

# Camouflage, Subterfuge & Emptiness: Nothing, Matters

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***Camouflage, Subterfuge & Emptiness -  
Nothing, Matters***

**Gabrielle Somers**

A thesis in fulfillment of the requirements for the degree of  
Master of Fine Art



School of Art & Design  
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## TABLE OF CONTENTS

<b>ACKNOWLEDGEMENTS</b>	<b>II</b>
<b>LIST OF FIGURES</b>	<b>III</b>
<b>CHAPTER 1 INTRODUCTION</b>	<b>1</b>
<b>CHAPTER 2 QUANTUM EMPTINESS</b>	<b>8</b>
2.1 Artists and emptiness	11
2.2 Probability Clouds	16
3.1 Waving Particles	19
3.2 Tom Wilkinson	19
3.3 Electromagnetic waves	22
3.4 James Turrell	24
3.5 Phenomenal Diffraction	36
3.6 Refraction & Reflection	48
3.7 Anish Kapoor	49
<b>CHAPTER 4 EXPERIENTIAL CIPHERS</b>	<b>52</b>
4.1 Christo and Jeanne-Claude	54
4.2 Napoleon's Ciphers	57
4.3 Cornelia Parker	59
<b>CHAPTER 5 PROBABILITIES OR OBJECT?</b>	<b>61</b>
5.1 Camouflage and Subterfuge	64
5.2 Butterflies and Dominoes	72
5.3 In Memoriam	75
5.4 Bonaparte and Phillip	77
5.5 Gloria Petyarre	81
5.6 Lyre and the Lyrebird	82
<b>CHAPTER 6 - CONCLUSION</b>	<b>90</b>
<b>BIBLIOGRAPHY &amp; REFERENCES</b>	<b>93</b>

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## LIST OF FIGURES

Figure 1. Mikala Dwyer, <i>The Hollows</i> , 2014 / Photo Gabrielle Somers. ....	12
Figure 2. Charles Petillon, <i>Souvenirs de famille</i> (ONLINE). Available at <a href="http://www.charlespetillon.com/albums/invasions/">http://www.charlespetillon.com/albums/invasions/</a> Retrieved May 10 2015. ....	13
Figure 3. Rachel Whiteread, <i>Cabin</i> (2016) / Photo Timothy Schenck. (ONLINE) Available at <a href="http://www.artlyst.com/articles/rachel-whiteread-unveils-site-specific-installation-in-new-york">http://www.artlyst.com/articles/rachel-whiteread-unveils-site-specific-installation-in-new-york</a> Retrieved June 5, 2016. ....	14
Figure 4. Rachel Whiteread, <i>House</i> (1993) / Photo Sue Omerod. (ONLINE) Available at <a href="http://www.tate.org.uk/whats-on/tate-modern/exhibition/unilever-series-rachel-whiteread-embankment/rachel-whiteread-0">http://www.tate.org.uk/whats-on/tate-modern/exhibition/unilever-series-rachel-whiteread-embankment/rachel-whiteread-0</a> Retrieved May 10, 2016. ....	14
Figure 5. Do-Ho Suh., <i>Home Within Home</i> , 2013. Installation view Museum of Modern and Contemporary Art, Seoul, Korea November 12, 2013 – May 11, 2014. (ONLINE) Available at: <a href="http://www.lehmannmaupin.com/exhibitions/2013-11-12-national-museum-of-modern-and-contemporary-art-seoul-korea">http://www.lehmannmaupin.com/exhibitions/2013-11-12-national-museum-of-modern-and-contemporary-art-seoul-korea</a> Retrieved May 10 2015. ....	15
Figure 6. Tom Wilkinson, <i>Light Wave</i> , mixed media. (ONLINE) Available at <a href="http://www.youtube.com/watch?v=0Wf5WVBMJDg&amp;feature=related">http://www.youtube.com/watch?v=0Wf5WVBMJDg&amp;feature=related</a> Retrieved July 5, 2016. ....	20
Figure 7. Tom Wilkinson, <i>Light Wave</i> , mixed media showing movement in time. (ONLINE) Available at: <a href="http://www.youtube.com/watch?v=0Wf5WVBMJDg&amp;feature=related">http://www.youtube.com/watch?v=0Wf5WVBMJDg&amp;feature=related</a> Retrieved July 5, 2016. ....	21
Figure 8. Opals. (ONLINE) Available at: <a href="http://www.gemstory.com.au">http://www.gemstory.com.au</a> Retrieved March 23, 2016. ....	23
Figure 9. Peacock Feathers (ONLINE). Available at: <a href="http://weknowyourdreams.com/peacock.html">http://weknowyourdreams.com/peacock.html</a> Retrieved March 23, 2016. ....	23
Figure 10. Jai Prekesh Yantra, Jantar Mantar Observatory Jaipur, India 2016 / photo Gabrielle Somers. ....	26
Figure 11. Pantheon, Rome Italy. (ONLINE) Available at: <a href="https://www.thinglink.com/scene/609754373978849281">https://www.thinglink.com/scene/609754373978849281</a> Retrieved July 12, 2016. .....	27
Figure 12. James Turrell, <i>Revised Outlook</i> , 2005 Dallas Price and Bob Van Breda Santa Monica, California, USA Latitude: 34.0194 Longitude: -118.4903 Skyspaces. (ONLINE) Available at <a href="http://archive.jamesturrell.com/artwork/revisedoutlook/">http://archive.jamesturrell.com/artwork/revisedoutlook/</a> Retrived July 28, 2016. ....	28
Figure 13. James Turrell, <i>The Color Beneath</i> , 2013 Ekeberg Skulpturpark Oslo, Norway Latitude: 59.897957 Longitude: 10.757289 Skyspaces. (ONLINE) Available at: <a href="http://jamesturrell.com/work/the-color-beneath/">http://jamesturrell.com/work/the-color-beneath/</a> Retrived July 27, 2016. ....	28
Figure 14. James Turrell, <i>Second Wind</i> , 2005 Vejar de la Frontera, Cádiz, Spain Latitude: 36.6667 Longitude: -6.1167 Skyspaces. (ONLINE) Available at: <a href="http://jamesturrell.com/work/secondwind/">http://jamesturrell.com/work/secondwind/</a> Retrived July 27, 2016. ....	29
Figure 15. James Turrell, <i>Within Without</i> , 2010 National Gallery of Australia. Canberra /photo Gabrielle Somers. ....	30

Figure 16. James Turrell, <i>Within Without</i> , (internal space) 2010 National Gallery of Australia. Canberra / Photo Gabrielle Somers. ....	30
Figure 17. James Turrell, <i>Within Without</i> , 2010 National Gallery of Australia. Canberra. Showing stupa entry doorway /Photo Gabrielle Somers.....	31
Figure 18. James Turrell, <i>Within Without</i> , 2010, National Gallery of Australia. Canberra / Photo Gabrielle Somers taken at 11:52pm May 29, 2015. ....	32
Figure 19. James Turrell, <i>Within Without</i> , 2010, National Gallery of Australia. Canberra / Photo Gabrielle Somers taken at 10:36am May 30, 2015.....	33
Figure 20. James Turrell, <i>Within Without</i> , 2010, National Gallery of Australia. Canberra / Photo Gabrielle Somers taken at 1:29 pm May 30, 2015. ....	33
Figure 21. James Turrell, <i>Raemar Pink White</i> 1969 fluorescent light 440x1070x300cm. (ONLINE) Available at: <a href="http://jamesturrell.com/work/raemar-pink-white/">http://jamesturrell.com/work/raemar-pink-white/</a> Retrived July 27, 2016 . ....	35
Figure 22. James Turrell, <i>After Green</i> 1993 Wedgework: fluorescent, LED and fibre-optic lights 365x532.2 x 1083.5cm (approx). (ONLINE) Available at: <a href="http://artsearch.nga.gov.au/Detail.cfm?IRN=252832">http://artsearch.nga.gov.au/Detail.cfm?IRN=252832</a> Retrived July 27, 2016. ....	36
Figure 23. Gabrielle Somers , <i>Sunbaking Under a Green Straw Hat</i> . Acrylic on board. 45x64cm. ....	37
Figure 24. Gabrielle Somers, <i>First Light I, II,III</i> triptych. Acrylic on Linen, 150x100x3cm. ....	40
Figure 25. Gabrielle Somers, <i>First Light I</i> . Acrylic on Linen, 150x100cm.....	41
Figure 26. Gabrielle Somers, <i>First Light II</i> . Acrylic on Linen 150x100cm.....	42
Figure 27. Gabrielle Somers, <i>First Light III</i> . Acrylic on Linen, 150x 00cm.....	43
Figure 28. Gabrielle Somers, <i>DiffRACTed Ocean</i> . Acrylic on Linen, 90x120cm. ....	45
Figure 29. Gabrielle Somers, <i>DiffRACTed Blue</i> . Acrylic on Linen, 90x120cm.....	46
Figure 30. Gabrielle Somers, <i>Ocean Blue</i> . Acrylic on Linen 90x120cm.....	47
Figure 31. Giant mirrors erected on a mountainside reflect sunlight into town of Rjukan in the valley below. /Photo: Reuters/Tore Meek/Ntb Scanpix. (ONLINE) Available at: <a href="http://www.theatlantic.com/photo/2013/10/using-giant-mirrors-to-light-up-dark-valleys/100613/">http://www.theatlantic.com/photo/2013/10/using-giant-mirrors-to-light-up-dark-valleys/100613/</a> Retrieved July 27, 2016. ....	49
Figure 32. Rjukan's market square basks in the light beamed down by the three mirrors./Photo: Reuters/Tore Meek/Ntb Scanpix. (ONLINE) Available at: <a href="http://www.theatlantic.com/photo/2013/10/using-giant-mirrors-to-light-up-dark-valleys/100613/">http://www.theatlantic.com/photo/2013/10/using-giant-mirrors-to-light-up-dark-valleys/100613/</a> Retrieved July 27, 2016.....	49
Figure 33. Anish Kapoor, <i>C-Curve</i> . Stainless Steel, 220x770x300cm 2007. (ONLINE) Available at: <a href="http://anishkapoor.com/117/c-curve">http://anishkapoor.com/117/c-curve</a> Retrieved November 12, 2014. ....	51
Figure 34. Anish Kapoor, <i>C-Curve</i> . Stainless Steel, 220x770x300cm 2007. (ONLINE) Available at: <a href="http://anishkapoor.com/117/c-curve">http://anishkapoor.com/117/c-curve</a> Retrieved November 12, 2014. ....	51
Figure 35. Anish Kapoor, <i>Cloud Gate</i> Millennium Park, Chicago. Stainless Steel 2004. (ONLINE) Available at: <a href="http://www.urbancapture.com/20111021-millennium-park-cloud-gate-chicago-usa-2/">http://www.urbancapture.com/20111021-millennium-park-cloud-gate-chicago-usa-2/</a> Retrived August 1, 2016. ....	51
Figure 36. Olafur Eliasson, <i>The Weather Project</i> 2003. Turbine Hall Tate Modern / Photo: Tate Photography © Eliasson. (ONLINE) Available at:	

<a href="http://www.tate.org.uk/context-comment/articles/the-weather-project">http://www.tate.org.uk/context-comment/articles/the-weather-project</a> Retrived April 15, 2015.....	53
Figure 37. Christo & Jeanne-Claude, <i>The Gates</i> , Central Park NY 2005 /Photo Sylvia Ross.....	55
Figure 38. Christo & Jeanne-Claude, <i>The Gates</i> , Central Park NY 2005 / Photo Sylvia Ross.....	56
Figure 39. Christo & Jeanne-Claude, <i>The Gates</i> , Central Park NY 2005 /Photo Sylvia Ross.....	56
Figure 40. Christo & Jeanne-Claude, <i>The Gates</i> , Central Park NY 2005 /Photo Sylvia Ross.....	56
Figure 41. Gabrielle Somers, <i>Surface Tension</i> . Mixed media projection.....	58
Figure 42. Cornelia Parker., <i>Cold Dark Matter: An Exploded View</i> 1991. (ONLINE) Available at: <a href="http://www.sculpture.org/documents/scmag09/june_09/parker/parker.shtml">http://www.sculpture.org/documents/scmag09/june_09/parker/parker.shtml</a> Retrived August 29, 2016.....	59
Figure 43. Gabrielle Somers, <i>Without Prejudice</i> . Elevation 2014.....	66
Figure 44. Gabrielle Somers, <i>Without Prejudice</i> . Video Installation.....	69
Figure 45. Gabrielle Somers, <i>Without Prejudice</i> . Proposal exists in video format.....	70
Figure 46. Gabrielle Somers, <i>Able was I</i> . Elevation Plan. ....	72
Figure 47. Gabrielle Somers, <i>Nothing, Matters</i> . Photo still from video projection.....	74
Figure 48. Gabrielle Somers, <i>In Memoriam</i> . Mixed media. ....	76
Figure 49. Gabrielle Somers, <i>Nautilus Shell</i> – initial condition. Acrylic on board 60x80cm.....	78
Figure 50. Gabrielle Somers, <i>Nautilus Shell</i> . Acrylic on board 60x80cm.....	78
Figure 51. Gabrielle Somers, <i>Hour Glass</i> – initial condition. Acrylic on board 60x80cm. ....	78
Figure 52. Gabrielle Somers, <i>Hour Glass</i> . Acrylic on board 60x80cm. ....	78
Figure 53. Gabrielle Somers, <i>Cross</i> – initial condition. Acrylic on board 60x80cm. ....	79
Figure 54. Gabrielle Somers, <i>Cross</i> . Acrylic on board 60cm x 80cm.....	79
Figure 55. Gloria Petyerre, <i>Bush Medicine Leaves</i> . Acrylic on linen 204x139cm. (ONLINE) Available at: <a href="http://www.japingka.com.au/collections/gloria-petyerre-paintings/">http://www.japingka.com.au/collections/gloria-petyerre-paintings/</a> Retrived August 1, 2016.....	81
Figure 56. Gabrielle Somers, <i>Lyre</i> , Initial condition. Graphite on paper 55 x 75cm. ....	82
Figure 57. Gabrielle Somers, <i>Lyre</i> . Graphite on paper 55 x 75cm. ....	82
Figure 58. Gabrielle Somers, <i>Lyrebird</i> Initial condition Graphite on paper 55cm x 75cm.....	83
Figure 59. Gabrielle Somers, <i>Lyrebird</i> . Graphite on paper 55cm x 75cm. ....	83
Figure 60. Gabrielle Somers, <i>Man on Canoe</i> , Initial condition. Graphite on paper 55x75cm.....	85
Figure 61. Gabrielle Somers, <i>Superb Lyrebird</i> , Initial condition. Graphite on paper 55x75cm.....	85
Figure 62. Gabrielle Somers, <i>Circle in the Sand</i> , Initial condition. Graphite on paper 55x75cm.....	86
Figure 63. Gabrielle Somers, <i>Superb Lyrebird</i> . Graphite on paper 55x75m. ....	87
Figure 64. Gabrielle Somers, <i>Circle in the Sand</i> . Graphite on paper 55x75m.....	88
Figure 65. Gabrielle Somers, <i>Man on Canoe</i> . Graphite on paper 55x75m. ....	89

## CHAPTER 1 INTRODUCTION

*In the end, I'm talking about myself. And thinking about making nothing, which I see as a void. But then that's something, even though it really is nothing.*

Anish Kapoor

This research investigates the realm of hidden information and how science, literature and art can depict phenomena/matter; how 'matter' emerges and interacts with other 'matter' and how 'matter' can have presence yet be simultaneously empty.

I start with a brief history of quantum mechanics and a summary of relevant scientific ideas, especially the ideas that affect our visual subjectivity in the context of 'matter' and therefore our understanding of emptiness. I look at camouflage and subterfuge in selected visual and literary contexts, and how such (possibly non-deliberate or deliberate) concealments affect our understanding of phenomena/matter by influencing our perspectives and our preferences and inadvertently generating discriminations or 'prejudices'. I will investigate how meaning/matter/phenomena can be buried beneath or embedded within ciphers; where 'nothing' matters and the meaning we prescribe the 'matter' is perceived.

As a child I was taught that the universe contains 'things' or objects that exist irrespective of the existence of other 'things'. I was led to believe that individual 'things' exist according to their own innate existence and are often independent of other 'things'.

For some time I have been grappling with the idea of the independent 'thing'. For example, as alluded to by Gyatso (2012); a table cannot exist without the tree, the carpenter and the various other components that formulate a table. The tree cannot grow without soil, light and water to support it. The carpenter cannot



exist without the fruit that is produced from a tree and he requires various tools, also made from trees and materials mined from the ground in order to make the table etc etc. In amongst this network of necessities where is the table? Suffice it to say the table has interconnectivity with everything and cannot exist independently. The table has emerged, interacted and has a presence yet is simultaneously 'empty', because on closer inspection we have found that the table can only exist by the nature of its interactivity with other matter.

This idea of inherent emptiness confronts our practical understanding of the world and many find it difficult to comprehend; that all existence is empty and it is only when it interacts with other phenomena that it takes on meaning. For example the table mentioned above has no intrinsic independent meaning; because in order for the table to exist it must have a surface to be placed, the surface must have a foundation on which to be built, the foundation must respond to the local environment, the local environment must form a microcosm of the regional environment, etc. Clearly we could expand this concept beyond the continuum of the interrelating phenomena noted above. So when we consider how the table became an object (matter) and all the variable conditions that abounded in order for it to be fabricated and the subsequent conditions required for it to exist, it is easy to see that the table has no independent existence and is conditionally reliant on its subparts and multiple interactions with other phenomena (matter) in order to have any meaning.

Dependent origination as cited by Van Hien (2003, p181,) 'is a fundamental Buddhist doctrine relating to the interdependence of things. It teaches that all beings and phenomena exist or occur only because of their relationship with other beings or phenomena.'

Aristotle taught that 'the whole is greater than the sum of its parts'. This suggests that a collection of things all interacting with each other is more than the so-called individual 'things' acting in isolation.

Although many artists, writers, historians, philosophers, scientists and the like can appear to work in isolation, they are in fact consistently engaging with the world, affecting and being affected by it. They exist on this changing information exchange matrix that everything exists and which continues to exist by virtue of the relationships with other phenomena/matter. These classical macrocosmic relationships are continuously interacting and exchanging with each other and similar to the quantum realm some relationships are obvious, others are discrete and yet countless others are hidden.

I investigated certain aspects of science and philosophy in order to understand my own work. I explore certain contemporary artists, who I believe have adopted some principles of physics into their work, knowingly or not, that demonstrate subterfuge, camouflage or emptiness. In my site-specific works I will also reveal this interconnectivity or interdependence.

In the classic novel *War & Peace*, Leo Tolstoy is concerned with the unpredictable random variables that are influenced by an infinite number of factors and disturbances. Tolstoy asserts that no event, or human behaviour, can be accurately predicted because of the infinite and continuing factors that combine, interact and respond accordingly to the newly created conditions.

