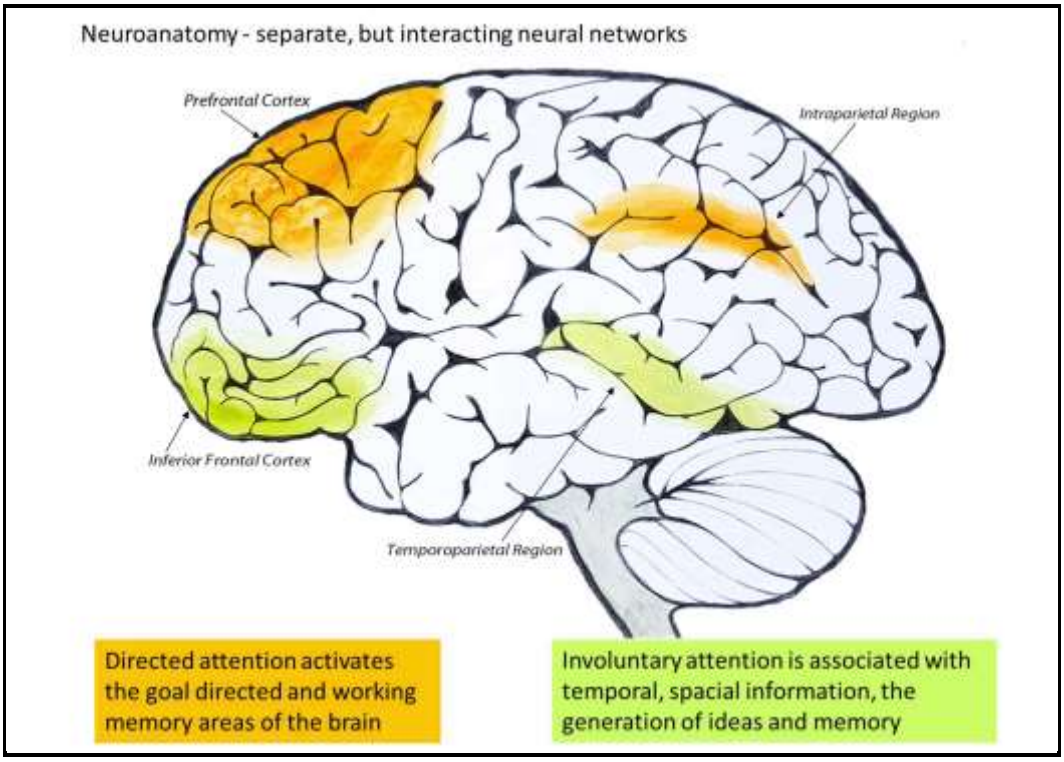

Figure 8: Diagram of the neural networks engaged for directed and involuntary attentional states. Diagram by the author.

The latter two refer to the cognitive effort that goes into staying focused on a task or changing focus from one task to another. Levitin explains that multi-tasking is actually an inefficient and energy depleting action of continual focusing and refocusing from one thing to another. Due to the inefficiency of this type of rapidly switching focus, the task at hand is processed by the brain in an ineffective manner, making the focus activity harder to remember at a later time. Levitin describes the work human brains do to pay attention as being akin to the work of a muscle. In other words, if we stand on one leg for a few minutes, it tires. Changing to the other leg for a short time rests the muscles of the first leg. Similarly with attentional states, working attention requires rest after twenty five to fifty five minutes. Switching to involuntary attention mode engages other areas of the brain which allows the directed attention to rest. Levitin's phrase 'mind-wandering' evokes well the effortless engagement and lateral thinking of the involuntary attentional state, similar to Ulrich's description of being 'wakefully relaxed'.[61] However, for consistency I will retain Kaplan's ART terminology for the two main attentional states: directed attention and involuntary attention.

[61] Ulrich, "Biophilia, Biophobia, and Natural Landscapes."103.

It should be noted that mental fatigue and stress are related but different physiological and emotional states. When one is tired, challenges that might otherwise be trivial can be stressful. Kaplan makes pains to differentiate the two. Kaplan and others point out that attention restoration through engaging with nature can be a key factor in mitigating stress, and with it, the effects stress has on us.[62] Having the capacity to make, use, and then restore depleted directed attention is important for the ability to deal with stress, to communicate effectively, attend to details, maintain patience and manage interpersonal relationships. Being too tired to talk is not the way to spend the working day. There is an increasing focus on wellbeing in the workplace and in educational institutions, and as Sullivan points out:

> Our capacity to direct attention (that is, to pay attention) is necessary for almost everything we care about doing…and although it is a limited resource…it can also be restored.[63]

Attention to tasks and mental wellbeing can be improved by including restorative art and design elements in work and study spaces. A surprisingly brief amount of time looking at a nature view or picture is all that is needed for there to be a significant restorative effect. Two Studies on attention restoration found that people spent from less than one to five minutes looking at nature imagery. Subjects who self-regulated the nature viewing time had a viewing duration of less than 5 minutes.[64] In an Australian study, participants displayed significant attention restoration with a mere 40 seconds of looking at a green field simulation.[65]

In light of these findings, it can be assumed that nature-themed art and design is not superfluous, but has a real benefit for people's attentional states. Images of landscape are placed throughout this document, as a means to address mental fatigue. When tired from reading, I invite the reader to take an 'art break' and pause for 40 seconds to contemplate a landscape and note the experience on the ability to focus.

Viewing non-threatening nature is inherently restorative, in a way that attentional switching is not. Kaplan describes directed attention as 'a key psychological resource'.[66] We rely on directed attention for work and study tasks, as well as to maintain social, emotional and physiological wellbeing. To manage this finite resource it is best to avoid working when fatigued and constant switching (multi-

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[62] Kaplan, "The Restorative Benefits of Nature."180. Ulrich et al., "Stress Recovery During Exposure to Natural and Urban Environments.", Sullivan, "In Search of a Clear Head."
[63] "In Search of a Clear Head."3.
[64] Berto, "Exposure to Restorative Environments Helps Restore Attentional Capacity."257.
[65] Lee et al., "40-Second Green Roof Views Sustain Attention: The Role of Micro-Breaks in Attention Restoration."
[66] Kaplan, "The Restorative Benefits of Nature." 180.

tasking). Switching focus uses a lot of working memory and is tiring.[67] Regular short breaks to engage the 'mind-wandering state' (involuntary attention) both rests and refocuses the directed attention. All it takes to achieve this cognitive benefit is a short period of viewing a picture of landscape such as *The Hills* (Figure 9).



Figure 9: B. Minuzzo, *The Hills*, 2018. Acrylic on paper, 220 x 440 mm. Photograph by author.

2.3. Restorative Effects of Landscape

In this Section I will discuss the literature on the restorative effects of *landscape* in order to contextualize my ideas about the restorative effects of *landscape art*. To do this I will consider the literature on preferences for landscape type, the sorts of landscapes that are considered to be restorative and the restorative effects of landscape.

Some ART Studies use a method whereby subjects visit and walk in nearby landscape (parks or forest) and compare the cognitive functioning and mental wellbeing of this group with subjects walking along city streets. Time spent on the nature walks improves cognitive functioning and reduces anxiety producing rumination.[68] To counter the argument that the physical activity of walking in the cleaner air of the park may be a causal factor, Berman et al compared a walking study to one with photographs of the same places.[69] The photographic study had the same result for restorative effect on cognitive functioning as the actual walking experience. Viewing a representation of nature was equally restorative.

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[67] Nikki Pratt, Adrian Willoughby, and Diane Swick, "Effects of Working Memory Load on Visual Selective Attention: Behavioral and Electrophysiological Evidence," *Frontiers in Human Neuroscience* 5, no. 57 (2011).
[68] Berman, Jonides, and Kaplan, "The Cognitive Benefits of Interacting with Nature." Bratman et al., "Nature Experience Reduces Rumination and Subgenual Prefrontal Cortex Activation."
[69] Berman, Jonides, and Kaplan, "The Cognitive Benefits of Interacting with Nature."

The literature on the *type* of landscape that is considered restorative and/or preferable is broad and, somewhat inconclusive. Studies average participant responses, which does not account for personal, cultural and aesthetic partiality. Yet patterns of preference can be determined, and as I am interested in communities in urban and public spaces, drawing on prior findings is appropriate. The literature highlights a preference for savannah-like landscapes; open grassy plains with groups of shady trees, and a sense of distance.[70] There is some consensus in the literature that a cross-cultural preference for savannah-like landscapes exists, yet the underlying reason for this preference is attributed to a variety of factors; genetic predisposition, evolutionary hereditary, sociocultural construct or an aesthetic preference passed down through generations.[71] The savannah landscape is typically described as having open grassland (prospect) and clumps of low branched trees with spreading canopies (refuge) which lends support to Appleton's Prospect Refuge Theory (PRT).[72] It is interesting that urban parklands or farms, like those found in Adelaide (where this study is situated), often resemble savannah landscapes; expanses of lawn shaded or fringed by trees with blue skies and access to water and/or hills in the distance (Figure 10). The urban parks we like to use for recreation are modelled on English and European estate gardens, which are in turn fashioned after the savannah landscape.[73] This predilection for parklands with savannah-like designs has a long history, motivated by the knowledge of the health effects of nature connection.[74]

An American study of preference for views by college students, experiencing mild fatigue after attending a lecture, found that a natural environment (a digitally simulated nature walk in a forest) was perceived to be more restorative than urban environments (a simulated walk in the city).[75] Notably the preferential difference was more significant for the people who experienced a higher level of mental fatigue. The students who were more fatigued rated the city as a much less restorative environment. Similarly, when college students were consulted about the choice of wall mural for a break-out room, they ranked views to water or landscape as the most restorative scenes. Break-out rooms with blank walls, views to buildings or street scenes were considered by the

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[70] Roger S Ulrich, "Human Responses to Vegetation and Landscapes," Landscape and Urban Planning 13 (1986); "Biophilia, Biophobia, and Natural Landscapes."; Heerwagen and Orians, "Humans, Habitats, and Aesthetics." John H. Falk and John D. Balling, "Evolutionary Influence on Human Landscape Preference," 42, no. 4 (2010).

[71] "Evolutionary Influence on Human Landscape Preference."487.

[72] Jay Appleton, *The Experience of Landscape*, Rev. ed. (Chichester ; New York: Wiley, 1996); Mary Ann Fischer and Patrick E. Shrout, "Children's Liking of Landscape Paintings as a Function of Their Perceptions of Prospect, Refuge, and Hazard," *Environment and Behavior* 38, no. 3 (2006).

[73] Ward Thompson, "Landscape and Health." 191.

[74] Ibid.188-193.

[75] Terry Hartig and Henk Staats, "The Need for Psychological Restoration as a Determinant of Environmental Preferences," Journal of Environmental Psychology 26, no. 3 (2006).

students as less restorative.[76] These examples demonstrate a desire for 'being away' from built environment and a preference for natural environments when experiencing mental fatigue.



Figure 10: B. Minuzzo, *The Farm*, 2016. Acrylic on board, 300 mm². Photograph by author.

Landscape preference and perceived restorativeness of a landscape are correlated factors, in that scenes that we like and that revive a tired mind are similar. An analysis of these factors by Herzog found that ART criteria of being away and compatibility are strongly correlated with predicted restorative potential, whereas extent and fascination had a higher association with landscape preference.[77] This is of interest as my research design was geared to provide people with a restorative image, a scenic picture that allowed them the sense of being away from their immediate environment, a windowless room. That the image may not have been their most preferred type of landscape painting is, according to Herzog's conclusions, secondary to the restorative effect of the presence of the painting in the room. Therefore, a landscape image does not need to be an artistic masterpiece if the landscape image is compatible and satisfies other restorative criteria.

To understand why landscapes have a restorative effect, we must return to the idea of biophilia and attraction to life and life-like things. Nature connection has long been advocated for in the design of

[76] Gary Felsten, "Where to Take a Study Break on the College Campus: An Attention Restoration Theory Perspective," ibid.29, no. 1 (2009).166.
[77] T R Herzog, P Maguire, and M B Nebel, "Assessing the Restorative Components of Environments," ibid.23, no. 2 (2003).168-169.

health environments as a way to improve patient health outcomes.[78] Over many years, Roger Ulrich has found that a view of landscape produces a significant difference in patient wellbeing for factors such as pain, stress, anxiety, physiological conditions and length of stay in hospital.[79] Ulrich's focus has predominately been on improving patient and visitor wellbeing, yet health environments are also places of high stress and fatigue for staff. Stress and mental fatigue are separate factors that can contribute to reduced capacity to concentrate and both are improved by engaging with nature and landscape views.

The amount and type of access to landscape preferred by staff in their break-out areas was the subject of a large study of American healthcare workers.[80] Variables tested were an undecorated room (control), inclusion of a plant, a landscape artwork, a window view to landscape, and a balcony overlooking a landscape. Any amount of landscape was found to be statistically significant for restorative effect (the window view and balcony ranked higher and highest respectively). The finding that *landscape art* was preferred over indoor plants is of interest for my study and confirms the assertion that a representation of landscape can contribute to a restorative environment in a windowless room.

Self-reported connection to nature is a strong predictor of an individual's positive wellbeing. Being connected to nature and feeling happy, do in fact, have a correlation.[81] From this we might infer that people, who express higher levels of nature relatedness, would also benefit from the presence of landscape imagery in the workplace. Viewing nature during the working day can reinforce the positive emotions felt from nature-connectedness.

One aspect of Attention Restoration Theory is that a conceptual shift occurs; observers have a feeling of being away. That a series of brief breaks are enough to have this effect is also evident from Rachel Kaplan's study of window views.

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[78]Ulrich, "Visual Landscapes and Psychological Well Being." "View through a Window May Influence Recovery from Surgery."; "Effects of Interior Design on Wellness: Theory and Recent Scientific Research." William C Sullivan and Rachel Kaplan, "Nature! Small Steps That Can Make a Big Difference," (SAGE Publications Sage CA: Los Angeles, CA, 2016).p7.Ulrich, "Effects of Interior Design on Wellness: Theory and Recent Scientific Research."

[79] "Biophilia, Biophobia, and Natural Landscapes." 102-106.

[80] Adeleh Nejati, Susan Rodiek, and Mardelle J Shepley, "Using Visual Simulation to Evaluate Restorative Qualities of Access to Nature in Hospital Staff Break Areas," *Landscape Urban Planning* 148 (2016).

[81] Zelenski and Nisbet, "Happiness and Feeling Connected: The Distinct Role of Nature Relatedness."

> Window viewing can be frequent; vacations come but rarely. The many and frequent interludes can forestall the need for a longer break, and although they are of very short duration, they may reduce mental fatigue before it becomes a serious problem.[82]

A landscape painting is something an office worker can immerse themselves in frequently throughout the day, spending time in nature may occur more rarely. The impulse we have to take in a view is akin to seeking a vantage and brings to mind Appleton's Prospect and Refuge Theory.[83] Similarly to Wilson and Kellert's Biophilia Hypothesis, PRT claims humans have evolutionary-biological survival instincts. In PRT these are to seek shelter (a refuge) and to be able to scan the surrounding environment for changing weather, predators or prey (gain a prospect). An interior room is a form of refuge, providing shelter and comfort. People indoors do not require refuge, but instinctively look for a *prospect*, or window view. In the next Section I will discuss how landscape art in windowless spaces can provide a representation of prospect, a simulacrum of a window view. The concept of PRT can be translated from the wilderness to the contemporary setting of the urban office; the conditions are different but the impulse to seek out a prospect remains.

2.4. Landscape Art: Restorative Effects of Representations of Nature

Returning to the hypothesis that viewing a landscape painting may have a restorative effect in a windowless room, I will discuss the literature on restorative effects of *representations* of nature. Attention restoration and other health environment studies typically use representations in the form of printed photographs, videos or digital images of nature or landscape. In order to add to the literature on Attention Restoration Theory, the objects in my Studies are original landscape paintings. The content of my paintings are scenes that imply a prospect; the horizon, a view to open land, hills, sky or the sea.

The literature demonstrates the wellbeing benefits of art and the preferences for nature-themed art in health settings, but there is scarce focus on the restorative effects of art. Situated studies of art in workplaces are uncommon. A focus on empowering office workers to influence décor has demonstrated the productivity and wellbeing benefits of a more visually interesting workplace.[84] Recognising that art aesthetically enhances the environs, one study of children's art in offices found

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[82] Kaplan, "The Nature of the View from Home: Psychological Benefits."511.
[83] Appleton, *The Experience of Landscape*.
[84] Knight and Haslam, "The Relative Merits of Lean, Enriched, and Empowered Offices: An Experimental Examination of the Impact of Workspace Management Strategies on Well-Being and Productivity."

the artworks also increased social interactions and had educational benefits.[85] A Norwegian study found that office workers in windowless spaces were significantly more likely to have decorated their space with plants (five times more likely) and nature imagery (three times more likely) than staff with a window view.[86] My research differs from these studies in that the focus is specifically the restorative potential of original landscape artworks.

Experiencing nature from an interior view, or by means of a simulacrum, is well documented in the literature as adequate to evoke nature connection. The benefits of connectedness to nature do not even require direct contact; they can be experienced from passive viewing of posters and slides, as well as window views.[87] Many people work and study in rooms without window views. These spaces which are ill-designed to optimize work focus are common in contemporary workplaces. Yet a small change to a room, adding nature-themed imagery or artworks, can have a noticeable restorative effect (Figure 11).



Figure 11: B. Minuzzo, *Portals to the Ranges*, 2016. Acrylic on board, 250 mm dia. Study 1. Photograph by author.

Landscape imagery in a windowless room can provide micro-restorative breaks throughout the working day, leading to an accumulation of restful moments which can reduce mental fatigue as required. A comparative study of the recuperation of directed attention from photographs of natural scenes, city scapes and geometric designs supports ART and found that participants had a greater

[85] Christina Smiraglia, "Artworks at Work: The Impacts of Workplace Art," *Journal of Workplace Learning* 26, no. 5 (2014).
[86] Tina Bringslimark, Terry Hartig, and Grete Grindal Patil, "Adaptation to Windowlessness: Do Office Workers Compensate for a Lack of Visual Access to the Outdoors?," *Environment and Behavior* 43, no. 4 (2011).
[87] Heerwagen and Orians, "Humans, Habitats, and Aesthetics."166.

restorative effect if they controlled the amount of time viewing the nature images.[88] This finding concurs with the 'empowered' workplace findings of Knight et al, that if a person is able to exercise choice and extent of engagement, they have a greater sense of wellbeing.[89] Self-regulation of the *frequency* and *period* of viewing landscape imagery appears to be important for restorative effect.

What happens when we look at or engage with art is the subject of Eco's 'The Open Work' and Hyman's 'Art and Neuroscience'.[90] Eco writes of the viewer bringing their own interpretations to a creative work, which in effect, completes the work. Hyman proposes a similar idea, that 'imaginative multiplicity' is a characteristic of art that holds people's attention. By this Hyman means that the art we consider to be worthy of attention allows us 'many valid interpretations'.[91] This idea of many interpretations is an attribute of an original landscape artwork, which mechanical representations of landscape may not have.

An aspect of ART not discussed by Kaplan is that attention restoration can occur as an increase in state of arousal (from low to high); from mentally fatigued to mentally engaged, rather than only a decrease from high to low (i.e. stressed to relaxed).[92] This process is illustrated in Figure 12. The distinction of the two restorative modes is significant; it is proposed that one of the benefits of *landscape art* over a photograph of landscape is that the artwork encourages viewers to interpret the visual image, which is a mentally stimulating effect (from low to high arousal). The imaginative interpretations that an artwork stimulates are engaging different areas of the brain, by accessing memories and generating associations. A landscape artwork can be both mentally engaging and restorative. Imaginative multiplicity, evoked by the artistic representation of landscape, arose as a theme in the evaluation of the Studies. Using landscape paintings in a study of fatigue in the workplace can add to the literature by considering the attention restoration effects and the imaginative interpretations of artworks.

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[88] Berto, "Exposure to Restorative Environments Helps Restore Attentional Capacity."257.
[89] Knight and Haslam, "The Relative Merits of Lean, Enriched, and Empowered Offices: An Experimental Examination of the Impact of Workspace Management Strategies on Well-Being and Productivity."
[90] Umberto Eco, *The Open Work* (Cambridge, Masachusetts: Harvard University Press, 1989). John Hyman, "Art and Neuroscience," in *Beyond Mimesis and Convention: Representation in Art and Science*, ed. Roman Frigg and Matthew Hunter (Dordrecht: Springer Netherlands, 2010).
[91] Hyman "Art and Neuroscience." 257.
[92] Marianne Frankenhaeuser and Gunn Johansson, "Stress at Work: Psychobiological and Psychosocial Aspects," *Applied Psychology* 35, no. 3 (1986).

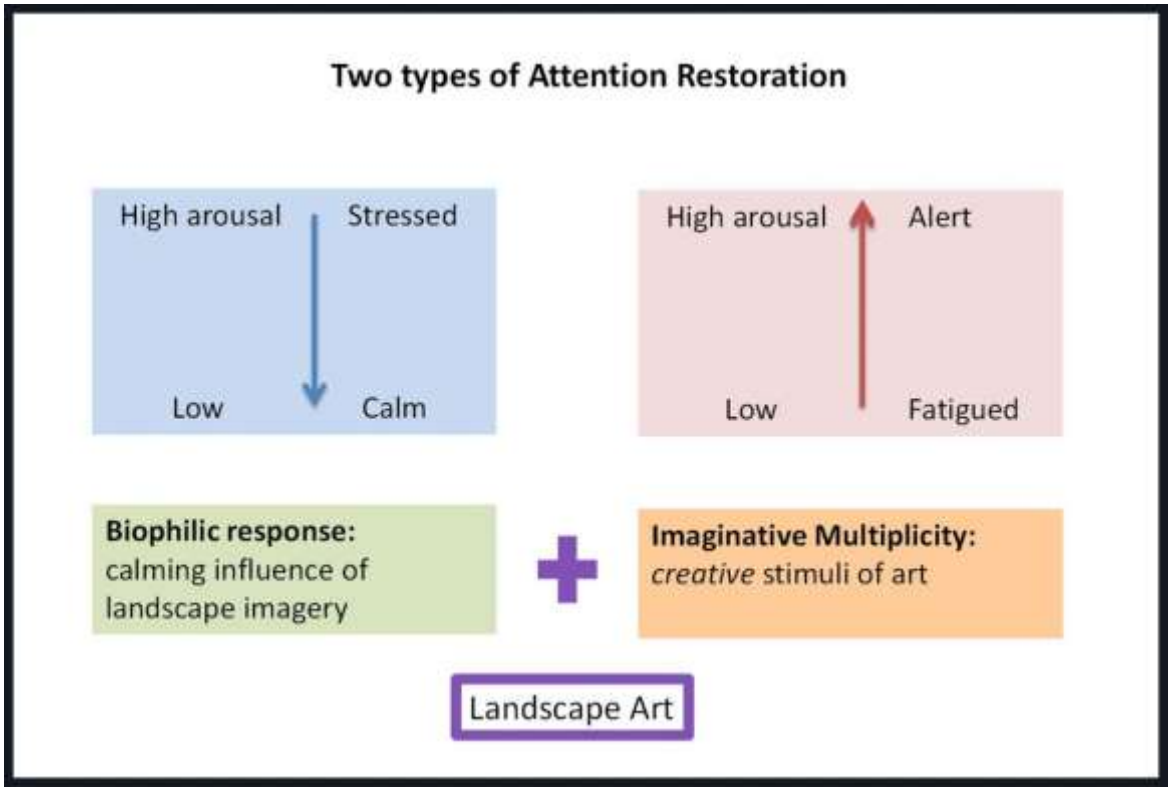

Figure 12: Diagram of the two ways that attention restoration can occur. Diagram by the author.

With the background information from social sciences that nature connection is a partially inherent trait, that even a brief connection with nature or a representation of nature is adequate to restore working focus, I now consider further contextualisation for the research. To better understand landscape art, it is necessary to know more about the term landscape, how visual perception works, and to explore the genre of landscape painting.

Chapter 3 Landscape Art: a framing of the world, how visual perception works and representations of landscape

The term landscape has personal and societal interpretations influenced by cultural and aesthetic preferences. The modes of landscape representation are also influenced by cultural norms. Indigenous Australians have a sense of belonging to country; place is relational. In contrast, Australians of other origins (i.e. English colonists and European immigrants) have inherited a proprietary association to land. Landscape is a thing to cultivate, own and profit from. According to Langton, this difference in outlook has prevailed since early settler days.

> Land and landscapes shared by settlers and indigenes are divergently imagined….Whereas settlers see an empty wilderness, Aboriginal people see a busy spiritual landscape, peopled by ancestors and the evidence of their creative feats.[93]

Indigenous Australians traditionally depict landscape as aerial maps encoded with culturally significant knowledge. The Westerner viewpoint typically depicts landscape as seen from standing, a horizon view, analogous with Appleton's notion of a prospect. As I am a descendant of English and European Australians, my research is concerned with Western landscape traditions.

Art historian W.J.T. Mitchell explains that landscape art is:

> in its "pure" form, a western European and modern phenomenon…[western landscape painting] emerges in the seventeenth century and reaches its peak in the nineteenth century…originally and centrally constituted as a genre of landscape painting associated with a new way of seeing.[94]

In my discussions of landscape, I am referring to Mitchell's interpretation. I concur with the first and last points; however, I will be discussing more recent paintings which have had a direct influence on my work, predominantly from twentieth century artists. The genre of landscape art is still popular in Australia today; indeed there has been an increase in significant landscape prizes awarded nationally in the past decade.[95]

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[93] Marcia Langton, "Homeland, Sacred Visions and the Settler State," *Artlink* 20, no. 1 (2000).13-14.
[94] WJT Mitchell, *Landscape and Power* (Chicago: University of Chicago Press, 2002).7.
[95] Examples are the Hadley's Art Prize (world's richest landscape award) and The Glover Prize (Tasmania), Fleurieu Landscape Prize, the Heysen Prize for Landscape and the Waterhouse Natural History Prize (South Australia), the Chippendale Landscape Award, Paddington Art Prize and Wynne Prize (NSW).

Landscape is a construct, a word used to denote a scenic part of the environment or a representation of a nature scene. Landscape art involves levels of selectivity; 1) a framing of a part of the environment, 2) the act of looking (visual perception), and 3) the way landscape is visually represented; the work of artists (see Figure 13, a compositional experiment). These levels of selectivity will be discussed in turn.



Figure 13: B. Minuzzo, *Untitled*, 2017. Watercolour on paper, 160 x 250 mm. Photograph by author.

3.1 Landscape: Framing of a Part of the Environment

In this Section I will discuss the concept of landscape. Landscape is a construct and, as such, cultural factors and individual subjectivity influence peoples' appreciation of a specific landscape. Even so, as discussed in Section 2.3, there exist cross-cultural tendencies for landscape preference. One definition of landscape is that it is *a selected view* of the environment. In other words landscape is an outlook attuned so as to be 'a good view'.[96] The term is also used to denote a genre of artistic expression; 'a landscape' refers to a landscape painting.

Landscape was considered a lesser genre of painting until an increase in urban living in late eighteenth century England meant that people turned to art to replace the views of countryside now

[96] Andrews, *Landscape and Western Art*.4.

lacking, and for the wealthy to display their status and property ownership.[97] Landscape painting as a genre positioned landscape as the subject without the presence of significant personage, religious iconography or narrative devices. The rise in popularity of landscape paintings at this time coincided with the population growth of cities, according to art historian Malcolm Andrews:

> One framed landscape replaces another, the simulacrum substitutes for the real, while both may make us aware of the degree to which we have become distanced from 'nature'. [98]

Interestingly, Andrew's historical observation correlates with more recent findings from environmental psychology about the predilection to compensate for a lack of window views with landscape imagery (Section 2.4 Restorative Effects of Representations of Nature). The desire people have to seek a prospect when indoors is apparently inherent and has occurred over time. A window view is an asset which has prestige and economic value in commercial, residential and holiday settings. If we lack a window view to landscape, a representation of a scene provides a simulation of prospect.

3.2 Landscape Art and Visual Perception; to Look, to Observe

My research project is to make landscape-themed art and understand how people engage with and interpret the landscape paintings. Delving into what it means to look, how visual perception works, is pertinent. Artists throughout the ages and in different cultures have fashioned new ways of representing the world and new ways to portray landscape. Making a landscape painting requires observation and a circumventing of the human brain's assumptions as we visually perceive the world. Noë discusses how 'painting requires the *discovery* of visual appearances.'[99] Making a painting is described by Alva Noë as:

> at once an activity of careful *looking to* the world, and an activity of reflection on *what you see* and *what you have to do to see.* [Noë's emphasis][100]

If you concentrate on seeing, you will become aware that the area that is in clear focus is only as big as your upheld palm. The rest of the world (including one's own fingers) is out of focus until we

[97] Mitchell, *Landscape and Power*. John Berger, *Ways of Seeing* (London: Penguin UK, 2008).106-107.
[98] Andrews, *Landscape and Western Art*.107.
[99] Noë, *Action in Perception*.167.
[100] Ibid.179.

move eyes, head or body. Visual perception requires sight, movement and thought.[101] The way we see is conditional to an embodied experience of being in the world. We have eyeballs that swivel, a neck and head that tilt and turn, a body that moves. 'Our embodiment…[is] constitutive of the way we perceive' declares Crawford.[102]The ability to comprehend the three dimensionality of the world is a function of peoples' being able to see, move and also think. People can understand a two dimensional representation of a landscape because there is lived experience of landscape as a three dimensional space. This explains how representations of landscape have a similar restorative effect as seeing an actual view to landscape. Human brains make sense of the world or a picture of the world in the same way. We can understand distance, depth and perspective in a two dimensional image (Figure 14).[103]



Figure 14: B. Minuzzo, *Leaving the Ranges,* 2018. Watercolour on paper, 230 x 420 mm. Photograph by author.

How we perceive things visually, how the human brain responds to art and nature is a complex process. Humans are pattern-seeking animals, part of the 'cognitive niche'. [104] It's one of the ways we make sense of the world. Engaging with visual art requires visual perception, an ability to observe and think. Perceptual aesthetics proposes that aspects of perception are shared by most people.[105] We are innately attracted to symmetry, the sublime and basic forms which imbue emotional

[101] Ibid.
[102] Matthew B Crawford, *The World Beyond Your Head: On Becoming an Individual in an Age of Distraction* (Macmillan, 2015).48.
[103] Ibid.47-50.
[104] Brian Boyd, "Artistic Animals: Common and Unique Features of Music and Visual Art," in *Visual Animals: Crossovers, Evolution and New Aesthetics*, ed. Ian North (Adelaide: The Contemporary Art Centre of South Australia, 2007).17.
[105] Ann Marie Barry, "Perceptual Aesthetics: Transcendent Emotion, Neurological Image," *Visual Communication Quarterly* 13, no. 3 (2006).135.

meanings. What we find aesthetically stimulating gives us pleasure. As an artist I was working with these aesthetic principles instinctively, yet it was through knowledge gained from practice-based research that I employed them consciously. Shapes evoke emotional responses:

> Circles feel closed, safe and comfortable. Squares feel solid and dependable.[106]

A circular landscape painting is an unusual format, even nowadays. Turner experimented with the shape of his paintings from the 1840's by painting circular and octagonal compositions onto square canvases (Figure 15). This change of format was a 'notable innovation' which Turner persisted with for a few years, despite much criticism.[107] The circular shape suited Turner's expressive painting style, the feeling of swirling weather with light emanating from the centre of the paintings.



Figure 15: JMW Turner, *Dawn of Christianity (Flight into Egypt)*, 1841. Oil paint on canvas, 790 mm dia. National Museums Northern Ireland. Collection Ulster Museum. (Copyright expired)[108]

An artist making a landscape painting will hone skills in observation, to capture the essence of light and colour and form. There is also the question of how the audience observes an artwork. In his treatise, 'The Open Work,' Umberto Eco argues that the audience (viewer or reader) of art, music or literature, is able to bring their own subjective interpretations to the work, discovering and

[106] Ibid.145.
[107] David Blayney Brown, "Squaring the Circle: New Formats from 1840," in *The Ey Exhibition: Late Turner, Painting Set Free*, ed. David Blayney Brown, Amy Conncannon, and Sam Smiles (London: Tate Publishing, 2014).176.
[108] JMW Turner, *Dawn of Christianity (Flight into Egypt)*, 1841. Oil paint and bees wax on canvas, 790 mm dia. National Museums Northern Ireland. Collection Ulster Museum. BELUM.U224. Copyright expired.

unravelling their own meanings. The implications for contemporary creative practice are that contemporary art is a 'work in progress'.[109] Eco's theory highlights:

> a new relationship between the *contemplation* and the *utilization* of a work of art.[110]

This idea is central to my research, that people are purposefully looking at the paintings and that this looking has a use, in this case to affect restorative focus. Understanding how people respond to landscape paintings, through consultation, is a key part of the research design.