Around 400 BCE, Buddha taught that all experienced phenomena are dependent on other phenomena in order to exist. He pointed out that if things really did exist as themselves then they could never change, because if they did change how could they ever have been themselves?

Within the framework of visual art, literature and science this research explores camouflage, subterfuge and hidden meaning that are caused by the presence or absence of certain ciphers. That information is overlooked and/or unseen, often appearing as patterns concealed or camouflaged. Meaning can also be deliberately buried by subterfuge, or embedded in ciphers, or just hidden perhaps because it's innate nature is empty.

Many contemporary artists allude to 'form', by demonstrating how hidden and empty information can be buried beneath or embedded within other meaning/matter and information.

Chapter 2 gives a brief explanation of quantum mechanics also known as quantum theory, quantum physics or particle physics and is the branch of physics that deals with the microscopic; atomic and subatomic realm. It is universally accepted in the world of physics (and beyond) that everything is made up of material particles called atoms. Classical physics declared that the discovery of atoms proved that material things are 'real', but classical physics is superseded by the discoveries of the quantum realm. However some classical concepts are still in use today for the sake of practicality.

The more the classical scientists looked into the atom the less they found. The particles ceased to be particles in all but name and these discoveries are responsible for heralding in quantum mechanics. Quantum mechanics found that subatomic particles lack a definite position, lack solidity, lack materiality and take all possible trajectories to get from A to B. Amazingly they do not transition the space between A and B ie, they disappear from A and appear at B. Suffice it to say the universe is not filled with 'things' but with perturbations, contextual information, disturbances and events.

At the turn of the 20 century, science interpreted the atom to be 99.999999999% empty. The remaining 0.000000001% is made up of the nucleus and an orbiting electron some great distance away. Contemporary quantum research suggests these extremely miniature particles, particles in name only, also lack materiality and solidity and yet somehow act as the basis for our world.

Chapter 3 investigates visual subjectivity which includes wave/particle duality, the electromagnetic spectrum, photons, diffraction, refraction and reflection.

For example artist James Turrell strips his artworks of known symbolic imagery in order to redefine the relationship the viewer has with the phenomena of light and colour. He is primarily interested in light and his explorations are concerned with colour and its effects on space. He is, if you like, de-cluttering his visual imagery by actively reducing his work to essential elements. However, paradoxically he is at another level creating a new code or cipher for interpretation. He investigates the experience of our new relationship with visual perception and its effects on our sensors by offering the viewer intense sensory encounters with light and colour within given/existing or constructed architectural space. He produces experiential installations, requiring viewer participation, interactivity and interconnectedness.

I discuss the *First Light* triptych and the *Diffractioned Ocean* series of paintings in the context of light and diffraction and interactivity. Diffraction is a phenomenon, which can only be explained by quantum mechanics.

Anish Kapoor investigates the contradiction between the known and perceived. He explores themes such as matter and non-matter whilst investigating dualities. I look at his works that utilize highly reflective materials that refract and reflect the immediate surrounding, creating a constantly interconnected environment.

Chapter 4 explores the idea of hidden information deliberately buried beneath subterfuge or embedded in ciphers.

Danish artist Olafur Eliasson explores ideas related to meditation, experimentation and representation. Eliasson created *The Weather Project*, which consisted of a giant artificial sun accompanied by mechanically blown mist/fog. He deliberately embedded physical ciphers into his work in order to affect psychological reactions, which in turn resulted in direct physiological responses.

Artist couple Christo & Jeanne-Claude's site-specific outdoor work *The Gates* is another example of a large-scale immersive installation. The work is dependent

on the countless environmental variables that provide the random responses from the work's many saffron curtains. *The Gates* is not a subtle installation in form, appearance or size yet it exposes hidden information, meaning and matter. The saffron curtains whilst undulating in the breeze and interacting with the prevailing environmental conditions, also displayed tonal colour variations, directly related to the prevailing light conditions.

I continue with subterfuge in the form of ciphers and present the Braille alphabet as a way of displaying pattern. Braille was informed from *Night Writing*; a secret code developed by Napoleon Bonaparte as a cipher that could be read in the dark. Who could have predicted that a Napoleonic military code could go on to be the catalyst for developing the Braille alphabet, an invaluable tool for people with vision impairment?

Chapter 5 investigates Leo Tolstoy's novel *War & Peace*, because visual artists and scientists are not alone in grappling with the subtle patterns of matter. *War & Peace* is an historical account of the French invasion of Russia in 1812. It rejects classical determinism; the scientific model that conceived the world to be a 'clockwork universe' which purposes that any action will give rise to an effect in principle determinable to an exact degree of precision. In this worldview there are neither chaotic or random events nor the possibility of them. Tolstoy identified that a chain of events can have a point of crisis that can magnify small changes and which lead to extraordinary outcomes, impossible to predict exactly.

Further Research into the peculiarities of light wave mechanics, (refraction, diffraction, reflection) which affect our visual subjectivity, led me to look closer at camouflage and subterfuge. It shows how such possibly non-deliberate concealments affect our perspective and preference and moreover generate preconceived judgments that may not be based on reason or actual experience. I use mirrors and codes in the work *Without Prejudice* to reflect the immediate environment and the viewer in order to demonstrate the interconnectivity of all things, even our perception. Complex adaptive systems are highly sensitive to

initial conditions and the way a small change now can have a colossal and unpredictable consequence in the future. It is understood that roughly repetitive patterns, which are never quite exact, are patterns with disturbances that result in orderly disorder. This is represented in the Canoe Series of drawings.

Chapter 6 brings to a close my discussion of the concept that matter, hidden or not, is constantly emerging and interconnecting with other matter. Everything, everyone and every phenomena (matter) can be thought of as being in constant exchange with everything, everyone and every phenomena (matter). As a result of this unfathomable interconnectivity matrix, it is impossible to predict future events with certainty, due to the immeasurable interactivity of all matter. Through this line of reasoning I conclude that matter and the meaning we ascribe to it is ultimately inferred. Matter exists concurrently in two simultaneous states and is dependent on observation, ultimately it is the observer who determines whether matter has a meaningful presence or is empty.

## CHAPTER 2 QUANTUM EMPTINESS

*Quantum. The word is at once evocative, bewildering and fascinating. Depending on your point of view, it is either a testament to the profound success of science or a symbol of the limited scope of human intuition as we struggle with the inescapable strangeness of the subatomic domain.*

Brian Cox & Jeff Forshaw (Cox & Forshaw p 12,2011)

Cox and Forshaw are not alone in describing the subatomic realm as bewildering and fascinating because the closer we look at the microcosmic, subatomic world we discover its departure from our conventional understanding of reality. The microcosmic world is not a smaller version of our macrocosmic world but a world unto itself.

Quantum entities' are said to be waves and particles at the same time. They do not exist fully until they are observed, they can be in two places at the same time and they can hover between existence and non-existence. These are a few of the bizarre properties that appear to lie at the heart of the quantum realm. (Smetham 2010 p23)

Until around the turn of the 20<sup>th</sup> century our understanding of the world was limited to a traditional emphasis on conventional reality, which deals in absolutes and certainties. Science in this classical realm was resolutely deterministic. The accepted viewpoint at this time was the assertion that the universe was conceived of as a mechanism that can, in principle, be measured and predicted perfectly and that the world was composed of independent solid physical objects interacting according to premeditated mathematical patterns.

However the German physicist and Nobel Laureate Max Planck did not agree, and he is credited with ushering in the quantum age by changing the way we understand the atomic and subatomic realm.

In 1900 Planck discovered the empirical fact that disproved the classical assumption that measurement is continuous. He established the fact that measurement is non-linear. This discontinuity is known in physics as Planck's constant, symbolized by ' $h$ '. It is also known as a quantum jump/leap, which is not at all large, in fact this leap is subatomic. These leaps are not continuous and do not transition the space between departure and arrival. This is counter to classical physics, which represents motion as a smooth continuity. Quantum leaps are regarded as small separate units of energy called 'quanta'. The word 'quantum' means the smallest quantity or discrete amount that exists.

Albert Einstein agreed with Planck and in 1905 he made the suggestion that light was indeed propagated in the form of energy quanta. Today we refer to these particle/light quanta as photons (from Greek phos, photos, 'light')- which can be observed as visible light by the human eye, or by a photon detector such as photographic film. Photons act as both a wave and a particle at the same time and they carry energy and momentum, but not mass.

Planck proposed that energy is 'quantized' and exchanged in discrete amounts. The fact that  $h \neq 0$  (ie. that the value of Planck's constant is not zero) marks the existence of a fundamental discontinuity of nature. The failure of Newtonian physics to take appropriate account of this discontinuity portends its downfall. (Barad 2007 p108)

Later in 1911, New Zealand born Physicist and Chemist. Ernest Rutherford, revealed the atom to be comprised of a nucleus that contains positively charged protons and neutral neutrons and negatively charged electrons that orbit at an extremely great distance away. Rutherford came to the conclusion that the atom was 99.999999999 % 'empty' space.



Rutherford's calculation has significant implications on how we perceive the world in which we live. It is agreed that everything in the world is made up of tiny atoms. So how can we have so many solid objects that are made up of atoms that are all 99.999999999% empty?

Danish Physicist, Niels Bohr's combined Rutherford's description of the nucleus and Planck's theory about quanta in 1922 and proposed:

...that electrons dropping down from one stable orbit to another would radiate a single discrete packet of radiation, in the form of a photon of light. This shows the deep connection between light and matter, and that photons are all or nothing — there is no such thing as half a photon. As cited by Jamieson (2013).

Further scientific enquiry into the nucleus revealed that the protons and neutrons to be made up of even smaller sub parts called quarks, leptons and bosons. Contemporary quantum research suggest these extremely miniature particles, particles in name only, also lack materiality and therefore mass/form. I will discuss various artists that allude to this lack of materiality in chapter 2.1.

The almost empty atom is a challenging concept to comprehend. In order to understand the subatomic realm it would seem that we must loosen our perspective on what we consider to be 'real'.

Contemporary American feminist and theatrical physicist Karen Barad contends that:

The existence of the quantum discontinuity means that the past is never left behind, never finished once and for all, and the future is not what will come to be in an unfolding of the present moment; rather the past and the future are enfolded participants in matter's iterative becoming. Becoming is not an unfolding in time, but the inexhaustible dynamism of the enfolding of mattering. (Barad 2007 p234)

Early Buddhist philosophies had already concluded that reality is an illusion, as the following assertion by the eleventh century Kadampa Buddhist adept Dromptonpa indicated: “now I shall cast to the winds concepts of solid objects with mass”.

It was nine Centuries later that Max Planck, observed. “There is no matter as such” concluding “I regard consciousness a fundamental. I regard matter as derivative from consciousness.” As cited by Smetham (2010 p153)

Planck’s conclusion is a clear departure from the accepted approach to science that preceded him and seems to resonate more with philosophical theory, and Buddhist teachings, than with empirical science, yet it is science, ‘quantum’ science. The closer scientists look at ‘particles’ the less they find.

## 2.1 Artists and emptiness

A number of artists appear to be elucidating emptiness, despite the appearance of mass, in their artworks. Sydney Artist, Mikala Dwyer created *The Hollows*, 2014 (figure 1) for the Navel Store 2 building in the Docks Precinct on Cockatoo Island for the 2014 Sydney Biennale. The artwork consists of a number of clear transparent three-dimensional plastic structures that appear to be randomized in size and shape and are suspended from the ceiling of the industrial building. The shapes are filled with nothing but air rendering them empty. These amorphous shapes hover just above the concrete floor, like synthetic ghosts of an industrial past. The shapes are strong enough to independently hold their form and are not the result of inflation. The transparency of the shapes allows the lack of content to be observed.



Figure 1. Mikala Dwyer, *The Hollows*, 2014 / Photo Gabrielle Somers.

French photographer and installation artist Charles Petillon also illustrates the contradiction of a space 'filled' with 'nothing'. He utilises inflated white balloons to fill architectural voids, in order to alter our perception of emptiness (figure 2). By installing thousands of balloons in empty spaces, he is challenging our classical perception of emptiness. The spaces the balloons occupy in architecture are typically very rarely considered. He captures the overlooked space with the balloons giving the empty space 'form' or mass. He is bringing our attention to the importance of the empty space by providing us with an object to contemplate it, that of the balloon. Similarly to Dwyer he is giving 'form' to emptiness in an architectural environment.

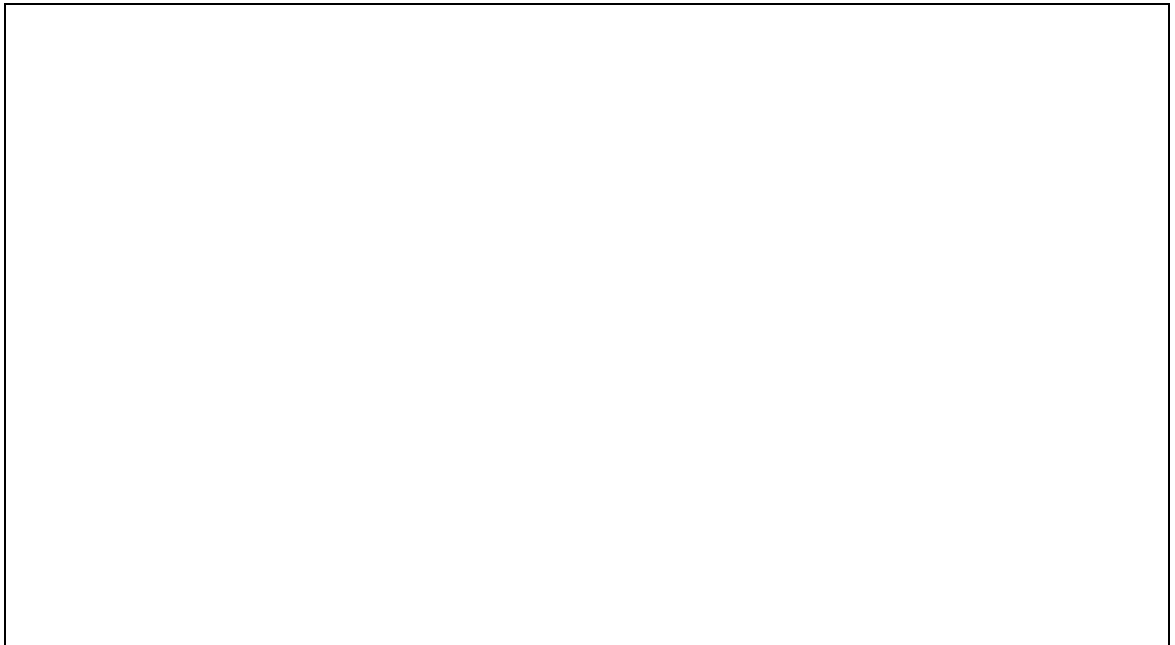


Figure 2. Charles Petillon, *Souvenirs de famille* (ONLINE). Available at <http://www.charlespetillon.com/albums/invasions/> Retrieved May 10 2015.

English sculptor Rachael Whiteread produced *House* 1993 (figure 4) in East London. She created a concrete impression of the internal space of what was once a residential Victorian home. Unlike Dwyer and Petillon she uses a solid mass to fill the internal space, the space between the original building's walls and roof, effectively casting the once ephemeral empty space into a literal concrete form. More recently Whiteread has created a concrete reverse cast of a wooden shed *Cabin* 2016 (figure 3) as part of the Governor's Island Public Art Commissioning Program in New York. In both works Whiteread, like Dwyer and Petillon has manifested emptiness into form.

Whiteread has effectively turned the architecture inside out, disorientating our understanding of the built environment. The viewer is required to re-imagine the concrete 'form' as empty space and to manifest the removed/demolished nonexistence empty walls into a solid forms. etc.

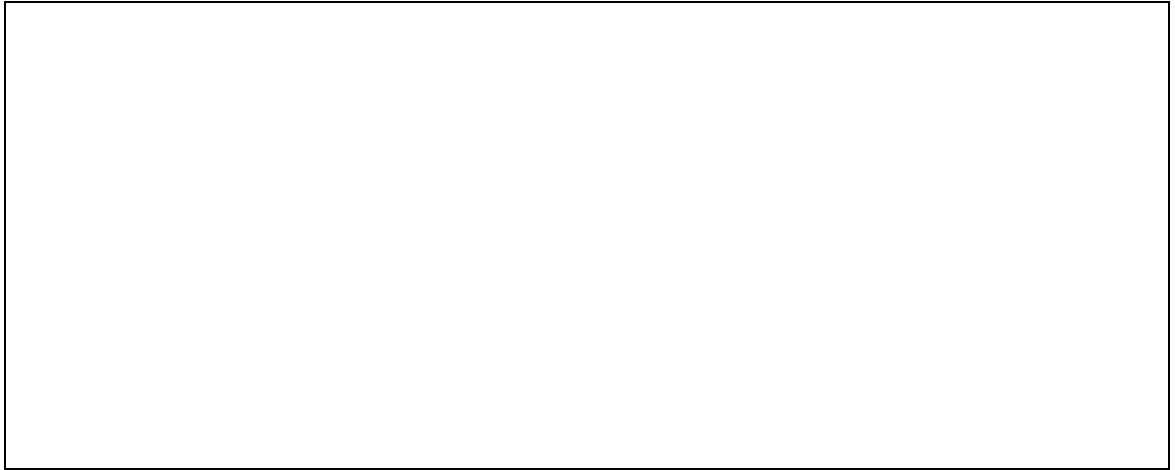


Figure 3. Rachel Whiteread, *Cabin* (2016) / Photo Timothy Schenck. (ONLINE) Available at 2016.

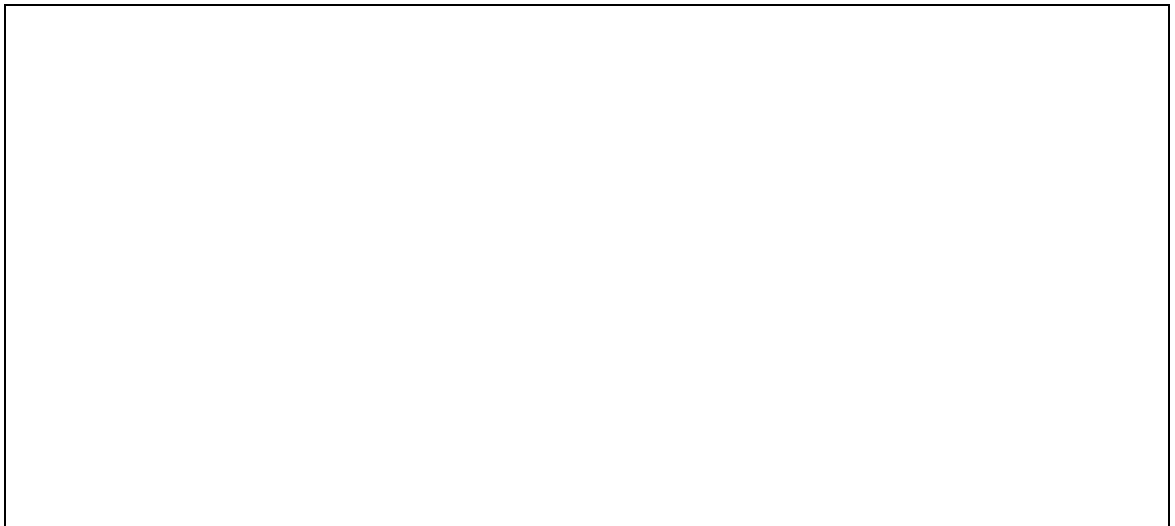


Figure 4. Rachel Whiteread, *House* (1993) / Photo Sue Omerod. (ONLINE) Available at <http://www.tate.org.uk/whats-on/tate-modern/exhibition/unilever-series-rachel-whiteread-embankment/rachel-whiteread-0> Retrieved May 10, 2016.

South Korean born sculptor and installation artist Do-Ho Suh, like Whiteread and Petillon, explores architecture of the home. His 2013 installation *Home Inside Home* (figure 5) is a replica of the exterior of a traditional Korean style house, shrouded by the exterior of a western style apartment building. Both houses are rendered in a translucent purple organza-like polyester fabric, which has an ethereal ghost like quality, enhancing the floating appearance of both the Korean home within the larger apartment building. The buildings look eerily real and yet not real, like a 'blueprint'. They stimulate the consciousness of the viewer by evoking memory of place. But from where does our memory arise? The substrate

is translucent polyester and is the recognizable building shapes of two distinct cross-cultural architectural styles. The ephemeral quality of the installation is in stark contrast to the usual permanency associated with architecture. Though translucent, the sheer fabric is embedded with information and its recognizable lines of reference create form. The viewer can reconstruct and re-image the installation into form even though Do-Ho's sculpture is primarily empty space that is alive with information, meaning and form.



Figure 5. Do-Ho Suh., *Home Within Home*, 2013. Installation view Museum of Modern and Contemporary Art, Seoul, Korea November 12, 2013 – May 11, 2014. (ONLINE) Available at: [http://www.lehmannmaupin.com/exhibitions/2013-11-12\\_national-museum-of-modern-and-contemporary-art-seoul-korea](http://www.lehmannmaupin.com/exhibitions/2013-11-12_national-museum-of-modern-and-contemporary-art-seoul-korea) Retrieved May 10 2015.

Dwyer, Petillon, Whiteread and Do-Ho are all concerned with hidden information - hidden information that informs and interacts with more tangible physical information. They have all variously used form or alluded to form by defining empty space in their artworks, demonstrating that meaning/matter can be buried beneath or embedded within other information, even when that information is emptiness. Petillon, Dwyer and Do-Ho have used materials usually devoid of 'substance'; balloons and transparent shapes and fabrics, whereas Whiteread has reversed form by representing the empty space with 'substance'.

The New Kamdampa Buddhist tradition teaches that form manifests in emptiness and emptiness manifests in form.

*Form is emptiness, emptiness is form*

*Emptiness is not separate from form; form is not separate from emptiness*

*Whatever is form is emptiness, whatever is emptiness is form.*

(Prajnaparamita -Perfection of Wisdom Sutra)

The Maha Bodhi Buddhists assert that all phenomena arise and continue to exist by virtue of their relationship with other phenomena, they have no fixed substance. They have as their true nature emptiness and nothing exists independently but is dependent upon causation and since the causal factors are changing every moment it follows and that there can be no static existence. (Van Hien 2003 p218- 221). Everything is interconnected.

## 2.2 Probability Clouds

Classical science determined that it could know everything and armed with that knowledge it would be possible to predict with absolute certainty future outcomes, if only enough data could be gathered. However in the subatomic world the laws of classical science are not always obeyed. Describing this breakdown in scientific exactitude is the key feature of quantum theory. Classical science does not include quantum mechanics theories. Unlike classical science, quantum theory deals with probabilities rather than certainties. Entities do not exist at particular places and times, but within space-time probability clouds. A probability cloud is the description of the atom's electrons that surround the nucleus in regions of high probability called orbitals.

Quantum mechanics posits that 'there are also four forces at play; the strong and weak nuclear forces that operate deep within the atomic nucleus, an electromagnetic force that glues atoms and molecules together and gravity'. (Cox 2011 p44).

The field of Subatomics proposes a whole new way of looking at the world. Moreover, this new view point is impossible to understand or accept if a person is limited to understanding the world in classical terms, where entities appear to have their own inherent existence independent of the consciousness of their observer.

Isaac Newton's classical theory of gravity, published in 1687 in his *Philosophie Naturalis Principia Mathematica*, is still relevant today for its practical applications, but it fails completely when describing the quantum phenomena. Nonetheless Newton's laws have been instrumental in the development of significant macrocosmic scientific and mathematical discoveries.

But this 'Newtonian' understanding comes at a cost and can prejudice our understanding of the world. In order to understand quantum, one must be prepared to accept the science that particles (atomic matter) could be in many places at once, one must also drop any prejudices that they may have unwittingly developed with regards to matter and accept that matter can be in more than one place. This theory does challenge our understanding of the world, and for many this proposal is beyond comprehension, yet for the open-minded, it is an exciting adventure into unknown territory, although uncomfortable at times.

We can never gather enough information to completely predict future outcomes; we can only work with variables and probabilities. We may be able to recognize a moment as flowing from the preceding moment yet prior to the moment's existence we could never have predicted accurately.



*'All matter originates and exists only by virtue of a force... We must assume behind this force the existence of a conscious and intelligent Mind. This Mind is the matrix of all matter.'*

Max Planck

Regardless of our comprehension of quantum mechanics, we should be mindful that our everyday understandings are actually approximations of the so-called reality we exist within. These approximations are made for convenience sake, in order to make some sense of the world.

## CHAPTER 3 THE MATTER WITH EMPTINESS

*I believe that we do not know anything for certain, but everything probably.*

Christiaan Huygens.

(quoted from a letter to Pierre Perrault 1673)

### 3.1 Waving Particles

'Light' baffled science for some time and in fact for a long time there were two theories about light:

Isaac Newton proposed the 'corpuscular theory' (particles of matter) in 1675 stating light was composed of particles. Newton considered light to travel in straight lines. In 1678 Christiaan Huygens proposed a mathematical wave theory of light, which explained that waves bend around obstacles.

Two centuries later in 1873 James Maxwell a Scottish mathematical physicist showed that light was made up of the sum of two waves, an electric wave and magnetic wave. Otherwise known as an electromagnetic wave. 'We now know that both theories are correct. By the wave/particle duality of quantum mechanics, light can be regarded as both a wave and a particle'. (Hawkins 1988 p85).

### 3.2 Tom Wilkinson

British Artist Tom Wilkinson, demonstrates the duality of the wave/particle; emptiness and form. He draws inspiration for his sculptural work both from astronomy and metaphysics by reflecting the constant motions, cyclical patterns and kinetic energies of the material world.

Wilkinson's sculpture *Light Wave* (figure 6) installed in The Economist Plaza, London 2009 is a kinetic sculpture depicting a fluid 'wave' like motion. He has achieved this by using long thin rigid transparent acrylic rods spaced equally apart

in a row. Each rod is connected to a single pivot point, located at the midpoint, when one side goes up the other side goes down, just like the children's playground seesaw. Wilkinson has installed scores of rods with their pivot points connected to the same motorized horizontal mechanism that runs the length of the artwork. The centre mechanism moves each rod individually up and down and each rod is synchronized to follow the movement of the neighbouring rod. The effect of a wave is achieved.



Figure 6. Tom Wilkinson, *Light Wave*, mixed media. (ONLINE) Available at <http://www.youtube.com/watch?v=0Wf5WVBMJDg&feature=related> Retrieved July 5, 2016.

Wilkinson has created an illusion of fluidity or 'wave' movement with a sculpture made from rigid materials. He has demonstrated one of the fundamental qualities of an electromagnetic wave, ie. that the object is not progressing forward just the information/disturbance. The object in this instance is each individual acrylic rod, which is moving up and down and not forward.

Each acrylic strip, moves only in a vertical motion, has no forward or horizontal movement. Yet the effect is that of a wave moving in a horizontal motion. Each particle is waiting upon a signal from the previous particle as to when to start reacting in a similar pattern. If the particles acted independently from each other, no wave would be detected, only random particles moving independently.

Yet when the particles respond by passing on the information their vertical motions provide a horizontal wave of information travelling at the speed of the momentary information transfer. A video of Wilkinson's *Light Wave* can be viewed online at the following web address:

<http://www.youtube.com/watch?v=0Wf5WVBMJDg&feature=related>

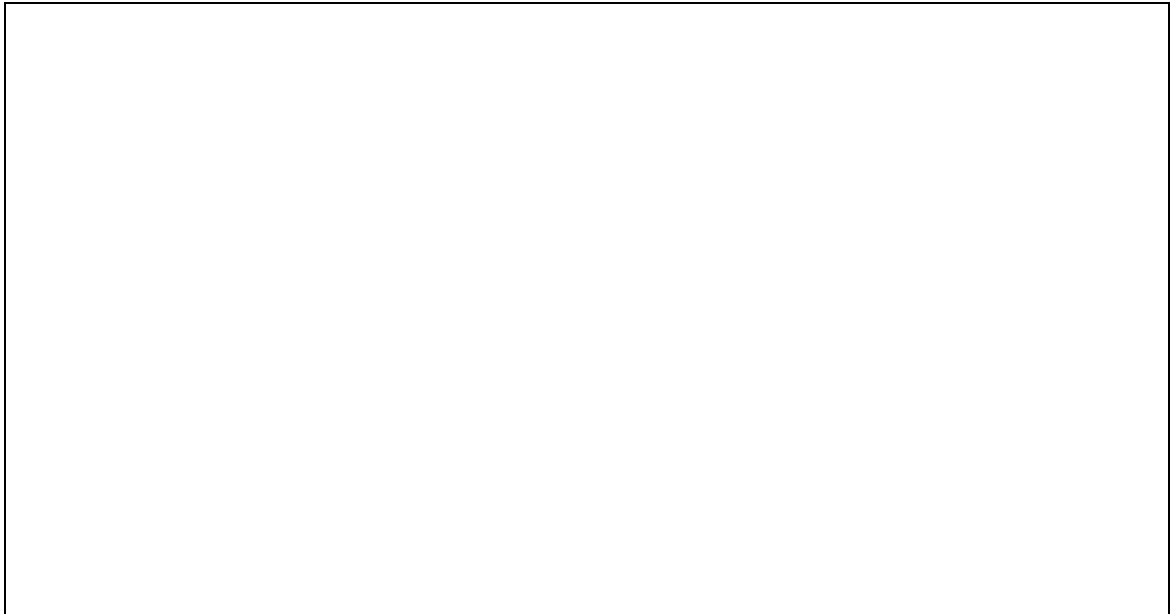


Figure 7. Tom Wilkinson, *Light Wave*, mixed media showing movement in time. (ONLINE) Available at: <http://www.youtube.com/watch?v=0Wf5WVBMJDg&feature=related> Retrieved July 5, 2016.

### 3.3 Electromagnetic waves

'In 1926 Physicist Max Born indicated that the wave function was not 'real' in the sense of physical reality.' (Smetham 2010 p138)

The electromagnetic spectrum comprises of a variety of wavelengths. Scientific research relies on the electromagnetic spectrum to study and characterize matter. The waves in the electromagnetic spectrum from shortest to longest are; Gamma rays, X-Rays, Ultraviolet (visible light), Visible (visible light), Infrared (visible light), Microwave and Radio waves.

For a long time it was thought that only visible light was part of the spectrum. However, infrared electromagnetic radiation was discovered in 1800, which paved the way for numerous other wavelengths being discovered, with gamma rays finally discovered in 1900.

In 1666 Isaac Newton passed a single beam of white light through a prism and the light's direction changed twice due to the shape of the prism resulting refraction. In this process colours separated out of the white light, because the angles of refraction of the separate colours are different. Newton discovered that white light is a mixture of various colours .

The human eye is only sensitive to 'visible light', which lies in a very small portion of the electromagnetic spectrum. The spectrum of visible light that the human eye can detect can be further divided according to colour from the shortest to the longest; violet, blue, green, yellow, orange and red.

Photoreceptor cells in the human eye (rods and cones), are used to perceive light. Rods react to low light levels, causing us to see the greys. Cones respond to brighter light and provide vision in colour. Rods and cones work at different speeds, causing us to see the brighter colours first and colours with the longer

wavelengths; red, orange yellow are seen before the shorter wavelengths of Green Blue, violet.

A light wave that contains all wavelengths in the same proportions, such as sunlight, appears white. Objects appear coloured because their structure absorbs some of the wavelengths of light and reflects others. An object's surface qualities produce the discharge properties that contribute to certain wavelengths leaving the surface of the object. For example a blue object absorbs all visible colour waves except the blue wavelength which it reflects causing it to appear blue. Some surfaces ie. some wings of dragonflies, butterflies and moths and iridescence peacock feathers appear to change with different viewing positions of the observer. This change is a result of the interference phenomenon or diffraction.

Diffraction and refraction are also responsible for the brilliant colours of the precious opal. An Opal is made up of clear transparent silica spheres arranged in a regular pattern resulting in a three dimensional arrangement of spaces or voids. Diffraction and the interference of light waves travelling through the spheres and voids produces the colours moreover the size of the spheres combined with their refraction angles at the surface of the opal determines the colour. (NSW Department of Industry n.d).

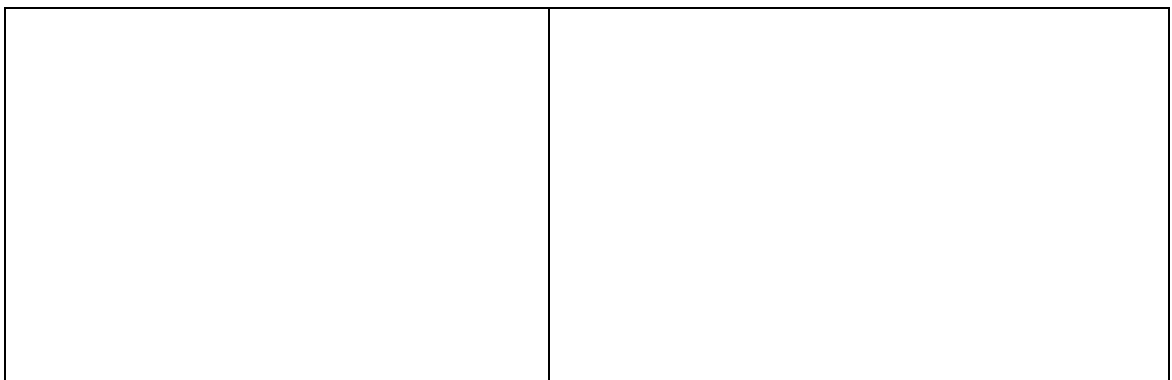


Figure 8. Opals .(ONLINE) Available at: <http://www.gemstory.com.au> Retrieved March 23, 2016.

Figure 9. Peacock Feathers (ONLINE). Available at: <http://weknowyourdreams.com/peacock.html> Retrieved March 23,2016.

Another example of colour refraction and diffraction is when light falls on a peacock's feather, which is pigmented brown. The geometry of fine striae upon the feather's surface reflects the light from the upper and lower surfaces at different times and angles and results in wave interference, which reflects blue, turquoise and green light. The colour is caused by light wave interference and not pigmentation.

Some animals, primarily marine though not limited to, have variable structures that can alter in order to change their colouring for the purpose of camouflage and signaling information.

#### 3.4 James Turrell

*My work has no object, no image and no focus. With no object, no image and no focus, what are you looking at? You are looking at you looking. What is important to me is to create an experience of wordless thought.*

James Turrell (Turrell n.d)

Artist James Turrell uses light to signal information to the viewer. His explorations are concerned with colour and its effect on space. He investigates visual perception and its effects on our sensors by offering the viewer intense, immersive and sensual encounters with light and colour.

His interior installations rely on artificially manipulated illumination whereas his Skyspaces rely primarily on the natural illumination of the sky.

Turrell's Skyspaces are architecturally designed rooms and/or buildings that have a large hole (aperture) in the ceiling, which open directly to the sky. The rooms allow the viewer to observe the sky in a new way. Turrell's early Skyspaces consisted of apertures cut in the walls and ceilings of existing buildings that would

then frame a selected segment of the sky. Since this time many of his Skyspaces have evolved into freestanding structures designed to maximize the effect of the sky on the viewer.

Turrell makes a distinction between his own 'architecture of space' – spaces created entirely by light – and the 'architecture of form' the physical walls, floors and ceilings. His understanding and command of the structure of form is generated by his knowledge of, among other disciplines, geometry, colour and lighting technology which all enable him to create his architecture of space and light with such impact.

Turrell has had a life long fascination with the phenomena of light and has produced light installations and Skyspaces many times but none are as large as Roden Crater near Arizona's Painted Desert that he discovered when flying small planes in the Arizona region.

Within the crater Turrell designed and constructed a series of six physical spaces leading up to the main circular aperture at the center of the crater. This project is perhaps a departure from his freestanding constructed Skyspaces and like the artists Christo & Jeanne-Claude (discussed 4.1), in this work he is responding directly with the natural environment.

Turrell caused the exterior depression of the crater to be excavated and re-sculpted into a perfect concave ellipse. Engineered to encapsulate the full optical vision of the viewer's sight and designed to provide a perfect circle of peripheral vision from the viewing platform in the centre of the crater. Resulting in the edge of the crater framing the sky without any interruptions, providing a space for the viewer to see themselves 'seeing'.

The central feature is a structure that forms an astronomical instrument similar to the Jai Prakesh Yantra in the celestial observatory at Jaipur, India. (figure 10). With this instrument one can track celestial bodies and events (such as



lunar and solar eclipses) as they occur within the timeframe of the 18 year, 11 day Saros Cycle. (Roden Carter n.d).