A formative contribution to Media Studies from the 1970s was the work of cultural theorist Stuart Hall, in deciphering the ideas behind what it means to represent through language, image, word and thought processes. Hall wrote about how we make sense of the world by 'two systems of representation': firstly 'mental representations', a conceptual system which 'we carry around in our heads' and secondly, a language system or representational signs and symbols.[111] A mental representation happens when one considers a thing: either an object or an intangible concept. Hall also expanded on the way in which we construe meaning from language. He defined language as encompassing the written and spoken word, bodily gestures and visual images/objects. Hall's broader definition of language describes how individuals communicate meaning to others about a mental representation.

Consider a real and an intangible/abstract thing; a mountain range, and nature-connectedness. The first brings to mind a geological formation that exists as a memory, in fiction and in the real world, and that thing has a name, for instance the Flinders Ranges. Nature-connectedness evokes a complex mix of landscape, memories, experiences and emotions. An example is the state of being when walking along the beach. Human ability to represent the real and the intangible allows concepts to be communicated between individuals and across cultures. It is the ability to provide a 'conceptual shift' to evoke a sense of physically or mentally being in another place, that I aim to explore for the people working in windowless spaces. As discussed above artists can evoke meaning about concepts, in this case landscape, through representation.

As Hall states:

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[109] Eco, *The Open Work* 15.
[110] Ibid.23.
[111] Stuart Hall, ed. *Representation: Cultural Representations and Signifying Practices* (London: Sage, 1997).17.

> the relation between 'things', concepts and signs lies at the heart of the production of meanings in language. The process which links these three elements together is what we call 'representation'.[112]

Reader Reception Theory (RRT) is Hall's analysis on the encoding and decoding of media by how the audiences 'use' television content.[113] The context of the audience influences the 'reception' and meanings derived from the content. Similarly with the audience for artworks; an artist creates a representation and a viewer 'reads' it. RRT emphasizes that an individual's cultural context is the lens with which that viewer actively interprets the world (and art, it being part of the world). Commonalities of cultural context between an artist and audience may lead to comparable readings of the artwork. This is an interesting point for this researcher, making representations of landscapes familiar to people living within a South Australian cultural context (i.e. Flinders Ranges, the Adelaide environs and metropolitan beaches).

Developments in Western landscape painting, particularly Impressionism, have enabled us to see the world differently. I discuss this further in Section 3.3. Innovations in representation of landscape continued from the Impressionists to the Post-impressionists like Paul Cézanne (1939-1906). In his time Cézanne's paintings and observations shed new light on the function of sight. By demonstrating that human vision relies on interpretation by the brain, Cézanne's research through painting pre-empted contemporary knowledge of visual perception, as Lehrer says in respect to Cézanne's work; 'The eye is not enough. One needs to think as well.'[114]

Well after Cézanne's time, scientists acknowledged what the artist had already concluded by careful observation; the eye and the brain work together. A portion of vision is determined by the function of the eyes, most of the process of vision is determined by the brain. To enable effective daily functioning, we gloss over a lot of the information and stimulation that we receive. To really see something, to get past this simplification of perceptual inputs, it is necessary to spend time; to observe, to notice. As observed by the author 'Look. And look again. The brain completes what the eyes see.'[115]

An artist synonymous with an abstracted soft focus is German painter Gerhard Richter (born 1932). Richter pushes the boundaries of how we see the world with his distinctive use of blur (Section 3.3,

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[112] Ibid.19.
[113] Stuart Hall, "Encoding/Decoding," in *Media and Cultural Studies: Keyworks*, ed. Meenakshi Gigi Durham and Douglas M. Kellner (Oxford: Blackwell, 2001).166.
[114] Paul Cézanne quoted in Jonah Lehrer, *Proust Was a Neuroscientist*, first ed. (Melbourne, Victoria: Text, 2007). 97.
[115] Bridgette Minuzzo, extract from Artist's Journal, 10th February 2017.

Figures 25-27). Richter explains; 'You do not see less by looking at a field out of focus through a magnifying glass.'[116] A blurry landscape is still a landscape; the subject is the same, the qualities of light and colour remain, even if the 'conditions of perception' change.[117] When we look at something, there is a shifting of visual focus from one thing to another. The subject that we look at is in focus and is sharply defined. The areas around, in front or behind this point have outlines that are softened, blurred. Focus is stillness, the fixed gaze. Blur is the moving gaze and how we really perceive much of the world. Human brains make us believe the world is in focus, but in actuality vision works as lots of points of focus meshed together.[118]

The blurring makes the work ambiguous but still recognisable as landscape. This discovery gave a new direction for my painting practice (Figure 16). I used the concept of the blurred landscapes to fulfil my objective to create conceptual landscape-themed artwork. The blur landscapes also met the criteria for restorative environments: they are non-threatening, allow a conceptual shift, are interesting to look at and are a whole other world (Section 2.2 Attention Restoration Theory and 5.2 Art Practice).



Figure 16: B. Minuzzo, *Portal #7*, 2017. Acrylic on board. Detail of Figure 69, Chapter 8. Photograph by author.

[116] Gertrud Koch, "The Richter-Scale of Blur," *October* 62 (1992).133.
[117] Ibid.133.
[118] Richard H. Masland and Paul R. Martin, "The Unsolved Mystery of Vision," *Current Biology* 17, no. 15 (2007).

Practice-based research has enabled me to see and represent landscape in new ways. The semi-abstraction of blur is a technical and philosophical insight explored and developed through practice-based research. This method of practice-based exploration is similar to the notion of 'design innovation', the making of objects and 'coming to see in new ways' as Bamberger and Schön discuss in their paper on design processes.[119] The new work produced is driven by exploration; to evoke a restorative effect in the artwork, through documented preferences for landscape views, and considerations of the process of seeing.

Looking at landscape or landscape art requires us to perceive and to pay attention as it *restores* that very attention. Landscape evokes a particular type of fascination; in attention restoration terms, it is experienced as a 'softly fascinating' stimulus.[120] Non-threatening natural scenes do not require conscious effort; viewing such a landscape holds the gaze as it calms and invigorates us.

Landscape is a construct, a framing, a selection of the scenic. We look at the world, and that part of the environment that is selected as 'view' is the first construction. With a camera lens I selected and recorded South Australian landscapes. These digital photographs were taken so as to document a landscape I had spent time in; a mnemonic device to aid me in the recollection of a personal experience of that place. A further process of framing was the selection of a series of photographs, often collaged together like David Hockey's *Joiners,* to refer to whilst painting representations of landscapes.[121]

3.3 Artefacts/Artists

Researching Western landscape art inspired experimentation aimed to replace the window view, to create a simulation of prospect for people in a windowless room. In this Section I discuss a selection of artists and their paintings from the Western landscape tradition which influenced my practice. I will also discuss Komar and Melamid's 'Painting by Numbers', a satirical study of aesthetics over ten countries which revealed cross-cultural preferences for landscape art.[122] Although the artists discussed are from different periods, countries, and art movements, I have found the manner in

[119] Jeanne Bamberger and Donald A Schön, "Learning as Reflective Conversation with Materials: Notes from Work in Progress," *Art Education* 36, no. 2 (1983).
[120] Sullivan, "In Search of a Clear Head."58.
[121] Canbra Hodson, "David Hockey's 'Joiners'," *Juxtapoz* (2014), https://www.juxtapoz.com/news/photography/david-hockney-s-joiners/. Accessed 15/3/2019.
[122] Vitaly Komar, Aleksandr Melamid, and JoAnn Wypijewski, *Painting by Numbers : Komar and Melamid's Scientific Guide to Art* (Berkeley: University of California Press, 1999).

which they depict landscape has some commonality. The selection of artefacts was also determined by paintings that I have seen at first hand. I consider this an important distinction as the fact that I use original paintings differentiates my study from other research on attention restoration. Materiality is evident in, and part of the appeal of, an original painting.

Landscape paintings were made by the researcher for each of the Studies (as described in Chapter 5). Aside from their materiality, the paintings in this project are considered to be unique objects. Walter Benjamin ascribes what he terms as an 'aura' to artwork, something that is evident in the authentic original but not so in mass reproductions.[123] Benjamin also claims that the extent to which the work is reproducible reduces the aura of an object. Later theorists question the concept of aura, and as Knizek explains, Benjamin's aura is actually a function of an artwork's reception, not an inherent quality of the art object itself. According to Knizek, aura is an 'extra-aesthetic feature', an elusive quality; aura is 'imaginary and not perceptual' and 'communicated through oral tradition or art-historical research'.[124] The prestige and meanings attributed to original works of art by arts curators today includes the authenticity of the work. Nowadays we are accustomed to viewing digital and print representations of artworks, much more so than in Benjamin's time. In the age of the infinitely reproducible and accessible image, Berger explains that an artwork, which has been popularized through extensive distribution, gains a status as 'the original of a reproduction' over and above the cultural context and content of the work.[125]

In an interesting correlation with the way actual landscape and representations of landscape are perceived as having a similar restorative effect, Knizek goes on to state that 'these [extra-aesthetic] features can be transmitted or transferred to reproductions by imagination.' Considering the popularity of reproductions of art (which in 2019 includes online gallery collections, print media, Pinterest and art images on merchandise) Knizek argues;

> We have to assume that the majority of art lovers get to know their works of art exclusively through their mechanical reproductions.[126]

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[123] Walter Benjamin, Michael William Jennings, and Brigid Doherty, *The Work of Art in the Age of Its Technological Reproducibility, and Other Writings on Media* (Cambridge MA: Harvard University Press, 2008).
[124] Ian Knizek, "Walter Benjamin and the Mechanical Reproducibility of Art Works Revisited," *British Journal of Aesthetics* 33, no. 4 (1993).361-362.
[125] Berger, *Ways of Seeing*.21.
[126] Knizek, "Walter Benjamin Revisited." 362.

The ability to access and reproduce artworks via the internet is instantaneous, which has broadened the audience of appreciation of visual art considerably. The cultural context of the viewer and the manner of encountering art influences the reception and experience of the artwork. This is a relevant point to consider when making the artworks, with staff and students viewing my artefacts in their everyday office environments, rather than in the rarefied space of a gallery. That the paintings are authentic originals, not mechanical reproductions, may encourage people to observe them more closely, even if they are not presented in optimum lighting or with the prestige and presence a gallery provides.

My own reflections on seeing original artworks in galleries, museums, hospitals, libraries and in people's homes, is that I tend to examine the work more closely if I know it is an original work. I look at the work up close and at a distance. Observation of the artwork involves movement, looking and thinking, the same 'sensorimotor skills' as looking at the actual scene, as Noë explains.[127] If another person is present, a discussion about the artwork, the materiality and meanings may ensue.

This brings me to the discussion of several Western artists who have influenced my practice-based research and some of their paintings studied at first hand; JMW Turner, the French Impressionists, Paul Cézanne, Clarice Beckett and Gerhard Richter. Artists associated with Impressionism included Claude Monet, Camille Pissarro, Pierre-Auguste Renoir, Charles-Francois Daubigny and Georges Seurat.

The late oil paintings and colour studies of JMW Turner (1775-1851) are less like his earlier landscapes (*View of Orvieto, Painted in Rome,* Figure 17) and more like experiences of weather depicted as colour and light. Surprisingly abstracted for their time, an example is *Sun Setting over a Lake* (Figure 18) which might not look at all out of place in a contemporary art gallery.

[127] Noë, *Action in Perception*.178.



Figure 17: JWM Turner, *View of Orvieto, Painted in Rome,* 1828-30, Oil paint on canvas, 914 x 1232 mm. Tate Collection. CC-BY-NC-ND 3.0 (Unported). Photo © Tate.[128.]

Preliminary colour studies (often referred to as 'colour beginnings') and watercolours such as *Bamburgh Castle, Northumberland* (Figure 19) evoke an essence of landscape and weather. These late works demonstrate Turner's experimentation and freedom of expression. The minimalism is inspiring, there is very little information provided, yet there is a sense of a horizon and landscape features. The late works evoke an experience of *being in* the elements. In *Sun Setting over a Lake* the scene is happening all around the viewer; we are immersed in an experience of a sunset reflection (Figure 18). I find that Turner's later, more abstract landscapes, strongly evoke what Kaplan terms 'fascination' and 'being away'. I would add that the paintings also inspire 'imaginative multiplicity' (see Section 2.4).

Always one to challenge conventions, in the 1840's Turner produced a series of square and circular paintings (such as *Dawn of Christianity (Flight into Egypt),* Figure 15). The compositions were considered radically different to the typical landscape or portrait format of the time. Seeing these works from the Tate Collection at first hand expanded my understanding of Turner's painting techniques, and influenced my semi-abstracted representation of landscape, use of bright light and circular pictorial compositions.

[128] JWM Turner, *View of Orvieto*, Painted in Rome, 1828-30. Oil paint on canvas, 914 x 1232 mm. Tate Collection Ref: N00511. Turner Bequest 1856. Photo © Tate. Creative Commons Licence CC-BY-NC-ND 3.0 (Unported).



Figure 18: JMW Turner, *Sun Setting over a Lake,* 1840-45. Oil paint on canvas, 911 x 1226 mm. Tate Collection. Turner Bequest 1856. CC-BY-NC-ND 3.0 (Unported). Photo © Tate.[129]



Figure 19: JMW Turner, Bamburgh Castle, Northumberland c.1837. Graphite and watercolour on paper, 459 x 769 mm. Tate Collection. Turner Bequest 1856. CC-BY-NC-ND 3.0 (Unported). Photo © Tate.[130]

Turner has been described as an innovator and an instigator of modern painting.[131] Art can change the way we see the world. Appreciation of landscape as a genre was also greatly influenced by the Impressionist movement in late nineteenth century France. Impressionism was, in its time, a revolutionary move away from the photo-realistic representations of traditional Western art

[129] JMW Turner, *Sun Setting over a Lake,* 1840-45. Oil paint on canvas, 911 x 1226 mm. Tate Collection Ref: N04665. Turner Bequest 1856. Creative Commons Licence CC-BY-NC-ND 3.0 (Unported). Photo © Tate.
[130] JMW Turner, *Bamburgh Castle, Northumberland* c.1837. Graphite and watercolour on paper, 459 x 769 mm. Tate Collection Ref: D36321. Turner Bequest 1856. Creative Commons Licence CC-BY-NC-ND 3.0 (Unported). Photo © Tate.
[131] Tate Tate Britain, *The Ey Exhibition: Late Turner, Painting Set Free*, ed. Amy Conncannon David Blayney Brown, Sam Smiles (London: Tate Publishing, 2014).8.

subjects towards stylisation and semi-abstraction of everyday scenes. Impressionism 'proposed bold new approaches to colour, composition, technique and subject matter, changing painting forever.'[132] The Impressionists' paintings are filled with light and colour.

Innovations such as developments in paint chemistry and portable paint tubes meant artists could work outdoors and travel to picturesque locations via the improved French rail network. Increased access to the countryside meant artists could more easily work on location, 'en plein air'.[133] This led to a renewed interest in landscape painting. Working outdoors enabled a more direct observation of landscape, which the Impressionists explored to great effect. The Impressionists depicted everyday events as they appeared, rather than using landscape as allegory for a religious narrative (Figure 20). Circumventing the traditional and photo realistic styles, the Impressionists developed self-expression, creating works of personally distinctive painterly abstraction. The Impressionists considered that 'light is both a dot and a blur', the camera (photography) captures the dot; the Impressionists' paintings represented the blur.[134] The attraction to blur may be because blur is part of the process of seeing; most of what is in the human field of vision is out of focus.



Figure 20: Paul Cézanne, *The Gulf of Marseilles seen from L'Estaque,* 1878-79. Oil paint on canvas, 580 x 720 mm. Collection of the Musée d'Orsay, Paris. (Copyright expired). Photo by the artist.[135]

[132] Kiesel Marine and Paul Perrin, eds., *Colours of Impressionism; Masterpieces from the Musee D'orsay* (Great Britain: National Gallery Singapore 2018).
[133] Ibid. Colours of Impressionism exhibition, AGSA April to July 29th 2018.
[134] Lehrer, *Proust Was a Neuroscientist*.100.
[135] Paul Cézanne, *The Gulf of Marseilles seen from L'Estaque,* 1878-79. Oil paint on canvas, 580 x 720 mm. Collection of the Musée d'Orsay, Paris. Colours of Impressionism exhibition, AGSA April to July 29th 2018. Copyright expired.

It is Paul Cézanne's *approach* to painting that I find inspiring. Cézanne took great pains to depict what the eyes see and the work the brain does to make sense of visual input. The paintings I will discuss here are *The Gulf of Marseilles seen from L'Estaque* and *Mont Sainte-Victoire* (Figures 20 and 21). Both works have colours applied as patchy marks which sit next to, rather than blend into each other. The earlier work is impressionistic, concerned with light and colour and being representative of the scene (Figure 20). In his later years Cézanne's art became more abstract and is associated with the Post-Impressionist. Cézanne built a studio in 1902 near Mont Sainte-Victoire. The mountain and valley became a regular subject of his paintings.



Figure 21: Paul Cézanne, *Mont Sainte-Victoire*, 1902–6. Oil paint on canvas, 572 x 972 mm. Collection of the MET, New York. (Copyright expired).[136]

Cézanne in his later years developed a new way of representing landscape, providing just enough for the image to be recognisable. The depiction of Mont Sainte-Victoire has very little detail and is almost geometric in its abstraction (Figure 21). The edges of the scene are quite indistinct, with a strong diagonal and horizon line directing the gaze inwards. The painting is reduced to how and what the eyes see (as discussed Section 3.2). Cézanne's later paintings are made up of patches of colour, without outlines, the colours and forms merge into each other, nothing appears in full focus. The eyes see the colours and forms, but the brain must then complete or make sense of Cézanne's purposefully reductionist paintings. Inspired by Cezanne's later works, my paintings are not concerned with fine details of a scene, rather an impression of landscape.

[136] Paul Cézanne, *Mont Sainte-Victoire*, 1902–6. Oil paint on canvas, 572 x 972 mm. Collection of the MET, New York. The Walter H. and Leonore Annenberg Collection. Ref: 1994.420. Copyright expired.

Another painter who depicted the world in semi-abstraction was Australian Clarice Beckett (1887-1935). Beckett, like the Impressionists, depicted everyday scenes in and around Melbourne in a signature soft-focus style. Familiarity with the Australian landscapes Beckett depicted is part of their appeal for me (Figures 22 to 24). The works which I am particularly drawn to were included in a survey exhibition and are often on display at the Art Gallery of South Australia and the National Gallery of Victoria: *Evening Light, Beaumaris* (Figure 22) and *Beach Road after the Rain* (Figure 23).[137]



Figure 22: Clarice Beckett *Evening Light, Beaumaris*, 1925. Oil on canvas on cardboard, 303 × 402 mm. NGV Collection. (Copyright expired).[138]

As a young female painter, Beckett was overlooked in her time due to her gender, choice of subject (ordinary suburban Melbourne and coastal scenes), the stylisation of her paintings and the alternative art movement she associated with (Australian Tonalism).[139] Beckett received very little critical notice until decades after her death when paintings were rediscovered in the 1970's.[140] The soft focus and diffuse outlines in Beckett's paintings evoke the low light and rain soaked streets of Melbourne in the mornings and evenings. The paintings are quintessentially Melbourne in the 1920's and 30's, yet Beckett's distinctive out-of-focus style means that the scenes bring to mind other Western cities of that era. Working predominately outdoors, walking the suburbs and pulling a cart made by her own hand, Beckett's paintings are by necessity portable. The small scale of her

[137] *Misty moderns: Australian Tonalists: 1915–1950,* Art Gallery of South Australia, 21 Feb-27 April 2009.
[138] Clarice Beckett *Evening Light, Beaumaris*, 1925. Oil on canvas on cardboard, 303 × 402 mm. NGV Collection. Ref: A3-1989. Copyright expired.
[139] Rosalind Hollinrake, *Clarice Beckett: Politically Incorrect*, Ian Potter Museum of Art, University of Melbourne (Parkville, Victoria1999).8-9. Copyright expired.
[140] Tracey Lock-Weir, "Misty Moderns: Australian Tonalists 1915–1950," (Adelaide: Art Gallery of SA, 2008).

paintings creates a sense of intimacy which influenced the scale of my works for Study 1. I began my painting explorations by working on a similar small scale, using a soft-focus effect. Working with acrylic paint, which dries much more quickly than oils, necessitated the development of painting techniques to achieve this atmospheric effect.



Figure 23: Clarice Beckett, *Beach Road after the Rain,* 1927. Oil on cardboard, 357 × 255 mm. NGV Collection. (Copyright expired).[141]



Figure 24: Clarice Beckett, *Summer Fields,* 1926. Oil on board, 244 x 340 mm. (Copyright expired).[142]

A contemporary artist renowned for the conceptual use of diffused focus is Gerhard Richter. Known for his versatility, Richter works with visual media from photography to paint, to painting on

[141] Clarice Beckett, *Beach Road after the Rain,* 1927. Oil on cardboard, 357 × 255 mm. NGV Collection. Ref: A1-1984. Copyright expired.
[142] Hollinrake, *Clarice Beckett: Politically Incorrect*.52. Copyright expired.

photographs, to digital representations of paintings (Lithograph prints) to digital manipulations of abstract paintings (Rorschach techniques) to random experiments in materiality; for example trapping paint between sheets of glass. Richter paints pictures of photographs, using painting to reflect on the imagery and processes of mechanical reproduction. The prolific ability that Richter has to create landscapes and portraiture as well as abstract expressionist paintings is intense and refreshingly honest.



Figure 25: Gerhard Richter, *Meadowland,* 1986. Oil paint on canvas, 905 x 949 mm. Collection: Museum of Modern Art , New York, USA. © Gerhard Richter 2019 (09102019). Photograph by author.[143]

Richter's diverse practice draws attention to the fact that artists may have many preferences, styles, skills and moods. I am particularly drawn to Richter's use of blur in his paintings. For instance *Meadowland*, appears to be a slightly out of focus large format photograph, the rendering is so precise (Figure 25). Yet if you see the original work, you will be aware that it is an oil painting, which increases the sense of fascination and engagement. The blurred quality gives a subtle, soft-focus effect reminiscent of the work of Australian artist Clarice Beckett. The charm and magnetism of this misty blur is that the image is somewhat ambiguous. The place depicted references a specific

[143] 'Gerhard Richter: the Life of Images' retrospective exhibition at GOMA, Brisbane, Australia, 14 Oct 2017-4 Feb 2018.

location, and yet it may call to mind associations from many different places and experiences of being outdoors, looking at landscape (see also Figures 26 and 27).

Ambiguity allows for multiple readings or interpretations and evokes in the viewer the aspects of a restorative environment: fascination, extent, being away and if we consider the image life-sustaining, familiar and/or aesthetically pleasing, the landscape is also compatible. Note that only one characteristic of what constitutes a restorative image is related to aesthetic taste; compatibility. Something that is not compatible with one's aesthetic taste can be fascinating; an example being shock art.[144]

The development of photography enabled artists like Gerhard Richter to paint from photographs rather than 'en plein air'. Indeed Richter paints almost exclusively from photos as a critique of the mediation and reproduction of images. Richter paints from photographs, on photos and has had lithographic reproductions made of oil paintings (lithography depends on photographic processes).



Figure 26: Gerhard Richter, *Canary Landscape,* 1970. Oil paint on canvas. 120 x 150mm Collection: IVAM, Institut Valencia d'Art Modern, Generalitat, Spain. © Gerhard Richter 2019 (09102019).[145]

Photographs also make up the majority of images in Richter's *Atlas*, a series of artist's journals and a reference for artworks. The *Atlas* is a collection of photographs, sketches and found images which

[139] Shock art is a term used to describe contemporary art that intends to provoke a disturbing experience.

[145] Rosemary Hawker, *Gerhard Richter: The Life of Images* (Brisbane, Australia: Queensland Art Gallery, Gallery of Modern Art, 2017).126.

are often exhibited via reproduction. *Rooms* is Richter's exhibition design for a series of canvases simulating gigantic windows, bringing the experience of a horizon view to sea and sky into the gallery (Figure 28). Photography is a convenient means of documenting a moment of light to make a representation of a scene, to paint works such as these *Rooms.* Landscape photography is a genre of contemporary art, however not the focus of my study.



Figure 27: Gerhard Richter, *Seascape,* 1975. Oil paint on canvas, 200 x 300mm. Froehlich Collection, Stuttgart, Germany. © Gerhard Richter 2019 (09102019). [146]

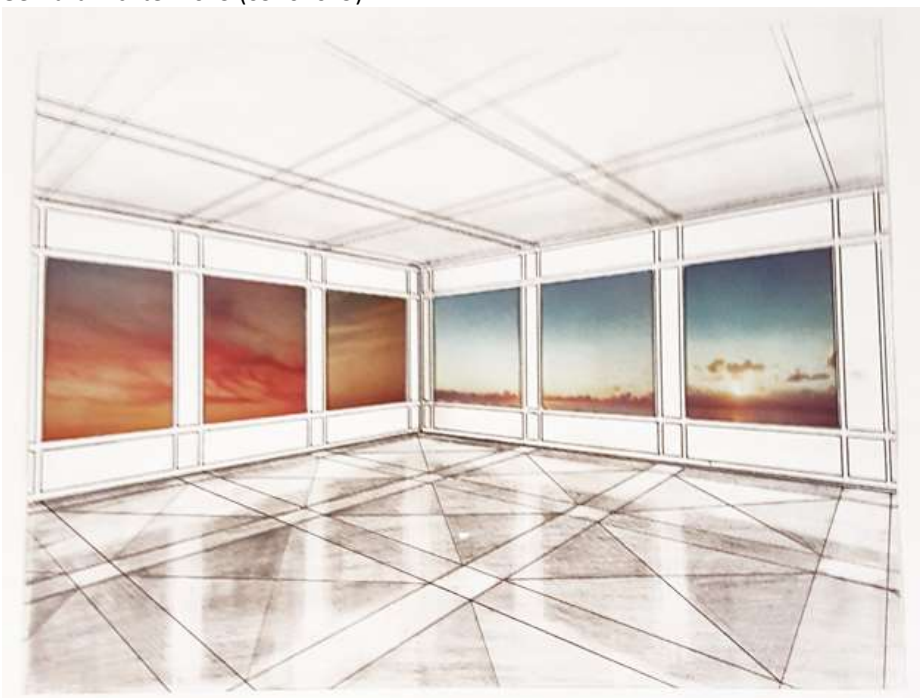

Figure 28: Gerhard Richter *Räume* (*Rooms)*, *Atlas*, page 232, 1970. Photograph by author. © Gerhard Richter 2019 (09102019).[147]

[146] Ibid.115.

Richter's approach to landscape painting has been described as 'the capture of a sliding glance'. [148] Recalling Noë's concept of perception being a moving process, my soft-focus or blur paintings aim to embody this sense of seeing and moving and were inspired by first-hand observation of Richter's work.

An interesting research project about landscape paintings with a very different perspective is Komar and Melamid's 'Painting by Numbers'.[149] The project was a study of cross-cultural aesthetic preferences for landscape art in ten countries. [150] The pair made composite paintings from the statistics gathered to represent the painting deemed most preferred for each nationality. When these averaged preferences per country were composed into one painting to represent each nationality, the ridiculousness of painting from the data can be understood (see Figure 29).

The experiment is better described not as painting by numbers, but painting by committee. Although intentionally satirical in approach, the research did highlight some interesting findings. The people surveyed were from diverse cultures, both Eastern and Western, yet there was a significant preference for landscape images over all other genres. The most preferred landscape images have a ratio of around forty percent blue (sky and/or water), familiar scenery and included local species (Figure 29).

It is worth mentioning the 'Painting by Numbers' study, for two reasons; firstly the findings support preference for life-sustaining landscapes in the literature from evolutionary biology and environmental psychology, and secondly, it is a large-scale, multi-country survey on aesthetic preferences for landscape *paintings.* The study reveals characteristics of art people like to look at. The surveys expressed this as an average of data from the ten countries. The paintings which resulted from this averaging of tastes were not aesthetically pleasing, resembling advertising imagery, designed to appeal to the masses. Art is not made by a committee. There is an interaction between the individual artist and something external; a subject, a concept, a technical process and/or the materials. The tacit knowledge and insights of engaging with art making processes are discussed in Section 5.5 and 5.6.

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[147] 'Gerhard Richter: the Life of Images' retrospective exhibition at GOMA, Brisbane, Australia, 14 Oct 2017-4 Feb 2018.
[148] Koch, "The Richter-Scale of Blur."136.
[149] Komar, Melamid, and Wypijewski, *Painting by Numbers : Komar and Melamid's Scientific Guide to Art*.
[150] Ibid.89.Countries surveyed: China, Denmark, Finland, France, Iceland, Kenya, Russia, Turkey, Ukraine and the United States

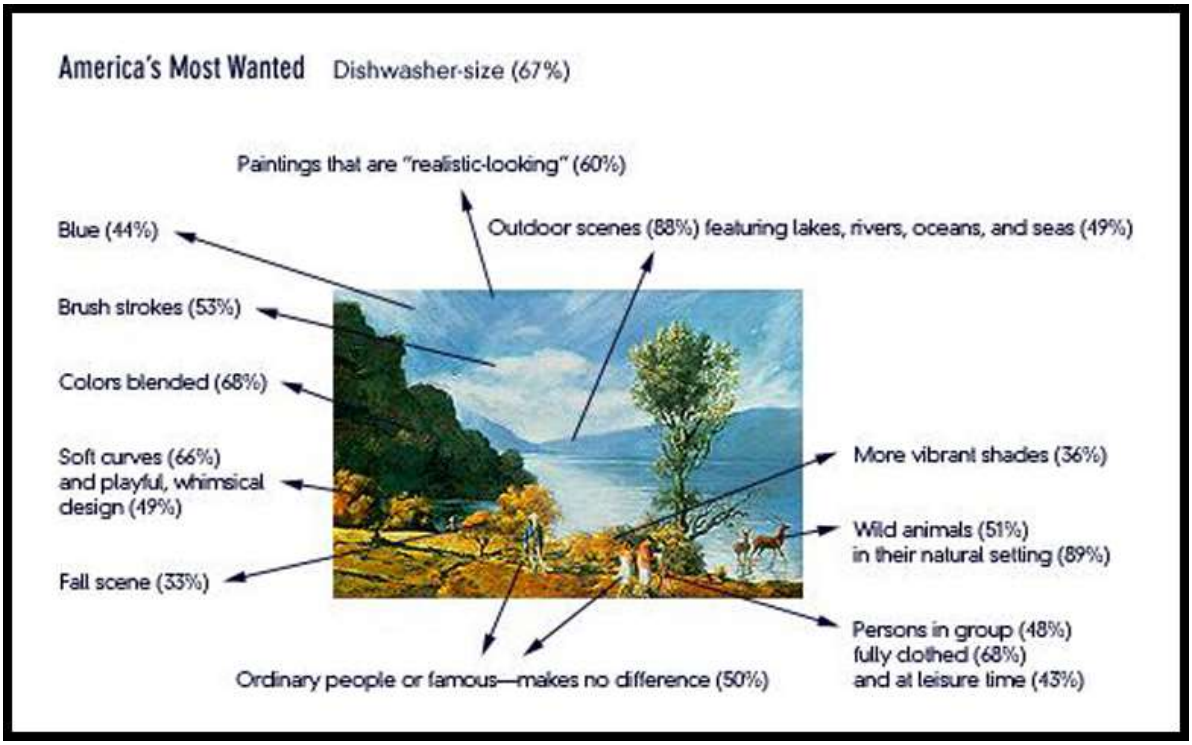

Figure 29: Vitaly Komar and Aleksandr Melamid, *America's Most Wanted*, in *Painting by Numbers,* 1999.[151]

In this Section I have discussed a few exemplary painters whose semi-abstract depiction of landscape has inspired my practice-based research. My research aim is to consider the restorative potential of landscape art and to create representations of life-sustaining landscape. The intended location or context of the work (windowless spaces) and the manner of installation are contributing factors. As observed by health care design expert Roger Ulrich;

> The decisive criterion for health care art is whether it improves patient outcomes, not whether it receives praise from art critics and artists or approaches museum standards for quality.[152]

The next Chapter on methodology contextualises the research approach and motivation for using the Attention Restoration framework in visual arts practice. It is followed by two Chapters describing the Study design, art methods and results.