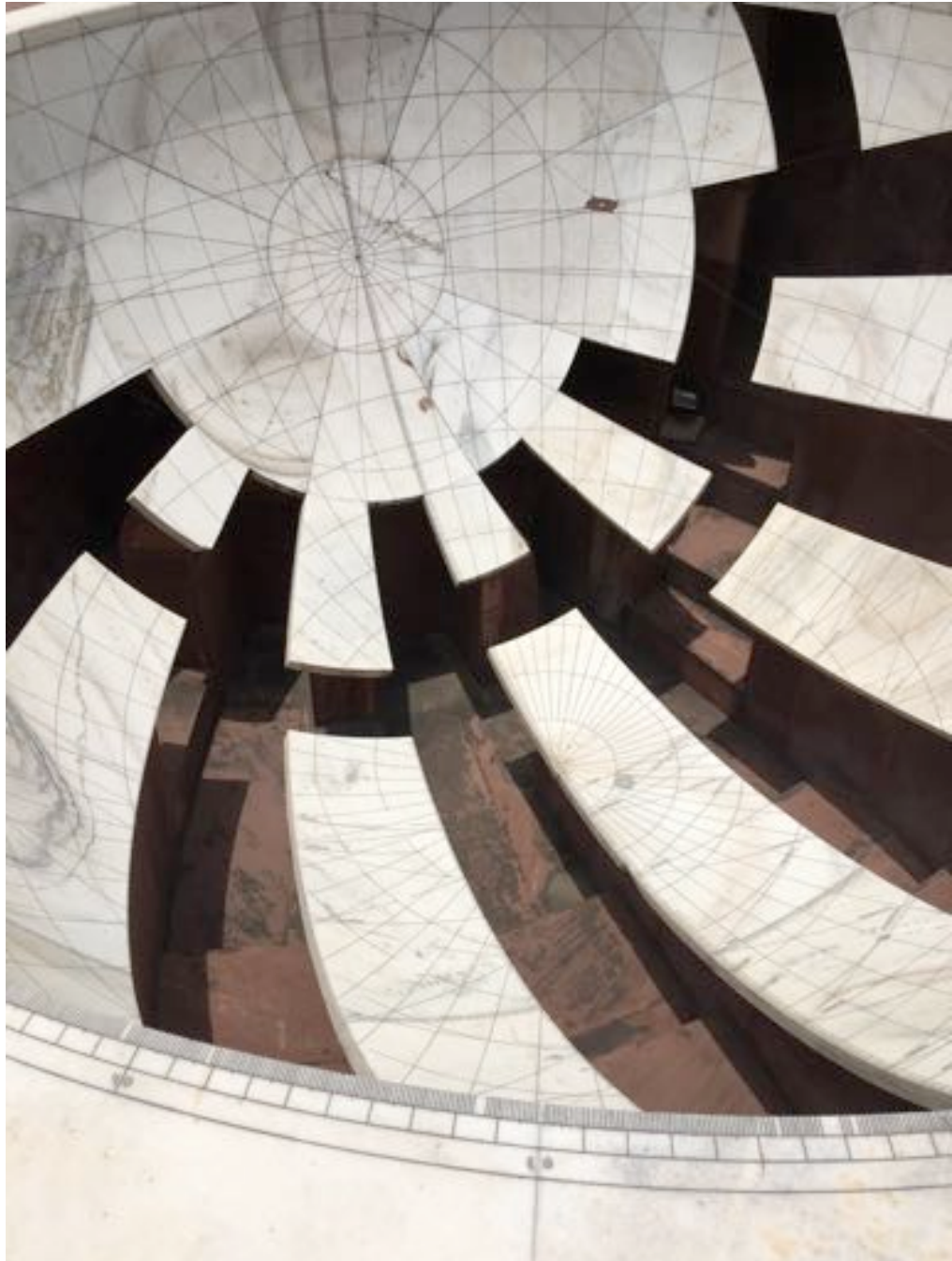


Figure 10. Jai Prekesh Yantra, Jantar Mantar Observatory Jaipur, India 2016 / photo Gabrielle Somers.

In addition to Jai Prakesh Yantra, one could argue Turrell also drew inspiration from the Pantheon in Rome, commissioned by Marcus Agrippa during the reign of Augustus as a temple to all the gods of ancient Rome 126ACE (figure 11). The

Pantheon also has a central circular aperture to the sky. However, unlike the Pantheon *Roden Crater* is not a temple designed to visually demonstrate its domination over the natural environment but one that is complementary and discrete to the natural environment.



Figure 11. Pantheon, Rome Italy. (ONLINE) Available at: <https://www.thinglink.com/scene/609754373978849281>  
Retrieved July 12, 2016.

I did not want the work to be a mark upon nature, but I wanted the work to be enfolded in nature in such a way that light from the sun, moon and stars empowered the spaces... I wanted an area where you had a sense of standing on the planet. (James Turrell n.d.)

Oscar Wilde once said of James Abbott McNeill Whistler's paintings 'There was no fog in London until Whistler started painting it'. Meaning that the fog was not observed as an independent phenomenon until Whistler elevated its status. By eliminating competing information Turrell focuses on the actual sky, which is 'empty'. It could be said Turrell has done for the sky what Whistler did for the fog in London.



Figure 12. James Turrell, *Revised Outlook*, 2005 Dallas Price and Bob Van Breda Santa Monica, California, USA  
Latitude: 34.0194 Longitude: -118.4903 Skyspaces. (ONLINE) Available at <http://archive.jamesturrell.com/artwork/revisedoutlook/> Retrived July 28, 2016.



Figure 13. James Turrell, *The Color Beneath*, 2013 Ekeberg Skulpturpark Oslo, Norway  
Latitude: 59.897957 Longitude: 10.757289 Skyspaces. (ONLINE) Available at: <http://jamesturrell.com/work/the-color-beneath/> Retrived July 27, 2016.

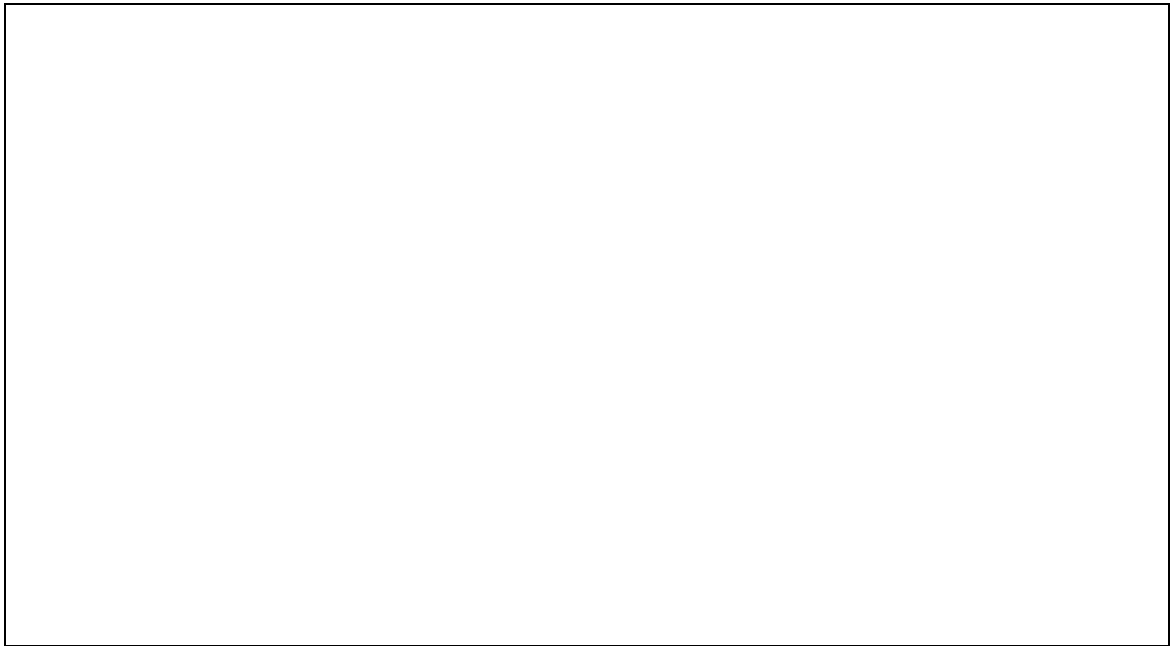


Figure 14. James Turrell, *Second Wind*, 2005 Vejar de la Frontera, Cádiz, Spain  
Latitude: 36.6667 Longitude: -6.1167 Skyspaces. (ONLINE) Available at:  
<http://jamesturrell.com/work/secondwind/> Retrived July 27, 2016.

Turrell's Skyspace *Within Without*, at National Art Gallery in Canberra, is surrounded by a shallow pool of water, lawn and landscaping.

The exterior of the monument is camouflaged with grass as if just a 'grassy knoll' (figure 15). One walks down a ramp towards the 'monument', which cuts through the surrounding reflective water leading one to the inner 'monument'.

Once within you discover a smaller pool and the interior sky dome chamber or stupa. Light is reflected off the internal pool as well as the outer shell's oblique walls, which confuse the architectural experience. (figure 16). This experience provides a sense of mystery. The inner chamber has a simple rectangular entrance (figure 17).



Figure 15. James Turrell, *Within Without*, 2010 National Gallery of Australia. Canberra /photo Gabrielle Somers.



Figure 16. James Turrell, *Within Without*, (internal space) 2010 National Gallery of Australia. Canberra / Photo Gabrielle Somers.



Figure 17. James Turrell, *Within Without*, 2010 National Gallery of Australia. Canberra. Showing stupa entry doorway /Photo Gabrielle Somers.

Once inside the inner chamber the experience is immediate. The space is unadorned other than a simple bench seating arrangement around the circumference of the room. When you look up there is no doubt as to what is on offer; a circle of pure light or the absence of light. (figure 18). Nonetheless this absence of light is so concentrated it gives the illusion of being an almost tangible solid object. The work is something and 'nothing' at the same time whereby the nothingness is given form and mass.

The following three images (figures 18, 19 & 20) were taken at various times over a 12-hour period.



Figure 18. James Turrell, *Within Without*, 2010, National Gallery of Australia. Canberra / Photo Gabrielle Somers taken at 11:52pm May 29, 2015.



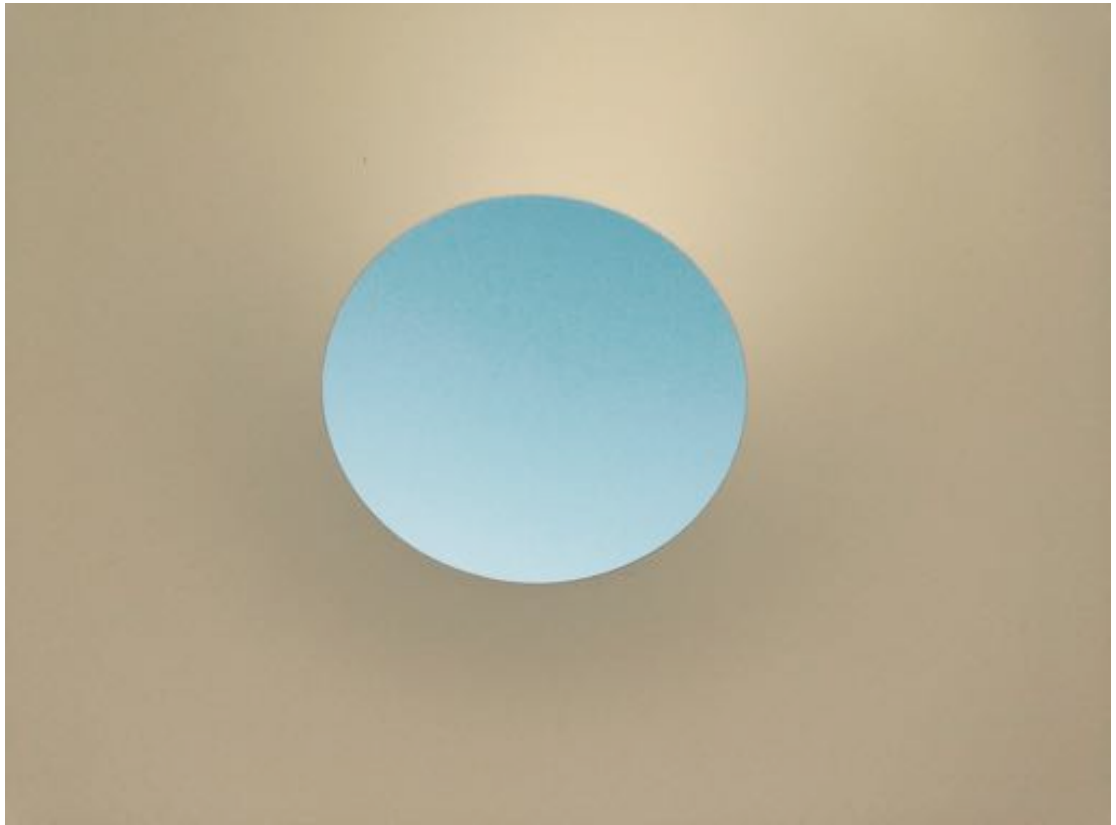


Figure 19. James Turrell, *Within Without*, 2010, National Gallery of Australia. Canberra / Photo Gabrielle Somers taken at 10:36am May 30, 2015.

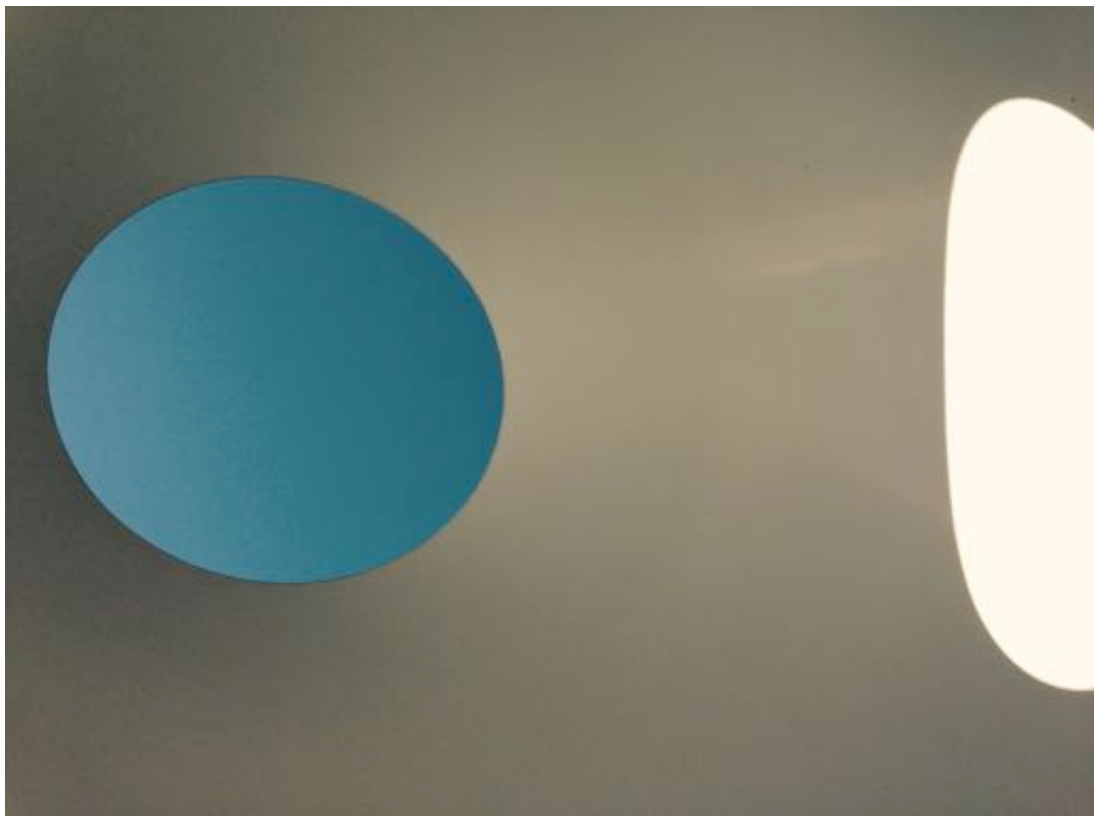


Figure 20. James Turrell, *Within Without*, 2010, National Gallery of Australia. Canberra / Photo Gabrielle Somers taken at 1:29 pm May 30, 2015.



Turrell has shown the viewer a different way of viewing by extracting the essence of the ever-present sky and reducing the visual context. This distillation of the sky enables us to 'see' the sky unencumbered and for itself.

Turrell conscripts elemental notions into the structures and geometrics he contrives, but he strips them of symbolic imagery and distils them into pure forms and pristine colour. They extract the viewer from symbol and meaning and put the viewer in direct contact with phenomena – visual, tactile and auditory- to confer a contemplative sensibility through and aesthetically powerful experience of light, shape, sound and colour. (Turrell 2014 p31)

Like many artists Turrell is fascinated by light but unlike many artists light is his medium and it informs the totality of his work. It is not its effect on the work, it is the work.

*Raemar Pink White* 1969 (figure 21). Like many of his works *Raemar Pink White* completely occupies an otherwise empty room. Fluorescent pink light permeates the room; it distorts boundaries and highlights the 'otherness' of our perception. A white fluorescent light is hidden behind a glowing rectangle of floating pink. Or is the white light floating around the pink? Turrell has disoriented the architectural space.



Figure 21. James Turrell, *Raemar Pink White* 1969 fluorescent light 440x1070x300cm. (ONLINE) Available at: <http://jamesturrell.com/work/raemar-pink-white/> Retrived July 27, 2016 .

In *After Green* 1993 *Wedgewood*: (figure 22) Turrell has combined fluorescent, LED and fibre-optics. He created multiple light sources creating an immersive realm of uncertainty. The viewer must make assumptions about the installation's depth, which is unclear, or could it be an optical illusion? It continues to question the viewer; yet, even on closer inspection we are still at a loss and the question still remains, unsettling our visual approximations and our otherwise classical understanding of the world. The work asks the question of how we perceive and what is so-called 'real' and what is not. It highlights our ability to calculate probabilities and challenges our prejudices about perceived reality.

*After Green* illustrates Turrell's knowledge of colour theories and the way that our eyes respond to certain colours. 'The title refers to the retinal effect of looking at concentrated green, when photoreceptors lose sensitivity and retain the 'memory' of the opposite colour: red'. (Turrell 2014 p55).

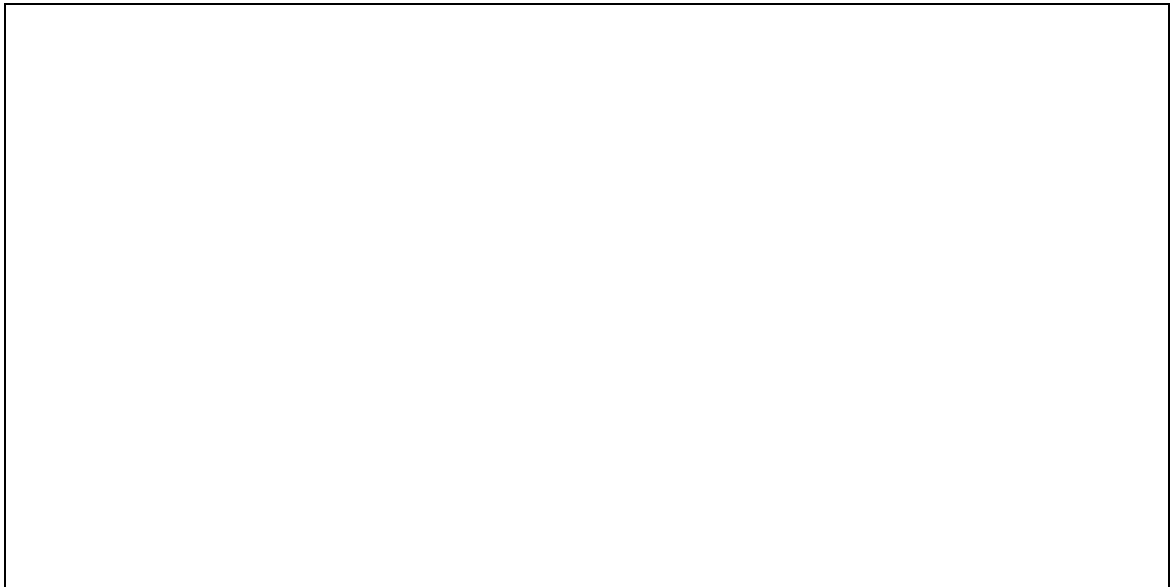


Figure 22. James Turrell, *After Green* 1993 Wedgewood: fluorescent, LED and fibre-optic lights 365x532.2 x 1083.5cm (approx). (ONLINE) Available at: <http://artsearch.nga.gov.au/Detail.cfm?IRN=252832> Retrieved July 27, 2016.

Many of his works challenge our understanding of light and colour perception. For example a white light is projected into a corner. The corner's precise edges and smooth surfaces cast no shadows, making it difficult to ascertain where the light is emanating from and which in turn ensures the questions; is the light source projected out of the shape cut into the surface, or is the light projected onto the surface? Is the light coming from within or from without? Are we looking at a solid form or light?

Turrell manipulates light and deliberately conceals its source demonstrating that without the ubiquitous shadow we are mystified and disoriented about form. The shadow is 'empty' of 'form' yet informs our world of form, meaning and matter.

### 3.5 Phenomenal Diffraction

'Diffraction is the phenomenon of the bending of waves around the edge of an obstacle. Light waves that just pass the edges of an opaque body are bent, or diffracted.' (Smetham 2010 p132)

A wave is a disturbance that propagates in a medium (ie. water or light) and not a thing per se. For example if we drop a pebble into a still pond it will cause a disturbance of circular wave rings. If a light beam passes through a narrow aperture or it encounters an obstacle it will produce a geometrical shadow wave resulting from the light bending around the corner of the obstacle or aperture, ensuring a diffracted pattern. Hence when we see light passing through a grill, a straw hat (figure 23) or a dappled canopy, the light is diffracted in such a way as to provide light, softly blurred at the edges.

However if the space the source wave front moves through is comparably similar to the source wave front then the diffraction produces a shallower curved wave front.

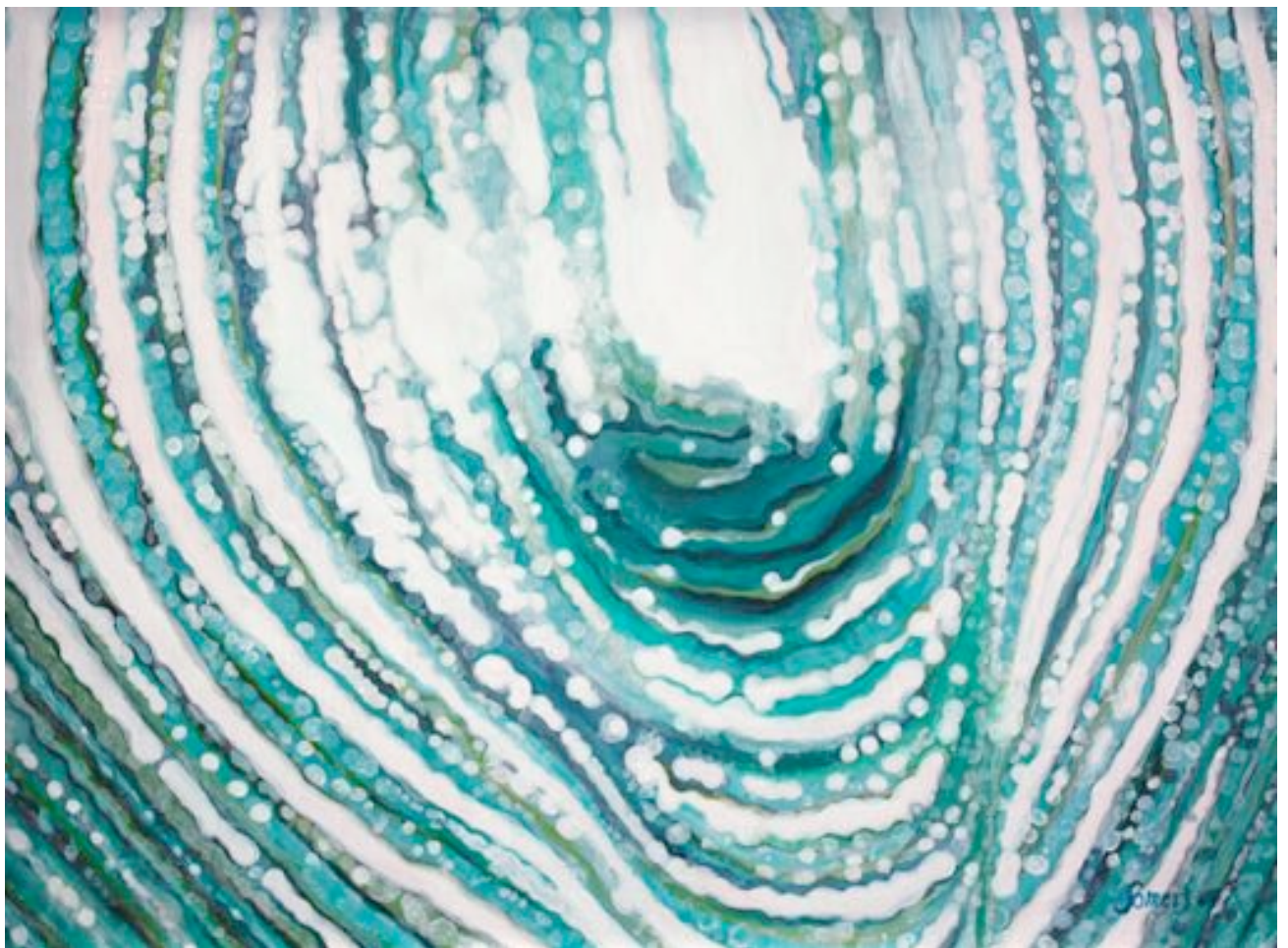


Figure 23. Gabrielle Somers ,*Sunbaking Under a Green Straw Hat*. Acrylic on board. 45x64cm.

American physicist and Nobel Laureate Richard Feynman as cited by Barad (2007 p73) once said of diffraction ‘a phenomenon which is impossible, absolutely impossible, to explain in any classical way, and which has in it the heart of quantum mechanics. In reality it contains the only mystery.’

The triptych *First Light* (figures 24, 25, 26 & 27) is a metaphor for the nature of the quantum microcosmic realm. In each painting the same gum tree is represented. Each painting is remarkably different, yet similar and each painting suggests a successive moment from the previous painting demonstrating the passage of time and the multiple changes that occur at a microscopic level. Diffraction is marked by patterns of difference.

Through this series of paintings I demonstrate the diffraction of light through the leaves of gum tree canopies. The moments I capture are fleeting. Our brain constantly reconciles the diffracted images with a macroscopic view of the canopy, so we may better understand it in our traditional appreciation of a tree. Scientist Mike Abrash, virtual reality expert, suggests that ‘Our visual data is actually astonishingly sparse and even if we were able to accurately record and process every photon that reaches our eyes, we’d still have too little data to be able to reconstruct the world accurately’. (Abrash 2015)

At the macroscopic level a gum tree would be rooted firmly in the ground and from moment to moment perceptible changes would be minor, especially on a calm day, and would be unaccounted for if painted in a realist ‘classical’ way. Certainly if the tree were to be painted in a realist style the three paintings would be almost identical, in spite of the fact that the tree is constantly interacting and exchanging with its local surroundings and the world.

We merely infer the tree and the world it engages with. It is said that the brain maintains a model of the real world, which is updated, as new data is available.

Therefore a tree viewed from a macroscopic viewpoint is inferred with a trunk, branches and leaves, a model of a tree, a 'symbol'.

However, from moment to moment the tree transforms itself by responding to the condition of the environment it enjoys, changing with micro and macro movements from within and without.

Yet when painted from a microscopic 'quantum' viewpoint we are treated to many changes. For example the diffraction of the electromagnetic wave curving around the disturbances of the leaves and branches creates interference patterns. We are unable to predict these interference patterns due to the unfathomable interactivity of the tree, its environment and the world.



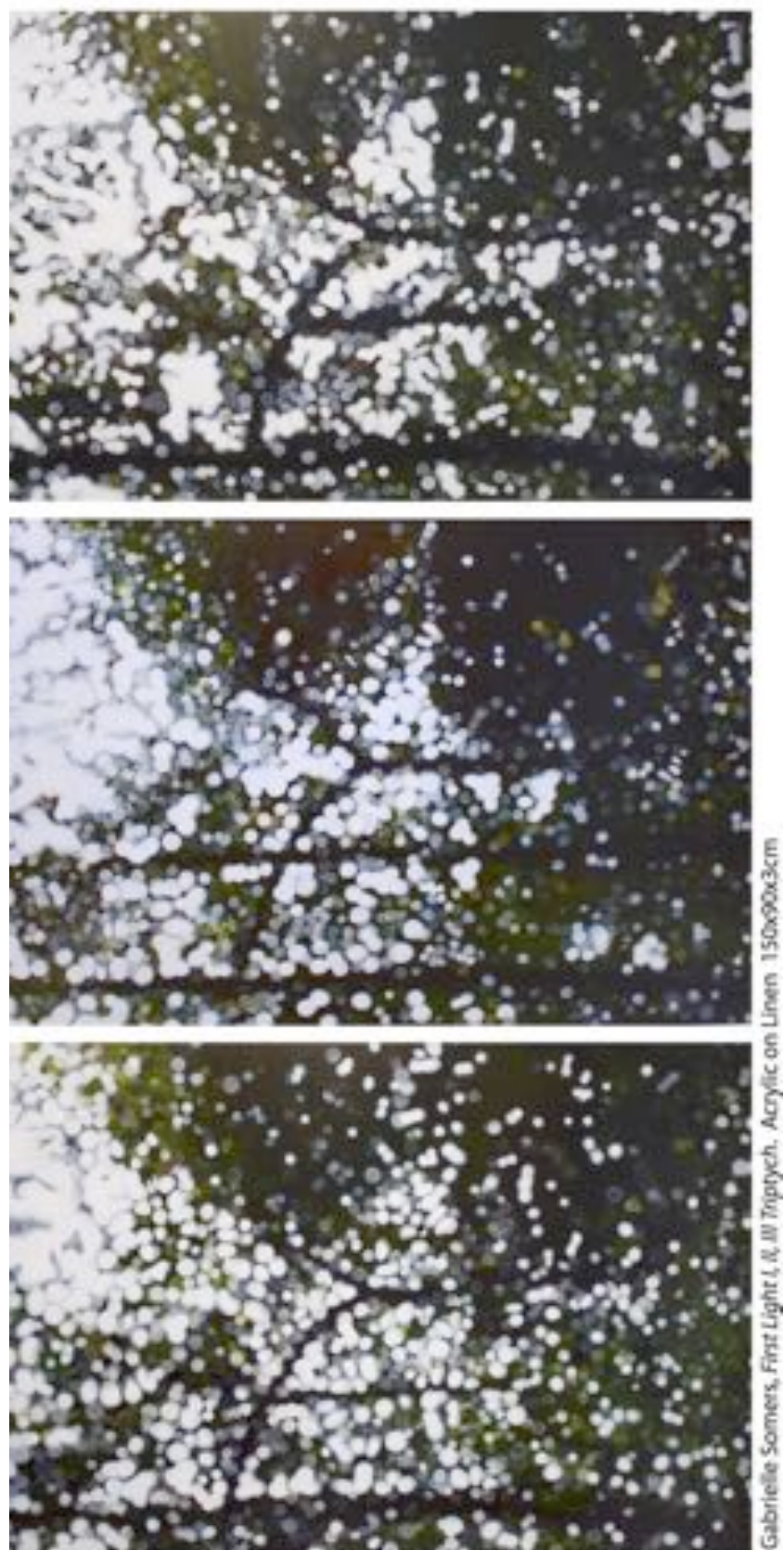


Figure 24. Gabrielle Somers, *First Light I, II, III* triptych. Acrylic on Linen, 150x100x3cm.



Figure 25. Gabrielle Somers, *First Light I*. Acrylic on Linen, 150x100cm.





Figure 26. Gabrielle Somers, *First Light II*. Acrylic on Linen 150x100cm.





Figure 27. Gabrielle Somers, *First Light III*. Acrylic on Linen, 150x 00cm.

Barad argues that ‘there is a deep sense in which we can understand diffraction patterns – as patterns of difference that make a difference – to be the fundamental constituents that make up the world’. (Barad 2007 p72).

In the same way the *DiffRACTed Ocean* series (figures 28, 29 & 30) questions our classical understanding and perception of the world in which we exist. The paintings allude to the moment before it was painted and the moment to follow and the idea of there being one ‘true’ or ‘real’ truth is uncertain. Each individual has a unique history, which has innately contributed to their perception, experience and prejudices resulting from their interactivity with the world. This shaped history will determine varying outcomes between individuals when viewing the same work. For example, do you view the *DiffRACTed Ocean* paintings as white circles on blue or do you view the paintings as diffracted light reflected off a tidal wave or as something completely different again? Perception is individual and unique and it informs future insight and becomes a component of the complex adaptive system that our thought patterns ultimately are.

When observing this series of paintings like the *First Light* triptych, could there be a brief moment of understanding for the viewer? Does the viewer recognize an ephemeral moment that they may have experienced? A passing moment otherwise lost?

The *DiffRACTed Ocean* paintings are a metaphor for the metaphysical transition of time and they represent the ‘crack between the worlds’ or the microcosmic glue that binds our classical reality together. The paintings are a demonstration of the duality of the macrocosmic and microscopic worlds. ie. The tension between Newtonian determinism and quantum mechanics.



Figure 28. Gabrielle Somers, *Diffracted Ocean*. Acrylic on Linen, 90x120cm.





Figure 29. Gabrielle Somers, *Diffracted Blue*. Acrylic on Linen, 90x120cm.



Figure 30. Gabrielle Somers, *Ocean Blue*. Acrylic on Linen 90x120cm.

### 3.6 Refraction & Reflection

Coloured objects, by reason of the atomic structures of their pigments or surface layers, absorb light of some wavelengths and reflect other wavelengths. Plain glass allows light of all wavelengths to pass straight through it. Coloured glass transmits light of some wavelengths while absorbing light of other wavelengths... When light travels through a transparent substance like glass or water, it is slowed down by a factor known as the 'refractive index' of that substance. It is slowed down by air, too, but less so. (Dawkins 1998 p44).

When light hits a substance like glass or water at an angle, it continues to travel through the substance but is deflected to a shallower angle and travels more slowly if the medium is denser. When light hits the glass or water straight on it will continue through the substrate in a straight line, but is similarly slowed down.

In the case of reflection, the light wave does not continue to travel through the surface. In fact the light is reversed equal to the angle at which it falls on the surface. A mirror provides the most obvious model for light reflection. The law of reflection states that the angle of incidence of a light wave when it falls on a very smooth surface is so reflected that the angle of reflection is equal to the angle of incidence and the image appears to be reversed. If light falls on a curved surface, light may be magnified or reduced depending on the mirror's surface.

The tiny Norwegian town of Rjukan is cast into perpetual shadow from September to March. In 2013 a group of engineers installed the *Mirror Project*, which for the first time re-directed 185sqm circle of winter sun into the otherwise shadowed town's square creating a sunny meeting place (figure 32). High on the mountain opposite 450 metres above the town, three large, solar-powered, computer-controlled mirrors steadily track the movement of the sun across the sky, reflecting its rays down on to the town square bathing it in bright sunlight. The mirrored

‘hot spot’ does not create any notable warmth, but does have a psychological warming effect on the community who live there.

Artist Oluf Eliasson, though not working with mirrors, also deliberately embedded physical ciphers into his work, *The Weather Project* (figure 35), in order to effect psychological reactions, which in turn resulted in direct physiological responses. I discuss further in chapter 4.

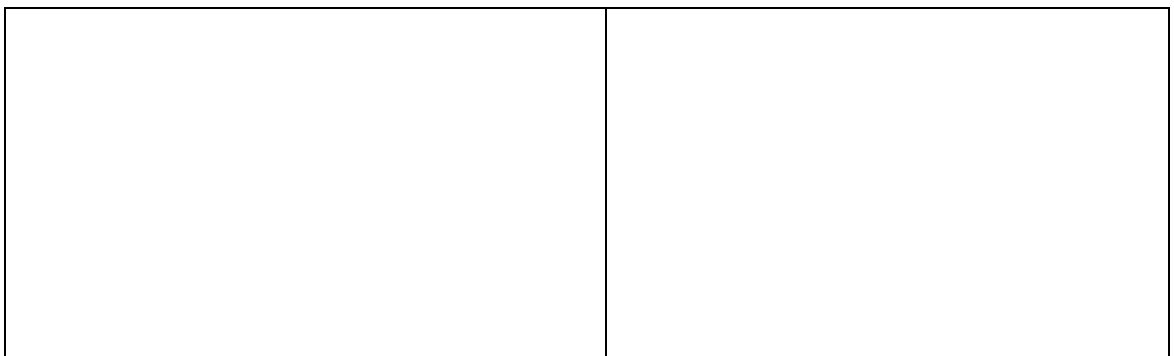


Figure 31. Giant mirrors erected on a mountainside reflect sunlight into town of Rjukan in the valley below. /Photo: Reuters/Tore Meek/Ntb Scanpix. (ONLINE) Available at: <http://www.theatlantic.com/photo/2013/10/using-giant-mirrors-to-light-up-dark-valleys/100613/> Retrieved July 27, 2016.

Figure 32. Rjukan's market square basks in the light beamed down by the three mirrors./Photo: Reuters/Tore Meek/Ntb Scanpix. (ONLINE) Available at: <http://www.theatlantic.com/photo/2013/10/using-giant-mirrors-to-light-up-dark-valleys/100613/> Retrieved July 27, 2016.

### 3.7 Anish Kapoor

Anish Kapoor investigates the contradiction between the known and perceived. He explores themes such as matter and non-matter whilst playing with dualities by using highly reflective and/or non-reflective materials, which are highly light absorbing.