[151] Ibid.7. Permission to use image in an academic thesis granted by publisher Sterling Lord Literistic, Inc. on 27 Sept 2019.
[152] Roger S Ulrich, "Effects of Viewing Art on Health Outcomes," *Putting Patients First: Best Practices in Patient-Centered Care* 2 (2009).131.

Chapter 4 Methodology and Methods

The Methodology Chapter is dedicated to the research approach and design of the three Studies. Practice-based research is the overarching methodology in this multidisciplinary project (see Figure 3, page 7) and is described in Chapter 5. The results of the Studies are summarized in Chapter 6. The aim of the research is to investigate and produce landscape artworks, in order to determine through consultation how the presence of art in windowless offices can contribute to attention restoration. The methods employed to address the research question are creative art practice, three sequential Studies involving staff and students in their work places, surveys and a written exegesis with literature and artefact contextualization.

Australian Physicist, Tanya Monro, defines multidisciplinary research as involving 'the application of tools from one discipline to questions from other fields'.[153] In this instance, the methodological approach involves a framework from environmental psychology, Attention Restoration Theory, applied to visual arts practice-based research, in conjunction with methods from design/urban planning and health sciences. The artist's auto-ethnographic viewpoint is complemented by concepts and quantitative and qualitative approaches from other disciplines. The perspective of the researcher oscillates between one of a practicing artist to that of the researcher undertaking consultation and considering responses to the artworks.

Multidisciplinary creative research has been around for a while. As Messer argues, interdisciplinary genre blurring in practice-based research has occurred since the 1980's.[154] Yet it is the particular *combination* of disciplines, methods and questions in any project that can lead to a shift in the practice-based research, and may lead to new and unexpected outcomes (Figure 30: Diagram of Methodology). In this case, researching ART, biophilia, evidence-based healthcare design, restorative effects of nature, attentional states, visual perception and Western landscape art, has influenced the research trajectory. These ideas changed my understandings of art and landscape and what occurs when we engage with landscape art, prompting my focus on the restorative potential of art.

[153] Monro, Tanya. Research does solve real-world problems: experts must work together to make it happen. *The Conversation*. September 8, 2017 accessed 2.59pm AEST https://theconversation.com/research-does-solve-real-world-problems-experts-must-work-together-to-make-it-happen-42824

[154] J Messer, "Practicing Interdisciplinarity," *TEXT*, no. 14 (2012).

Figure 30: Diagram of the practice-based research process and methods. Diagram by the author.

An applied approach to academic research is variously described as action research, knowing-in-action or reflective practice. The importance of knowledge gained from engaging in processes, 'tacit knowledge that their practitioners usually cannot describe' is something that Schön takes pains to emphasize.[155] The experience of practice-based art research is a process of working with ideas, materials and techniques. Similarly Gray describes it as 'reflection-in-action', a cyclic and iterative process (as illustrated in Figure 30).[156] Practice-based research is, as Sullivan describes, 'discovery orientated'; concerned with interpretations rather than numerical analysis.[157] Art making involved a cyclic process of critical reading, making, data collection, analysis, reflection and innovation.

As artist/researcher I used the ART framework as a set of guiding parameters for the conceptualisation of the landscape artworks. As discussed, ART explains that certain landscape views have a reviving effect for cognitive abilities. Directed attention tires easily yet is restored when engaging with landscape by activating another attentional state; involuntary attention (see Section 2.2). Like a public art or commission brief the four criteria of ART as defined by Kaplan (fascination, compatibility, extent and being away) shaped the creative choices and processes used to develop iterations of landscape paintings.

Implementing ideas from visual aesthetics, biophilia, and Kaplan's concepts of ART, I developed a series of restorative landscape paintings. The original paintings were installed in real organisations, with people going about their daily work or study tasks. The landscapes were placed in windowless offices (*n* = 17, time = 4 weeks) and a lecture theatre foyer (*n*=74). The benefit of engaging with actual workplaces is that most Attention Restoration studies simulate the setting, the work tasks and/or the nature imagery. Staff and students were going about their actual tasks in real work spaces which were lacking window views to nature and typically had clean-wall policies in place. 'Context is half the work' is the motto of the socially engaged Artist Placement Group (APG), based in the United Kingdom.[158] An avant-garde group from the 1960's and 70's, APG placed themselves within industries to demonstrate that other 'non-art' knowledges, disciplines, materials and approaches are relevant to art making and vice versa. Recognising the influence of context resonates

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[155] Donald A Schön, "Knowing-in-Action: The New Scholarship Requires a New Epistemology," *Change: The Magazine of Higher Learning* 27, no. 6 (1995).34.
[156] Carole Gray, *Visualizing Research: A Guide to the Research Process in Art and Design*, ed. Julian Malins (Burlington: Ashgate, 2004).22.
[157] Graeme Sullivan, *Art Practice as Research: Inquiry in the Visual Arts* (Thousand Oaks, Calif: Sage Publications, 2005).192.
[158] APG 'Context is Half the Work, a Partial History of the Artist Placement Group', 1966-1980's, Pub: 3 August– 5 October 2016. Website accessed Sept 21, 2018. Principal artist: Barbara Steveni.
https://en.contextishalfthework.net/about-apg/artist-placement-group/

with my situated research project. Staff and student responses to open-ended questions shed light on real issues about work places and work practices, while monitoring the positive effects of landscape art in the office.

In my art practice, the audience has been, for the most part, one that encountered my works outside of a gallery space. Locating art in everyday environs was a primary motivation for investigating the viewers' experience of the work. In a predominately project-driven art practice, it was a pragmatic decision to seek input from the public to inform current and future work in health environments, schools and workplace settings.

4.1. Methods

The research used a hybrid set of methodologies: practice-based research, an intuitive and aesthetically driven visual art making process, and consultation methods, a Cultural Probe and surveys. The art practice involved making semi-abstract representations of landscape. To allow time for evaluation, reflection and iterations of art making, the three Studies were scheduled six months to one year apart (from 2016 to 2018). For practicality of installation in rooms, artworks were predominately medium sized paintings (250 to 800 mm wide). The paintings were developed for each Study, and in Study 3 the paintings presented were as installations. In making the work, I experimented with landscape format and the stylisation of the paintings. Forms evoked telescope views, a series of windows, skylights or holiday photo montages, as well as the more typical rectilinear landscape composition. The paintings produced during the project are discussed in Chapter 5.

The term 'windowless room' refers to an interior room which has either no windows at all, windows that are internal without a view, windows that are frosted over or otherwise do not afford a view to nature, the sky or foliage. Over 90 participants working or studying in windowless spaces were surveyed at three university campuses and a hospital. The Studies were descriptive in nature and did not involve inferential statistical analyses, so the sample does not aim to be representative of the population.[159] A control condition was not included as the concern was with the context and perspectives of individuals. The Studies were situated in organisations with participants going about their everyday work tasks. The three Studies were designed and conducted under the guidance of Population Health Scientist Dr Catherine Paquet.

[159] Descriptive statistics is the analysis of data to outline patterns and summarise a data set. Inferential statistics takes a randomized sample set of data from a population, using this to make generalizations for the broader population.

For the first two Studies, I utilized a user-centred consultation tool, the Cultural Probe. Developed by William Gaver and other researchers, the Probe elicits comprehensive insights about design innovations from sample groups.[160] Probes are customized for different applications or locations such as testing product prototypes, new technologies, and public transport or infrastructure improvements.[161] The Cultural Probe typically consists of a personal journal with open-ended questions, set tasks and a camera. I adapted the Cultural Probe to collect viewer perceptions about landscape artwork and attention restoration (Figure 31). An artwork can be like a Cultural Probe, in how it affects people, by stimulating personal insights and responses (see Section 4.1.2). The benefit of using the Cultural Probe was also its challenge. A probe generates a lot of qualitative feedback for analysis. A coding framework was developed and data was co-coded (Appendices 1 and 2). It is noted in the literature that few Studies provide a qualitative analysis of employee reactions to art in the workplace.[162] Study 3 involved a series of artworks installed in a lecture foyer space. Students fatigued by attending a lecture completed an online survey in the foyer (*n*=74).



Figure 31: Cultural Probe kits from Studies 1 and 2; a landscape painting (Figures 32 and 33), a mobile phone camera and a journal with questions about the artwork, fatigue and work focus. Photograph by author.

[160] Bill Gaver, Tony Dunne, and Elena Pacenti, "Design: Cultural Probes," *Interactions* 6, no. 1 (1999).
[161] Tuuli Mattelmäki, "Applying Probes–from Inspirational Notes to Collaborative Insights," *CoDesign* 1, no. 2 (2005).
Andy Crabtree et al., "Designing with Care: Adapting Cultural Probes to Inform Design in Sensitive Settings" (paper presented at the In OZCHI2003: New Directions in Interaction. Proceedings of the 2003 Australasian Conference on Computer-Human Interaction, Brisbane: University of Queensland, 2003).
Susanne Schmehl et al., "Directed Cultural Probes: Detecting Barriers in the Usage of Public Transportation," in *Human-Computer Interaction–Interact 2011*, ed. Nicholas Graham Pedro Campos, Joaquim Jorge, Nuno Nuews, Philippe Palanque, Marco Winckler (Heidelberg: Springer, 2011).
[162] Smiraglia, "Artworks at Work: The Impacts of Workplace Art."285.

4.1.1. Application of the Framework

The reflective and iterative processes of the practice-based research are illustrated in Figure 30 and in a poster presentation (see Appendix 13).[163] For each of the three Studies I created landscape paintings which were installed in offices and study spaces for a month. During the course of each Study the participants were consulted on their levels of focus, mental fatigue, stress and engagement with the artwork. Questionnaires are included in Appendices 3 to 6.

Applying Kaplan's ART criteria to the conceptualisation of artworks was challenging. I approached this like an art commission brief; the works were conceptualised in response to the four characteristics of a restorative environment: fascination, being away, extent and compatibility. This is expanded on in Section 5.1: ART Framework and Conceptualisation of Artworks.

4.1.2. The Work of Art as a Cultural Probe

The research methods involved designing a Cultural Probe kit, adapted for this research project. The kit is made up of a personal journal with open-ended questions or tasks inscribed, and often accompanied by a map or camera (Figure 31). A Cultural Probe kit is used to trial new products or services with end-users over time (see Section 4.1). In my project the work of art is, in itself, also acting as a Cultural Probe. The paintings are an intervention in work places: offices, study spaces and a lecture foyer. The participating staff and students engage with and respond to these artworks. The artworks stimulate thoughts, feelings and associations; qualitative data which were collected over the course of a month.

The subjectivity of viewers is a key consideration to answering the research question: how may landscape-themed art reproduce the restorative effects of nature for individuals in a nature-deprived environment? Gaining a diversity of personal interpretations from viewers is a vital part of the process of testing the research argument. A Cultural Probe is, by intention, a research tool which values the subjective insights and interpretations of the viewer/participant. Referring to his ethnographic observations, Gaver explains;

[163] Research poster presentation at the Australian Society for Medical Research's National Science Conference, Adelaide, November 2018.

> Most research techniques seek to minimize or disguise the subjectivity of the research process…Probes purposely seek to embrace it.[164]

An artwork can be like a Cultural Probe, in how it affects people, allowing the viewer to develop personal responses. To record the effects an artwork has on viewers and have the artwork functioning as part of a Probe, has not, to the best of my knowledge, been done before. The work of art as a Cultural Probe can thus be considered a methodological innovation.

The representations of landscape depicted: Flinders Ranges, Adelaide Hills and farmland; may be landscapes familiar to the Study participants, who were all residing in South Australia. Commonalities of cultural context between an artist and the viewers may lead to comparable meanings and interpretations of the artwork. This is an interesting point which is tested by having the work of art as a Cultural Probe.

4.2. Study 1

The first Study was conducted at individual office sites over two university campuses in the central business district of Adelaide, South Australia (*n*=9). Participants in the Study satisfied the inclusion criteria: adults (over 18 years of age), with a dedicated office or study space (hot-desking was excluded), the room had either no window or no window view and the participant had access to an email account and mobile phone camera. Interiors with window views of a wall or opaque glass panels overlooking another room were included as they satisfied the criteria of having no view to nature. At the installation meeting, each participant had an induction to the Study and selected from a series of three to four landscape paintings. The paintings were small, circular semi-abstract works using a blurred painting technique (see Figures 2, 11 and 32, also Appendix 15). The landscapes were painted with reference to places in South Australian the artist had visited in person.

[164] William W Gaver et al., "Cultural Probes and the Value of Uncertainty," *Interactions* 11, no. 5 (2004).50.



Figure 32: B. Minuzzo, *The Road to Blinman,* 2017. Study 1, a windowless open plan office at a university with landscape painting installed in a purpose-built frame and Cultural Probe journal on the desk. Photograph by author.

The situated Study investigated the effect on the occupant of placing a landscape painting in their windowless office (Figures 32 and 46, in Section 6). The participant was consulted as to the placement of the painting, to ensure a clear view of the artwork when participants looked up from their computer monitors. The paintings were left in each workspace for the duration of the Study (four weeks). Consultation methods included a personal Cultural Probe journal (Figure 31 and Appendix 3), a pre/post mental wellbeing survey (Appendix 4) and a focus group session a few months after the Study was completed. Recruitment of participants: administrative staff, PhD candidates and early career researchers, was conducted in accordance with human ethics protocols, as outlined in Section 4.6.

Demographic data and information about workplace environments were recorded. Factors included office type, presence of decorative elements or plants in the space and hours at work. Pre and post measures were collected for mental focus, fatigue and stress. In my Studies I heeded Stephen Kaplan's advice and included separate measures for mental fatigue and stress levels.

Participant responses to the artwork included the number of times the participant looked at the painting during the day, any memories or associations triggered by the landscape painting and other insightful responses to open-ended questions. The Cultural Probe tasks and questions are documented in Appendices 3 to 5. Restorative effects were ascertained by open-ended questions referring to the ART criteria of being away, fascination, compatibility and extent (Section 5.1.1 to 5.1.4). The consultation process involved a weekly email from the researcher to remind participants of the week's three tasks and to prompt the completion of any unfinished tasks. At the end of the Study an individual appointment was made to collect the Cultural Probe Journal and the artwork. At this meeting the participant completed a post project mental wellbeing survey, the Warwick-Edinburgh Mental Well-being Scale (WEMWBS).[165]

4.3. Study 2

The second Study was conducted at individual sites at a hospital and a university 12 km from the centre of Adelaide, South Australia (*n*=8, time=4 weeks). The situated Study investigated the effects on the occupant of placing a window-sized or panoramic 'blur' landscape painting in their windowless office (Figures 33 below and 51, in Section 6.1.6, also Appendix 15). The recruitment of participants: teaching, nursing and administrative staff, was conducted according to human ethics protocols, as outlined in Section 4.6. The consultation methods were identical to Study 1; a personal Cultural Probe journal and a pre/post mental wellbeing survey (Appendices 3 to 5) followed by a focus group session several months after project completion. Data were collected from the participants as outlined in Study 1; weekly email reminders to each participant prompted the completion of tasks.

[165] WEMWB survey was commissioned by the Scottish Government's National Programme for Improving Mental Health and Well-being, NHS Health Scotland, University of Warwick and University of Edinburgh, 2006. (Appendix 4) Permission granted on 4/11/2016 to use the survey for two years for up to 30 adult participants.



Figure 33: B. Minuzzo, *The Ranges,* 2017. Acrylic on board, 800 x 450 mm. A landscape painting installed in a hospital office without windows, Study 2. Photograph by author.

4.4. Study 3

The third Study was conducted at a university campus in the Adelaide CBD, the site being a lecture theatre foyer. The foyer has seating and is considered a break-out space. Study 3 differed from the earlier two Studies with a public location rather than an individual office, the consultation method entailed a short online survey, the sample size was significantly larger and engagement was brief compared to the earlier Studies. In Study 3 the curation of the artworks took into consideration the distinctive interior architecture of the foyer. Three series of artworks were presented in one large foyer space: *Myriorama, Portals* and *Fields of View* (see Figures 34 and 35, also Appendix 15).

The Study involved participants having a mentally fatiguing event (attending their tertiary course work lecture of one to two hours), followed by a short period of engaging with the landscape artworks and completing the survey (from 2 to 20 minutes). Due to some reluctance by participants to use the online survey via a QR code, a printed version was also offered. The survey consisted of a quantitative question (yes/no or a ranked scale) often followed by an open-ended question on the same theme. The survey responses were coded according to the themes, sub-codes and parent themes in the coding framework used for Studies 1 and 2.



Figure 34: B. Minuzzo, *Myriorama Series*, 2018. Each panel is 500 x 700 mm. Acrylic paint on card. Study 3, a university lecture theatre foyer and student break-out space. Photograph by author.



Figure 35: B. Minuzzo, *Portals* and *Fields of View,* 2018. Acrylic on paper and board, timber frames. Dimensions vary. Study 3, university lecture theatre foyer/student break-out space. Photograph by author.

The participant group was comprised of undergraduate student volunteers attending a lecture on campus.[166] The sample group of 74 students was engaged for two to twenty minutes after their lecture. Data collected included demographic information, subject of lecture, stress and mental fatigue levels pre and post looking at the artwork, recent caffeine intake, sleep quality, the participant's reflective responses to the artwork and memories or associations triggered by the landscape painting. Restorative effects were determined by yes/no and open-ended questions (Appendix 6: Online Survey) referring to the ART criteria of being away, fascination, compatibility and extent (Section 5.1.1 to 5.1.4).

4.5. Evaluation Processes

The Cultural Probe data required different evaluation processes. Quantitative data were analysed with SPSS software under the guidance of an experienced population health scientist, Doctor Catherine Paquet. Qualitative Probe journal and survey responses were analysed using thematic analysis. Recurring themes were initially highlighted using Affinity diagrams. NVivo software was trialled but was deemed too cumbersome. A manual coding system was developed in Excel. A coding framework was devised by looking at key themes such as hours worked, stress, fatigue/focus, looking/noticing/engagement, memories/associations, appreciation/familiarity, relaxed/calm and décor policies/preferences. These themes were grouped into a sub code; working day, work pressures, socialisation, issues, fascination, being away, compatibility, extent and multiple readings. Parent codes were developed to encapsulate these secondary categories; work environment, restorative effects, imaginative multiplicity and unintended effects. The coding framework was trialled for Study 1 and underwent revision for the second Study. Study 1 was subsequently recoded. For consistency of analysis data were co-coded by Doctor Catherine Paquet.

4.6. Ethics Protocols - Research with Human Subjects

Protocols and permissions were obtained for the research: Ethics approval from the Human Research Ethics Council, University of South Australia (HREC Protocol No. 0000034973) and Site Specific Access clearance for undertaking consultation at the hospital. Permission was granted to use the WEMWBS a pre/post mental wellbeing survey.[167]

[166] The coursework lectures were in anatomy, pharmacology, business, accounting, law, university studies, marketing, communications, critical thinking and sustainable design. Lectures on visual arts and landscape themes were excluded.
[167] WEMWBS is a University of Warwick and University of Edinburgh Mental Wellbeing Survey (Appendix 4).

The participant recruitment process involved Human Research Ethics clearance and organisational permission, consent from University Departmental Heads of School, teaching staff and from individual participants. Initial evaluation of the data was presented to participants in Studies 1 and 2 at follow-up focus group meeting and discussion. Secure storage and of the data was ensured. Participant data was de-identified for analysis and reporting. Each participant was assigned a number.[168] Supporting documentation: Human Research Ethics approval, Site Specific Access approval, participant consent forms and information sheets, are located in the Appendices.

[168] Study 1 is coded S1_1 to S1_9. Study 2 is S2_10 to S2_18. Study 3 is coded S3_1 to S3_74.



Figure 36: B Minuzzo, *Untitled*, 2017. Watercolour on card. Material investigation, cutting and reconfiguring horizons. Dimensions vary. Photograph by author.

Chapter 5 Art Practice Methods and Artefacts

The following is an outline of the practice-based research process, the adoption of the Attention Restoration Theory (ART) framework and how this and other knowledge gleaned from the literature influenced the conceptualisation of the artwork. Drawing on ideas from environmental psychology and evolutionary biology provided a novel means to explore the genre of landscape painting. The researcher's auto-ethnographic viewpoint is complemented by quantitative and qualitative approaches from social sciences. The research perspective is one of an artist making and reflecting on artistic practice and a social scientist consulting and considering viewers' responses to the artwork. The multidisciplinary approach provided new ways of thinking about art and landscape.

> How will you go about finding that thing, the nature of which is totally unknown to you?[169]

The notion central to Solnit's book, of getting lost in order to realize new work, was influential in the development of my practice-based research. Author Rebecca Solnit acknowledges the phrase; attributed to Plato's Meno, is misquoted. Yet it was a catalyst for her to embrace a state of uncertainty whilst exploring landscape, art and memory. I often revisited 'A Field Guide to Getting Lost' to remind myself that a period of indecision can lead to new knowledge. In this research project I took up the challenge to work in a new medium and genre, landscape painting, as a way to explore the unknown (see Figure 36). Approaching painting with little formal training allowed opportunities for discovery. Selecting the medium appropriate for the creative concept at hand is typical of my approach to project-based arts practice. Although medium diversity can be a challenging way to work, it can also be creatively stimulating and generative. Uncertainty *is* the territory of art practice; the voyage into the unknown *is* the process of making new work. As Solnit says:

> It is the job of artists to open doors and invite in prophesies, the unknown, the unfamiliar; it's where the work comes from.[170]

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[169] MENO as quoted by Rebecca Solnit, *A Field Guide to Getting Lost* (Edinburugh: Canongate Books, 2006).3.

The creative process is one of letting instincts guide manipulation of materials, and listening to gut decisions that cannot be explained but *feel* right. This embodied or 'tacit knowing' can lead to new creative work.[171] A degree of courage and commitment is essential when making art and embracing this uncertainty.

To navigate the making of the work with respect to the research enquiry I drafted an assemblage of ideas, interests, influences, directions and intents of possible artworks and processes. Within the territory initially staked out by this assemblage, painting techniques were not predetermined. Room was allowed for discovery, for the ideas and art to evolve through the process of research, making and reflection. The auto-ethnographic reflection on my experiences of working and studying in windowless spaces informed early experiments in creating nature-themed artworks

Adhering to specific parameters or constraints of site and context is something I am accustomed to, coming from a project based, public art background. The project Studies required an understanding of how people, places and other non-art factors interact. As discussed in Chapter 4, the context of where the artworks were located, in everyday office spaces, was a part of the work. The subject matter, horizon views of landscape, was chosen as the artworks were intended to substitute for the participants' lack of window views and to provide a prospect. Locating artworks temporarily within personal work space necessitated a conservative approach to the choice of art form, so that the works were recognised as art by the general public. Two dimensional paintings were also easy to install and remove.

The artwork needed a presence within the work spaces without being obstructive, oppressive or intrusive. My focus is on the restorative aspects of nature, the biophilic (attraction to life, the life-like and life-sustaining things) and recuperative effects on the individual, as discussed in previously Chapters 2 and 3. Rather than the biophobic, fear inducing elements of nature, which can cause adverse reactions. Context, installation restrictions, biophilia and the framework of ART informed the conceptualisation of the work. The aim was to provide a landscape painting as a restorative moment in people's contemporary state of preoccupied, distracted being and seeing.

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[170] Ibid.5.
[171] Estelle Barrett and Barbara Bolt, *Practice as Research: Approaches to Creative Arts Enquiry* (London: I.B. Tauris, 2014).34.

5.1. ART Framework and Conceptualisation of the Artworks

The multidisciplinary approach was a real transition in my practice-based research, affording an appreciation of landscape art from an environmental psychology viewpoint. Responses from Study participants provided insights into how people engaged with, and interpreted the paintings. Exploring landscape art from the perspective of nature connection and restorative effect provided a new way of thinking about landscape representation. In the next Section, each ART criteria is discussed in turn, to show how it influenced the conceptualisation of the artworks. Examples of viewers' comments and responses are coded and collated according to ART characteristics, in Chapter 6: Results of the Studies.

5.1.1. Fascination; an absorbed interest

To stimulate absorbed interest, the objects of the Study are original hand-painted scenes of South Australian landscapes. The landscapes depict horizon views (see Prospect Refuge Theory, Section 2.3) and are painted with bright, daylight hues, suggesting biophilic preferences for fresh air and clean water (Figure 10). A technique of blurring the paintings made these works representative, rather than descriptive of one specific place (Figure 39 and 40). Non-traditional landscape formats; circular forms, series and multi-image works, provided another point of interest for many of the paintings.

5.1.2. Being Away; a momentary release from a prior mind state

A landscape picture, as a representation of another place, can transport the viewer through memories and associations. A landscape can evoke the sense of 'being away', a momentary release from a prior mind state. Being away can be a 'conceptual shift' rather than purely a physical relocation.[172] To increase the 'being away' effect, I worked with semi-abstract imagery, to add ambiguity, and suggest a view seen when moving or turning the head, like Richter's 'sliding glance'[173] (Section 3.3, Figures 25 to 27).

[172] Kaplan, "The Restorative Benefits of Nature."173.
[173] Koch, "The Richter-Scale of Blur."136.

5.1.3. Extent: the scene appears to be a whole other world

The paintings were predominately of views to the horizon, to simulate a window view and provide the sense of a whole other world. Another way I addressed the criteria of extent was by experimenting with a series of framing devices: circles (Figures 2, 6, 11 and 37), panoramic views (Figures 5, 9, 14 and 33) and by presenting multiple paintings together to create a more extensive image (Figures 38 and 41 to 44). Participants associated the circle-shaped landscapes as a window or lens akin to ship windows or a telescope view.

5.1.4. Compatibility; congruence with the viewer's preferences

Compatibility was a difficult aspect to address. Aesthetic appreciation is culturally and individually subjective. In other words, people like different things. The Studies were conducted in South Australia and, as familiarity contributes to compatibility, I made paintings which referenced local South Australian landscapes. Biophilic design identifies a cross-cultural preference for blues and greens colours in nature imagery, so I used a palette of these colours, referenced from local landscapes. The literature from environmental psychology identifies cityscapes as negatively associated with attention restoration. With this in mind I painted scenes of wild untouched places, devoid of buildings and people, as in the landscape traditions of the Romantic Movement and its engagement with the Sublime. In order to pre-empt any prejudices or aversions that representations of humans or animals might evoke in viewers, my paintings are devoid of people and creatures. To further promote compatibility, the participants in each Study had a choice of one of three to four paintings or installations.

This Section described in broad terms how Attention Restoration Theory informed conceptualization of the paintings. In the next Section I discuss the making of the artwork and the artefacts created.

5.2. Art Practice: Making and Materiality

Walking and Looking

The subjects of the artworks were the natural landscapes I encountered in suburban Adelaide and whilst travelling in South Australia. Throughout the course of the project I maintained a habit of walking, looking and documenting the local environment, of seeking out vantage points, green spaces and water. This daily engagement provided source material for artworks, but more importantly, it gave me an appreciation of natural light and how it changes over seasons and the course of a day. I noted the colours of the landscape, the forms of the land and the experience of weather. Landscape was observed as I travelled through it, in motion. In this way, I gained an embodied experience and an active perception of landscape. Experiences of being in nature were recorded in journals. These reflections informed themes, compositions and colour palettes of the paintings.



Figure 37: B. Minuzzo, *Petri Dish,* 2015. Watercolour on paper and photocopies, plastic dish, 200 mm dia. Photograph by author.

Making and Materiality

A biophilic effect can be experienced from items sourced directly from nature such as leaves, timber, feathers or stones. For this reason I chose not to use these materials in artworks. In the preliminary works collage, painting and bricolage were trialled (Figure 13, *Untitled* and Figure 37, *Petri Dish*). Photographs became objects in some early works (*Walking and Looking*, 2015 Figure 38). However, for the Study context of windowless offices, the larger painted landscapes on board better fulfilled

my criteria and constraints: nature theme, original artworks, lightweight and ease of installation. An original painting is recognisably an artwork irrespective of the context, be it in an art museum, a residence or a mural painted on a wall. Original paintings have a material presence as Berger describes;

> one follows the traces of the painter's immediate gestures. Closing the gap between the painting of the picture and one's own act of looking at it.[174]

Brush strokes evoke the hand of the artist, the process of the creation of the image. The materiality of artworks, the choice and combination of materials and how these are manipulated is part of the fascination and appeal of experiencing an artwork at first hand. Materiality is not as tangibly experienced via a mechanical reproduction.



Figure 38: B. Minuzzo, *Walking and Looking,* 2015. Reclaimed timber, photo print on aluminium.300 x 300 mm. Photograph by author.

Landscape paintings are a representation of a scene through material manipulation of paint. A landscape is something we construct. When we look at the world, that part of the environment selected as a view is the first construing of landscape. The photograph is a secondary framing. I used the lens of a camera to select and record South Australian landscapes. These digital photographs documented light, colour and landforms, as a mnemonic aid to recall the experience of being in the actual environment.

The Artefacts

Making an artwork or painting begins with decisions about theme and materials. There is a haptic exploration of materials and material processes, in this instance acrylic on board. This creative

[174] Berger, *Ways of Seeing*.31.

process becomes research when the experimentation is contextualised within a research enquiry.[175] An example of this experimentation with materials and techniques was the use of blur. Inspired by the work of the Tonalist, Beckett, and conceptual artist, Richter, I experimented with a soft-focus effect. As an artist more typically working with photography, animation and painting, I wanted to capture a sense of movement within the painted image. On experimenting with techniques, I found that blurred paintings of South Australian scenes suggested a scene viewed on a long car trip, whilst cycling, or with a quick turn of the head. A risky, random material manipulation, blur can produce an abstracted representation of landscape or a muddy green brown, only fit for painting over. Through experimentation, the degree of horizontal blur approximated the sensation of seeing whilst moving, evoking the embodied manner in which we see (for example, Figures 39 to 41).



Figure 39: B. Minuzzo, *The Road to Blinman*, 2017. Acrylic on board, 450 x 450 mm. Photograph by author.

The way that we experience the world in contemporary urban settings is often a mediated view from moving vehicles, monitor screens, cameras, social media sites and still images scrolled on a screen. This mediated view is an embodied and a technologically augmented experience. We are in the age

[175] Barbara Bolt, "The Magic Is in Handling," in *Practice as Research: Approaches to Creative Arts Enquiry*, ed. edited by Estelle Barrett and Barbara Bolt (London: I.B. Tauris, 2014).34.

of the short attention span; a swiping movement or a quick glance. The blurred landscape painting can appear to have movement, while at the same time being a still image.



Figure 40: B. Minuzzo, *The Road to Clare*, 2017. Acrylic on board, 470 x 450 mm. Photograph by author.

The traditional rectilinear format and presentation of landscape paintings has been experimented with by some Western artists. Turner was criticised for making square and circular paintings (see Section 3.2, Figure 15).[176] Cézanne's later paintings contained areas of unpainted, blank canvas, the 'nofinito' works.[177] Clarice Beckett curated her solo shows with care, arranging double rows and linking elements, hanging paintings according to themes.[178] Beckett's exhibitions approached installations. Richter's Atlas has many concepts for *Rooms*, gigantic paintings which simulate vast windows to sea, land and sky.[179] Bringing the outside in, replacing the view of landscape lost for city dwellers with a painted view, is something that I experimented with by exploring and reflecting on the effects of different framings, shapes, collage and painting techniques.

[176] Brown, "Squaring the Circle: New Formats from 1840."176.
[177] Lehrer, *Proust Was a Neuroscientist*.114.
[178] Lock-Weir, "Misty Moderns: Australian Tonalists 1915–1950."
[179] Hawker, *Gerhard Richter: The Life of Images*

Some of the processes I used to make paintings were to extend them through a physical manipulation, a painterly abstraction or a method of presentation. One technique was the act of cutting the paintings into circles. It took courage and trust in the creative process to cut up my paintings. Like blurring a painting, cutting is an irreversible act. The *Portal Series* were a departure from a traditional rectilinear landscape format (see Figures 2, 6, 11, 41 and 68). Landscapes were set within a square frame or presented as a series of circular forms.