‘In any examination of the way Anish Kapoor conveys the central thrust of his art, one question remains constant: whatever their diversity of materials or forms, what non-physical effects do his sculptures create?’ (DeLoisy 2009 p37)



Kapoor has produced artworks varying from those that exploit pure pigment, generating a luxurious visual sense of tactility to the *C-Curve* (figures 33 & 34) which relies on the reflective qualities of the mirror, rather than pigment. He is working between the duality of light absorbing or light reflective materials. The large outdoor public sculpture *C-Curve* utilises both the concave and convex mirrors and its reflections attract and swallow, echoing the immediate environment. The sculpture can also disappear into the landscape almost becoming 'nothing' yet still having a presence. The mirror's reflective surface stridently reflects and reverses the landscape, distorting the view and creating a void. My work *Without Prejudice* (figure 44), also reflects and reverses the landscape and additionally exposes the interconnectivity of the environment and the observer.

Another of Kapoor's works *Cloud Gate* (figure 35) was installed in Millennium Park, Chicago in 2004. This large sculpture is just over 20 metres long, 13 metres wide and 10 metres high of which eighty per cent of the surface reflects the sky. The seamlessly constructed sculpture is highly polished stainless steel with curves that take on an organic shape, with no sharp edges, reflecting and distorting the Chicago skyline and streetscape. Like many of Kapoor's works *Cloud Gate* has an immersive nature. The viewer can walk beneath and through a concave chamber where their reflections will be multiplied and warped, actively placing them in the sculpture and necessarily changing their interaction with the work.

Mirrors could be said to be a metaphor for the emergence of 'matter', its interaction with other 'matter' and how 'matter' can have a presence yet be simultaneously empty. ie. The reflected matter interacts with the matter reflected and reflection is empty of mass yet has a presence.

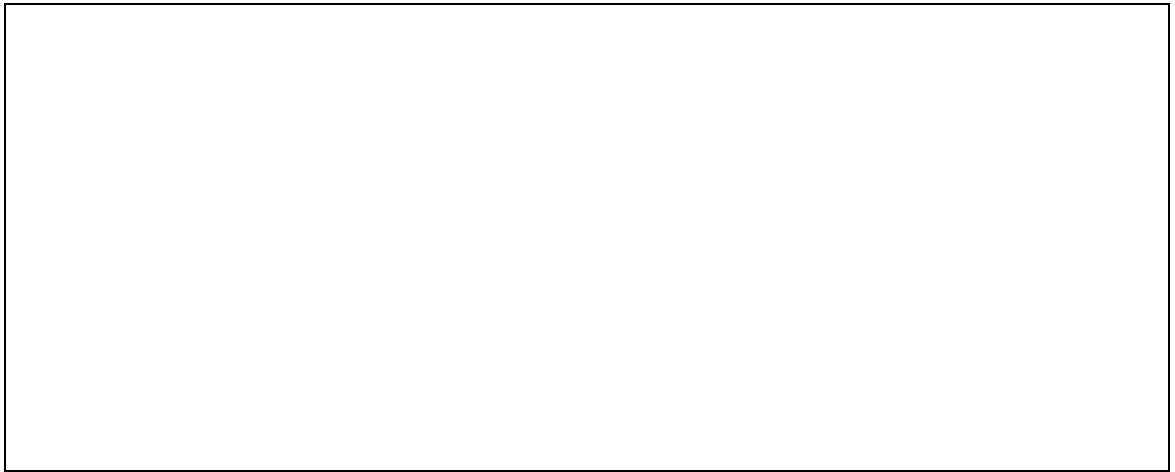


Figure 33. Anish Kapoor, *C-Curve*. Stainless Steel, 220x770x300cm 2007. (ONLINE) Available at: <http://anishkapoor.com/117/c-curve> Retrieved November 12, 2014.

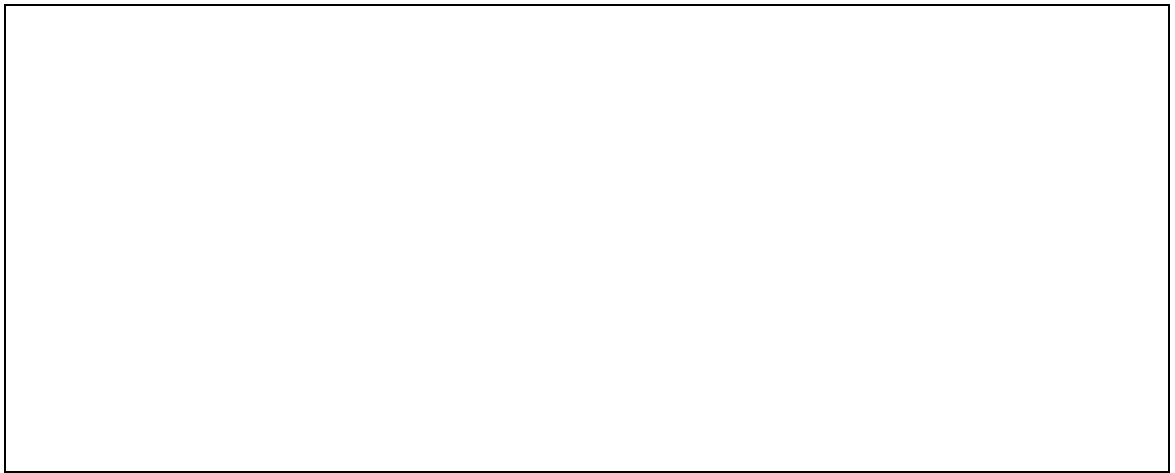


Figure 34. Anish Kapoor, *C-Curve*. Stainless Steel, 220x770x300cm 2007. (ONLINE) Available at: <http://anishkapoor.com/117/c-curve> Retrieved November 12, 2014.

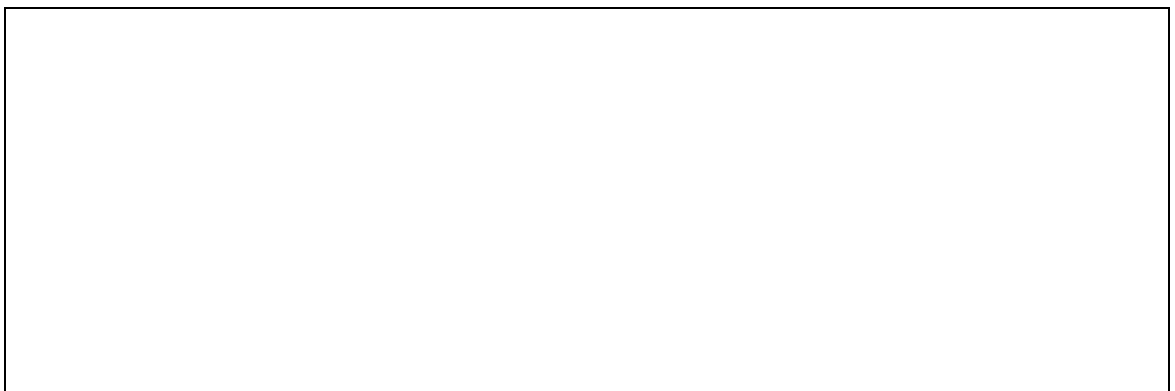


Figure 35. Anish Kapoor, *Cloud Gate* Millennium Park, Chicago. Stainless Steel 2004. (ONLINE) Available at: <http://www.urbancapture.com/2011/02/1-millennium-park-cloud-gate-chicago-usa-2/> Retrived August 1, 2016.

## CHAPTER 4 EXPERIENTIAL CIPHERS

I commence all my paintings by under painting the substrate orange. Despite this being a conscious decision, I could equally claim it was an intuitive response to the environment in which I was working.

I have Raynaud's phenomenon, which resulted from over-exposure to low temperatures, which developed whilst I was living in the European Alps. Simply put, Raynaud's phenomenon is a short-term decrease of blood flow to the extremities. Cold is a classic trigger for this phenomenon. Raynaud's can be painful and inconvenient but is easily avoided by staying warm.

The hidden undercoat of orange brings 'warmth' and extra colour into my work even if only as an embedded cipher.

I started to under paint my work orange when I was painting oceanic themes, which required a lot of phalo blue and green. Determined to stay warm, in my studio, I under painted all my canvas' orange. Fortunately orange is also a complimentary colour to blue and works well with my work and it has a warming effect on me generally, even though it is not tangible. The orange undercoat brings warmth to the finished work.

Danish artist Olafur Eliasson also incorporates a non tangible warmth into his work *The Weather Project* 2003 commissioned for the Unilever Series in the Turbine Hall at Tate Modern in London. *The Weather Project* was made up of a wide semicircular screen back-lit by a battery of about 200 yellow mono-frequency lamps mounted 7.7 metres from the end wall of the Hall.

Eliasson is exploring ideas about experience, mediation and representation and the installation it had an unexpected outcome. Visitors to the exhibition forgot their normal habitual gallery behaviours and took advantage of the relaxed atmosphere created by the artificial sun and mist/fog blown out from mechanical

nozzles. The work is immersive and the visitors took to the floor, reclining as if tranquilised by the 'radiation' of the sun (figure 36).

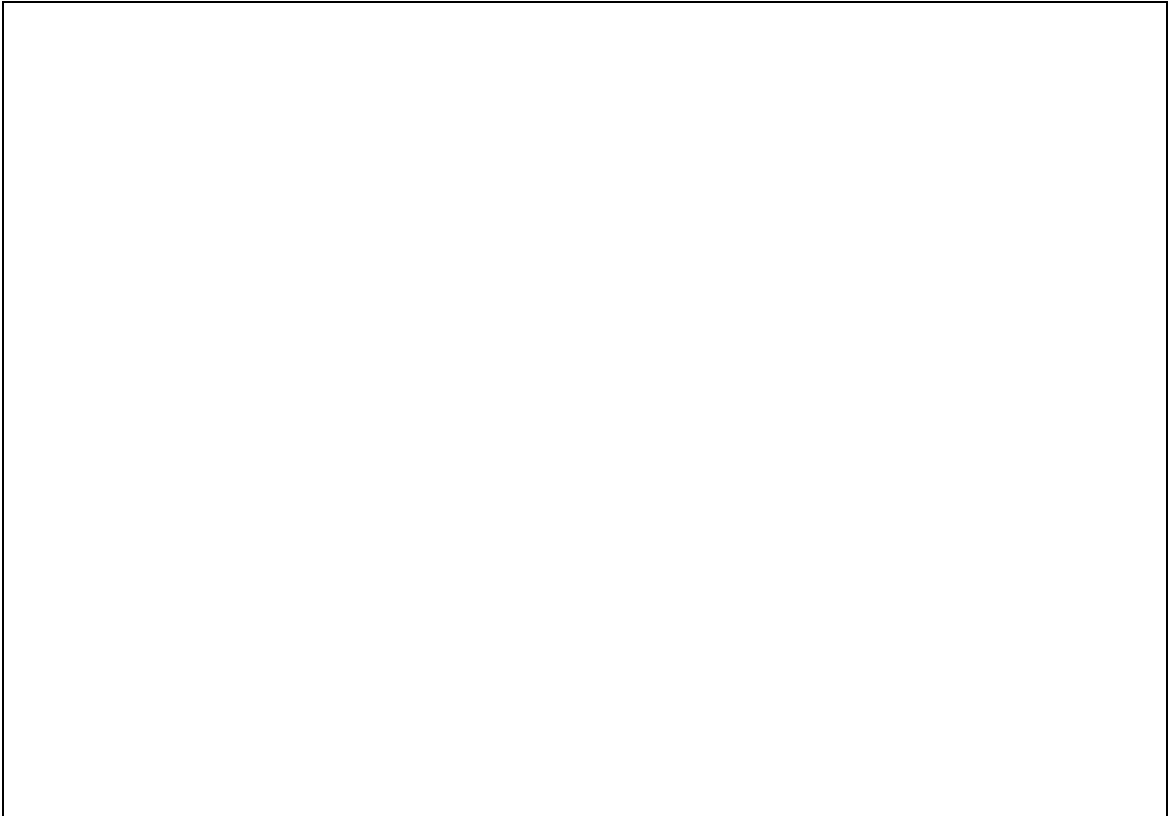


Figure 36. Olafur Eliasson, *The Weather Project* 2003. Turbine Hall Tate Modern / Photo: Tate Photography © Eliasson. (ONLINE) Available at: <http://www.tate.org.uk/context-comment/articles/the-weather-project> Retrived April 15, 2015.

There is stark similarity between Eliasson's *The Weather Project* and Rjukan's *Mirror Project*. Both projects produce psychological warmth to the observers yet create no notable heat. The misdirection and subterfuge in both works is about people, their responses and their interactivity with the world and others.

I too embed physical ciphers into my paintings, in order to effect a psychological reaction resulting in a direct physiological response. But unlike Eliasson my cipher is ultimately hidden under the final painting.

#### 4.1 Christo and Jeanne-Claude

Artists Christo and Jeanne-Claude also produce large-scale immersive artworks; *The Gates* project in New York's Central Park in 2005 was, like many of their works, a site-specific installation. Christo said of the work that he wanted 'the viewer to walk through and let their mind wander'. This work is a direct response to the location in which it exists and is creating a discourse with the natural environment.

*The Gates* project consisted of 7503 gates erected with saffron coloured fabric panels suspended from the horizontal top rail of the gate. The gates were 4.87m tall and varied in width from 1.68 to 5.48m according to the different widths of Central Park's pathways. *The Gates* was specifically installed in winter so the surrounding deciduous trees allowed the gates to be readily seen.

The saffron coloured fabric was weighted so that it would respond to the prevailing winds and breezes with sensual movements. In addition to the breeze the fabric curtains responded to daily light fluctuations and accordingly the saturation and chroma of the curtains would adjust to the available light conditions. The saffron fabric also reflected a warm orange glow in an otherwise stark winter landscape, a landscape that was highly reflective at certain times of the day when there was a snow cover.

*The Gates* are in direct response to the environment and highlight the interactivity of all the elements. *The Gates* emphasise the environmental changes in the park for the viewer. By installing a 'foreign' object, in this case the individual gates, in a natural environment we are forced to observe flux and changes in the immediate environment, that would be otherwise lost, due to the complex adaptive system that has developed imperceptibly over time in that environment.

The orange colour, as in my own work and that of Eliasson, brings with it a non-tangible warmth to the work, a hidden cipher in clear view. Christo indicated saffron was ideal for displaying the 'full colour palette', which could be further

interpreted to mean the full tonal keys of that colour. Orange is located in the mid range of the tonal scale allowing it to be easily lightened and darkened by the light conditions of the moment. At different times the curtains could be in bright full sun or in dull shadow and they would respond to the conditions with colour tonal variety (figures 37, 38, 39 & 40). Though possibly not considered by Christo & Jeanne-Claude, in the East orange is considered as the colour of knowledge.

The photographs below demonstrate the interactivity of the saffron gates with their immediate environment, the park and the viewers. The success of Christo & Jeanne-Claude's work is dependent on the countless environmental variables that provide the random responses from the curtains. *The Gates* expose hidden information.

A large amount of information is hidden in *The Gates* and can only be detected via its interactivity with other 'matter'. Christo & Jeanne-Claude have demonstrated how hidden 'empty' information, ie. light and wind, interacted with the curtains and how that information had a presence, by changing the form and colour of the curtains, yet it was simultaneously empty. The only evidence of its existence was demonstrated by its interactivity with other matter: the curtains.



Figure 37. Christo & Jeanne-Claude, *The Gates*, Central Park NY 2005 /Photo Sylvia Ross.



Figure 38. Christo & Jeanne-Claude, *The Gates*, Central Park NY 2005 / Photo Sylvia Ross.



Figure 39. Christo & Jeanne-Claude, *The Gates*, Central Park NY 2005 /Photo Sylvia Ross.



Figure 40. Christo & Jeanne-Claude, *The Gates*, Central Park NY 2005 /Photo Sylvia Ross.

## 4.2 Napoleon's Ciphers

In the early 19<sup>th</sup> century Napoleon Bonaparte was seeking a communication method for the military that his soldiers could decipher whilst hidden in darkness. In response, Charles Barbier, a French military Captain, developed a system of dots arranged in sets of two (2) columns and six (6) rows totaling twelve (12) dots in a combination of raised dots and empty space in a set. Each twelve dot set corresponded to a letter of the *Night Writing* French alphabet. Due to its complexities the system was difficult to implement and thus failed as a secret means of communication.

In 1821 whilst visiting the National Institute of the Blind in Paris, France, Barbier introduced *Night Writing* as new way of reading and writing for visually impaired people, who had previously had to labour with reading large letters made of wood, cardboard or lead.

At that time Louis Braille, was a student at the Institute. Braille identified the problems with *Night Writing* which was the number of dots. The *Night Writing's* 12 dot system was too big for the fingertip therefore making it difficult and slow to move along the code.

Louis Braille went on to refine Barbier's code into a six (6) dot system that enabled readers to move much more quickly, facilitating a more fluid and natural decoding of text. This newer 6 dot code known as Braille is now universally accepted and is an invaluable communication tool for vision impaired people.

I researched the idea of using various materials in order to illustrate a temporal quality to the Braille system in order to reflect and diffract light, because using light with a code that was originally designed for little or no light, further demonstrates the idea of subterfuge and emptiness. This experimentation has resulted in the Braille code, designed for the visually impaired, somewhat ironically, becoming a visual means of communication for my research.



*Surface Tension* (figure 41) utilises the words 'surface' and 'tension' by representing them in the Braille alphabet, not by raised dots but circles cut into the substrate. I incorporated light, which was directed through the circles to create a diffracted pattern on the wall surface a few feet beyond the artwork substrate. In *Surface Tension* the extra use of light establishes the concept; that impressions viewed in different circumstances can have a completely different influence on the perceived outcome.

Lights are projected through the work intermittently. This simple modification in the light projection changes the work from static to animated in an instant and the viewers' perception is necessarily changed. When the light is projected it becomes the artwork and the 'Surface Tension' substrate becomes the interference. When the viewer has seen both; with lights and without lights, they are exposed to two separate experiences, one with projected lights and one with natural light. They are exposed to cause and effect, diffraction, ciphers and other phenomenon in the microscopic world.