The *Portal Series* paintings, made for Study 1 and 3, were presented individually or as a series of portholes on the wall (see Figures 41 and 57). The circular framing implies a selected view; the paintings took on the properties of a telescope, a planet or an eye. When these circles were placed within square frames there is a strong visual effect which is aesthetically reassuring according to proponents of perceptual aesthetics (Section 3.2). This departure from the traditional rectilinear landscape shape was a novel presentation, providing an aspect of fascination and a sense of a whole other world.



Figure 41: B. Minuzzo, *Portal Series*, 2017. Acrylic on board, 80 to 200 mm. Detail of installation, Figure 35. Photograph by author.

The iterations of artworks made for Study 2, the *Panorama* series, attempted a more immersive experience for the viewer; the scale of the work was larger. On advice from initial Study 1 participants that an actual window-sized painting would have a greater restorative effect, I created panoramas rather than porthole views for Study 2. With the use of cinematic proportions (a ratio of 16:9) the larger scale created a greater sense of escapism, of being away and extent (Figures 33, 43 and 45).

Study 3 was presented in one large foyer space. The artworks in this final Study had a site specific installation, in that the treatment of the unique architectural spaces of the foyer was considered part of the presentation. A low ceilinged alcove provided an opportunity to create a sense of space

overhead with *Sky Portal* (Figure 6 and 35). Eight *Myriorama* paintings simulated a bank of windows and created an entrance statement on two tall blank walls flanking a passageway (Figure 34 and 43).



Figure 42: B. Minuzzo, *The Ranges, Revisited*, 2018. Acrylic and collage on board, 300 to 400 mm². Photograph by author.

In my studio, I experimented with arrangements and layering of paintings and discovered that relationships can be created between paintings when works are installed in series; landforms and the horizon appear to be continuous (Figures 36, 42 to 44). This effect was further explored in *Fields of View* (Figure 44). To increase the effect of multiple readings of the paintings, I developed works in series. An early series incorporated blur, collage and multiple views (Figure 42). For the large wall space in Study 3, I made *Myriorama*, two sets of four paintings, intended to evoke a view to landscape through a line of windows (Figure 34 and 43). Referencing the 19th century illustrated card game, each painting has the same horizon line on the left and edge, which allows the paintings to be installed in a random order and still read as one horizon. This shuffling of images adds to the fascination and possible interpretations of the work. Human brains make assumptions that as the paintings align, they must be one image. On closer inspection is it noticeable that details of the scene differ from the next frame.



Figure 43: B. Minuzzo, *Myriorama*, 2018. Acrylic on card, each 500 x 700 mm. Photograph by author.

Many smaller paintings make up a montage in *Fields of View* (Figure 35 and 44). Experimenting with collage, composition and cutting, I reworked discarded paintings into one larger ensemble of twenty

three scenes. Incidental and intentional associations occur between adjoining scenes. Located on a low ceilinged wall above an upholstered bench, the work resembles a collection of holiday photographs or postcards. The aim with *Fields of View* was to increase the fascination, being away, compatibility and extent, as well as the element of imaginative multiplicity.

Sky Portal was a large, site specific painting installed in an alcove of the break-out space (Section 4.4, Figure 35 and Section 6.2, Figure 57). The work simulated a sky light so viewers might imagine looking up through the low concrete ceiling, through the building, to a cloudy blue sky.

A subsequent artwork was not part of a project study; rather it was a developed from the findings of the Studies. A temporary public art commission from The City of Prospect provided an opportunity to make a large scale mural. Feedback from Study 3, namely the appreciation of an expansive window view to landscape where there was none, inspired the panoramic view through a multi-paned window to the Northern Flinders Ranges (Figures 45 and 66). The intention was to bring landscape to a public site where people often sit and spend time. In the concrete and asphalt streetscape of a busy arterial road I transformed an existing bus shelter into a place to contemplate nature.



Figure 44: B. Minuzzo, *Fields of View*, 2018. Acrylic and mixed media on board, framed. Various dimensions. Photograph by author.

5.3. Tacit Knowledge

In this Section I highlight knowledge gained from developments in my art practice and the practicalities of making work for non-gallery spaces. Researching visual perception and the work of other artists enhanced my perceptual experiences of noticing landscape, which influenced the way I made representations of landscape.

There are insights gained in practice-based research when a researcher embraces the unknown. As Bamberger and Schön discuss in their paper on design processes, design innovation is akin to the making of objects and 'involves coming to see in new ways'.[180] New to the discipline of painting, I had to come to understand, appreciate, see, and represent landscape in ways that I have not realized before. The following quotes are examples of artist journal reflections where this process of discovery was documented.

In my journal entry, May 5th 2016, I reflected on the first time I started experimenting with the format of the canvas.

> Cutting the paintings into circular shapes, like the view through a telescope. The painting has become a little world; the shape of an iris, a lens, a globe. The first act of framing is selecting a scene from the world, a landscape. The second act of framing is to capture this via photography or painting. The third act of framing is to select again a portion of this representation, an instinctual hunch about what looks 'right'. It's an aesthetic choice, compositional. Cutting is an irreversible and risky move, a fourth level of framing. I cut the painting, discarding fragments, retaining the main piece and reflect on this newly imagined object: a circular landscape painting.

A landscape as a circle brings to mind a telescope view, a planet, or an eye. Cutting the paintings shifted them from paintings to objects, which I then presented in series, leading to interesting relationships between the paintings. An artist's journal is an important tool for recording thoughts on material processes, as in this attempt to blur paintings, June 6th 2016.

> Smearing a painting is an irreversible act. It is a risk, yet at the same time a random element of material manipulation can produce an abstraction that is a truer representation of the landscape scene. This blurred image approximates more accurately the assumptions made by the brain when we look at a view. The world is not all in focus; we move the eyes, head, and body. We see with a

[180] Bamberger and Schön, "Learning as Reflective Conversation with Materials: Notes from Work in Progress." 68.

sliding glance. The Impressionists and Post Impressionists were right. As was Turner, Beckett, Richter and many others. An impression of a landscape scene is a truer representation of how we actually see the world.

A painting captures time, in the way that the evidence of the artist's hand brings the viewer to the moment of the painting being made. The blurring heightens this sense of material manipulation and creates movement in what is otherwise a fixed image. Material processes are part of art making, yet there are intangible processes that are equally important. An embodied experience of visual perception was reported in an artist journal entry, on October 2nd 2018.

> Swimming in the breath-catchingly cold waters off Moana Beach, keeping my head above the swell, kicking into the deep, my gaze shifts from orange cliffs to white sands to waves to the blue-tinged, bottle green waves, to the distant white-blue where sea meets sky. Looking up to the vast stretch of sky, I felt a perceptual *jolt*; these clouds formations have perspective. I'd never really noticed this before. Or probably I had, but my brain had a perception filter on my consciousness. I will never paint clouds in the old way again.

New knowledge comes from overcoming the brain's visual assumptions, and developing skills in observation. Similarly, a reflection on October 27th2018 about colour shows how a keener scrutiny of the world reveals the potentiality of perceiving.

> I step outside, walk a while and notice the feel and sound of wind, the scent of leaves, the texture of bark and the greenness of vegetation. At first I see a homogenous green, and then my more attentive eye notices tones of purple-green, blue-green, grey-green and yellow-green. Human vision can recognise more shades of green than any other colour.

Training the eye to notice colour is an important skill in making a landscape painting. In my journal entry on August 30th2018, I contemplated the materiality and properties of colour.

> Mixing paint colours, working on the mural painting. The dusk pink of morning sky, when applied to the burnt umber of foreground rocks, becomes by contrast, an unlikely but believable shade of white.

Colour is relative and subjective, changing with a change in light or shadow or by comparison with another colour. Seemingly unrelated influences and knowledge can coalesce, generating inspiration and insights in the art making process, as in the following thoughts about vision, landscape and subterranean geological forces. Artist journal entry, January 7th 2017.

> Thinking about landscape and memory, time and place, focus and blur, the glance out of the corner of the eye or from a car window, the distortion of place through haze of memory, evening light, over time and distance. I'm interested in this physical movement, this shifting of the land, and the shifting of recollection of place that happens through memory, or even perceptually as we move visual focus from one point in the landscape to another, the subject that we look at is in focus, the areas around, in front or behind the focal point are somewhat a blur. Vision works somewhat like a camera lens with a shallow depth of field, as it focuses on specifics, not the whole. Unlike a photograph, we focus in turn on different subjects in the viewing frame. I heard about geospatial mapping and the way that the ground beneath my feet is moving. Longitude and latitude coordinates are not fixed, they change over time. What we assume are fixed features in the Australian landscape are moving 'about 7 centimetres a year to the northeast', due to tectonic plate drift.[181] Geospatial mapping is now being developed with a third coordinate, another dimension, that of time. Spatial coordinates are time dependant, as is a recollection of landscape. It is blurred through the filter of memory.

The processes, insights and experimentation of creative practice are intangible aspects which the artist experiences, but are not often evident in the final work. Reflection on material learning gives voice to this tacit knowledge.

5.4. Research Outputs

The tacit knowledge discussed in the previous Section is difficult to quantify. The tangible research outcomes are more easily described. There were several series of artworks made; *Collages, Portals, Panoramas, Fields of View, Myriorama, Sky Portal* and a mural commission. Specific focus was on semi-abstract landscape painting. The majority of artworks were presented as part of three attention restoration Studies at three university campuses and at a hospital in Adelaide, South Australia.

Apart from the three Studies, artworks were included in five exhibitions: *Luminous* Promenade Gallery, Flinders Medical Centre 2015, *Translations* at SASA Gallery May 2017, *Side by Side2*, Prospect Gallery, August 2017, *Synapse* at ASMR National Science Conference 2018, University of Adelaide and *Restoration* at the Royal Adelaide Hospital, from 5th June to 29th July 2019. A painting

[181] Chris Rizos and Donald Grant, "Australia on the Mopve. How G.P.S. Keeps up with a Continent in Constant Motion," *The Conversation* 2019, no. Science and Technology (2017).

from the blur series, *The Road to Blinman*, was a finalist in the 2017 Chippendale International Landscape Painting Prize (Section 5.2, Figure 39).

A commission for a public art work was an opportunity to convert a bus shelter into a restorative 'room' with a large landscape mural. The temporary bus shelter artwork was commissioned by the City of Prospect and installed from October 2018 to January 2019 (see Figures 45 and 66).



Figure 45: B. Minuzzo, *Give Me Shelter,* 2018-19. Acrylic on board, timber, pot plants, seat cushion, found books. 3.2 x 1.8 m. Temporary art commission for existing bus shelter, Prospect, SA. Photograph by author.

My research was formally presented at two conferences; ACUADS in Perth, September 2018, and the ASMR's National Science Conference in Adelaide, November 2018, and at three University of South Australia HDR Research Forums and a Colloquium (from 2015 to 2019).[182]

[182] ACUADS is the Australian Council of University Art and Design Schools. ASMR is the Australian Society for Medical Research.

Other outcomes were a poster presentation (reproduced as Appendix 13) and a published conference paper.[183] A recently published book 'Dreaming, Healing and Imaginative Arts Practice' included an image of my artwork.[184]

One benefit of the multidisciplinary approach was an opportunity to apply for science initiatives. I received a grant to produce a play about my research in the 2018 National Science Week 'Perform Your Science' event, at the Scott's Theatre, University of Adelaide. Producing, directing, making props and acting in a play based on my research was a novel opportunity to communicate the research ideas to a general audience. The play won a National Science Week award and can be accessed online via a video link[185]

In this chapter, evidence has been provided on how ideas from art and social science research influenced my art processes and the landscape paintings. Art practice was extended through experimentation with materials and findings from the three attention restoration Studies. The next Chapter outlines the research findings from these three project Studies.

[183] ACUADS conference paper, CC BY-NC-ND 2.5 AU: https://acuads.com.au/conference/article/landscape-art-and-attention-restoration-theory/

[184] Kathleen Anne Connellan, *Dreaming, Healing and Imaginative Arts Practice*, 1st ed. (London: Routledge, 2019). Colour Plate.

[185] *Perform Your Science*, PhD performed on stage, National Science Week 2018: https://youtu.be/ZH6RdduhSwQ

Chapter 6 Results of the Studies

This Chapter outlines results from the three Studies concerning the restorative potential of landscape art on attentional states for people working or studying in windowless spaces. The first two Studies have been combined in Section 6.1 as they have similar methods. Study 3 is summarized in Section 6.2. Study results are described with respect to each of the four parent codes: restorative effects, imaginative multiplicity, unintended effects and work environment. Participant responses were analysed according to ART characteristics of compatibility, fascination, being away and extent, as introduced in Section 2.2. These are discussed in turn. Qualitative and quantitative data are summarized in tables, charts and through samples of participant responses. The coding framework, Cultural Probe journal tasks, survey questions and other supporting documents are located in Appendices 1 to 12.



Figure 46: B. Minuzzo, *The Farm*, 2016. Acrylic on board, 300 mm². Study 1, a windowless office at a university with a landscape painting installed and a Cultural Probe journal. Photograph by author.

6.1. Studies 1 and 2

Participants in Study 1 were located in windowless offices over two university campuses based in the city's central business district (*n*=9, time=4 weeks), for example: Figure 46. Ten participants volunteered to be part of Study 1, however one was deemed ineligible as they worked away from their office. Participants in Study 2 were situated in offices at a hospital and a university 12 km from the city centre, in the Adelaide foothills (*n*=8, time=4 weeks) for example Figure 51, Section 6.1.6.

There was some attrition of the initial Study 2 sample as several staff were deployed to other positions and relocated prior to commencement. A second recruitment phase was required; nine people were initially recruited, but one withdrew due to moving office, leaving the final sample of eight. Characteristics of participants in Studies 1 and 2 are presented in Table 1.

TABLE 1: Participant Characteristics, Studies 1 and 2

Characteristic		**Study 1 (*n*=9)**	**Study 2 (*n*=8)**
Gender:	**Female**	7 (77.8% Female)	7 (87.5% Female)
	Male	2 (22.2% Male)	1 (12.5% Male)
Age Category:	**1 (21-30)**	5 (55.6%)	0
	2 (31-40)	1 (11.1%)	1 (12.5%)
	3 (41-50)	2 (22.2%)	3 (37.5%)
	4 (51-60)	0	2 (25%)
	5 (61-70)	1 (11.1%)	2 (25%)
Occupation:	**Manager**	1 (11.1%)	2 (25%)
	PhD/Research assistant	7 (77.8%)	0
	Academic	0	1 (12.5%)
	Administrator	1 (11.1%)	3 (37.5%)
	Nurse	0	2 (25%)
Work environment:	**Open Plan**	7 (77.8%)	5 (62.5%)
	Shared Office	2 (22.2%)	0
	Individual Office	0	3 (37.5%)
SRNE:	**1 (low)**	1 (11.1%)	0
	2 (moderate)	2 (22.2%)	2 (25%)
	3 (high)	6 (66.7%)	6 (75%)

Note. **SRNE =** Self-Reported Nature Engagement

Female participants in Studies 1 and 2 greatly outnumbered males, which reflected the gender ratio of staff and PhD candidates within the organisations. Study 1 had a majority of early career researchers; 55.6% of participants were in the 21 to 30 year age range. In contrast, Study 2 was comprised of a mature-age workforce with 75% in the 41 to 70 year age range. More participants worked in open plan offices than other spaces. Most participants expressed a moderate to high level of nature connection preceding the Study (Table 1: SRNE). This was confirmed by responses to Probe Journal Task D (Table 2), with participants from the foothills (Study 2) ranking nature connectedness higher than people at the central city site (Study 1).

TABLE 2: Nature Connectedness Studies 1 and 2

Item	Nature Connectedness	Study 1 (*n*=9)	Study 2 (*n*=8)
1	Whenever I spend time in nature nowadays I do not experience a close connection to it.	0	0
2	My personal welfare is independent of the welfare of the natural world.	0	1 (12.5%)
3	I am somewhat concerned with the natural world	3 (33.3%)	0
4	I sometimes feel a sense of oneness with the natural world around me	6 (66.7%)	4 (50%)
5	I often feel a sense of oneness with the natural world around me	0	3(37.5%)

Note. Connection to Nature scale categories derived from Tam et al [186]

6.1.1. Restorative Effect: Compatibility

There is a sense of compatibility if the viewer feels at ease with, or has an affinity for a landscape. The image may be familiar looking, or be considered an agreeable scene by the viewer. Qualitative analysis of participants' responses found almost all of the participants used the terms calm(ing), relax(ing), soothing or peaceful in their comments when engaging with the artwork (see Figure 47 and Table 3). Most people described being more relaxed and calm when looking at the landscape (Study 1: 88.8% and Study 2: 100%). This result was also evident in the ranked question on the effect of viewing artworks on levels of stress, fatigue and energy (Table 4: Journal Task K). There was a decrease in stress for most participants and some increase in focus for Study 2 participants. Table 4 is discussed further in Section 6.1.7 Work Environment.

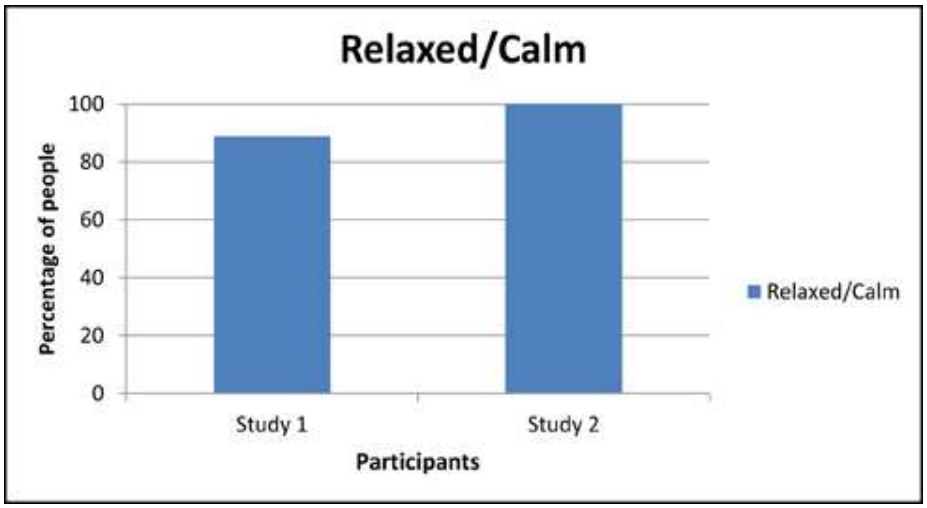

Figure 47: Study participants who reported a relaxing or calming effect (qualitative responses).

[186] Tam, "Concepts and Measures Related to Connection to Nature."65.

TABLE 3: Studies 1 and 2 Qualitative Responses, Compatibility

ID	Sample of qualitative responses that relate to the restorative criteria of Compatibility
S1_7	*Gazing into a natural landscape…it felt calming and allowed me to refocus and re-centre myself.*
S1_9	*Relaxes me and gives me a sense of perspective. Relieves my eyes. I'm really appreciating having your painting at my desk – it makes a big difference!*
S2_16	*The subject matter of the painting engages me on a spiritual level. I'm atheist but gain a deep sense of meaning, calm, clarity from natural surroundings.*
S2_18	*After looking at the artwork for a minute I feel a sense of relaxation. I found my tension subsided considerably. It made me think of occasions when I travelled through environments like this.*

A selection of three or four paintings of local South Australian landscapes provided choice for each participant, an aspect of the Study design intended to aid compatibility. All but one of the participants responded positively about compatibility of the artworks. An issue of non-compatibility occurred in Study 2: part of the painting was not to a participant's liking. Participant S2_11 mentioned this three times in their Probe journal. This person recorded few memories and associations and reported minimal change in stress and fatigue levels. That this participant did not report any improvement in stress or focus is an illustration of how compatibility of an image is a factor in evoking a restorative effect. Lack of familiarity can also have a negative effect on engagement with the artwork (see comment by S1_6 in Table 5).

TABLE 4: Studies 1 and 2, Effect of Viewing Artworks on Stress, Fatigue and Energy Levels

Effects of viewing artworks on participants	Mean Study 1 (*n*=9)	Std. Deviation Study 1 (*n*=9)	Mean Study 2 (*n*=8)	Std. Deviation Study 2 (*n*=8)
K1 Effect on Stress	3.11	1.269	3.38	1.188
K2 Effect on Focus	2.44	0.882	2.63	0.744
K3 Effect on Energy	2.11	1.453	2.25	0.886

Note. 1 = no effect, 2=minimal effect, 3= some effect, 4= decrease (K1) increase (K2/3), 5 = noticeable effect

6.1.2. Restorative Effect: Being Away

Being away is when a viewer is able to mentally transport themselves into a painted scene, or to a memory of being in such a place. A majority of participants from both Studies commented on the artwork educing memories of holidays, time with family, being outdoors and travel (Study 1: 88.8% and Study 2: 100% of participants). The landscapes gave the participants an opportunity to remove themselves mentally from the pressures of work or study, through thinking of a different and more

relaxing place (Table 5 and Figure 50). Although an increase in focus on work tasks was a subtle attribute to measure using a single ranked scale (Table 4), most people recorded benefits for focus. Of the total sample, 94% wrote that the presence of the artwork was effective in helping them refocus on their work by, for instance; 'clearing the mind', providing 'something else to focus on' or 'rest my eyes' and evoking 'thoughts of happier times'.

TABLE 5: Studies 1 and 2 Qualitative Responses, Being Away

ID	Sample of qualitative responses where participants discuss Being Away
S1_1	*It reminds me of time spent with family in the Spring time with a beautiful blue sky.*
S1_2	*The greenness of the vegetation. The sense of movement. It is like viewing from a car or train window.*
S1_6	*It's not too similar with anywhere I am that familiar with so it doesn't bring back many memories.*
S2_12	*Thoughts of the weekend and holidays relaxing come to mind.*
S2_16	*The painting brings a flood of memories back to me. I guess this prompts a sense of peace and wellbeing.*

6.1.3. Restorative Effect: Fascination

Fascination is when a landscape image stimulates absorbed interest, or a looking to decipher. To determine the amount of engagement with the artwork (fascination), I asked participants to log the number of times that they looked at the landscape over the course of a day (Task E1). Participants in Study 1 recorded looking at the artwork between 2 to 17 times per day (median value = 4, average of 5.5 times per day), see Figure 49. Participants in Study 2 recorded looking at the artwork between 2 to 29 times per day (median value of 5, average ~ 8 times per day). The distribution is due to the measure being interpreted differently among participants. Some recorded every instance of looking at the artwork, whilst others noted the hour of the day when they were more aware of, and engaging with, the painting (Figure 49). In addition to quantitative data from Task E1, qualitative responses were coded for instances of fascination. In my coding framework, Fascination is a sub code of Restorative Effect. Qualitative responses were coded for the presence of the themes: looking and noticing. Probe journal entries on materiality, colour and subject matter of the landscape painting provide insights into what participants were observing. (Table 6, Figure 48).

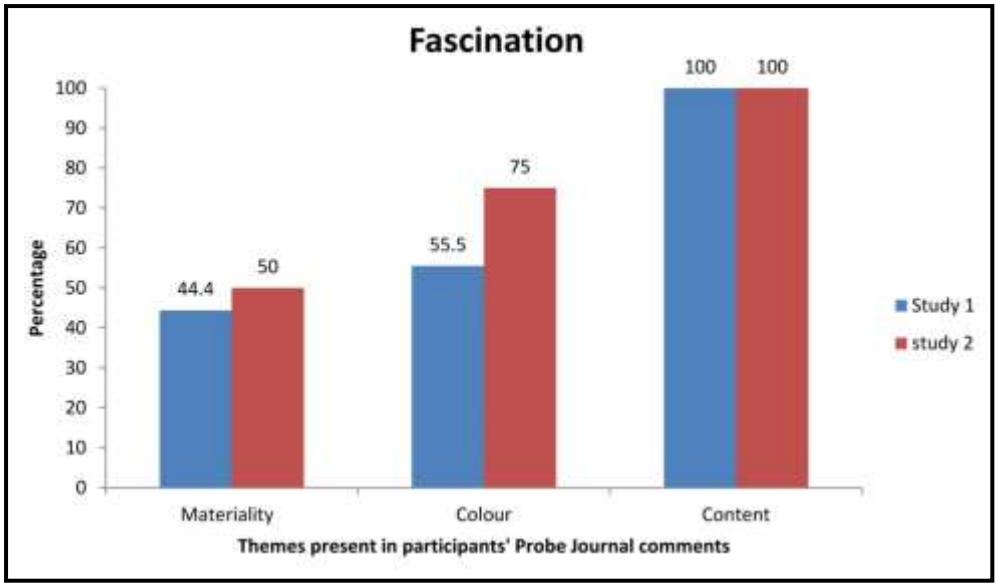

Figure 48: Fascination: percentage of qualitative responses mentioning the materiality, colours or content of the landscape artworks.

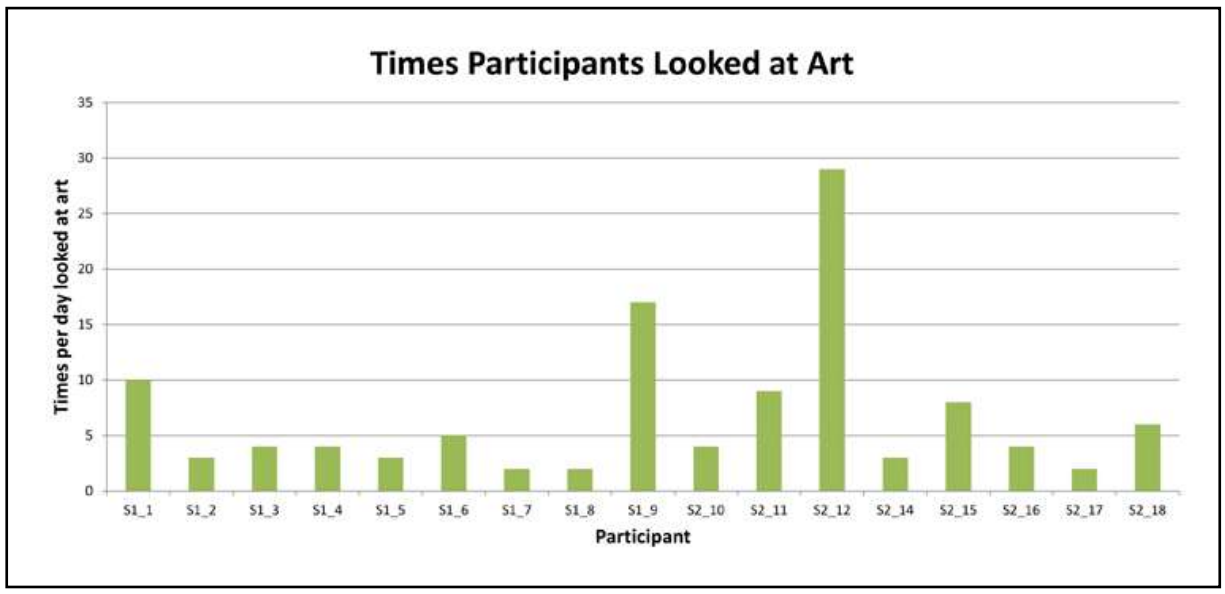

Figure 49: Probe journal Task E1: self-reported instances of looking at the landscape painting over a day.

TABLE 6: Studies 1 and 2 Qualitative Responses, Fascination

ID	Sample of Qualitative Responses Which Describe Observing and Engaging with the Artwork
S1_1	*The artwork certainly does evoke images of a real-life rural setting or park. The greenery and little lake/pond/waterhole, reminds me of Spring time.*
S1_3	*Really like the range of colours and the softness of the way they interact. It's just really nice to look at.*
S2_14	*The rolling hills are very relaxing to look at in my busy, crazy day.*
S2_17	*The colours – soothing. Brush work gives the impression that this view is being passed by a moving object (or that the landscape is moving).*

6.1.4. Restorative Effect: Extent

The attribute of extent occurs if a viewer considers that the landscape seems like a whole other world, even a miniature one. Despite the Probe journal tasks not including a question directly addressing the theme of extent, almost all of the participants from Study 1 and 2 (94%) described aspects of their landscape painting having a sense of 'whole other world', of experiencing a landscape with extent (Table 7 and Figure 50).

TABLE 7: Studies 1 and 2 Qualitative Responses, Extent

ID	Sample of qualitative responses that recount an experience of Extent
S1_5	*I often look at it and think of farm scapes that I've seen in rural W.A. and S.A. Reminds me a bit of childhood road trips.*
S1_7	*Made me imagine myself actually looking out of a window – gazing into a natural landscape and it felt calming and allowed me to refocus and re-centre myself.*
S1_8	*It* [the painting] *reminds me of hiking in the wilderness- times when there is no stress, only physical challenges.*
S2_14	*It reminds me of when we drive to the Riverland, through the small country towns nestled in rolling hilly landscape.*

6.1.5. Imaginative Multiplicity

Imaginative Multiplicity is a stimulation of creative thinking. The concept was introduced in Chapter 2 (Section 2.4 and Figure 12). Imaginative Multiplicity occurs when a viewer can bring to mind multiple interpretations and associations from viewing one artwork. The most interesting finding that came from the first two Studies was that participants were using the landscape painting as a stimulus to transport themselves mentally to a different time and place. The majority of participants came up with three or more memories or associations when looking at the one artwork, demonstrating that the paintings induced imaginative interpretations (S1:77 % and S2:87%). People were looking at one painting and generating multiple readings of the artwork, often bringing to mind an event, place or object not depicted in the painting (see Table 8 and Figure 50). The summary diagram of qualitative responses coded for the five restorative characteristics (Figure 50) illustrates that imaginative multiplicity was the most commonly occurring theme.

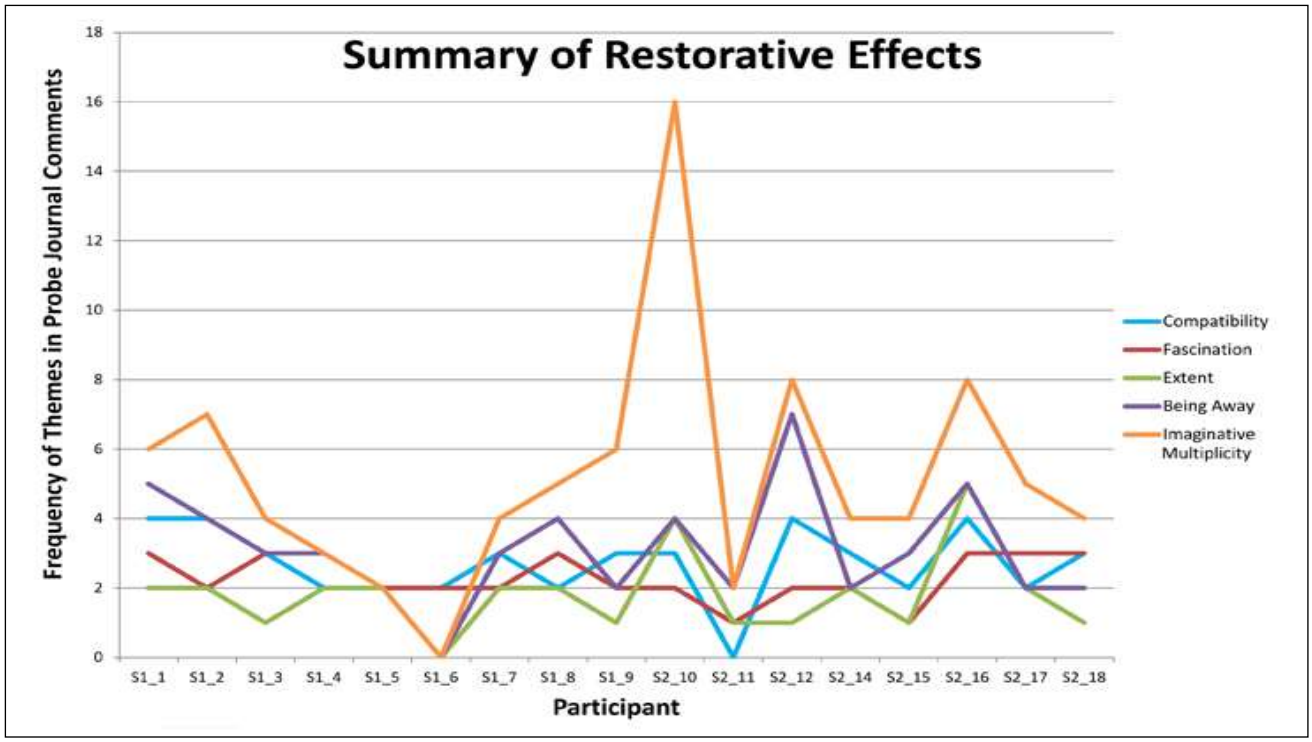

Figure 50: Study 1 & 2, summary of qualitative responses coded for restorative effects and the additional characteristic, Imaginative Multiplicity.