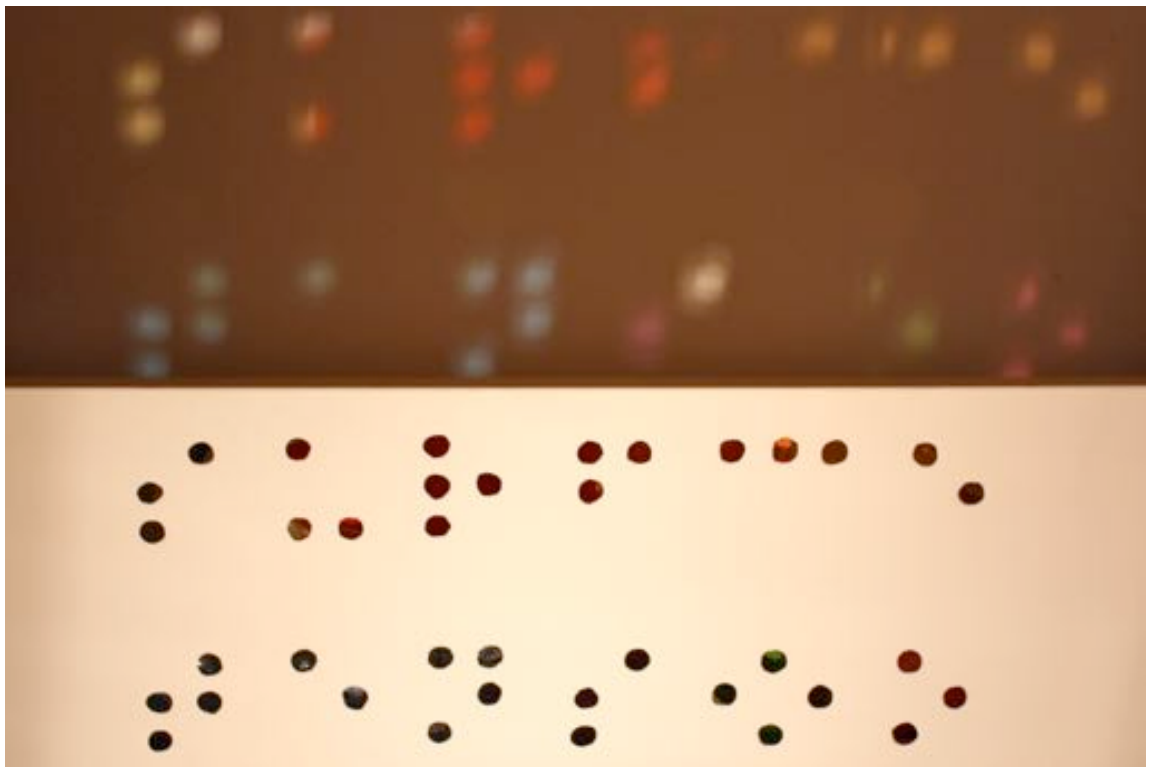


Figure 41. Gabrielle Somers, *Surface Tension*. Mixed media projection.

#### 4.3 Cornelia Parker

Cornelia Parker's suspended work *Cold Dark Matter: An Exploded View* 1991 (figure 42) could be related to the fragility of the human experience. The work is the suspended remains/fragments of an exploded shed. Parker has suspended the fragments of the shed with great delicacy and illuminated the installation from the core of the work, with a single light globe, giving the impression that a dramatic explosion has been suspended in time. With this technique she is also creating diffracted shadows. The work is as violent as it is delicate.

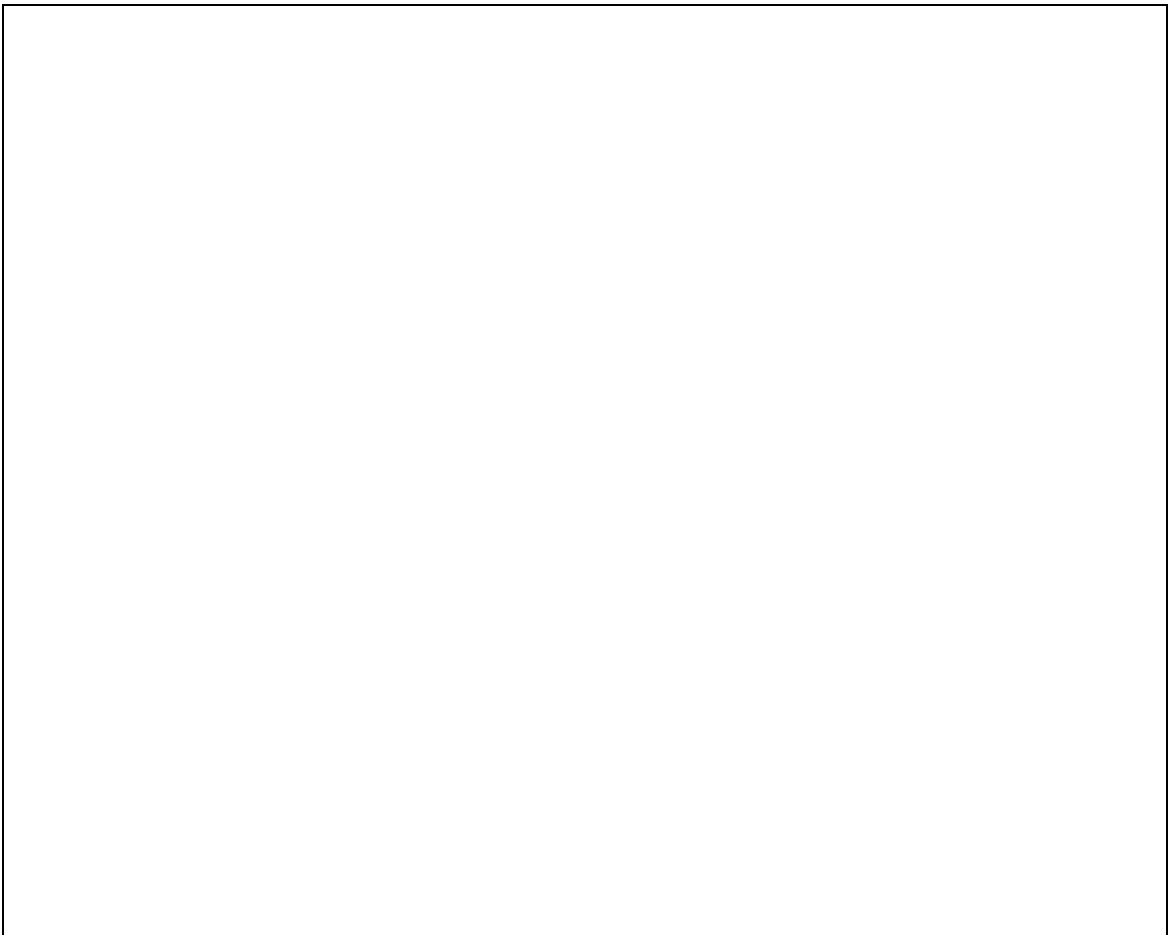


Figure 42. Cornelia Parker., *Cold Dark Matter: An Exploded View* 1991. (ONLINE) Available at: [http://www.sculpture.org/documents/scmag09/june\\_09/parker/parker.shtml](http://www.sculpture.org/documents/scmag09/june_09/parker/parker.shtml) Retrived August 29, 2016.

The actual installation's solid components occupy the centre of the room only. However Parker has utilized light to create dramatic shadow in order to extend the installation to occupy the space beyond the physical material. Her use of light

has provided an extension of the work by duplication and magnification. She has also used the negative spaces within the work to imply a solid, not only in the projected shadows but also within the confines of the material installation's empty space.

The artwork represents a moment in time that we would usually be unable to explore due to the extraordinary release of energy and associated speed of action.

Parker's installation is creating an environment for approximation. We must try to approximate the moments before and the moments that theoretically follow in order to make sense of the work. In some way it could be argued that Parker is giving us an almost microscopic view of an explosion via a macroscopic template. She is making sense of the explosion for us; she has provided us a calm space in which to explore an event that would have been spectacularly violent. Parker has given empty space the impression of a solid mass that could be said to be a metaphor for the metaphysical transition of time and space.

## CHAPTER 5 PROBABILITIES OR OBJECT?

*“To think is to form patterns inside ourselves that are just as complex, fleeting and rich in their diversity as is reality itself. Thinking is the mirror of the world, and nothing less. “*

Deepak Chopra (Chopra 1989 p51))

The question is, what comes first the pattern or the object?

The local predetermination of attributes is refuted by quantum theory and experimental investigation of that theory. Einstein’s ‘elements of reality’, each with its own separate on-board bit of information, is false. It is an interconnected pattern, a pattern that contradicts the possibility of separate, independently existent elements with definite attributes, which constitutes the fundamental reality that surrounds us and within which we have our being. (Smetham 2010 p153).

Quantum phenomena displays a behavioral profile which is completely at odds with previously understood notions of what is considered independently existing, objective ‘matter’.

Moreover, at the subatomic level we are only dealing in probabilities and quantum mechanics confirms that entities do not exist at particular places and times, but within space-time probability clouds. A probability cloud is the description of the atom’s electrons that surround the nucleus in regions of high probability called orbitals. The inherent nature of orbitals make it impossible to measure certain pairs of physical properties, for example position and speed, and the more precisely one property is measured the less is known about the other. These uncertainties are critical at the quantum level.

Nevertheless, I posit that even at the classical level we have only ever been dealing with probabilities because accurate predictions are only accurate after the

fact. Prior to the fact they are probabilities no matter whose science you are following.

But all these hints at the foreseeing of what happened, both on the part of the French and on the part of the Russians, are now put forward only because events justified them. If the events had not occurred, those hints would have been forgotten, as thousands and millions of contrary hints and suppositions that were current then, but turned out to be incorrect, are now forgotten. (Tolstoy 2007 p683)

Tolstoy is referring to the French invasion of Russia in 1812 and that after the event the theorists and historians, justified by the so-called facts, claim to understand the events that took place. Tolstoy disputes their understanding, suggesting that retrospection can be easily manipulated to suit the available facts. He is much more interested in the countless self-interested random acts of disorder that lead to the French defeat.

It would seem that Tolstoy rejects classical determinism. He understood randomness, (complexity) and that a chain of events can have a point of crisis that can magnify small changes and lead to extraordinary outcomes, for instance Napoleon was not even French!

Based on the facts of the day one should have been confident predicting the French to win the war over Russia. The French army was some 600-700 thousand men strong, considered the best in the world and led by the best generals. On the contrary the Russian army was made up of 180 thousand inexperienced men (figures are approximates and vary widely) and was lead by inexperienced generals. Based on this evidence alone a French victory would have been considered a predictable certainty. But alas the French army was defeated and in a way that could never have been and was not foreseen.

I propose that Tolstoy is suggesting that no one person or army has the ability to change the world in a predictable way due to an infinite number of variables.

Providence made all these people, while striving to achieve their personal aims, contribute to the fulfillment of one enormous result, of which not one man (neither Napoleon, nor Alexander, still less any of the participants in the war) had the least expectation. (Tolstoy 2007 p684).

So whilst we have classical science to guide us theoretically through the material world with its practical, logical and convenient explanations it is still very clumsy at explaining the actual reality in which we live. As quantum science has shown classical concepts are approximations, mere labels, ultimately 'empty' of meaning.

I think Tolstoy's understanding of the human condition is exceptional, but it is his understanding and ability to demonstrate that no human being, regardless of race or rank, is independent of the world. Throughout *War & Peace* he asserts that every individual, is constantly and necessarily interconnecting with the world according to their own idiosyncrasies, signifying that future predictions are only probabilities and never certainties and do not ascribe to conventional 'reality' until they are viewed retrospectively.

Endocrinologist, Dr Deepak Chopra explains it from a biological perspective suggesting:

If you could see your body as it really is, you would never see it the same way twice. Ninety-eight percent of the atoms in your body were not there a year ago. The skeleton that seems so solid was not there three months ago. The configuration of the bone cells remains somewhat constant, but atoms of all kinds pass freely back and forth through the cell walls and that means you acquire a new skeleton every three months. The skin is new every month.... (Chopra 1989 p48).

He goes on to say that the human body looks much the same from day to day but it is constantly in exchange with the rest of the world and itself.

This is a concept echoing the words of the Greek philosopher Heraclitus ‘*You cannot step into the same river twice*’.

### 5.1 Camouflage and Subterfuge

*Light not only reveals but it also obscures.*

James Turrell (Turrell n.d)

Research into the peculiarities of light wave mechanics, (refraction, diffraction, reflection) which affect our visual subjectivity also led me to consider camouflage and subterfuge and how such possibly non-deliberate concealments affect our perspective and preference and generate discrimination and prejudices that may not be based on reason or actual experience.

Our experiences shape our realities and the meanings we ascribe to them. Subjectivity and objectivity emerge together to synthesize the world; like two knives sharpening each other or like Escher’s two hands drawing each other.

If the discursive practices by which we seek to describe phenomena do not refer to properties of abstract objects or observation-independent beings but rather actively reconfigure the world in its becoming, then what is being described by our epistemic practices is not nature itself but *our intra-activity as part of nature*. That is, realism is reformulated in terms of the goal of providing accurate descriptions of that reality of which we are a part and with which we intra-act, rather than some imagined and idealized human-independent reality. (Barad, 2007 p207)

The idea of interconnectivity and our constant interchange with the world provided the inspiration for the installation *Without Prejudice* designed for the Bennelong Precinct, Royal Botanical Gardens, Sydney.

Bennelong was an Aboriginal Elder of the Eora Nation of Port Jackson at the time of the first British settlement. On this site sits Government House. Interestingly, the building is in the form of a Gothic castle, designed in 1834 by royal architect Edward Blore. Blore demonstrated the preference for the architectural style of his homeland. It would appear that no consideration was given to the existing people, the landscape (beyond the rudiments of site foundations) and the local climate. It could therefore be argued that the building was an intimidating demonstration of colonial domination.

Today Bennelong Precinct is the embodiment of a cultural and environmental fusion. The landscaped gardens are offset by the movement of the seascape and commerce. Every visitor to the gardens will have their own individual appreciation of the site for many varied and different reasons.

*Without Prejudice* consisted of twenty-five double-sided acrylic mirrors suspended, from a mirrored clad scaffold and though designed for the Bennelong Precinct it was installed elsewhere and exists in video documentation.

Each mirror is strategically suspended, to represent a particular position of an individual dot that relates to the Braille alphabet. The word 'prejudice' is spelt in Braille by the circular mirrors. 'Prejudice' by definition is any pre-judged, preconceived opinion or feeling either favourable or unfavourable.



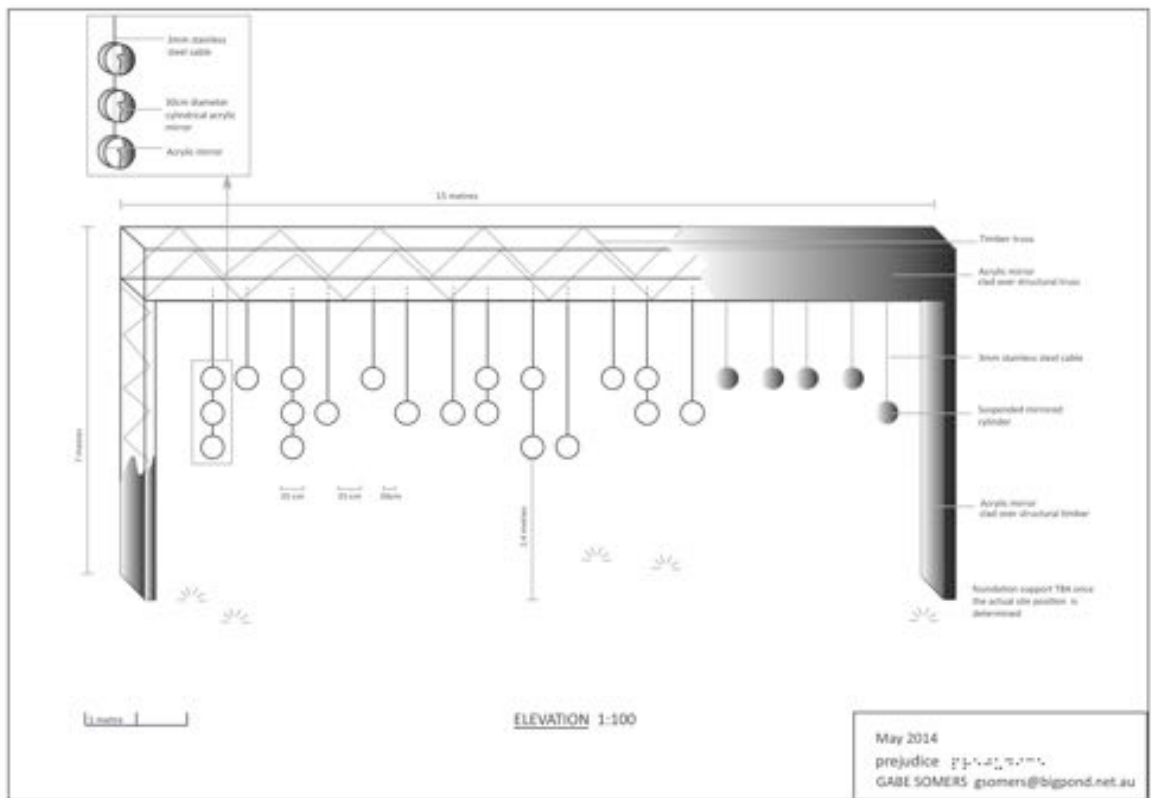


Figure 43. Gabrielle Somers, *Without Prejudice*. Elevation 2014.

The mirrors constantly reflect the viewer/s and the immediate environment.

The viewer responds to the artwork with his/her gender, age, race, emotionality, observations, culture, body type, body image, preferences etc. The individual's personal attributes, whether psychological or physiological, innately contribute to that individual's perception of the world and that, coupled with their social and cultural status reflects their own personal history. This history becomes embedded in their neural pathways such that subjectivity and objectivity interplay. In the words of prominent writer Anais Nin 'We don't see the world as it is; we see the world as we are'; though she referenced Rabbi Shemuel Ben Nachmani, as quoted in the Talmudic Tractate Berakhot. Accordingly we're always in the 'picture' and our thoughts are a mirror to the world in which we live and these thoughts are necessarily prejudiced, as they can only be informed by our own individual interconnectivity experience, knowledge and personal history.

...humans do not merely assemble different apparatuses for satisfying particular knowledge projects; humans are part of the configuration or ongoing reconfiguring of the world – that is, they/we too are phenomena. In other words, humans (like other parts of nature) are of the world, not in the world, and surely not outside of it looking in. (Barad 2007 p206)

The mirrors respond chaotically to the fluctuation of the breeze, just as many of our thoughts are fleeting, so too the reflected images in the mirrors. There one minute gone the next, reoccurring but different? Much the same as the human body looks the same from day to day but it is constantly in exchange from within and without and with the rest of the world.

Based on our brain's idiosyncratic responses to stimuli, no one person or collective has the ability to change the world in a predictable way due to the infinite number of variables and because decisions and actions can be made on the impulse of personality habits, circumstances, conditions and aspirations and motivations.

The result is apparent randomness or complexity. Complexity theory has it that a chain of events can have a point of crisis that can magnify small changes and lead to extraordinary outcomes.

Complexity is the study of dynamic systems that are highly sensitive to initial conditions: The way a small change now can have a colossal consequence in the future. It is sometimes referred to as the 'butterfly effect' whereby a minor flap of a butterfly's wing could set off a chain of events on one side of the world that could lead to major event on the other side of the world.