TABLE 8: Studies 1 and 2 Qualitative Responses, Imaginative Multiplicity

ID	Sample of qualitative responses illustrating multiple readings
S1_2	*It reminds me of Australian and English farm land. I grew up on a farm and the fence-line in the painting brings memories of happy times on the farm – sheep, ponies and farm activities (even though those things are not depicted in the artwork).*
S1_4	*It* [the painting] *is abstract and allows me to use my imagination, also find it a good distraction when I can't write.*
S2_10	*Flinders Ranges…sunset light on the ancient gum trees in stone filled river beds. Wilpena Pound…eating snake, blue trees, steep cliffs and waterholes. West McDonnell Ranges: red sand pans, water holes, glorious ground covers, sound of cicadas.*
S2_12	*The artwork is a landscape of rolling hills, trees and blue sky. It reminds me of being on the golf course relaxing or walking in a nearby park. I often think about the weather outside at the time when looking at the artwork.*

6.1.6. Unintended Effects/Insights

The focus group meetings were an opportunity for participants to reflect on the study, make further contributions and raise any issues or concerns. Unintended effects of the Study were highlighted during these conversations. Several people reported an increased sense of ownership; displaying a connection to and care for their workplace by cleaning up and tidying their desks (Table 10). Many removed outdated and redundant posters and documents to make some room for the landscape

painting, as can be seen in the office space pictured (Figure 51). Participants identified individual preferences for workplace décor, including wanting to add plants and/or pictures.

TABLE 9: Studies 1 and 2, Personalization of the Work Environment before the Study

Work Environment	**No non-functional items**	**Screen saver***	**A photograph (not nature view)**	**Three or more nature items***
Study 1 (*n*=9)	4 (44.4%)	3 (33.3%)	2 (22.2%)	0
Study 2 (*n*=8)	1 (12.5%)	0	4 (50%)	3 (37.5%)

*Plants, objects or images of landscape, animals or plants present at your work station or computer.

There are strict guidelines in place for the materiality, display and maintenance of artworks in many Australian hospitals.[187] Managerial policies on infection control in the hospital (Study 2) limited personalisation of the work stations. Prior to the intervention, few people had personalised their workplace (Table 9). Despite the limitations on workplace decor, some participants made efforts to personalise their area by adding nature-themed items. After the Study, 57% of people introduced either a painting or a photograph of a landscape into their work space (Figure 52). Desire for a window view was unanimous amongst participants, however this preference was unobtainable.

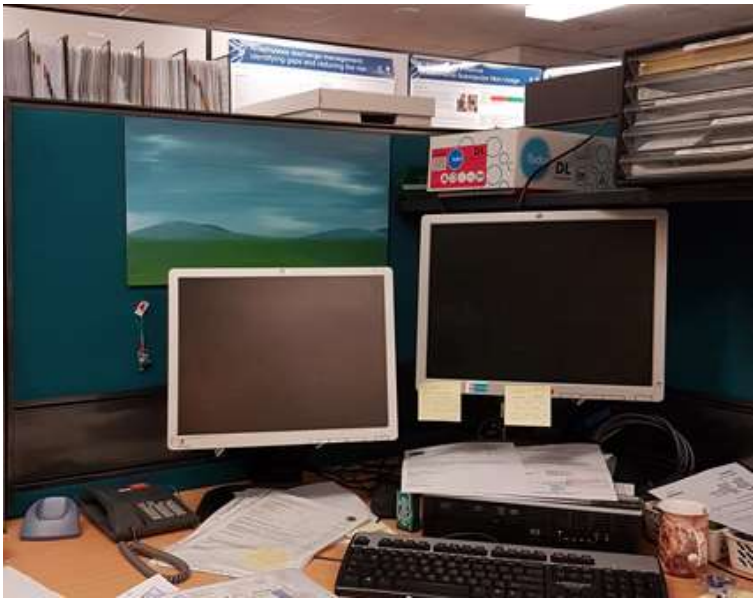

Figure 51: B. Minuzzo, *Blue Green Blur*, 2017. Acrylic on board, 600 x 335 mm. Study 2, a windowless office in a hospital with a landscape painting installed. Photograph by author.

Having the artwork in the room fostered interactions with colleagues; increasing socialisation in the workplace. The artwork and Study prompted discussions (Table 10). The project did stimulate

[187] As part of the research I visited and interviewed curators at the most recently built hospitals in Australia (in Brisbane, Perth and Adelaide), to investigate curatorial and design practices with respect to nature connection in health environments.

awareness of mental fatigue for participants. Some people reported spending their breaks and lunch hour outdoors. One participant dealt with workplace fatigue by taking a 10 minute 'nature break', like a smoker's break but healthier, to get some fresh air in a courtyard garden.



Figure 52: Post Study Survey: items added to participant workplace since the study.

Participants written responses overwhelmingly demonstrate the positive effects of art in the workplace. Interestingly, the ranked (quantitative) responses were not as supportive of the hypothesis as people's reflections to the open-ended questions (qualitative data). This difference may be due to the fact that people tend to answer an open-ended question in a more personal, emotional or interpretive way than a scale or ranking question.

TABLE 10: Studies 1 and 2 Qualitative Responses, Unintended Effects

ID	**Some qualitative responses recounting Unintended Effects; Ownership, Socialisation**
S1_3	*It was really lovely having this artwork next to my desk; I almost wish I didn't have to give it back. Having some colour in my office next to my work space was really nice. And it is a shared office; my colleagues also enjoyed having it there too.*
S1_FG	*Tidied my desk more as there was something special in the space.*
S1_FG	*Artwork created interest and conversation points for colleagues and visitors to the work space.*

Note. Individual focus group contributions were not identified. S1_FG refers to an insight shared from the focus group meeting a few months after Study 1 was completed.

The artworks in Study 1 were smaller, circular *Portal* paintings. At the focus group meeting scale was discussed with suggestions for actual window-sized paintings or panoramic views. These ideas were implemented for the Study 2 artworks. At both focus group meetings participants stated that they missed having the landscape in their office. The landscape paintings were said to be a welcome intervention in the windowless office spaces.

The way that people engaged with artworks over a day ranged from intermittent to frequent (Figure 49: Times Looked at Art). The issue of habituation (becoming accustomed) was raised in focus group 1. One participant felt that the artwork 'blended in' after a week or so, another only noticed the landscape on arriving or leaving work (Table 11). Others felt a real attachment to their painting and wrote about the stimulation and respite it provided. The comments suggest that people were choosing to engage with the artwork in different ways. Some would glance at the landscape whilst others were quite attached to it and would spend time looking at the landscape, as a means to regain their focus in order to deal with mental fatigue or work pressures.

TABLE 11: Studies 1 and 2 Qualitative Responses Highlighting Issues

ID	Qualitative responses highlighting habituation or instances of noticing the artwork
S1_6	*I found that art was interesting and probably helped when I was distracted/stressed at the start however after 1 week I felt it kind of blended in to the rest of my office and I didn't notice it as much.* [Habituation]
S1_5	*Sometimes I look at it as when I am thinking or tired, it is something beautiful to focus on. The effects are un-noticeable, although may be more subtle?*
S1_8	*Allows me to stop and just think of one thing rather than all of the many work thoughts going on. Gives me an intimate moment of meditation/thought when I am looking at it. I will be very sad to see it go.*
S2_15	*It gives me a moment to pause and be mentally still.*
S2_18	*Feel more relaxed when looking at the landscape artwork. When more relaxed can attend to work duties less stressed.*
S1_FG	*Only noticed it at the start and end of the day.* [Habituation]

6.1.7. Work Environment

Considerable workplace pressures were identified by participants in both samples. During the Studies the South Australian Government was implementing a new healthcare model, Transforming Health. These changes affected many Study 2 participants whilst others in a medical school faculty were also undergoing a restructure. Colleagues were redeployed, moved office or were made redundant. A second round of recruitment was required prior to commencement due to these changes. The consequence was a workplace environment with significant uncertainty and high level of stress for many of the Study 2 participants. The transient nature of contemporary workplaces is highlighted by the fact that shortly after the Studies, over 21% of survey respondents had relocated to another office. Workplace pressures meant there were time pressures. Some participants had too much work to fully engage with the artwork and their personal Probe journal. During the study, the workplace pressures described had a negative effect on people's overall mental wellbeing. This may explain the fact that wellbeing did not change significantly over the Study (Table 12). The realities of

contemporary employment are revealed in a situated Study in a way that a simulation cannot (Table 13).

TABLE 12: WEMWBS Participants Pre/Post Survey, Studies 1 and 2

WEMWBS Pre/Post survey	Mean of Pre Study Total Score	Std. Deviation Pre Study	Mean of Post Study Total Score	Std. Deviation Post Study	Average change Pre/Post per Individual
Study 1 (*n*=9)	48.44	6.598	51.22	7.949	2.55
Study 2 (*n*=8)	50.38	5.476	49.88	7.549	-0.25

Note. WEMWBS: University of Warwick and University of Edinburgh Mental Wellbeing Survey (Appendix 4)

The descriptive analysis of stress, fatigue and energy levels (Section 6.1.1, Table 4) indicates a slight change in some of these conditions. However, averaging the data does not show the experience of individuals. When individual data is considered, there were notable effects on stress, fatigue and energy levels (Figure 53). The findings show that stress was decreased for many of the participants (S1: 55.5%, S2: 75% of participants), people experienced an increase in focus (S1: 55.5%, S2: 62% of participants) and some had as increase in energy levels (S1: 22.2%, S2: 50% of participants). These findings suggest that mental wellbeing can be improved for many individuals with a minor intervention in office décor.

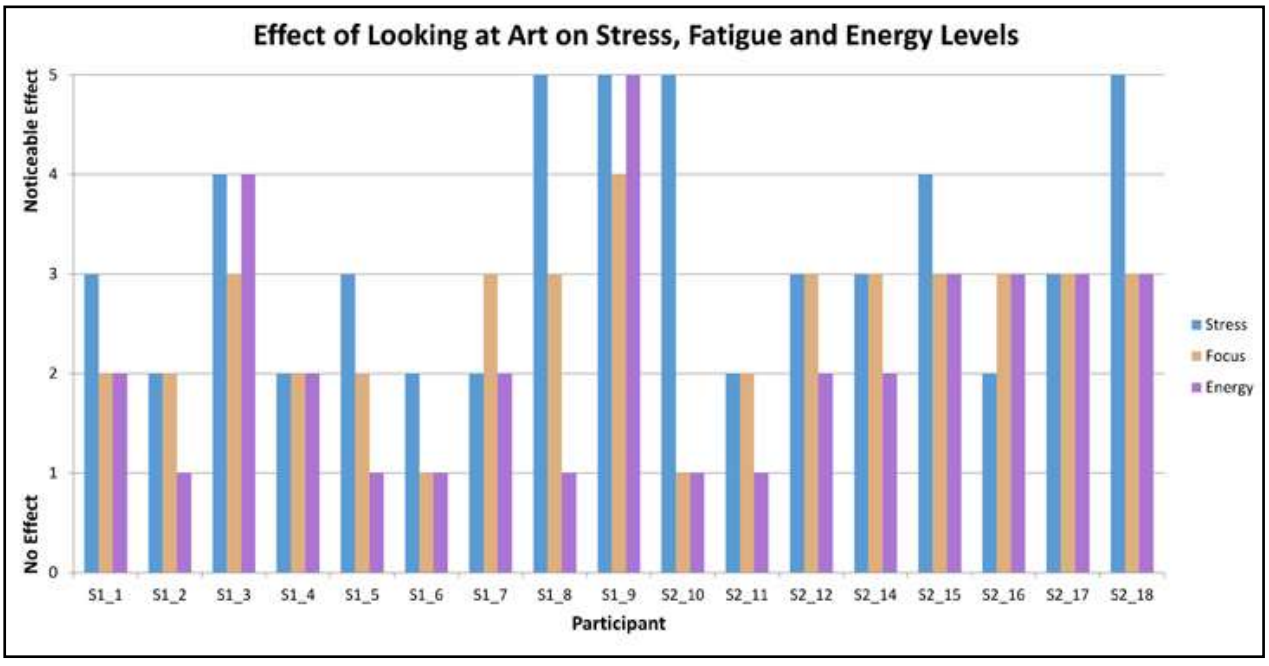

Figure 53: Effect of arts engagement on stress, fatigue and energy levels (See Appendix 3, Task K).

Mental fatigue over the working day was evident for all participants. Fatigue was measured twice during the Study (Task B2 and E3) and the hours fatigued were calibrated with the hours each

individual worked per day (Figure 54). All participants reported mental fatigue, with a majority (94%) having between one to three hours of mental fatigue over each working day. The implications with regard to mental wellbeing and productivity in the workplace are discussed in Chapter 7. Focus Group 2 participants hypothesized that the extent of fatigue might be reduced if a person had different tasks. A person in a windowless space, who was sedentary all day, would have a higher level of fatigue than someone performing diverse activities. Participants recounted that landscapes had a noticeably positive effect on their experience of their workplace and were a welcome intervention in the workplace (Table 13).

TABLE 13: Studies 1 and 2 Qualitative Responses, Work Environment

ID	**Sample of qualitative responses on Work Pressures/Stress, Décor Preferences, Fatigue/Focus**
S2_17	*It does take me away (mentally) from this office space but unfortunately I have had little time to pause and reflect on it.*
S2_16	*The paintings are to a degree helping engage my sense of peace within my otherwise pretty grey/ugly internal office space.*
S1_8	*A really nice thing about this artwork is that it gives me privacy in a busy open plan workspace. The work provides physical screening, but also gives me an intimate moment of meditation/thought when I am looking at it. I will be very sad to see it go*
S2_14	*I wish I had a window with this outlook in my office. I think it would make working a little easier if we could bring the outside in. I find it very confining/depressing to work in an office with no windows.*

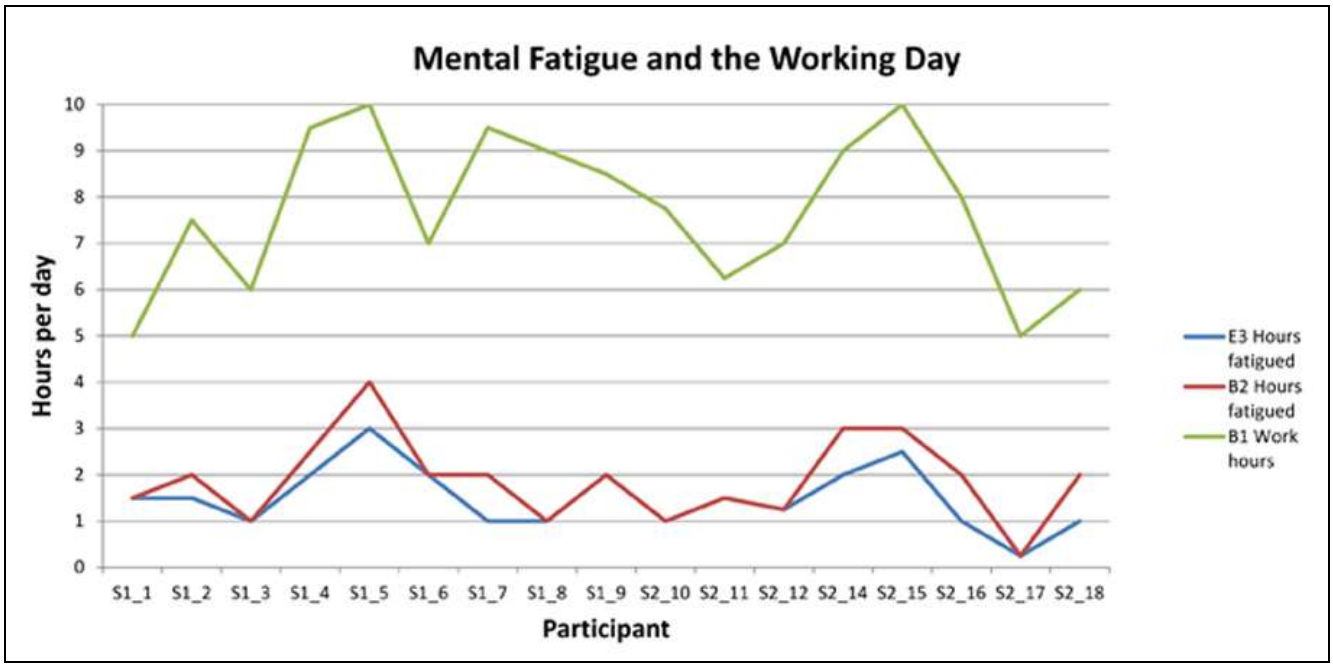

Figure 54: Working Day; the hours worked, hours per day mentally fatigued per individual.

6.1.8. Study 1 and 2 Post Study Survey

An additional anonymous online survey was distributed via email six to twelve months after Studies 1 and 2, to determine any influence of the project on the participants' workplace and work habits, and to assess the art themes that participants found most restorative. Eighty two percent of the original participants responded (14 of 17) and although the sample is small, it is indicative of the effect the original Study had on participants' habits and preferences. After taking part in the study, half of the participants made efforts to better manage their mental fatigue (Table 14).

TABLE 14: Studies 1 and 2 Qualitative Responses, Work Habits

ID	Sample of qualitative responses on work habits to manage fatigue
PostS1/2_9	*I try to take more breaks, especially outside if possible, or at least looking out a window or at an image.*
PostS1/2_4	*One strategy though is to go to a nicer location after reading books/articles. Only tied to my desk for computer tasks.*
PostS1/2_6	*Not really,* I *seem to be back in my old routine*

Participants' preferences for painting genre correlate with the literature on restorative environments and imagery discussed in Section 2.3. Preferences for nature imagery (landscapes or gardens) ranked as significantly more restorative than other genres of paintings (still life, cityscapes, portraits or abstract art) as illustrated in Figure 55. Some participants made changes to their workplace décor and work habits to increase nature connection (Figure 52 and Table 15). Fifty seven percent of participants recounted that the Study raised issues and preferences about their work environment (Table 15).

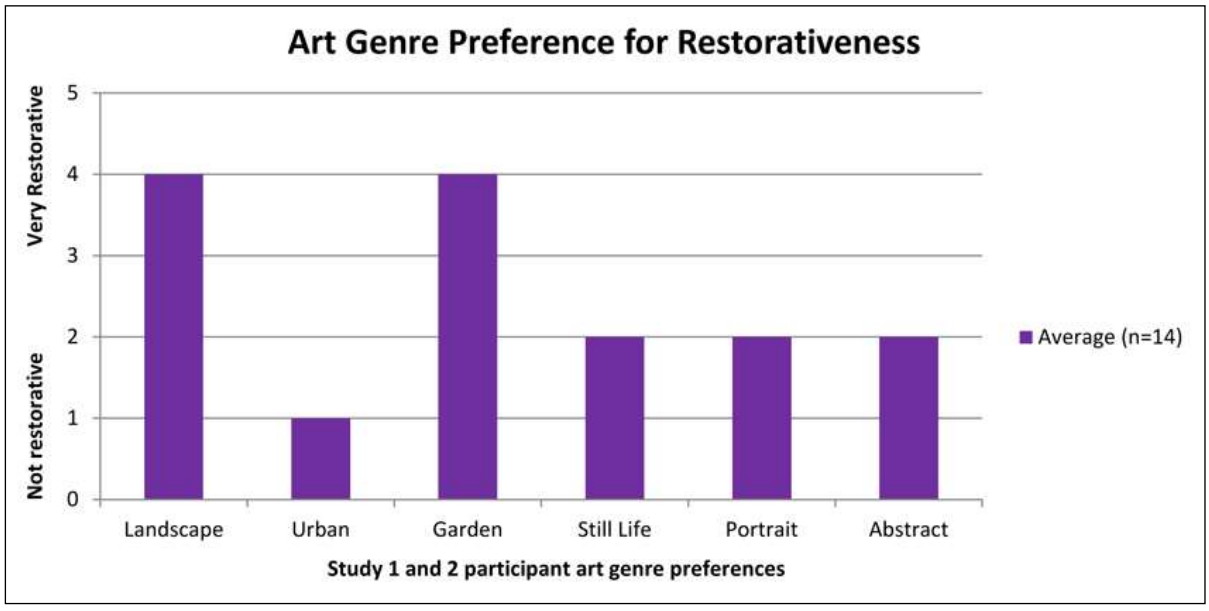

Figure 55: Preferences for Painting Genre, Post Study 1 and 2 surveys.

TABLE 15: Studies 1 and 2 Qualitative Responses, Preferences for Work Environment

ID	Sample of qualitative responses about preferences for Work Environment
PostS1/2_11	*Just highlights that there isn't any time or space to add much in the way of non-work related materials.*
PostS1/2_2	*Highlighted how unhappy my colleagues and I all are with our work environment and how powerless we are to make changes or assert control.*
PostS1/2_7	*My personal experience really confirmed my beliefs and preferences for having art in the workplace.*

An interesting question in the follow-up survey addressed representation. I asked if it was important that the landscape was familiar, the artist was known or that it was an original painting. Familiarity with the landscape was deemed the most important of these attributes (Table 16, Figure 56).

TABLE 16: Studies 1 and 2 Qualitative Responses, Artwork Characteristics

ID	Sample of qualitative responses on familiarity, acquaintance and original artwork
PostS1/2_3	*Not important, more about the aesthetics.*
PostS1/2_6	*An original artwork was definitely preferable to its reproduction.*

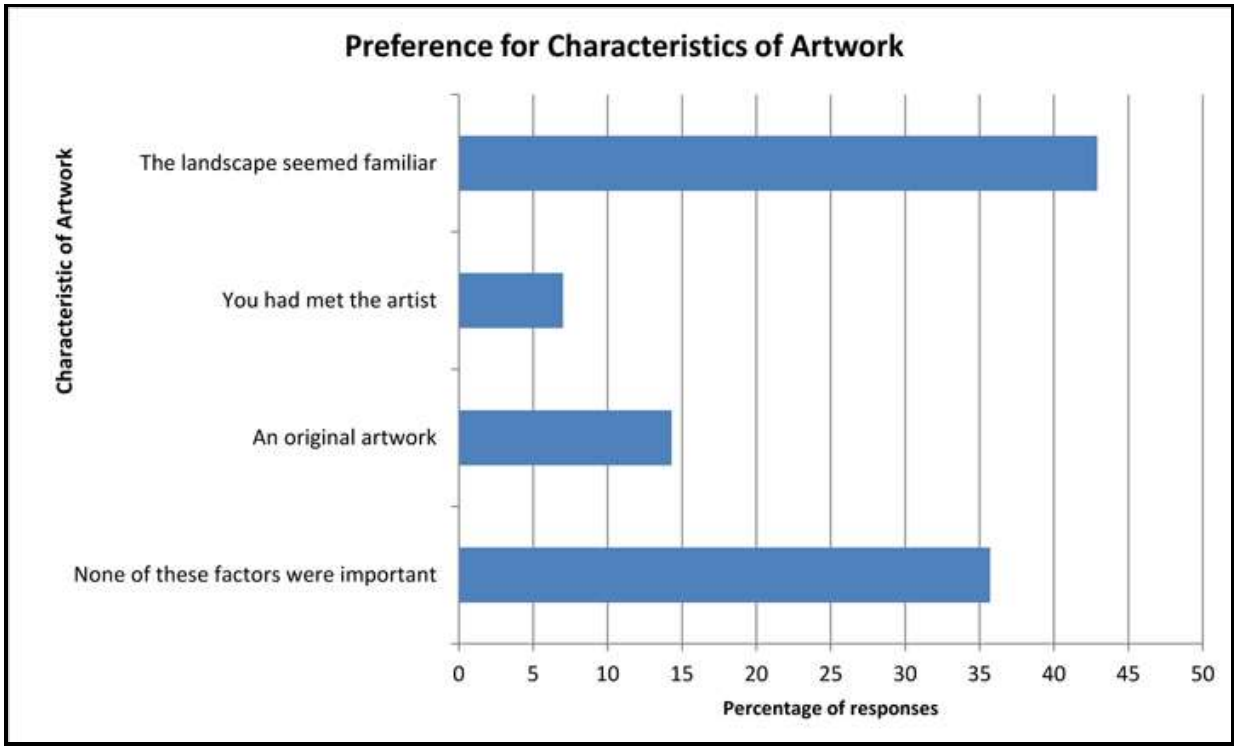

Figure 56: Participants views on aspects of the artwork, Post Study 1 and 2 survey, multiple choice questions.

The first two Studies investigated the effects on staff of introducing a landscape painting into individual work spaces. The user-centred consultative tool provided insights into how members of

the public engaged with the art works. Introducing landscapes into office spaces had a positive impact on mental fatigue and workplace stress. The art encouraged connection to the workplace and conversations with colleagues. Participants appreciated having a landscape view as it provided a calming presence and a chance for brief restorative breaks throughout the day. In the next Section I discuss the third and larger study.

6.2. Study 3

The third Study was conducted at a university campus in the Adelaide CBD, the site being a lecture theatre foyer and student break-out space. Study 3 differed from the earlier two Studies in several respects; a public location, the consultation method, sample size and duration. Several artworks were presented in one large foyer space to provide choice (see Section 4.4, Figures 34, 35 and 57, below). The artworks presented were a series of eight *Myriorama* panels, fifteen *Portal* paintings including a large *Sky Portal* and an installation of twenty three smaller landscapes in *Fields of View*.



Figure 57: B. Minuzzo, *Myriorama*, *Portals, Sky Portals, Fields of View*, 2018. Installation view in the University lecture theatre foyer, Study 3. Photograph by author.

University students viewed the artworks after attending a one to two hour lecture of non-visual art content. Characteristics of participants in Study 3 are presented in Table 17. Participants were from 22 different countries. Most were from English speaking countries (61%) and over 90% of the English speakers were Australian. The remaining 39% were from 18 different non-English speaking countries, with 32% coming from Asia. Participants in Study 3 were predominately younger Undergraduates, aged between 19 to 30 years (80%). There was a more even gender representation in Study 3 than the first two Studies; however females still greatly outnumbered males (66% to 31%).

TABLE 17: Participant Characteristics, Study 3

Characteristic		Study 3 (*n*=74)	100%
Gender	Female	49	66%
	Male	23	31%
	Other	1	3%
Age Range		**(*n*=74)**	**100%**
Category (years)	(19-30)	59	80%
	(31-40)	12	16%
	(41-50)	3	4%
	(51-60)	0	0
Country of Origin		**(*n*=74)**	**100%**
	English speaking	45	61%
	Non-English speaking	29	39%
Occupation		**(*n*=74)**	**100%**
	Year 1 Undergraduate	43	58.1%
	Year 2 Undergraduate	12	16.2%
	Year 3 Undergraduate	10	13.5%
	Year 4 Undergraduate	1	1.4%
	Post Graduate	8	10.8%
Subject of Lecture		**(*n*=74)**	**100%**
	Sustainable Design	12	16.2%
	University Studies	11	14.9%
	Pharmacology	11	14.9%
	Critical Thinking	11	14.9%
	Anatomy	9	12.1%
	Communication	9	12.1%
	Marketing	5	6.7%
	Law	4	5.5%
	Business	2	2.7%

The period of engagement with landscape artworks was recorded by commencement and completion times of survey questions relating to artworks, after the demographic data questions. The average time participants spent engaging with the artworks and filling out the survey was 8 minutes (ranging from 2 to 22 minutes). By subtracting the average time taken to complete just the questions, I calculated that the average period spent viewing the artwork was around 3 and a half minutes.[188] Participants were de-identified for data analysis and reporting.[189]

Restorative effect is discussed by considering the characteristics of compatibility, fascination, being away and extent (Section 2.2. ART). The quantitative survey questions had a 97 to 100% response

[188] Five non-participating volunteers completed the survey, without engaging with the artwork, to determine an average time it took to complete the questions. Average participation time was 8 min, minus average survey completion time of 4 min 40 sec, gave an approximate time of 3 min 20 sec participants were viewing the artworks.
[189] Study 3 participants were coded from S3_1 to S3_74.

rate. The quantitative and qualitative responses were evaluated according to the coding framework and are summarised in Figures 58 and 60. The two charts illustrate the relative occurrences of restorative effect reported by the participant from both survey methods; the closed and the open-ended questions. The quantitative data was collected from yes/no and ranked questions. The qualitative survey questions had fewer responses, and are summarized according to the presence of each Restorative Effect in Figure 60, page 100. Compatibility and fascination appear to be the most important aspects for people viewing the landscape paintings.

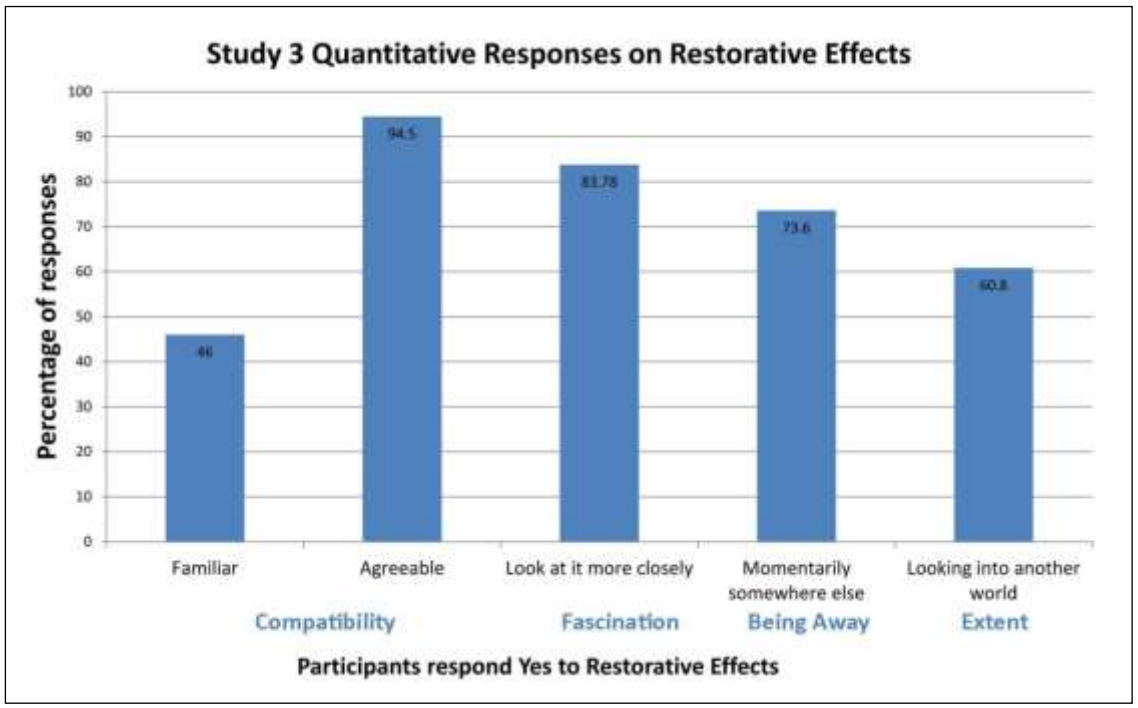

Figure 58: Summary of quantitative (yes/no) survey responses on restorative effects

6.2.1 Restorative Effect: Compatibility

To be compatible, familiarity and agreeableness of an image are important. Participants were from 22 different countries, many of which have landscape and ecosystems that are very different to local landscapes. South Australian landscapes are described as temperate, grassland and desert.[190] Although less than half the participants found the landscapes imagery of South Australian familiar (46%), an overwhelming 94.5% reported that the paintings were agreeable (Figure 58). Of the viewers who identified the landscape as familiar 97% recounted personal association(s) using terms such as: looks like, reminds me, like, recognise, similar to and reflects. The words: calm(ing), relax(ing), peace(ful), therapeutic and serenity were mentioned by 40% (27/67) of people (Table 18).

[190] Bureau_of_Meteorology, "Climate Classification of Australia," *Climate Classification Maps* (2005), http://www.bom.gov.au/jsp/ncc/climate_averages/climate-classifications/index.jsp?maptype=kpngrp#maps.

Familiarity and whether something is agreeable are compatibility characteristics of restorative environments. Even though the subject matter was foreign or unfamiliar to most of the international students, the students' survey responses; both qualitative and quantitative, overwhelmingly illustrated that the landscape artworks evoked the restorative quality of compatibility.

TABLE 18: Study 3 Qualitative Responses, Compatibility

ID	Sample of qualitative responses that relate to the restorative criteria of Compatibility
S3_2	*Reminds me of childhood getaways.* ***Portals***
S3_36	*I like the textural technique, colours, balance of elements, calming image.* ***Myriorama***
S3_37	*It looks like I'm looking into my memories.* ***All of the artworks***
S3_47	*Reminds me of many paintings I have seen hanging on walls over my lifetime. They are a quintessential piece of my past.* ***All of the artworks***

Note. The particular artworks discussed by the Study 3 participants are in ***italics/bold***.

6.2.2 Restorative Effect: Being Away

When a person looking at a view is thinking about another place, memory or event than the physical location they are in, this is what is termed a conceptual shift or the restorative effect of being away. A majority of people affirmed that looking at the artwork made them feel like they were somewhere else (73.6% of quantitative responses) and most respondents (90% of the qualitative responses) wrote about being in another physical place or a different state of mind (Table 19, Figure 58 and 60).

TABLE 19: Study 3 Qualitative Responses, Being Away

ID	Sample of qualitative responses where participants discuss Being Away
S3_3	*Tend to loose myself in the artwork.* ***All paintings in the room***
S3_17	*It makes me feel like I'm actually looking at and I'm in the scene.* ***All of the artworks***
S3_48	*Spent time on Kangaroo Island recently. Reminiscent of where I was and evoked the sensations I had then.* ***Myriorama***
S3_68	*The art takes my mind away from being in a building in the city and reminds me of times when I was surrounded by similar landscapes.* ***Myriorama***

6.2.3 Restorative Effect: Fascination

When we experience an absorbed interest in an image this the restorative effect of fascination. A majority of the students agreed that they wanted to look at the artwork more closely (83.8%, Figure 58). The interest in the paintings varied for individuals. Responses emphasized different aesthetic properties. However, over the five qualitative questions, 96% of people (71/74) recorded appreciating the artwork and made observations about the subject, content, materiality or aesthetic elements of the paintings. Expressions included; liked the colours (blue and green), soft, blended, brushstrokes, configuration, layout (Table 20 and Figure 59).

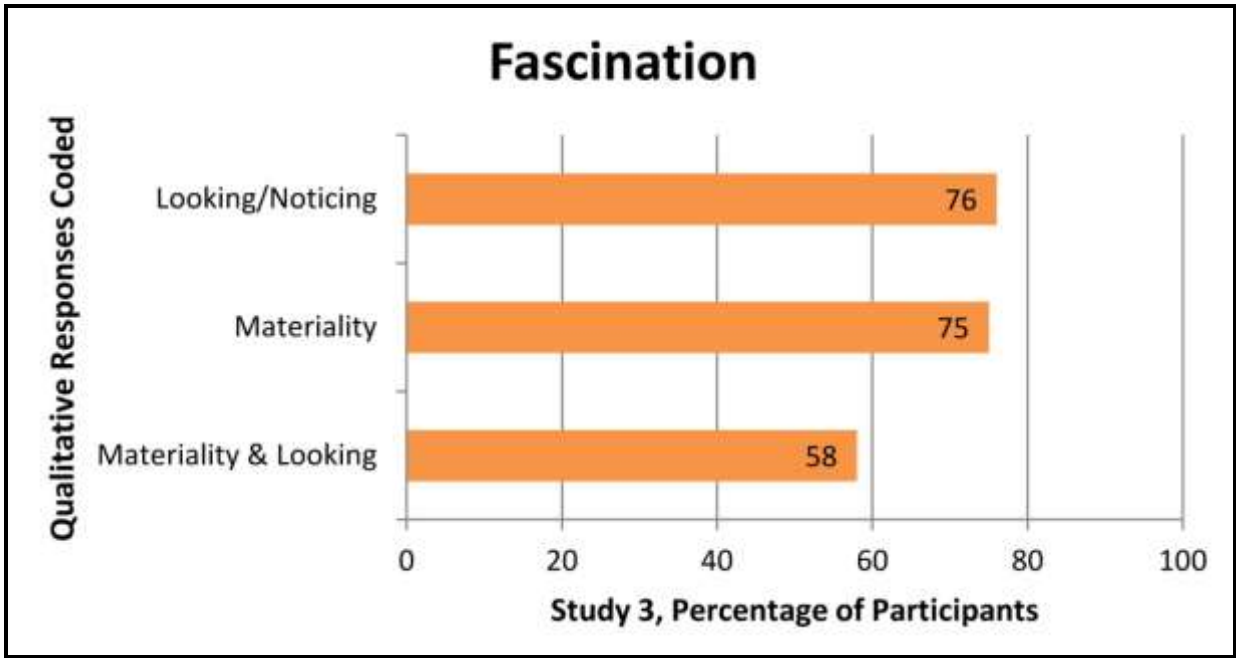

Figure 59: Thematic coding of quantitative responses, Study 3.

TABLE 20: Study 3 Qualitative Responses, Fascination

ID	Sample of qualitative responses describing observation/engagement with artworks
S3_25	*Seems blurry and yet much detail. Some artworks are small.* ***Myriorama***
S3_32	*I like the way the circles are positioned and used instead of one large canvas.* ***Portals***
S3_73	*Colour scheme is very relaxing to look at and makes the grey interior of the lecture room/lobby more interesting.* ***Portals***
S3_68	*I love natural artworks and find them aesthetically pleasing and calming. The colour palette is lovely. I love the idea of spreading it over 8 panels.* ***Fields of View***

6.2.4 Restorative Effect: Extent

If a person, on looking at the painting, feels that the landscape evokes a sense of another world, this is the condition of extent. Eighty percent of qualitative responses by participants (31/39) described aspects of another environment; a specific place, a dream state or a window view or a view of nature. The quantitative responses were scored lower for extent, although there were still a significant number of people (60.8%) associating the landscapes with being a 'whole other world' (Table 21, Figure 58 and 60).

TABLE 21: Study 3 Qualitative Responses, Extent

ID	Sample of qualitative responses that recount an experience of Extent
S3_42	*It is a portal to another existence or memory.* ***Portals***
S3_45	*Feel like I'm looking through a window to different (less concrete!) reality.* ***All paintings in the room***
S3_65	*Like the ceiling isn't there.* ***Portals***
S3_68	*Through being spread onto 8 panels… makes it look like looking out of a window to a panorama view of a landscape.* ***Myriorama***

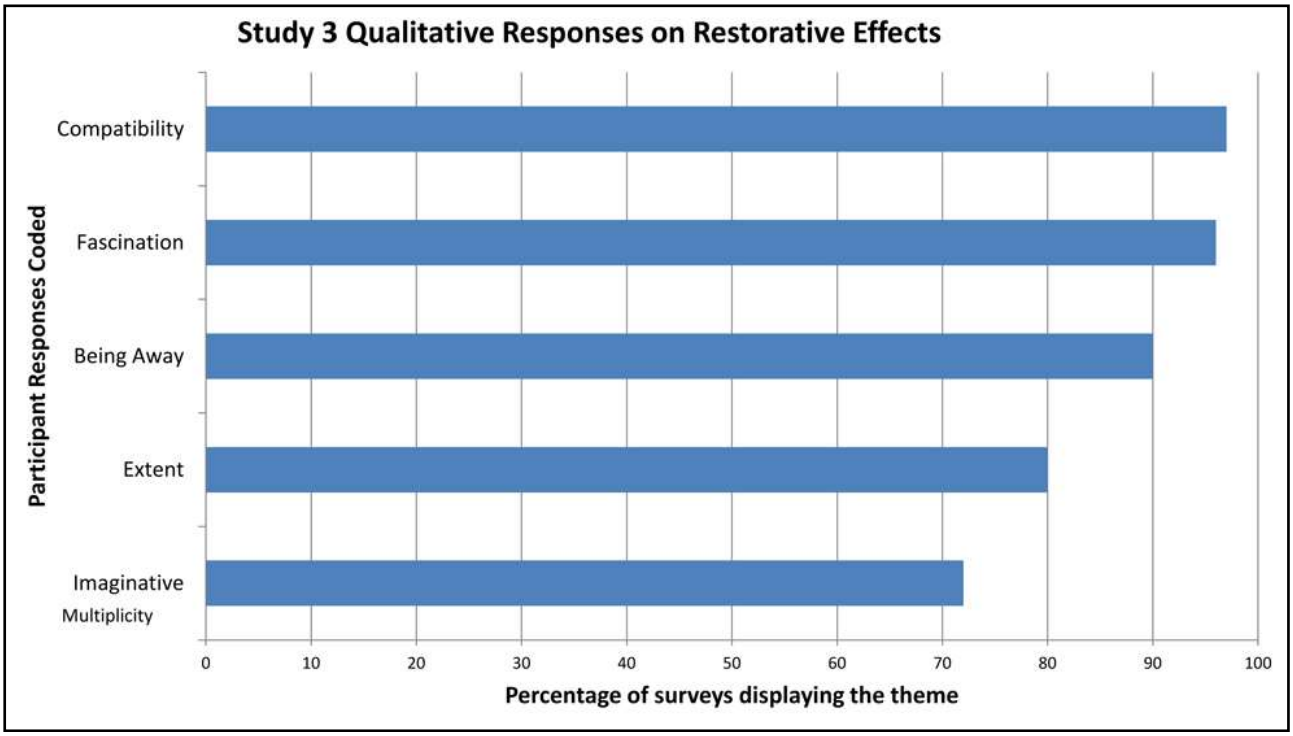

Figure 60: Percentage of qualitative survey responses coded with respect to Restorative Effects, Study 3.

6.2.5 Imaginative Multiplicity

Imaginative multiplicity is an ability to generate multiple readings or interpretations from one visual image. A majority of participants in Study 3 had three or more memories or associations when looking at the one artwork, demonstrating that the paintings generated both a sense of being away and imaginative interpretations (Table 22, Figures 60 and 61). Seventy two percent of survey respondents (43/60 of people) recounted three or more interpretations, memories or associations when looking at the artwork. Of this latter group, 30% (13/60 people) generated 5 or more associations (up to 12). Students looking at the artworks were stimulated to use their imaginations.

TABLE 22: Study 3 Qualitative Responses, Imaginative Multiplicity

ID	Sample of qualitative responses illustrating multiple readings; Imaginative Multiplicity
S3_6	*Like the round portholes of a ship. Like bubbles from a dream.* ***Portals.*** 2 interpretations
S3_21	*It's good to imagine that you (are) painting or that you are viewing the painting or imagined you are inside it and exploring.* ***Fields of View.*** 2 interpretations
S3_42	*Sea, ocean, rolling waves, water lilies, Monet, soft fluffy clouds, cloud guessing, dreaming whilst lying on my back, the differences between the colours.* ***Portals.*** 7 interpretations
S3_68	*To me the landscape combines a few familiar landscapes. Immediately I felt that it looked a lot like the Flinders Ranges, but upon further inspection the green-ness reminded me of the Adelaide hills landscape combined with the sparse Flinders. The white mountains in the background also reminded me of driving from Geelong towards the Grampians, which were foggy and looked just like what is pictured.* ***Myriorama.*** 3 interpretations

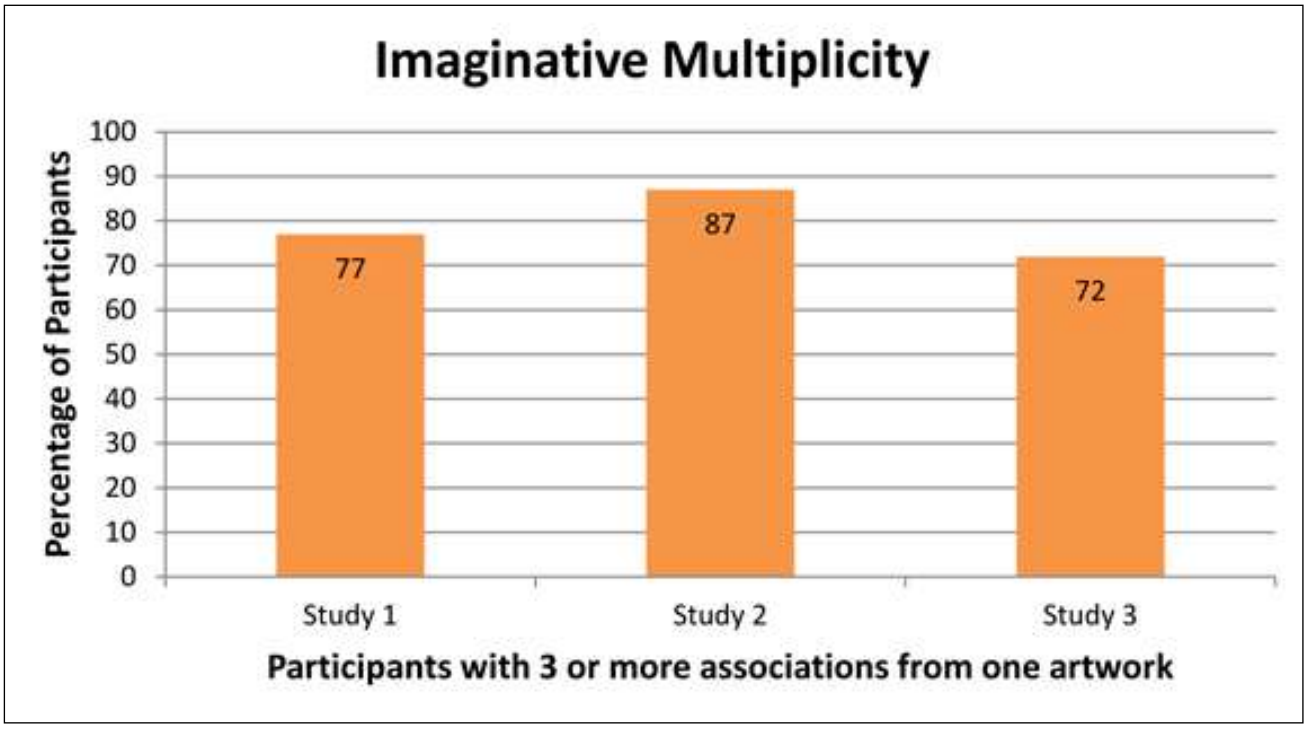

Figure 61: Imaginative multiplicity: viewers generating 3 or more associations, comparison of all 3 Studies.

6.2.6 Unintended Effects/Insights

An unintended result was that one participant experienced a negative effect. The *Myriorama* works were intentionally hung out of order. The student could not get past this detail of the work and commented on it three times in the survey, which demonstrates the issue of non-compatibility (Table 23). Most students appreciated the installation of the artwork in the break-out space.

TABLE 23: Study 3 Qualitative Responses, Unintended Effects

ID	Some qualitative responses recounting Unintended Effects
S3_13	*Peacefulness, the paintings make people calm down.* ***All of the artworks***
S3_33	*Colour scheme is very relaxing to look at and makes the grey interior of the lecture room/lobby more interesting.* ***Portals***
S3_35	*It is hung out of order. Please fix order.* ***Myriorama***
S3_42	*I love blues and greens together which in this example reminds me of the ocean.* ***Portals***

6.2.7 Work Environment

There are many factors that impact on mental fatigue. The survey included questions on caffeine intake and sleep quality for this reason. Waking fatigue was an issue for students. Many university students (68.5%) reported feeling tired on waking in the morning (Figure 62). A mere 9.6% woke feeling refreshed, an indicator that few university students are achieving an adequate amount of sleep. This finding is significant as insufficient sleep is a major contributing factor to mental fatigue, anxiety and reduced productivity.[191] Inadequate sleep is often compensated for by drinking coffee, but this is not the case for most students. The majority of the students in the Study (59.5%) did not drink caffeinated drinks. Students under the age of 30 reported seldom drinking these beverages. Only forty percent of the student sample had consumed a caffeinated drink up to 4 hours preceding the lecture (Figure 63).

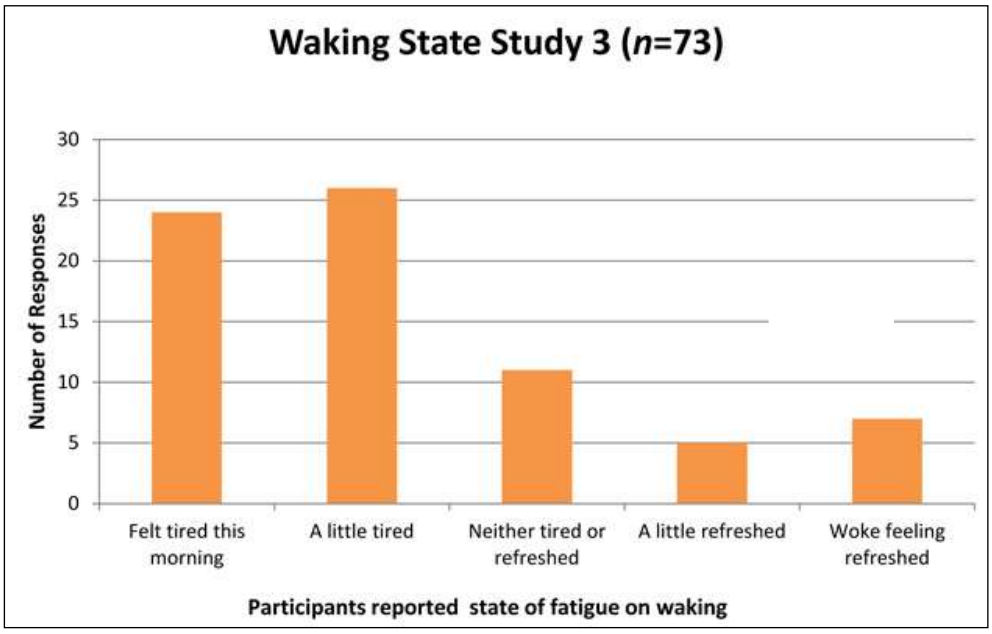

Figure 62: Students rated how fatigued they felt that morning, Study 3.

[191] Mark R. Rosekind et al., "The Cost of Poor Sleep: Workplace Productivity Loss and Associated Costs," *Journal of Occupational and Environmental Medicine* 52, no. 1 (2010).

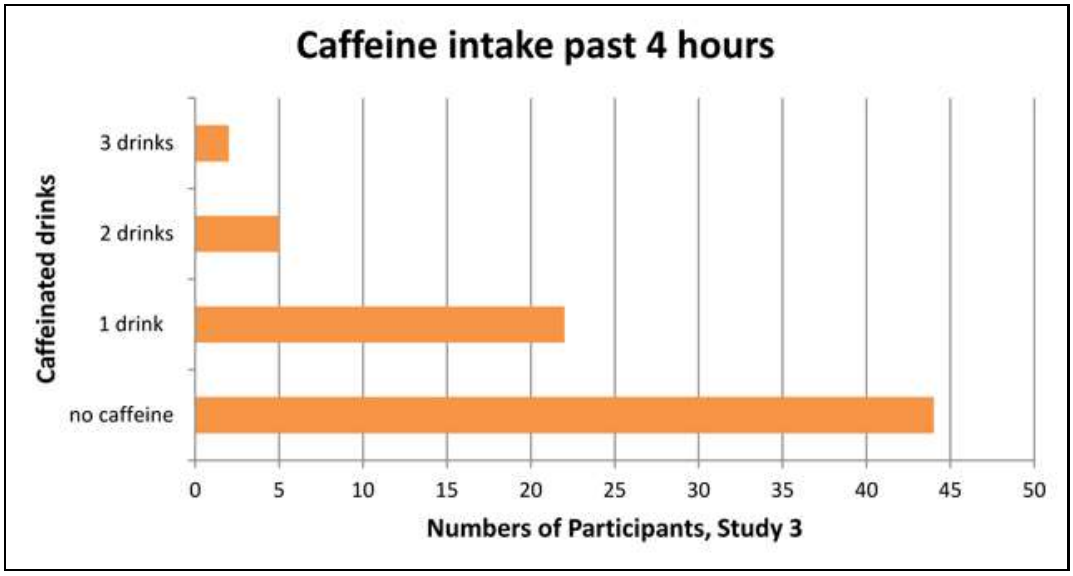

Figure 63: Caffeinated drinks (coffee/tea/cola/energy drinks) consumed by students in past 4 hours, Study 3.

The Study demonstrates a real appreciation by students for the display and incorporation of nature-themed artworks in university interior environments (Table 24). Apart from improving interior spaces, the landscape artworks had a notable effect on student stress and fatigue.

TABLE 24: Study 3 Qualitative Responses, Work Environment

ID	Sample of qualitative responses about the Work Environment, Work Stress, Work Space Preferences
S3_2	*Personally I would love to see artworks in classrooms and around the University. I do not enjoy the library to study; I much prefer studying outdoors, even down the Torrens River. So to bring a bit of that free feeling indoors would be great benefit.* ***All paintings in the room***
S3_37	*It definitely beats blank concrete walls.* ***All paintings in the room***
S3_47	*I feel I'm camping, vacation, enjoy wonderful landscapes, without stressful, hard work.* ***All paintings in the room***
S3_71	*It was a lot more appealing and calmer than the posters that are normally there.* ***Fields of View***

The changes in stress and mental fatigue from a pre/post scale are charted in Figure 64. Students ranked their level of fatigue and stress on a 5 point Likert scale before viewing the landscape artworks in the break-out space and then again at the end of the survey. The chart does not show how individuals were affected. Over 87% (65/74 of people) reported *either* a decrease in stress *or* a decrease in fatigue, with some people experiencing a decrease in both measures after a short engagement with the artworks. Eight people (10.8%) reported no change in either stress or fatigue levels. One person experienced a negative effect on stress and fatigue by participating in the Study for the 5 minutes. Notably, this person replied negatively to questions about the artworks and

omitted to answer 6 of the 7 qualitative questions. The participant did not record any comments on materiality, memories or associations with the artworks; their engagement in the Study was limited.

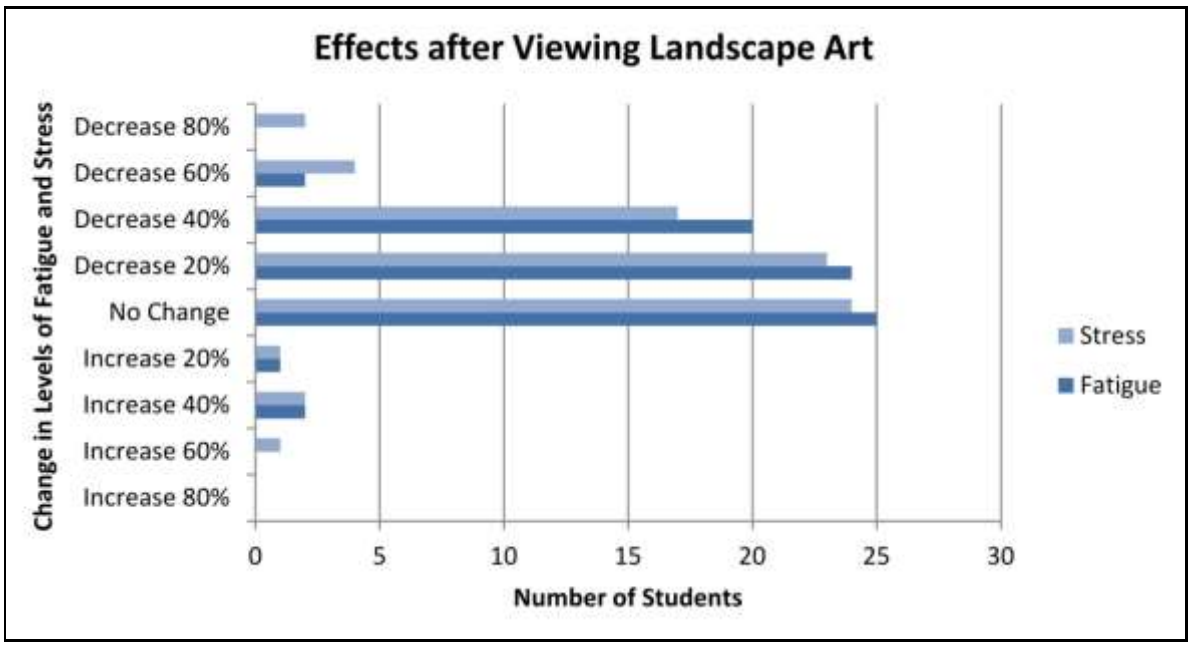

Figure 64: Changes in fatigue and stress, pre/post survey. Study 3 (n=74)

6.3 Summary

In Study 1 and 2 I introduced a landscape painting into individual work spaces and examined the effects on staff (*n*=17). The consultative tool, a Cultural Probe, allowed participants to record insights and responses to the art works. Although there was no change in mental wellbeing reported from the pre/post survey, the landscape art had a positive impact on staff. People reported the reduction of mental fatigue and workplace stress. Participants were generating multiple readings from one artwork; imaginative multiplicity was the most commonly occurring theme.

Study 3 involved three groupings of artworks installed in a break-out area, adjacent to a large lecture theatre. After attending a lecture, 74 university students engaged with the artworks and completed a survey. A brief period of looking at the artwork had a notable effect by reducing stress and fatigue for over 87% of students and stimulated creative thinking. The findings and limitations of all three Studies, and recommendations for further research are discussed in the following two Chapters.



Figure 65: B Minuzzo, *Riding by the River*, 2016. Acrylic on board, 340 x 600 mm. Study 2. Photograph by author.

Chapter 7 Discussion

In this Chapter I discuss the Study findings on landscape preferences, mental fatigue, stress and conceptual shift, the Study design and the benefits and challenges of the research approach. The methods, processes and language used in the situated Studies differ from that of the Practice-Based Research, so they are discussed separately. Findings from the Studies are analysed first, followed by a discussion of new knowledge gained from my art practice research. Findings show that a representation of landscape, a landscape painting, has an effect on fatigued directed attention similar to an actual landscape view, thus contributing to attention restoration. Short periods of looking at a landscape artwork (example: Figure 65) resulted in a significant decrease in a majority of the participants' mental fatigue and stress. A twenty to forty percent reduction was reported in all three Studies (see Section 6.1.7, Table 12 and Section 6.2.7, Figure 64). Combining methods from art, design and social sciences provided insights into the way a work is engaged with and 'used' by members of the public.

Preferences

The follow-up survey found that landscape or garden imagery were the most favoured painting themes, which is consistent with the literature on preferences for art in health settings (Section 6.1.8, Figure 55). As reported by Ulrich, Lankston, Kaplan and Berto, nature scenes are a preferred

subject for contemplation whilst cityscapes are not.[192] Participants in my Study considered urban scenes as not restorative. Other insights from the Study participants were preferences for larger, window-sized landscape paintings (Study 1, Section 6.1.6) and paintings which intentionally simulated a window view (Section 6.2.4, Table 21). The literature and my Study findings demonstrate that people desire access to a window view of the natural world; to sky, trees, park or water, or a representation of such. This expressed desire for a prospect provides supporting evidence to Appleton's Prospect Refuge theory (PRT). PRT is an evolutionary-biological survival instinct to scan the surrounding environment for shelter, changing weather, predators or prey. PRT has currency today and should be taken into consideration when designing interior spaces and in urban public art (see Figure 66).



Figure 66: B. Minuzzo, *Give Me Shelter*, 2018-19. Acrylic on board. Detail of mural, Section 5.6, 3.2 x 1.2 mm. Photograph by author.

[192] Ulrich, "Effects of Viewing Art on Health Outcomes.", Louise Lankston et al., "Visual Art in Hospitals: Case Studies and Review of the Evidence," *Journal of the Royal Society of Medicine* 103, no. 12 (2010)., Kaplan, "The Role of Nature in the Context of the Workplace.",Berto, "Exposure to Restorative Environments Helps Restore Attentional Capacity."

Mental Fatigue, Stress and Conceptual Shift

Mental fatigue has a negative effect on human functioning, on the ability to stay on task, think effectively, problem solve, deal with stress, communicate, attend to details, maintain patience and manage relationships. Knowing how attentional states work and how to best manage them is important to mental wellbeing and productivity in the workplace. Working in windowless spaces does not provide the occupant with an opportunity to optimise their attentional capacity, to rest the directed attention when experiencing a period of mental fatigue, by looking at a restorative environment, or a representation of one.

Study 3 exhibited one negative impact and a small proportion of the sample experiencing no change in levels of fatigue or stress. This does not reduce the significant finding that a few minutes of looking at landscape paintings can produce a 20 to 40% decrease in stress and mental fatigue for university students, 68.5% of who report feeling tired on waking. A minor intervention in student Study and break-out areas can improve student concentration, mental wellbeing and sense of connection to the university.

Viewers utilized landscape imagery in windowless offices and public spaces to gain a brief rest from work tasks and stress; to restore attention. People reported that looking at the painting gave them a chance to be mentally elsewhere and evoked fond memories of time in nature and holidays with friends and family, contributing to a calmer mindset and positive wellbeing. Most participants reported that the landscape helped them to feel calmer and more relaxed (Study 1: 88.8%, Study 2: 100%). In Study 3 this percentage was lower (40%) however, the engagement with the artwork was very short, an average of 8 minutes in Study 3, compared to four weeks for Studies 1 and 2. A majority of participants had three or more memories or associations when looking at the one artwork (Section 6.2.5, Figure 61), demonstrating that the paintings generated both a momentary release from a prior mindset and imaginative interpretations. When engaging with the landscape paintings, Study participants showed both a restorative effect and stimulation of imagination.

The Study participants frequently reflected on fond experiences of engaging with landscape; recounting holidays and time spent in nature with family and friends. Vacation is the word ranked as the most positive by a comprehensive English language study.[193] Distraction is usually thought of as a negative influence as people attempt to maintain focus on office work or Study tasks. However a

[193] Amy Beth Warriner, Victor Kuperman, and Marc J Brysbaert, "Norms of Valence, Arousal, and Dominance for 13,915 English Lemmas," *Behavior Research Methods* 45, no. 4 (2013).

self-regulated, restorative distraction, a brief interval of looking at landscape art can be beneficial for concentration, problem solving, social interactions and wellbeing.[194] My findings show that this beneficial effect is linked to people associating the nature imagery with vacation or recreational experiences. In addition, interpreting a painting stimulates creative and critical thinking, as evidenced by current educational initiatives in Visual Thinking Strategies.[195]

Fatigue and stress in the workplace can occur at any time of day and for a myriad of reasons; insufficient sleep, pressing deadlines, job insecurity, and a predominance of reading and writing based tasks. The drop in productivity from mental fatigue is a significant economic loss, in addition to the impact it has on people's mental wellbeing.[196] Lessening mental fatigue and stress is conducive for more effective work focus and productivity.[197] In Studies 1 and 2, most participants reported between one to three hours of mental fatigue over the working day (Section 6.1.7, Figure 54). My Studies find that looking at a *representation* of landscape is enough of a suggestion of a restorative environment to have a positive effect by reducing mental fatigue and stress.

Sleep disorders are on the rise and sleep disruption studies find that the mental fatigue caused by inadequate sleep has a detrimental effect on mood and productivity.[198] A majority of students from Study 3 reported feeling tired on the morning of the survey (Section 6.2.7). Ensuring a good night's sleep is the best way to optimize cognitive function. The second best way, identified by Kaplan and others, is to be in a restorative environment. Lee and Berto, for example, each prove that even a short time of viewing nature imagery (40 seconds to 5 minutes) improves peoples' mental capabilities and ability to manage workplace stress.[199] Study 3 supports the literature in that a significant reduction in fatigue and stress was reported in less than four minutes (the average artwork viewing time). The design of work and study spaces could adopt attention restoration principles to help ameliorate the effects of inadequate sleep.

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[194] Kirstie Brewer, "Art Works: How Art in the Office Boosts Staff Productivity," *The Guardian*, January 21 2016.
[195] http://teachers.mam.org/collection/teaching-with-art/visual-thinking-strategies-vts/ accessed 21/1/2019; Diana Davis, "First We See," in *The National Review of Vsual Education* (Canberra, Australia: Australia Council & Department of Education, Employment and Workplace Relations, 2008).
[196] Knight and Haslam, "The Relative Merits of Lean, Enriched, and Empowered Offices: An Experimental Examination of the Impact of Workspace Management Strategies on Well-Being and Productivity."
[197] Ibid.; Brewer, "Art Works: How Art in the Office Boosts Staff Productivity."
[198] Rosekind et al., "The Cost of Poor Sleep: Workplace Productivity Loss and Associated Costs."
[199] Lee et al., "40-Second Green Roof Views Sustain Attention: The Role of Micro-Breaks in Attention Restoration."187. and Berto, "Exposure to Restorative Environments Helps Restore Attentional Capacity."255.

Study Design

The Studies were contextual, situated within actual workplaces. The concern was with the workplace context and the perspectives of individuals. A control was not included as the situated Studies were focusing on real work conditions and stressors (i.e. the State Government Transforming Health restructure meant people moved office and position). The effect of art on a viewer is difficult to measure as everyone has their own subjective aesthetic tastes, preferences and cultural experience. However, restorative effect occurs despite aesthetic preference and the literature shows consistency across populations with regard to landscape preference for attention restoration.

The use of both quantitative and qualitative methods provided valuable insights. A key finding was that a majority of participants (94%) stated that looking at the landscape helped them refocus on their work. This was not reflected in the quantitative question on fatigue (Table 4, Section 6.1.1), but was revealed through participants' insights into the engagement with the artwork, for example: '[I] imagine myself actually looking out of a window…and it felt calming and allowed me to refocus and re-centre myself' (Probe journal entry by participant S1_7). The Cultural Probe allowed participants the time to engage with the artwork and articulate such insights. Understanding how the participants responded to the artworks over the month was rewarding.

A limitation of the Study was the small sample sizes; however, data is indicative of conditions in Australian workplaces and Universities and illustrates the benefits of art in the workplace. Although the Study 1 and 2 samples were small (17 in total) they present new findings of interest and results that lend support to previous work on attention restoration and preferences for nature imagery. For qualitative interview Studies, the number of participants need not be high. Data saturation can be reached with twenty to thirty interviews, as claimed in a recent Australian Study on arts engagement.[200] Data saturation, the point where participants' responses do not generate new themes, occurred after around seven or eight of my Cultural Probe Studies. As can be seen in Section 6.1, there is a high level of consistency in the responses for Studies 1 and 2. Cultural probes are designed for small sample sizes, where individual feedback is more important in generating qualitative understanding than statistics.

There were some issues with the Study design, specifically Cultural Probe Journal Tasks E and B2. The design of Studies 1 and 2 could have been improved by repeating Task E at the end of the

[200]Christina R Davies et al., "The Art of Being Healthy: A Qualitative Study to Develop a Thematic Framework for Understanding the Relationship between Health and the Arts," *BMJ Open* 4, no. 4 (2014).3.

project. This would determine any changes in mental fatigue over a full day at the beginning and end of the study.[201] Participants did not report a noticeable improvement in energy levels (Task E3). There was an issue with Task B2 (record times looking at the artwork over a day) as participants interpreted the task differently. Some people were more diligent about recording every instance of viewing, while others noted the hour of the day. This explains the range of responses from two to twenty nine instances per day. To improve this aspect of the Study design a recommendation is to have a clearer instruction for the measure, or have a shorter time span (i.e. how many times looked at the artwork between 9am to 11am). Another solution is to measure the incidents and duration of engagement with the artwork autonomously. Video optical tracking could provide an independent measure. For a month-long study, however, such devices would be expensive and intrusive.

The duration of each viewing of artworks was not measured yet viewer reflections such as 'minute', 'moment' and 'pause' suggest that the presence of landscape art provided micro-restorative opportunities throughout the working day, leading to an accumulation of restful moments (Section 6.1.7 Table 13). A self-regulated viewing time is more effective and efficient in restorative effect (i.e. shorter) than a nominated time as Berto found.[202]

Expressed as a 'likelihood caveat', how likely or not an individual in that environment will actually feel a sense of restoration, depends on many factors in addition to nature connection. Factors that were outside of the scope of the Studies include: sleep deprivation, external stressors and the number and qualities of breaks the participant had during the day. Effects of other aspects of the environment on the capacity to direct attention were also outside of the scope of the Studies (e.g. noise, temperature, lighting or interruptions). Factors within the scope of the Study were preference and empowerment. All of the participants had a choice over the artwork they engaged with (from three or four) and the length of time of viewing. In Studies 1 and 2, participants were consulted on the placement of the artwork within their office. As Knight and his colleagues found, empowerment through choice of artwork and room design gives the best results for cognitive functioning and wellbeing in the workplace.[203]

[201] Task E had three parts: how many times was the landscape artwork viewed (E1), periods of high work focus/concentration (E2) and periods of distraction/mental fatigue (E3) over the course of one day.
[202] Berto, "Exposure to Restorative Environments Helps Restore Attentional Capacity."257.
[203] Knight and Haslam, "The Relative Merits of Lean, Enriched, and Empowered Offices: An Experimental Examination of the Impact of Workspace Management Strategies on Well-Being and Productivity."

Benefits and Challenges of the Research Design

Investigations of the benefits of engaging with art tend to consider other measures, not the restorative effects for attention. For instance Davies, measurement of art engagement and wellbeing; Lankston, preferences for art in hospitals; Gordon-Nesbitt, a longitudinal health study of arts engagement; Ulrich, the effects of art on health determinants, anger and stress; and Craemer, economic benefits of art in hospitals.[204] An understanding of the effects of viewing landscape art on attentional states is a new approach to valuing and evaluating arts engagement.

The advantage of my methods is that most Attention Restoration Studies simulate the setting, the tasks and/or the nature imagery. I installed original paintings in real organisations, with people going about their daily work tasks. 'Context is half the work' is the motto of the socially engaged Artist Placement Group, based in the United Kingdom.[205] This Avant-garde group from the 1960s and 70s demonstrated that other 'non-art' knowledges, disciplines, materials and approaches are relevant to art making and vice versa. 'Context is half the work' resonates with the situated Study approach. The paintings were intended as minor interventions in the participating organisations. In Studies 1 and 2 there was a reported increase in connection and care for workplace, more socialisation and personal awareness of fatigue management. Other outcomes included understanding more about office conditions, workplace policies, preferences for office decoration and extraneous factors affecting people in actual work situations (see Sections 6.1.6-7and also 6.2.6-7 Work Environment and Unintended Effects). The situated Studies identified issues and constraints in the workplace that a simulated study would not.

During the focus group sessions a further question arose as to why people who are working four to five days a week in a windowless room did not attempt to make it more appealing to work in. The nature of contemporary work, with short-term contracts and redeployments, has a negative effect on people's ownership of their work station and hence the disinclination to personalise it. Participants were easily recruited and responded positively to the presence of an artwork in their workspaces. Typically lower or middle level staff members are allocated these windowless offices; a

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[204]Davies et al., "The Art of Being Healthy: A Qualitative Study to Develop a Thematic Framework for Understanding the Relationship between Health and the Arts.",Lankston et al., "Visual Art in Hospitals: Case Studies and Review of the Evidence.",Rebecca Gordon-Nesbitt, "Exploring the Longitudinal Relationship between Arts Engagement and Health," *Manchester, UK: Manchester Metropolitan University* (2015); Ulrich, "Effects of Viewing Art on Health Outcomes."; Ulrich et al., "Stress Recovery During Exposure to Natural and Urban Environments.",Raoul Craemer, "Art at the Canberra Hospital: An Independent Evaluation," in *Final Report, Prepared for ACT Health and Arts ACT* (Canberra, Australia2015).

[205] APG (2016). Context is Half the Work, a Partial History of the Artist Placement Group, 1966-1980's, Pub: 3 August– 5 October 2016. Website accessed Sept 21, 2018. https://en.contextishalfthework.net/about-apg/artist-placement-group/

demographic less empowered to personalise their workplace due to casualisation and workplace clean-wall policies.[206]

Some of the challenges of the project were the complexity of using the mixed-methods, comprehending another field (social sciences), and acquiring data collection and analytical skills. The Cultural Probe and other consultative tools provided the artist new ways of evaluating and understanding viewers' experiences of engaging with artworks.

In addition to the three Studies, I conducted a survey of recently constructed hospitals in Australian cities. The benefits of nature views and art on wellbeing of hospital patients and for work environments are well documented.[207] The importance of nature connection is recognised in the design and build of new public hospital infrastructure, with window views for each patient, courtyard gardens, curated landscapes, art and photography in wards and public spaces. Examples are the Flinders Medical Centre (FMC), Royal Adelaide Hospital and Queensland Children's Hospital. Yet, apart from the FMC, which has had a comprehensive Arts-in-Health program since 1997, it is the patient and public spaces which are targeted for nature-themed art and views to gardens. Clean-wall policies persist in staff areas of new public infrastructure. A minimalist corporate style prevailed in the twentieth century as a means to improve staff productivity and is still implemented in many workplaces, despite evidence to the contrary.[208]

People increasingly spend a majority of time indoors, with urbanisation 'associated with increased levels of mental illness' and a 'corresponding decrease in nature experience'.[209] In western societies we live and/or work predominately in urban areas. We could do well to heed Berto's advice:

> Giving the many benefits from contact with nature, plans for urban settings should consider the human need for restoration.[210]

Landscape-themed art placed in windowless work environments is one way to nurture this 'human need for restoration'. Landscape-themed art has been shown to improve workplace fatigue by

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[206] Many workplaces have a 'clean wall' policy; to avoid visual clutter, democratize/depersonalize shared office spaces, and preserve walls in a leased building and/or as an infection control.

[207] Lankston et al., "Visual Art in Hospitals: Case Studies and Review of the Evidence." Ulrich, "View through a Window May Influence Recovery from Surgery."; Kaplan, "The Role of Nature in the Context of the Workplace." Tennessen and Cimprich, "Views to Nature: Effects on Attention."; Peter Dockrill, "Just Looking at Photos of Nature Could Be Enough to Lower Your Work Stress Levels " article, no. March 23 (2016), http://www.sciencealert.com/just-looking-at-photos-of-nature-could-be-enough-to-lower-your-work-stress-levels. Smiraglia, "Artworks at Work: The Impacts of Workplace Art."; Ulrich, "Effects of Viewing Art on Health Outcomes."

[208] Knight and Haslam, "The Relative Merits of Lean, Enriched, and Empowered Offices: An Experimental Examination of the Impact of Workspace Management Strategies on Well-Being and Productivity."

[209] Gregory N. Bratman, "Nature Experience Reduces Rumination and Subgenual Prefrontal Cortex Activation."8567.

[210] Berto, "The Role of Nature in Coping with Psycho-Physiological Stress: A Literature Review on Restorativeness."402.

providing a stimulus for involuntary attention. Short restorative breaks during the day were reported to improve focus and decrease stress in the workplace, which in turn improved staff and student wellbeing. Art in the office can also be a welcome aesthetic element, creating a point of interest, a sense of distinctiveness and personalized space.



Figure 67: B. Minuzzo, *Waitpinga Farm*, 2016. Acrylic on board, 300 mm². Photograph by author.

Practice-Based Research and Representation of Landscape

This section focuses on findings from the Practice-Based Research. The principle research ideas; Attention Restoration Theory and the benefits of nature connection, were embodied in my approach to the research project. The knowledge of how to best manage mental fatigue and optimise attentional states was applied to my daily studio and research practices. Understanding the effects of nature connection on mental fatigue motivated me to install landscape imagery and pot plants in study spaces. To manage attention fatigue I scheduled blocks of focused desktop work with nature breaks: I cycled to university, walked my dog daily and scheduled regular field trips to spend time in, and document, landscape. In order to better represent landscape I devoted time to being outdoors, keenly observing nature, to hone my powers of visual perception.

The methods employed: the framework from ART, art making, consultation with people working in windowless spaces and research, allowed an innovative approach to making landscape paintings.

One of the benefits of the ART framework was the objectivity and freedom it gave me to expand my ideas about landscape painting. Investigations included experimenting with abstraction techniques, exploring shape by cutting up paintings and presenting groups of paintings as installations. Theories on preferences for landscape and the contributing factors for attention restoration influenced the subject of the paintings; horizon views of life-sustaining landscapes (such as *Waitpinga Farm,* Figure 67). The conceptualisation of artworks was informed by ART criteria (fascination, extent, being away and compatibility) and Study responses (subject, colour and format preferences). Viewer responses validated my visual communication; people gleaned from the paintings things that I intended to communicate: local landscapes, sense of movement and imagery that evoked more than one locale. I gained understandings of what it means to represent landscape, how looking at landscape has a connection to evolutionary preferences and the embodied nature of visual perception.

Inspiration and influence on representing landscape was drawn from the work of selected landscape painters; Turner, Cézanne, Beckett and Richter, as well as from the experience of being in landscape. Exploring the work of these artists broadened my understanding of painterly techniques and representation of landscape (Section 3.3). Landscape paintings require visual perception, to make them and to view them (Section 3.2). I see the world differently because of the way these artists have painted it. Paintings which have the ability to hold the gaze have the quality that Kaplan describes as fascinating. I would add that paintings we find engaging may also hold the viewer's gaze as they allow imaginative multiplicity, or many interpretations and associations.

Original landscapes were painted for the Studies as a point of difference from other Attention Restoration research and to determine what an artwork might contribute to the discourse on ART. The presentation of an artwork is affected by context. Offices and university rooms do not have the curatorial authority of an art gallery or museum. In these everyday work settings I chose to work with paintings, as they have the presence of art objects. In addition, an original landscape painting is different to mechanical representations of landscape as it exhibits materiality.[211] Participants were aware of the materiality of the landscapes, often commenting on brush strokes, colours and form (Section 6.1.3, Figure 48 and Section 6.2.3, Figure 59). Considering the way that members of the public engage with and interpret creative works is an approach more commonly applied in fields other than arts; for example product design, landscape design, urban planning and human-computer

[211] Berger, *Ways of Seeing*.21.

interaction. As making art for public places and health environments is part of my practice, the perspectives of end users are valuable.

The artworks stimulated interpretations; people engaged their imaginative thought processes. A majority of Study participants recorded three or more readings, memories or associations when looking at the artwork (Section 6.2.5, Figure 61). A smaller proportion of students generated five or more associations (up to twelve), illustrating that interpreting an artwork stimulated creative thinking. Abstraction allows ambiguity. The semi-abstract representations of landscape inspired the Study participants to find multiple interpretations and associations from the one image. Artworks have the potential for what Hyman terms 'imaginative multiplicity'.[212] Findings suggest that an impressionistic representation of a landscape can be understood by a viewer as a landscape scene, while also evoking personal connections related to the image.

Research into restorative effect and landscape paintings was a process of learning to see more keenly in order to make representations of landscape. By exploring artistic representation, learning about the qualities of paint and understanding how viewers contemplated the artwork my art practice has been moved into new territory. These insights gained have already been applied to a public art installation with a restorative focus (see Figure 66) and will continue to inform my art practice. The concluding Chapter draws on the Study findings and artefacts to address the research questions: 1) how landscape paintings can contribute to attention restoration, 2) how landscape imagery is utilised by viewers in windowless spaces and 3) what sort of landscapes are considered to be restorative.

[212] Hyman, "Art and Neuroscience."257.



Figure 68: B. Minuzzo, *Portal #7*, 2016, Acrylic on board, 350 mm dia. Photograph by author.

Chapter 8 Conclusion

The findings of this multidisciplinary research approach bring new insights into the significance of arts engagement for city-based communities. The ability to pay attention is essential for work, study and many other things we do, yet this cognitive function is easily fatigued. Many urbanites spend long hours indoors working in places lacking views to foliage, hills or sky. Aside from cultural and aesthetic appreciation, for urbanites surrounded by views to concrete and steel, it was found that landscape art can be beneficial for improving cognitive function and for mental wellbeing. Nature connection improves directed attention, reduces stress and increases wellbeing. When viewing nature, we use other parts of the brain, by engaging the default mode. This involuntary attention state is effortless; it does not require concerted focus and it allows the areas of the brain devoted to directed attention to rest. The ability to direct focus can be restored by sleep, rest, being outdoors in nature, looking out a window to landscape or by viewing a painting such as Figure 68, a representation of landscape.

The ideas and methods informing this visual art research are from the disciplines of art, design, environmental psychology and social sciences. Exploring landscape art from the perspective of nature connection and restorative effect provided a novel approach for conceptualising work and a transition in my art practice. Through this inquiry a painting became a portal, a sky light, a window view, a panorama, a sequence, an installation and a blurred view on a long road trip. Insightful responses from members of the public verified my intended visual communication and shed light on how people engage with my work. Considering insights from end users is an approach more commonly applied in fields other than arts; for example product design, landscape design, urban planning and human-computer interaction. Analysis of art is usually the province of professional curators, academics and reviewers, not the general public. In this respect, it was novel to consider interpretations of Study participants in an arts research project. Understanding how artwork was experienced by others was a driving interest for this artist, with a background of making art for the public realm. Insights from staff and students informed subsequent installations in an iterative, practice-based research paradigm. At the same time, the art research is generating new knowledge about the cognitive benefits of viewing landscape art, adding to the discourse on Attention Restoration.

The thesis claims new understandings about 1) how landscape paintings can contribute to attention restoration, 2) how landscape imagery is utilised by viewers in windowless spaces and 3) the type of landscapes considered restorative.

Firstly, landscape paintings can contribute to attention restoration by providing some or all of the characteristics of a restorative environment (fascination, being away, compatibility and extent) and by simulating a window view. Even a brief or infrequent encounter with a landscape artwork can make a perceived difference in fatigue and stress levels for the viewer. For people in windowless spaces, viewing the landscape art throughout the day provides a series of restorative moments without having to leave one's desk. Micro-breaks of less than one minute can alleviate mental fatigue until the time of a longer break. Viewing a landscape artwork is enough to evoke associations and memories of personal connections with nature such as childhood memories, holidays or outdoor exercise. This 'being away' is quite powerful in that it is restorative and also produces positive emotions through a momentary shift in mind state.

Secondly, landscape imagery is utilised by viewers in windowless spaces in the following ways: as a substitution for an actual window view to nature (a prospect), as a momentary respite from work tasks or pressures and to rest directed attention. Participants reported that looking at the landscape helped them to feel calmer and more relaxed. The Study participants were *looking at the landscape*

painting but experiencing a *conceptual shift* as they *transported themselves through memory* of a lived experience to a *place that was not actually depicted in the painted representation*. At times the conceptual shift occurred through a visualisation of another place or experience altogether.

This conceptual shift process reflects a key concept derived from Eco's 'The Open Work'; how viewers contemplate and utilize a work of art.[213] A majority of office workers were using the landscape paintings as a stimulus for a *restorative experience* by immersing themselves in their own memories of familiar, natural environments. In effect people were taking an 'art break'. Taking an art break is a significant idea. An art break is a chance to have a few moments of involuntary attention focus, to rest the directed attention focus, seek respite from the pressures of work and relax the mind. An art break is potentially an accessible and healthier option than other ways of combating fatigue such as imbibing nicotine, caffeine or sugar. Participants described taking a 'minute', 'moment' or 'pause' to look at the landscape, a micro-restorative opportunity which throughout the working day provided an accumulation of restful moments. Taking an art break in the workplace could be a self-regulatory fatigue management strategy and has the added benefit of stimulating creative thinking.

Attention restoration can occur as an increase in state of arousal from low to high (from fatigued to alert) and as a decrease from high to low (from stressed to relaxed). Semi-abstract landscape paintings evoke many associations of nature connection, stimulating imagination which fosters creative thinking. I propose that one of the benefits of landscape art over mechanical reproductions of landscape is that the artwork enables restoration (from stressed to calm) and mental stimulation of other areas of the brain through the individual's interpretations of the image and engagement with the materiality of the artwork (from fatigued to alert). A landscape artwork offers another restorative characteristic to Kaplan's ART criteria. The fact that a majority of participants generated multiple associations from one landscape painting means that they were engaging their imaginations. Viewing an original landscape painting can stimulate creative thinking, it generates imaginative multiplicity.

Lastly the literature from environmental psychology and the 'Painting by Numbers' project identify that preferences for landscapes are consistent cross-culturally, with highest preference for scenes that resemble life-sustaining environments.[214] The restorative qualities of a scene have an effect despite individual aesthetic preference. Someone may not like landscape art as a genre or the

[213] Eco, *The Open Work*
[214] Komar, Melamid, and Wypijewski, *Painting by Numbers : Komar and Melamid's Scientific Guide to Art*.

particular aesthetic, but the presence of a landscape painting in a windowless office can still have a restorative effect on attention, as has been shown by the significant findings to this effect for most of the ninety one Study participants. The landscapes which are preferred as most restorative have common qualities; there is a sense of looking outdoors (a prospect), distance and a view to the horizon, representation of a life-sustaining landscape (blue and green colours indicative of clean air, fresh water and verdant vegetation) and familiarity. A landscape painting that evokes the restorative characteristics (fascination, being away, compatibility and extent) and contains preferential features discussed (prospect, horizon view, life-sustaining, 40% blue, verdant) can contribute to attention restoration. The findings show that semi-abstract landscape paintings, with some ambiguity, increase the viewer's engagement and potential to imagine personal meanings and associations from the artwork.

Directed attention and involuntary attention are affected by the spaces we work in. Providing a more restorative work environment for people has measurable benefits. In a windowless space, the opportunity to view a landscape painting can significantly reduce mental fatigue and stress as demonstrated by findings from the three Studies. The advantage of landscape imagery over other potentially restorative interventions (i.e. music or pot plants) is that an image does not impinge on others in shared spaces or require maintenance.

The research findings have implications for improving people's experience of built environments, workplaces and study spaces. The South Australian Government has implemented a mental health and wellbeing public health policy since 2010. The knowledge of how to improve interior spaces to better manage mental fatigue and stress would be a positive addition to current SA Government, University and Hospital wellbeing initiatives. Curation of restorative art in workplace environments would benefit office workers and local artists alike. With the Australian workforce spending ever increasing hours at work, a future study could expand the scope of the project in partnership with a local visual arts festival to create restorative 'art breaks' in work spaces for an entire building. A barrier is that property owners, managerial policies and bureaucratic systems may constrict the implementation of new ideas.

Reducing mental fatigue and stress, increasing relationships and connection to the workplace correlates with the research by psychologist Dr Martin Seligman on positive wellbeing.[215] The concept Seligman developed is that educating a community about the factors which sustain positive

[215] Martin Seligman, "Building the State of Wellbeing: A Strategy for South Australia," (Adelaide: Government of South Australia Department for Premier and Cabinet, Government of South Australia, 2013).

mental health raises the level of wellbeing in the population. This approach can be applied to the workplace; improve conditions for some people and everyone will benefit. Wellbeing of staff and students can be improved by learning how to better manage mental fatigue and stress. It is recommended that staff and students be informed about attention restoration and the benefits of viewing nature-themed art in work environments as a means to improve mental health and wellbeing across workplace or university populations.

Future research could replicate this study with small sculptural landscape-themed artworks, suitable to sit on a desk, in consideration of the impediments to installing artworks on office walls. A more ambitious transdisciplinary research project could involve neuroscientists and artists in a study of neural activity as people look at landscape artworks. Functional magnetic resonance imaging makes it possible to measure brain activity without harm, by monitoring blood flow. The research interest would be to better understand the processes involved of engaging involuntary attention and generating interpretations from viewing landscape and semi-abstract artworks. This proposed further research would lend empirical evidence to the restorative potential of landscape art and the ability of art to stimulate creative thinking.

As a result of the findings I propose restorative potential as another means to measure and value arts engagement. Developing new ways to value the arts and provide a new evidence base to support arts engagement is imperative in times of continuing cut-backs to arts funding. In September 2018 the Liberal Government in South Australia slashed $4.9 million from the State arts budget for the next financial year (2018-2019) and $32 million over the following 4 years.[216] There is a real need for advocacy that negotiates in pragmatic terms, for the benefits of arts engagement.

If we want to promote innovation, creativity and critical thinking, it would be advisable to promote opportunities in work and study situations for viewing art. In cities, where there may be fewer opportunities to engage with nature, landscape murals can create a more restorative and imaginative environment for urban communities. The curation of landscape-themed art into offices, lecture theatres, board rooms, meetings and lecture presentations, may have previously been considered a distraction. Yet in the light of my research, landscape paintings installed in work and

[216] AICSA (2018) State Budget Sees Cuts to the Arts and Significant Changes to Arts South Australia, September 5, 2018 http://aicsa.net.au/state-budget-sees-cuts-to-the-arts-and-significant-changes-to-arts-south-australia/

study environments have significant benefits, providing a self-regulated means for people to restore attention and generate creative thinking.

A contribution to the visual arts is a new evidence base and value for arts engagement: restorative effect. Significantly, it was found that viewing landscape art improves cognitive function, reduces fatigue and stress and stimulates imagination. A contribution to environmental psychology is the situated Study using original artworks. An artistic representation of landscape in a windowless room can have a significant restorative effect on viewers. Imaginative multiplicity may be considered as another characteristic of a restorative environment, adding to the discourse on Attention Restoration Theory.

Considering the restorative potential of art provides a new evidence base to support and advocate for arts engagement, not only in galleries and museums, but in educational settings and work spaces. Landscape artworks can be both a restorative and a *creative* stimulus for viewers, inspiring visual interpretation and creative thinking. Work and study environments can be designed or adapted to consider attention restoration. Instigating a more restorative environment can be as simple as introducing a landscape image.

Art doesn't just have a cultural or economic value; art has been shown to have a positive benefit for mental fatigue, stress and thus wellbeing and health. Landscape art can help ameliorate fatigue for staff and sleep-deprived students overloaded by work and digital distractions. The multidisciplinary approach enabled a shift in my practice-based research and an appreciation of landscape art from an environmental psychology viewpoint. By utilizing the Attention Restoration Framework, I discovered that arts engagement has significance other than its cultural and aesthetic value; landscape art can be beneficial for work-weary brains. Art can contribute to a restorative environment in the windowless spaces we inhabit in our increasingly indoor and urban lives.

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Section 10 Appendices

1) Coding Framework
2) Coding Framework: definitions of terms
3) Cultural Probe Journal Questions (3 pages)
4) WEMWBS Pre/Post Wellbeing Survey
5) Study 1 and 2; Post Study Online Survey (3 pages)
6) Study 3: Online Survey (4 pages)
7) Human Research Ethics Council Ethics Approval
8) Site Specific Authorisation - Hospital
9) Participant Commencement Survey
10) Participant Information Sheets: Study 1, 2 and 3
11) Participant Consent Form
12) Departmental Information sheet (Study 3)
13) Poster Presentation
14) Copyright Applications
15) Documentation of artworks in situ for Studies 1, 2 and 3.

1. Coding Framework

Coding Diagram, May 2018

Qualitative analysis of participant responses.

Effects of introducing landscape artwork into windowless offices and study spaces.
Bridgette Minuzzo, PhD candidate, School of Art, Arch. and Design, University of South Australia
References:
Saldaña J. (2015) *The Coding Manual for Qualitative Researchers*: Sage.
Kaplan S. (1995) The Restorative Benefits of Nature: Toward an Integrative Framework. *Journal of Environmental Psychology* 15: 169-182.



2. Coding Framework: Definitions of Terms

Clarification of Coding Terms, June 2018

ASSERTION: Considering Attention Restoration Theory, how may landscape art help to provide a restorative environment in windowless workplaces?

PARENT CODES:

Restorative Effects - positive consequences which enable a person to recuperate, including a decrease in fatigue, stress and an increase in mental wellbeing and the ability to focus on tasks.

Unintended Effects - positive or negative consequences which occurred during the case studies not related to restoration or recuperation

Work Environment - this is a situated study, with administrative or research based office workers. Aspects of this study, recorded which relate to the participants' experience at work.

Imaginative Multiplicity - multiple readings of the artwork, as when the participant thinks about different places, activities or things when looking at the artwork.[1]

SUB CODES (SC):

Restorative Effects

Developed from Kaplan's criteria for Restorative Natural Environments which are as follows: [2]

- Fascination
- Being Away
- Extent
- Compatibility

SC: Fascination - looking & noticing, engagement with/reflection on the artwork without undue effort

SC: Being Away - the viewer can step outside of their current mindset, experience a conceptual shift, can 'be away' by having associations or memories of another time or place.

SC: Extent of Imagery - stimulating enough to engage the mind, even a miniaturization, acknowledgement of image as an entire landscape

SC: Compatibility - being relaxed or calm as a consequence of engaging with the image, a reported sense of appreciation or familiarity. Consistent with what the viewer considers restorative (non-threatening, a clifftop vista may not be restorative to an Acrophobic).

Unintended Effects

SC: Socialisation - increased interaction with others in the workplace

SC: Ownership - strong connection to artwork or increased personal connection to the workplace

SC: Issues Identified - positive or negative consequences such as personal décor preferences and workplace décor policies, dislike or non-compatibility with the artwork.

Work Environment

SC: Working Day - hours worked in the office (self-reported)

SC: Work pressures -any stress or changes occurring

SC: Productivity - self-reported periods of fatigue or focus over the day/working week.

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[1] Imaginative Multiplicity is a concept developed from art theory, which I believe to be a restorative effect additional to Kaplan's criteria. It is added as a separate element to test this particular effect of an artwork.

[2] Stephen Kaplan, "The Restorative Benefits of Nature: Toward an Integrative Framework," *Journal of environmental psychology* 15, no. 3 (1995).173.

3. Cultural Probe Kit Journal Questions



Welcome to your
Cultural Probe Journal
Initials: Room No:

NB: The Cultural Probe kit is a journal with questions and tasks on each page. Space is allowed for participant comments. Illustrations and icons were included for visual interest and to encourage engagement.

Task A: Are there any windows in your work space? How many? *Describe the view.*

Task B1: Estimate the time spent on a weekday (Monday to Friday) in your office space. Shade the chart.

	8am	9am	10am	11am	12pm	1pm	2pm	3pm	4pm	5pm	6pm
M											
T											
W											
Th											
F											

Task B2: Is there a time of day that you tend to feel a drop in energy, or feel tired? Mark the time chart.

	8am	9am	10am	11am	12pm	1pm	2pm	3pm	4pm	5pm	6pm
M											
T											
W											
Th											
F											

Task C: ***List*** any objects or images of landscape, animals or plants present at your work station or computer (i.e. screen saver image, calendar or photographs). ***Comment*** about the motivation for selecting these objects/images.

Task D: On a scale of 1 to 5 how would you describe your feeling of connectedness to nature?

1	2	3	4	5
Whenever I spend time in nature nowadays I do not experience a close connection to it.	My personal welfare is independent of the welfare of the natural world.	I am somewhat concerned with the natural world	I sometimes feel a sense of oneness with the natural world around me	I often feel a sense of oneness with the natural world around me

NB: Task D Connectedness to Nature scale categories derived from Tam et al [1]

Task E: This is a three part task: E1. How many times did you view the landscape artwork today? Estimate by marking the chart. Please comment.

8am	9am	10am	11am	12pm	1pm	2pm	3pm	4pm	5pm	6pm

E2. Indicate periods of high work focus/concentration. Shade the chart. Any comments?

8am	9am	10am	11am	12pm	1pm	2pm	3pm	4pm	5pm	6pm

E3. Indicate periods of distraction/mental fatigue. Shade the chart. Care to reflect on this?

8am	9am	10am	11am	12pm	1pm	2pm	3pm	4pm	5pm	6pm

Task F: What do you find engaging about the landscape artwork? *Take a photo of the landscape artwork and comment on it.* Email this to the researcher.
Why do you find these things about the landscape artwork engaging?

Task G: Does the landscape artwork evoke images of life-like things?
If so, how?

Task H: Does the landscape artwork bring to mind memories of nature?
Please elaborate.

Task I: Using the window template provided, hold it up, in front of the landscape artwork and take a photograph. *Comment.*
Email this to the researcher.

[1] Tam, "Concepts and Measures Related to Connection to Nature."65.

Task J: *Make a sketch of your work space in plan-view*. See example. Indicate features: door, window, desk, computer and where the landscape artwork is positioned.

Task K (3 part task): How does looking at the landscape artwork affect your perceived stress? Comment.

1	2	3	4	5
No Effect	Minimal effect	Some effect	Decrease in stress	Noticeably decrease in stress

How does looking at the landscape artwork affect your work focus? Elaborate.

1	2	3	4	5
No effect	Minimal effect	Some effect	Increased work focus	Noticeably Increased work focus

How does looking at the landscape artwork affect your energy levels? Comment.

1	2	3	4	5
No effect	Minimal effect	Some effect	Increased energy	Noticeably Increased energy

Something to add?

Something to subtract?

4. WEMWBS Pre/Post Mental Wellbeing

The Warwick-Edinburgh Mental Well-being Scale (WEMWBS)

Below are some statements about feelings and thoughts.

Please tick the box that best describes your experience of each over the last 2 weeks

STATEMENTS	None of the time	Rarely	Some of the time	Often	All of the time
I've been feeling optimistic about the future	1	2	3	4	5
I've been feeling useful	1	2	3	4	5
I've been feeling relaxed	1	2	3	4	5
I've been feeling interested in other people	1	2	3	4	5
I've had energy to spare	1	2	3	4	5
I've been dealing with problems well	1	2	3	4	5
I've been thinking clearly	1	2	3	4	5
I've been feeling good about myself	1	2	3	4	5
I've been feeling close to other people	1	2	3	4	5
I've been feeling confident	1	2	3	4	5
I've been able to make up my own mind about things	1	2	3	4	5
I've been feeling loved	1	2	3	4	5
I've been interested in new things	1	2	3	4	5
I've been feeling cheerful	1	2	3	4	5

Warwick-Edinburgh Mental Well-Being Scale (WEMWBS)
© NHS Health Scotland, University of Warwick and University of Edinburgh, 2006, all rights reserved.

5. **Study 1 and 2; Post Study Online Survey (3 pages)**

Research title: How may landscape-themed art have a restorative effect in windowless workplaces?

Participant initials: **Room No:**

Case Study 1 and 2 further interview questions

1. Are you still in the same office environment (no natural light, no window view)?

   YES ☐ NO ☐

2. Have you added/removed any of the following in your workplace since the case study?

		Added	Removed
a.	Landscape paintings	☐	☐
b.	Paintings with other themes	☐	☐
c.	Landscape photos	☐	☐
d.	Photos other themes	☐	☐
e.	Plants	☐	☐
f.	Other: describe	☐	☐

3. Explain your reasons for adding/removing these items.

_____

4. Has the case study highlighted any workplace policies, issues or personal preferences for work space decoration/having art at work?

_____

5. In the case study was it important that it was

   ☐ an original artwork
   ☐ you had met the artist
   ☐ the landscape seemed familiar

   Why? _____

6. Since the case study have there been any changes to how you manage periods of fatigue during the working day?

_____

7. Rate the restorative effect of the following:

Landscape painting *compared to* Landscape photograph



Not restorative Very Restorative

1	2	3	4	5



Not restorative Very Restorative

1	2	3	4	5

8. Rate the restorative effect of the following painting themes:



Not restorative Very Restorative

1	2	3	4	5



Not restorative Very Restorative

1	2	3	4	5



Not restorative Very Restorative

1	2	3	4	5



Not restorative Very Restorative

1	2	3	4	5



Not restorative Very Restorative

1	2	3	4	5



Not restorative Very Restorative

1	2	3	4	5

9. Has your attitude to the benefits of landscape art in the workplace changed since the Case Study?

_____

_____

List of illustrations in order of appearance:

1 Bridgette Minuzzo, *The Road to Blinman*, 2017, acrylic on board, 45 x 45 cm. Photo by artist.
2 Bridgette Minuzzo, *The Road to Blinman*, 2011, digital photograph. Photo by artist.
3 Paul Cezanne, *Mont Sainte-Victoire*, ca.1887. Oil on canvas, 67 x 92 cm. Copyright expired
4 Vincent van Gogh *Houses Seen from the Back*, 1885-86. Oil on canvas, 43.7 cm x 33.7 cm Van Gogh Museum, Amsterdam. Copyright expired.
5 Giorgio Morandi, *Still Life (Natura morta),* 1936. Oil on canvas, 33 x 37 cm. Fondazione Magnani Rocca, Mamiano di Traversetolo.Italy. Copyright expired.
6 Claude Monet, *Bridge over a Pond of Water Lilies,* 1899. Oil on canvas, 89.7 x 90.5 cm. Copyright expired
7 Pierre-Auguste Renoir *La Couseuse* c 1875. Oil on canvas, 65 x 54 cm. Copyright expired.
8 Paul Klee, *Child and Aunt,* 1940. Oil on canvas, 44 x 46 cm. Beyeler Foundation, Riehen, Switzerland. Copyright expired.

Researcher: Bridgette Minuzzo
PhD Candidate
School of Art, Architecture & Design
University of South Australia
Ethics Protocol No. 0000034973

6. Study 3 –Online Survey (4 pages)

Attention, Fatigue and Landscape Art

1. Course of Study

2. Year Level

3. Country of Birth

4. Age group

5. Gender

6. A few questions on Attention. Have you attended a lecture in the past hour?

7. Time of lecture

8. Subject of Lecture

9. A few questions on Fatigue. Rate your current level of mental fatigue

Very Tired/Mentally fatigued		Neutral		Very Refreshed/Alert
○	○	○	○	○

10. Rate your current level of stress?

Highly Stressed		Neutral		Very Relaxed
○	○	○	○	○

11. Indicate the number of caffeinated drinks (coffee/tea/cola/energy drinks) consumed in the past 4 hours.

0 None 2 caffeinated drinks 4 caffeinated drinks

12. Rate how fatigued you felt this morning

Felt tired this morning Neither tired or refreshed Woke feeling refreshed

13. Questions on Landscape refer to the art installations in the Allan Scott Foyer. Please complete them after selecting artwork to look at (A, B, C or all of the art).

14. Please record the time you began to look at the artwork.

15. Have you seen these artworks before?

16. Do the landscapes look familiar?

- Yes
- No

17. How do the landscapes look familiar?

18. Do you find the artworks agreeable?

- Yes
- No

19. What do you like about the artworks?

20. Does the artwork make you want to look at it more closely?

- ◯ Yes
- ◯ No

21. Why do you want to look more closely at the artwork?

22. Does the artwork seem like you are looking into another world?

- ◯ Yes
- ◯ No

23. How does the artwork seem like another world?

24. When looking at the artworks, do you feel like you are momentarily somewhere else?

- ◯ Yes
- ◯ No

25. Explain

26. List everything that the artwork makes you think about (please separate answers with a comma)

27. After looking at the artwork, please rate your level of mental fatigue.

Very Tired/Mentally fatigued		Neutral		Very Refreshed/Alert
◯	◯	◯	◯	◯

28. After looking at the artworks, please rate your level of stress

Highly Stressed		Neutral		Very Relaxed
◯	◯	◯	◯	◯

29. Please record the time you finished looking at the artwork.

30. Any other comments you would like to add?

7. Human Research Ethics Council Ethics Approval

University of South Australia

23 May 2016

To Whom It May Concern,

I confirm that the University's Human Research Ethics Committee (HREC) granted ethics approval for the research project detailed below. In so doing, HREC determined that the project met the requirements of the *National Statement on Ethical Conduct in Human Research*. Full details of the project are as follows:

Research and Innovation Services

Adelaide South Australia 5000

GPO Box 2471 Adelaide South Australia 5001 Australia

t: +61 8 8302 3723

Chief Investigator: Bridgette Minuzzo
Principal Supervisor: Professor Simon Biggs
Project Tile: 'Assessment of the Biophilic effects on viewers of artistic representations of landscape elements'
Ethics Protocol Number: 0000034973
Ethics approval date: 22 April 2016
Ethics expiry date: 22 April 2019

Please do not hesitate to contact me should you require any further information.

Kind regards,

[redacted]

Assoc Prof. Bernie Hughes
Chair, Human Research Ethics Committee
University of South Australia

8. Site Specific Authorisation– Hospital

Office for Research

Flinders Medical Centre
Ward 6C, Room 6A219
Flinders Drive, Bedford Park SA 5042
Tel: (08) 8204 6453
E: Health.SALHNOfficeforResearch@sa.gov.au

Government of South Australia
SA Health
Southern Adelaide Local Health Network

22 September 2016

Ms Bridgette Minuzzo
School of Art, Architecture and Design
University of South Australia
North Terrace
ADELAIDE SA 5000

Dear Ms Minuzzo

OFR reference number:	**258.16**
Project title:	Assessment of the Biophilic effects on viewers of artistic representations of landscape elements
Ethics approval:	22 April 2016 to 22 April 2019
Site:	Flinders Medical Centre
Subject:	Site Specific Assessment Review

Thank you for submitting an application for authorisation of this project.

On the basis of the information provided in your Site Specific Assessment submission, I am pleased to inform you that authorisation has been granted for this study to commence.

This authorisation is based on the following documents:

Site Specific Assessment form AU/16/E2E214 dated 05 May 2016

University of SA HREC Approval Letter dated 23 May 2016

Participant Information Sheet v2.0 dated 10 August 2016

Confirmation of Public Liability and Professional Indemnity as per Raelene Barclay, Insurance Risk Compliance, University of SA Letter dated 08 August 2016

Bridgette Minuzzo, Principal Investigator CV dated February 2016

HREC reviewed documents listed on the approval letter are accepted as part of the site authorisation.

The SSA reference number should be quoted in any correspondence about this matter.

If Flinders University SA personnel are involved in this project, the Principal Investigator should notify the University before commencing their research to ensure compliance with University requirements including any insurance and indemnification requirements.

Should you have any queries about the consideration of your Site Specific Assessment form, please contact Dawn Jennifer on 8204 6453.

Yours sincerely

[redacted]

Professor Villis Marshall
Director, Office for Research

9. Participant Commencement Survey

University of South Australia | Art, Architecture and Design

Project Title: How may conceptual landscape-themed art reproduce the restorative effects of nature for individuals in a nature-deprived environment?

Principle Investigator/PhD Candidate: Bridgette Minuzzo
Email: bridgette.minuzzo@mymail.unisa.edu.au
Ethics Protocol Number: 0000034973

Participant Commencement Survey

This data will initially be individually identifiable until the focus group then de-identified for all publications and uses of the data.

Your initials:..... **Room number:**.....

Occupation:.....

Gender: Female Male Other

Age range: 20-30 31-40 41-50 51-60 61-70

Work space description: *circle those which apply to your space*

Cubicle space Open plan office Individual office Window view of sky

No windows Interior window Window view of built environment

No natural light Natural light Other:.....

How would you describe your engagement with the natural environment outside of your working hours? Examples: time spent gardening, walking at the beach, commuting through the parklands, living in the Adelaide Hills with views of native forest.

.....

.....

.....

10. Participant Information Sheets: Study 1, 2 and 3



Invitation to Participate in a Research Project

Project Title: How may conceptual landscape-themed art reproduce the restorative effects of nature for individuals in a nature-deprived environment?

Principle Investigator/PhD Candidate: Bridgette Minuzzo
Email: bridgette.minuzzo@mymail.unisa.edu.au

Principal Supervisor: Professor Simon Biggs, Professor of Art, Director: South Australian School of Art, Associate Head of School (Research): School of Art Architecture and Design, University of South Australia, Tel: (08)8302 0418

Co-Supervisor: Dr Catherine Paquet, Senior Research Fellow, School of Health Sciences, University of South Australia, Tel: (08)83022615

Dear Participant,

You are invited to participate in this research study, concerned with restorative effects of nature-themed artworks. Participation in this study is voluntary.

- The purpose of the study is to collect and analyse responses of the public to landscape art works.
- As a participant you will be expected to complete a series of tasks each week for 4 weeks. This will involve
  - completing short pre/post surveys and questions relevant to the research
  - taking photographs of the artworks and recording comments via email and a journal
  - attending a one hour focus group (at a time suitable for participants) to discuss findings from the research
- The focus group will be held in a meeting room at or near the site of the participant workplace and art installations. Given the nature of focus groups, confidentiality of focus group discussions and participation cannot be guaranteed.
- As a participant you may withdraw from the research at any time without affecting your position now or in the future.
- Data may be excluded from the study if participants withdraw in the early stages of the research.
- The benefits for participant are the addition of art works to the workplace/site of occupation and the knowledge that participation contributes to an understanding of how members of the general public engage with art.
- If the participant suffers adverse events as a result of participating in the research the researcher would refer them to the appropriate support services at the organisation.
- Information collected as part of the study will be retained for five years as a paper copy, Uni SA server and encrypted, password protected on external computer hard drive
- The data will initially be individually identifiable until the focus group then de-identified for all publications and uses of the data.
- All records containing personal information will remain confidential and no information which could lead to identification of any individual will be released, unless required by law.
- 'This project has been approved by the University of South Australia's Human Research Ethics Committee. If you have any ethical concerns about the project or questions about your rights as a participant please contact the Executive Officer of this Committee, Tel: +61 8 8302 3118; Email: vicki.allen@unisa.edu.au'.
- Participants may choose to be provided with a summary of the research finding at the end of the project via email. Participants or third parties who wish to lodge a complaint about either the study or the way it is being conducted should contact the Executive Officer of Uni SA HREC in the first instance, email: humanethics@unisa.edu.au or Tel: (08) 8302 3118.

Please contact the Principle Investigator to register your interest bridgette.minuzzo@mymail.unisa.edu.au

11. Participant Consent Form

UniSA Research and Innovation Services

Human Research Ethics Committee

CONSENT FORM

This project has been approved by the University of South Australia's Human Research Ethics Committee. If you have any ethical concerns about the project or questions about your rights as a participant please contact the Executive Officer of this Committee, Tel: +61 8 8302 3118; Email: humanethics@unisa.edu.au

SECTION 1: CONTACT AND PROJECT DETAILS

Researcher's Full Name:	Bridgette Louise Minuzzo
Contact Details:	bridgette.minuzzo@mymail.unisa.edu.au
Supervisor's Full Name:	Prof Simon Biggs, Professor of Art, Director: South Australian School of Art Associate Head of School (Research): AAD, Uni SA
Contact Details:	Simon.Biggs@unisa.edu.au
Protocol Number:	v.2.4.3
Project Title:	Real enough? How artistic representations of landscape elements may evoke Biophilic impulses.

SECTION 2: CERTIFICATION

Participant Certification

In signing this form, I confirm that:

- I have read the Participant Information Sheet and the nature and purpose of the research project has been explained to me. I understand and agree to take part.
- I understand the purpose of the research project and my involvement in it.
- I understand that I may withdraw from the research project at any stage and that this will not affect my status now or in the future. Should I choose to withdraw, I understand that I have up until two weeks following the completion of my interview to request that my data be excluded from the study
- I understand that while information gained during the study may be published, I will not be identified and my personal results will remain confidential, unless required by law.

Participant Signature	*Printed Name*	*Date*

Researcher Certification

I have explained the study to subject and consider that he/she understands what is involved.

Researcher Signature	*Printed Name*	*Date*

12. **Departmental Information sheet (Study 3)**

University of South Australia | Art, Architecture and Design

Research Survey Information – Allan Scott Auditorium May 2018

PhD Title: Art and Attention Restoration Theory.
Research Question: How does landscape-themed art contribute to a restorative environment in windowless spaces?

PhD Researcher: Bridgette Minuzzo
School of Art Architecture and Design, University of South Australia
Mobile: 0419 650 132
Ethics Protocol Number: 0000034973
Email: bridgette.minuzzo@mymail.unisa.edu.au

Principal Supervisor: Professor Simon Biggs, Director: South Australian School of Art, School of Art Architecture and Design, University of South Australia
Tel: (08) 8302 0418
Co-Supervisor: Dr Catherine Paquet, Senior Research Fellow
School of Health Sciences, University of South Australia
Tel: (08) 8302 2615
Co-Supervisor: Dr Ruth Fazakerley, Academic Developer Teaching Innovation Unit, Division of Education, Arts and Social Sciences (EAS), Uni SA
Tel: (08) 8302 4277

Research Contribution: To add to knowledge about the value of art in urban public places, in workplace and academic settings, and how landscape-themed art may improve focus and wellbeing.

Methodology: Practice-led research, public art practice.

Online Survey: *Attention, Fatigue and Landscape Art*

- Participation in the study is voluntary.
- A series of landscape paintings have been installed in the Allan Scott Auditorium.
- After a period of directed attention focusing on a lecture in H2-16, students will be invited to use the web link or QR code provided by the researcher to access an online survey.
- Participants to complete the survey whilst looking at the landscape art in the Auditorium.
- Online survey takes approximately 6 minutes to complete.
- Survey participation is not identified.
- The benefits for participant are an awareness of how their attentional state and cognitive abilities may be improved by factors in their environment.
- Information collected as part of the study will be retained for five years as a paper copy, Uni SA server and encrypted, password protected on external computer hard drive.
- This project has been approved by the University of South Australia's Human Research Ethics Committee. If there are any ethical concerns about the project or questions about participant rights, please contact the Executive Officer of the HRE Committee. Tel: +61 8 8302 3118; Email: vicki.allen@unisa.edu.au

13. Poster Presentation, National Science Conference , ASMR



University of South Australia

Landscape Art and Attention Restoration Theory

Bridgette Minuzzo
PhD Candidate
School of Art, Architecture and Design
University of South Australia
M: 0419 650 132
bridgette.minuzzo@mymail.unisa.edu.au

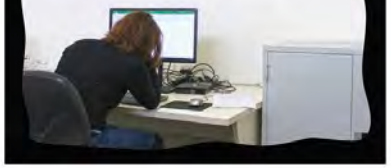


Background

- Many urbanites spend long hours indoors
- Workspaces often lack views of nature
- Experiencing nature reduces stress, pain and fatigue, and increases mental wellbeing[1]
- Attention Restoration Theory establishes that directed attention (focused work) is improved when viewing nature (engages involuntary attention, a stimulus-driven state)[2]
- It is unknown if artistic representations of nature have similar beneficial effects

The Research Question

How may representations of nature, in the form of artworks, have a beneficial effect on attention restoration and well-being for individuals working or studying in windowless settings?



Mixed-methods



Results

- Landscape art stimulates involuntary attention and thus directed attention is rested
- Participants report **20 to 40% reduction in stress/mental fatigue** after viewing landscape
- Brief encounter (<5 min) is sufficient
- **People took 'an art break'**
- Paintings triggered fond memories, a calming and relaxing effect
- Semi-abstract art inspired interpretation and personal associations; **'imaginative multiplicity,'** a restorative quality of art[3]

Conclusions

- Research outcomes question the persistence of clean-wall policies
- Show the health and attention restoration benefits of art for urban workplace design, study spaces and public places
- Arts engagement has a benefit beyond its cultural and aesthetic value, **looking at nature-themed art is good for our brains**



Watch a video about my research!
10 min play for
Perform Your Science 2018.
Runner-up Award
National Science Week
Inspiring South Australia
https://youtu.be/ZH6RdduhSwQ

References
1. Kellert SR and Wilson EO. (1993) *The Biophilia Hypothesis.* Washington, D.C: Island Press. Ulrich RS. (1991) Effects of Interior Design on Wellness: Theory and Recent Scientific Research. *Journal of Health Care Interior Design* 3: 97-109.
2. Kaplan S. (1995) The Restorative Benefits of Nature: Toward an Integrative Framework. *Journal of Environmental Psychology* 15: 169-182.
3. Hyman J. (2010) Art and Neuroscience. In: Frigg R and Hunter M (eds) *Beyond Mimesis and Convention: Representation in Art and Science.* Dordrecht: Springer Netherlands. 245-261.

Acknowledgements
Dr Catherine Paquet, Prof Simon Biggs, Dr Ruth Fazakerley, Prof Ian Gibbons

14. Copyright applications

Copyright for the majority of Figures in the thesis rests with the author; 53 of the 68 Figures in the body of the thesis are the work of the author. These include diagrams, charts and documentation by the author of her artworks and of her paintings installed in work and study spaces for the three Studies.
As indicated in the text, 9 of the other figures have Creative Commons licences or were made over 75 years ago, thus the copyright has expired.

Copyright permission to use the diagram *America's Most Wanted*, (Figure 29), for use in an academic thesis was granted 27th September, 2019. Rights have reverted to the publishers Sterling Lord Literistic, who granted permission.

Copyright permission was granted to reproduce four images of artist Gerhard Richter's artworks (Figures 25 to 28), for the PhD thesis and ROR digital publication on 9th October, 2019 by the Gerhard Richter Archive in consultation with the Assistant of Gerhard Richter.

The image of Yayoi Kusama's *The Obliteration Room,* (Figure 7) was redacted as copyright permission was not able to be obtained at time of submission. A link to the QAGOMA website

Appendix 15

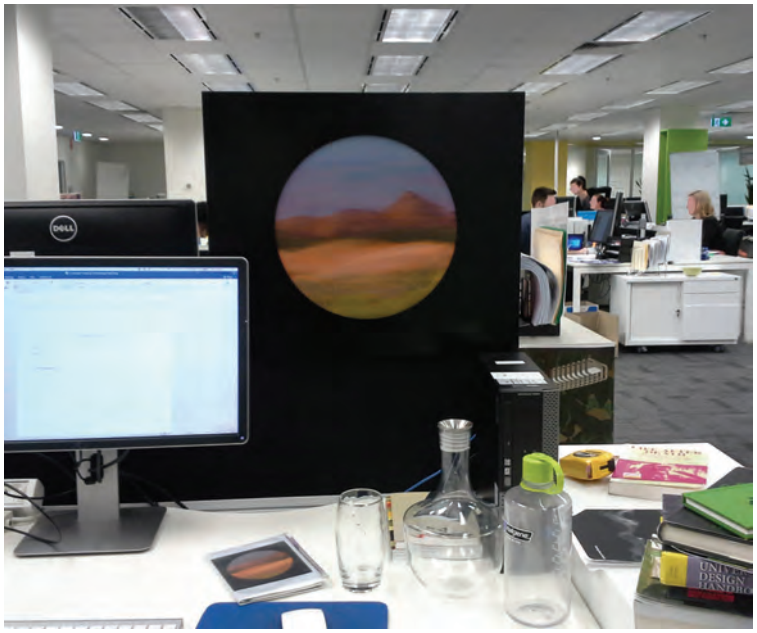
Documentation of artworks in situ:

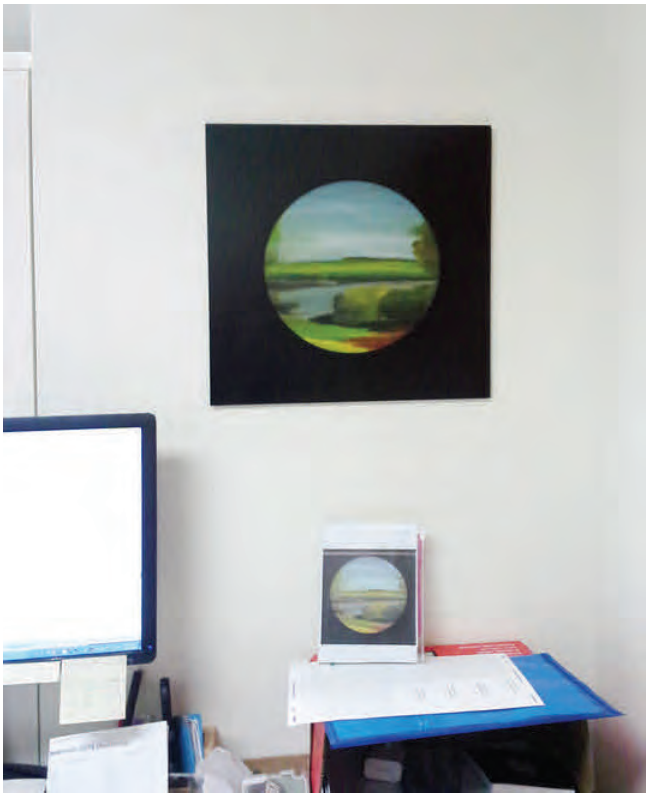
- Research Study 1
- Research Study 2
- Research Study 3

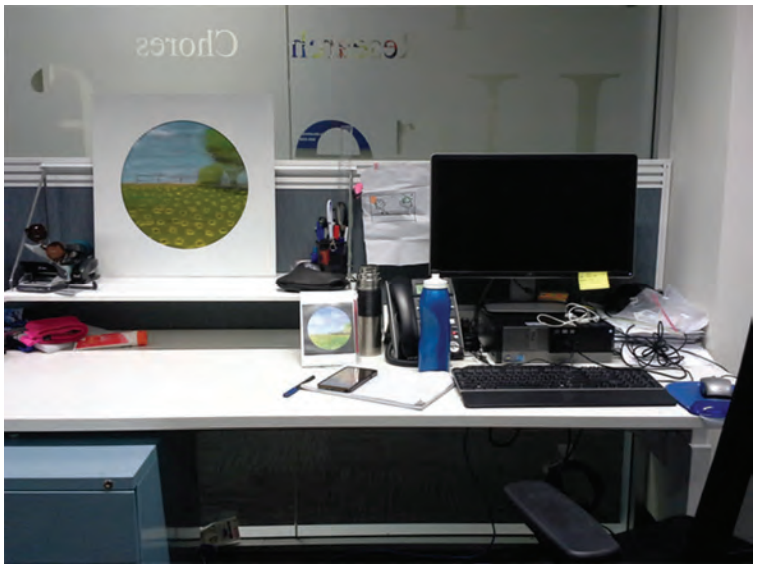
Research Study Focus: Art and Attention Restoration Theory: How landscape-themed art may contribute to a restorative environment in windowless workplaces.

Research Study 1: *Portal* landscapes installed in windowless offices at two city-based University campuses for a month.

Consultation Methods: Cultural Probe journals, surveys, pre/post mental wellbeing surveys







Clockwise from top:

B. Minuzzo, *Portal: Road to Blinman*, 2016. Acrylic on board, 350 mm dia, frame 600 x 500 mm. Photograph by the artist.

B. Minuzzo, *Waitpinga Farm*, 2016. Acrylic on board, 250mm dia, frame 400 mm². Photograph by the artist.

B. Minuzzo, *The Farm #2*, 2016. Acrylic on board, 300mm dia, frame 400 mm². Photograph by the artist.









Clockwise from top:

B. Minuzzo, *Portal to the Farm*, 2016. Acrylic on board, 300mm dia, frame 400 mm². Photograph by the artist.

B. Minuzzo, *Flinders Ranges #2*, 2016. Acrylic on board, 250 mm dia, frame 400 mm². Study 1. Photograph by the artist.

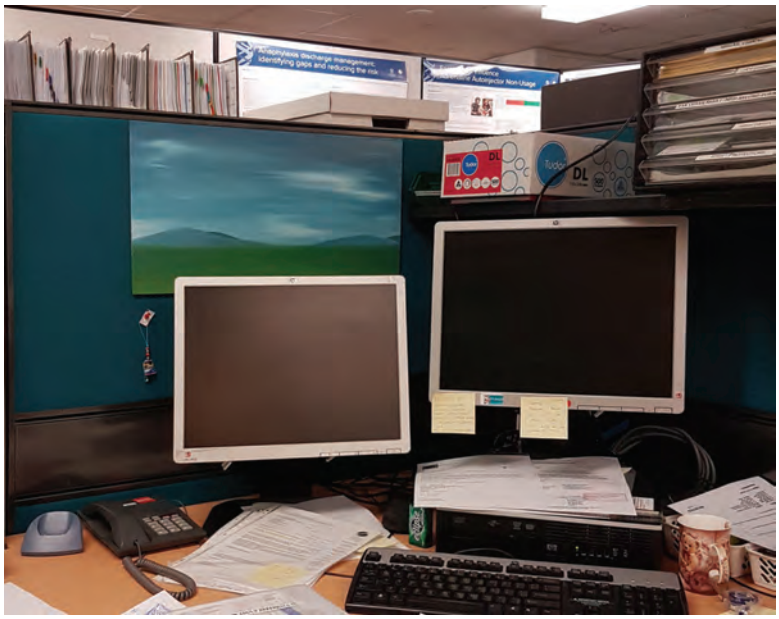
B. Minuzzo, *Portals to the Ranges*, 2016. Acrylic on board, 250 mm dia each. Study 1. Photograph by the artist.

B. Minuzzo, *River Gum*, 2016. Acrylic on board, 350 mm dia, frame 600 x 500 mm. Photograph by the artist.

Research Study 2: Panoramic and window-sized landscapes installed in windowless offices at a University campus and a hospital for a month

Consultation Methods: Cultural Probe journals, surveys, pre/post mental wellbeing surveys







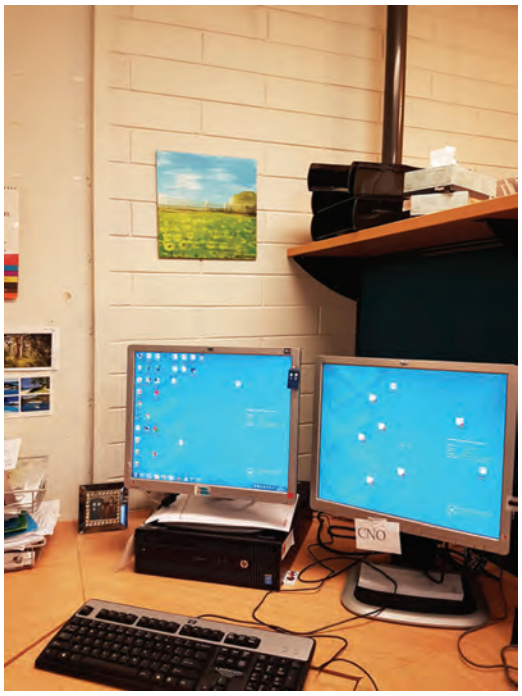
From top:

B. Minuzzo, *The Ranges,* 2017. Acrylic on board, 800 x 450 mm. A landscape painting installed in a hospital office without windows. Photograph by the artist.

B. Minuzzo, *The Blue of Distance,* 2017. Acrylic on board, 340 x 600 mm. Photograph by the artist.

B. Minuzzo, *Rolling Blue Hills,* 2017. Acrylic on board, 800 x 450 mm. Photograph by the artist.





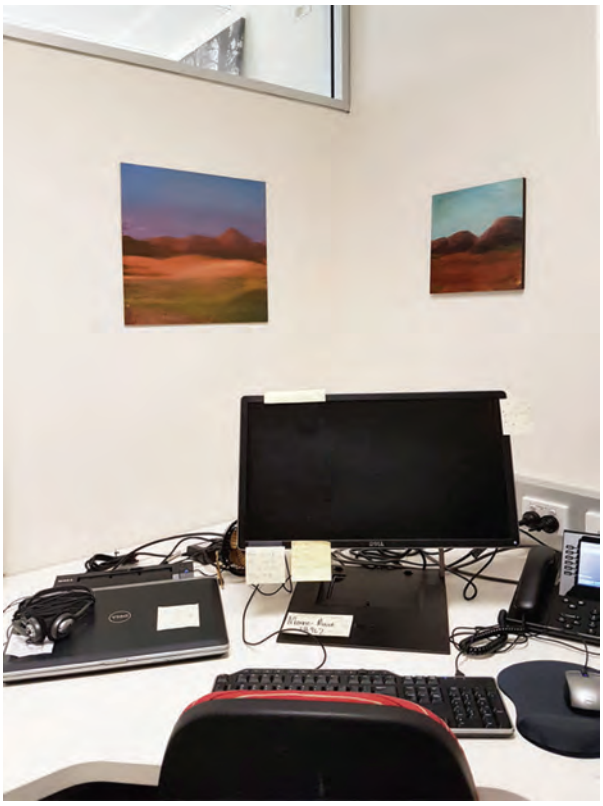
From top:

B Minuzzo, *Riding by the River*, 2016. Acrylic on board, 340 x 600 mm. Photograph by the artist.

B. Minuzzo, *The Farm*, 2016. Acrylic on board, 400 x 400 mm. Photograph by the artist.

B.Minuzzo, *The Road to Blinman*, 2017. Acrylic on board, 450 x 450 mm. Photograph by the artist.

B. Minuzzo, *The Ranges #4*, 2017. Acrylic on board, 400 x 400 mm. Photograph by the artist.



Research Study 3: *Myriorama*, *Portals* and *Fields of View* landscape paintings installed in a site specific arrangement, in a University student break-out with no view to nature.

Consultation Methods: on-line/hardcopy survey which included pre/post stress and mental fatigue measures.



B. Minuzzo, *Myriorama Series*, 2018. Each panel is 500 x 700 mm. Acrylic paint on card.
Study 3, a university lecture theatre foyer and student break-out space. Photograph by the artist.

B. Minuzzo, *Myriorama*, 2018. Detail. Acrylic on card, each 500 x 700 mm. Photograph by the artist.





B. Minuzzo, *Sky Portal, Portals* and *Fields of View,* 2018. Acrylic on paper and board, timber frames. Dimensions vary.

Study 3, university lecture theatre foyer/student break-out space. Photograph by the artist.

Below: details of the artworks and the foyer.