Quantum physics is exceedingly complex, with a manifold of connections with constantly changing practices, is multidimensional with ever-changing conditions and possibilities. It is also said that 'Quantum physics is part of a complexly entangled web of phenomena that include scientific,

technological, military, economic, medical, political, social and cultural apparatuses of bodily production to name but a few.” (Barad 2007 p388).

*Without Prejudice* was designed to produce certain light flashes and kinetic reflections resulting from the circular mirrors interacting and responding to the breeze fluctuations and reflecting the sun’s rays as they rotate. The lights dance chaotically about the gardens producing a complexity of unpredictable light flashes.

Paradoxically I have selected Braille, an alphabet code for visually impaired people, for this primarily visual installation, because it will necessarily challenge our bias about communication.

The inclusion of Braille also delivers an interactive element to the installation, since the code needs to be deciphered by the viewer, engaging the cognoscenti who can read Braille, and challenging those who cannot read the message to reflect upon it’s meaning as they are reflected within the message/installation.

The mirrors themselves are a medium for reflection, and are a literal metaphor for both light and emptiness.

At the macroscopic level we can comfortably predict that the artwork will sway and spin, however, we are not able to predict with any certainty the direction or speed of each individual mirror’s spin nor can we determine the sway response of all the mirrors. Nor can we determine with any accuracy the effect the artwork is having on its immediate environment. Could it be a butterfly or a viewer changed course in response to the flickering lights? This we can never know, but this installation will have played its part in the cosmos’ chaos and cause and effects.

This installation is reminiscent in its use of mirrors and dots, to many works by Yoyoi Kusama and Anish Kapoor who reflect and distort the viewer and also to

that of Christo & Jeanne-Claudes' *The Gates Project*, which demonstrated the complexity of environmental interactions.

*Without Prejudice* currently exists (as a proposal) in video format.



Figure 44. Gabrielle Somers, *Without Prejudice*. Video Installation.



Figure 45. Gabrielle Somers, *Without Prejudice*. Proposal exists in video format.

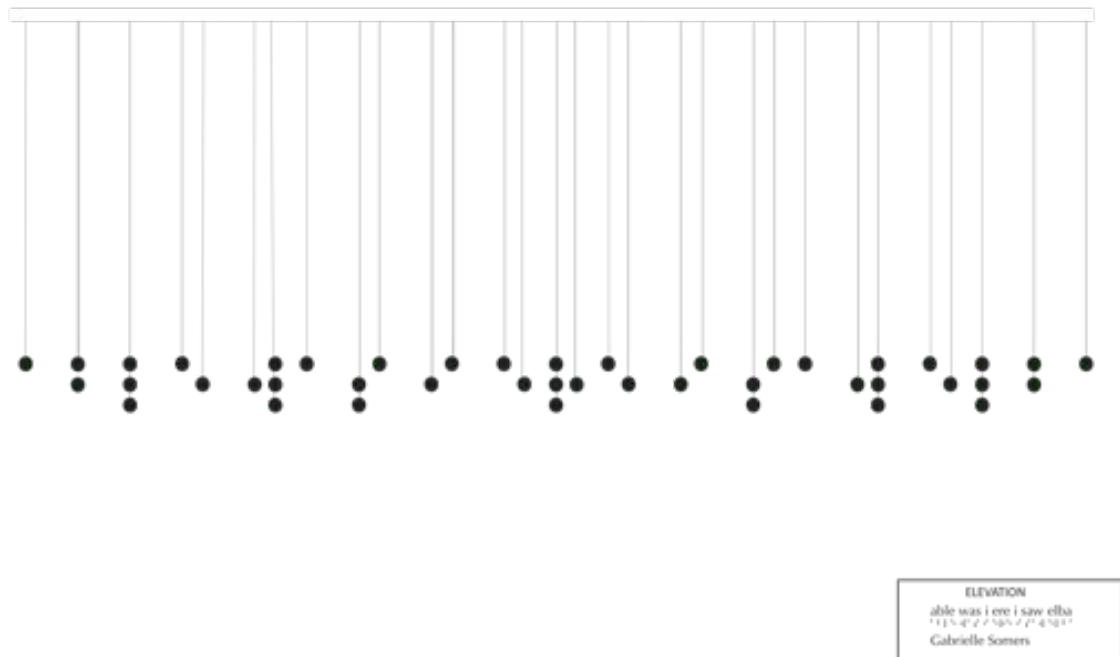
*Able was I* (figure 46) was designed for a gallery setting so that the gallery viewer would be a participant. Whereas *Without Prejudice* was designed for the natural environment, *Able was I* was designed for an architectural space, similar to the suspended art works of Dwyer and Do-ho Suh (figures 1 & 5) and Parker (figure 41). *Able was I* is an installation of suspended mirror disks spelling out a hidden message also in Braille. I determined that a palindrome would be the best for such a work. A palindrome allowed the work to be viewed from either side when suspended in the centre of the exhibition space.

I chose the palindrome 'Able was I ere I saw Elba' because it is famously credited to Napoleon Bonaparte, when in 1814 he was exiled by Allied Powers to the Island of Elba, 20km off the Tuscan Coast. He was thought to be an obstacle to the restoration of peace in Europe.

As Napoleon has serendipitously featured in this research, 'Able was I ere I saw Elba' emerged as the obvious choice of palindrome for the work. It is particularly relevant because it was Napoleon who commissioned Barbier to produce the communication system *Night Writing* the code that would go on to be the major influencing factor in the creation of Braille.

I selected mirror circles discs with diameters of 5cm, that are strategically arranged to spell out the palindrome 'able was I ere I saw Elba', in the Braille alphabet. This artwork is suspended in the centre of the gallery space, hanging approximately 160cm above the ground making it possible for the viewer to circumnavigate the work and read it from both sides. The mirrors deliver archetypical flashes of light that create a demonstration of flashing reflected light in the exhibition space, a demonstration that can not be predicted with any accuracy, yet with certain probability.

The viewer will also be reflected in the work by way of the 47 double-sided mirrors that spell out the palindrome, similar to site-specific work *Without Prejudice* whereby the viewer is implicated in the work.



## 5.2 Butterflies and Dominoes

*Embedded in the mud, glistening green and gold and black,  
was a butterfly, very beautiful and very dead.  
It fell to the floor, an exquisite thing, a small thing  
That could upset balances and knock down a line of  
Small dominoes and then big dominoes and then  
Gigantic dominoes, all down the years across Time.*

Ray Bradbury (1952)  
Quoted from *A Sound Like Thunder*

Further development of codes lead me to research dominoes. I found the six dot numerical system of dominoes had a relationship to the six dot alphabetical system of Braille. Whilst researching Louis Braille I also discovered that he apparently enjoyed playing dominoes, making it very possible that the simple six-

dot number system of dominoes may have played a critical role in informing his development of the Braille alphabet.

Dominoes was developed in China in about 1120 BCE and is a game played with small rectangular tiles, blank on one side and on the playing side the domino is divided into two squares and each square represents a number between nothing and six and which is represented by dots.

Napoleon Bonaparte also enjoyed playing dominoes. In July 1815 defeated at Waterloo he demanded asylum from the British, as a private individual. He requested fifty packs of cards, a backgammon board and a domino-table before he set sail on the British vessel 'Northumberland'.

*Nothing, Matters* (figure 45) consists of seven individual domino tiles which stand upright in a line, whereby if one domino falls it will set off a chain of events and the rest will be implicated and fall. This chain reaction is aptly named the 'domino effect' and is when the fall of one domino causes the fall of the remaining dominoes in succession if placed in a strategic arrangement. This direct cause and effect of the dominoes is different to that of the 'butterfly effect' because the domino effect is immediate and can be directly related back to the first domino.

In *Nothing, Matters* I have replaced the 'six dot' domino sets that represent numbers, with the six dot sets that represent the Braille alphabet. The seven dominoes each represent a letter from each word spelling out 'nothing matters'.

Braille is represented by small circular mirrors embedded in the ice dominos. The ice dominos are placed in a row and are exposed to the external elements and subsequently they interact with the local environment. Over time the dominoes evaporate and/or melt away leaving a collection of mirror discs that are a reminder of the dominoes prior existence, until they too are blown away and we



are left with nothing. This artwork currently exists in photograph documentation and video format.

Melted water from the dominoes overflows the supporting substrate creating a separate event, water droplets created circular ripples. Throughout the video the dappled light passing through overhanging trees evidences the passage of time. This produces a dance of diffraction across the dominoes, pooling water and the substrate surface. The pooling water also reflects the immediate environment. (figure 47) The artwork is constantly interacting with the physical environment.



Figure 47. Gabrielle Somers, *Nothing, Matters*. Photo still from video projection.

Effectively the Dominos melt away to nothing, but the so-called 'nothing' does matter because it is still exchanging with the world.

*Nothing, Matters* is a play on the concept of the atom being 99.99999999% empty. As we know all matter is made of atoms and theoretically 99.999999999% of all matter is empty. I suggest that this empty matter does matter; 'nothing' matters.

### 5.3 In Memoriam

For my work *In Memoriam* (figure 48) I Initially decided on Charles Rennie Mackintosh inspired domino table as a plinth for the work *Nothing, Matters*. The original Mackintosh domino tables were designed and produced using oak in 1907 by Scottish architect, designer and artist Charles Rennie Mackintosh and his tables were designed specifically for the playing of dominoes at the Glasgow School of Art library. Mackintosh notably designed the Glasgow School of Art and many other buildings and is responsible for many other iconic pieces of furniture that belong to the Art Nouveau and Post-Impressionist movements.

The table in my work *In Memoriam* references the act of playing dominoes. While designing my work on May 23, 2014, I learnt that much of the iconic Charles Rennie Mackintosh Building, which includes the Arts and Crafts library at Glasgow School of Art had been lost in a fire, which swept through the Building. This devastating fire touched many people the world over, due to the loss of beauty, history and craftsmanship that can never be recovered.

The Mackintosh inspired domino table was designed to be a plinth for *Nothing Matters* but the fire in Glasgow impacted upon me so I decided that the domino table should be a work in its own right and resultantly I developed the concept further.

I painted the work matt black, to symbolise the scorched remains of the original table and to suggest the shadow of the past.

The words 'in memoriam' are written in 'mirror writing' on the underside of the upper tabletop. Like many ciphers and codes the scripted text 'in memoriam' is camouflaged by being hidden from view, nonetheless on the lower bench is a mirror, which reflects the words making them legible. The reflection effectively brings the hidden cipher into focus.

Figure 48. Gabrielle Somers, *In Memoriam*. Mixed media.



#### 5.4 Bonaparte and Phillip

Following on the heels of the French revolution in 1789 the Napoleonic Wars engaged nearly all European nations in a bloody struggle between 1799 - 1815.

During this time of violent European struggle, Great Britain remained mostly unscathed at home while still achieving victories against France at sea and abroad.

The unrest in Europe played its part albeit indirectly in the colonisation of Australia by Britain. It is said that the colonialisation of Australia was driven by the need to address overcrowding in the British prison system. Between 1788 and 1868 approximately 160,000 convicts were sent to Australia. But the settlement in New South Wales in 1788 allowed England to claim Australia, effectively stopping France or Spain from claiming it.

The first Governor of Sydney, Arthur Phillip, undertook a series of local expeditions in and around Botany Bay, Port Jackson and Broken Bay looking for suitable land for farming. On one such expedition Governor Phillip wrote in his diary. '... different parts of the harbour were examined in one day, and the canoes counted; not more than sixty-seven canoes...' (1789). These bark canoes floated at the waters edge, and were an indication of a prosperous indigenous fishing culture.

The canoes referred to by Phillip were made crudely, by European standards and according to Phillip's expedition party 'being nothing more than a large piece of bark tied up at both ends with vine sticks'. (Anonymous 1789 p28) In contrast Phillip and his crew sailed sophisticated (for the day) trans oceanic vessels.

I was drawn to the simplicity of this visual image of the bark canoes and began to consider the butterfly effect/complexity and sensitive dependence on initial

conditions. Could the movement of one simple bark canoe in Broken Bay set off a chain of events that can have a point of crisis that could magnify exponentially small changes?

I asked myself what would it look like when scores of simple canoes were left by the shore? Would the shallow currents and prevailing winds arrange them in random clusters? I responded to the above question by painting simplified canoe shapes as if seen from above. I started with an initial condition, after which I placed one shape by another, all shapes having to relate with other shapes. Within these paintings I began to recognize patterns emerging. I was curious to determine if the same result would be gained if I started the painting with a 'control', say a secret word or symbol. Thus further affecting the outcome by artificially interrelating an initial condition.



Figure 49. Gabrielle Somers, *Nautilus Shell* – initial condition. Acrylic on board 60x80cm.



Figure 50. Gabrielle Somers, *Nautilus Shell*. Acrylic on board 60x80cm.

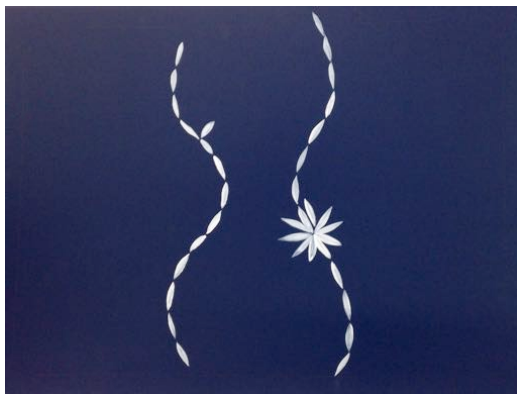


Figure 51. Gabrielle Somers, *Hour Glass* – initial condition. Acrylic on board 60x80cm.

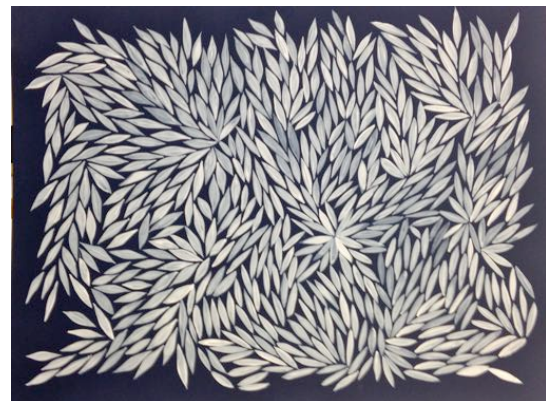


Figure 52. Gabrielle Somers, *Hour Glass*. Acrylic on board 60x80cm.



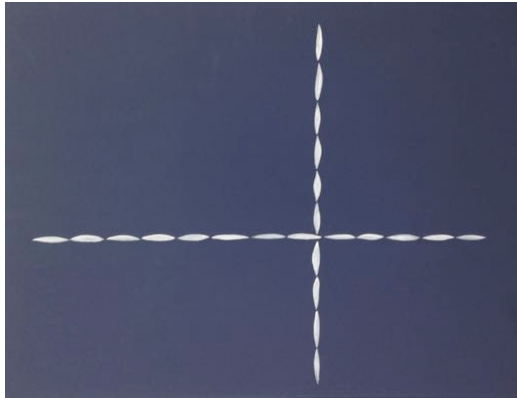


Figure 53. Gabrielle Somers, *Cross* – initial condition. Acrylic on board 60x80cm.

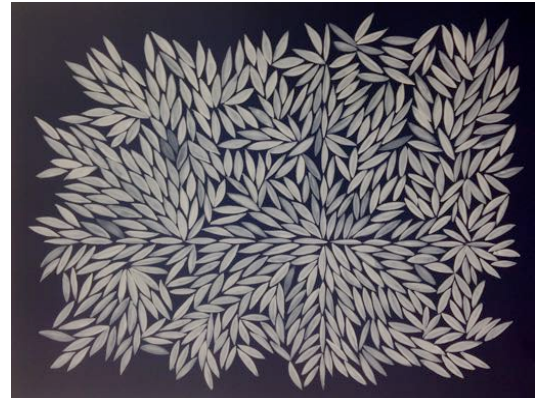


Figure 54. Gabrielle Somers, *Cross*. Acrylic on board 60cm x 80cm

I painted solid canoe shapes starting with a symbol or word, which became the initial condition on which all further canoes would follow. (figure 49, 51 & 53) I proceeded to add more canoes into the remaining space, in an attempt to conceal the initial condition/symbol. A dynamic pattern developed, demonstrating one of the fundamental qualities of an electromagnetic wave, ie that the object is not progressing forward, just the information/disturbance.

The object in this instance is each individual canoe. Each canoe placement informs the subsequent canoe which must connect with an existing canoe. Each new painting had a different initial condition and when completed each painting tended to be very similar to the last. The patterns that emerged from the concealed symbols highlighted the similarity of the results regardless of the somewhat original symbol. Nonetheless when the viewer looked closely they would discover many differences and even an embedded cipher.

We could conclude that the paintings demonstrate that disorder leads to order and back to disorder on an ongoing basis. And that 'noise' (disorder) and 'signal' (order) appear to assume the other. In this context 'noise' refers to any uncertainty in an observation because it reduces the clarity or accuracy of the signal and the measurement. It would appear that the works have an intrinsic behaviour because the placement of each separate canoe, whilst part of a larger pattern is only in response to the canoes placed before it.

The placement of the painted canoes relates to the concept that nothing exists in isolation. After the establishment of an initial condition – a symbol, all subsequent canoe marks are to lock in with existing canoes ie. no canoe is isolated in space. In that way the paintings are fully determined, yet the actual resulting patterns are not predictable. Because an arbitrarily small change of one canoe trajectory may lead to significantly different future results. These works are representative of dynamic complex adaptive systems (CAS).

The initial conditions did affect the final outcome of all the canoe artworks. More deeply the self-organising principle of the canoe placement means that on completion all the finished pieces look somewhat similar even though their initial conditions were all different. Thus the initial symbol became a cipher and was hidden in the camouflage of canoe orientation. Suffice it to say the initial conditions did affect the outcome of the artwork. But every subsequent canoe placed after the ‘so called’ initial condition played its role. Each canoe could take any number of possible trajectories. The trajectory chosen would clearly effect the placement of the next canoe. And the succeeding placements determined the next moment’s outcome. These works are ‘non-linear’ in that the placement of subsequence canoes did not rely on simple extrapolation of the pre-existing situation and because linear systems always respond proportionally.

Leo Tolstoy opens his novel *Anna Karenina* with the following. ‘All happy families are alike; each unhappy family is unhappy in its own way’. (Tolstoy, 2007 p1) Similarly we could interpret this sentence as implying all classical linear systems are predictable; each quantum non-linear system is unpredictable in its own way. Each canoe is separate and not identical and is connected only by the information inherent in the proceeding canoes and subsequent information transfer.

## 5.5 Gloria Petyarre

The similarity of some elements in the canoe works is similar to the paintings of artist Gloria Petyarre, who links specific marks with leaves, grasses and body paint, was noted.

The leaves painted by Petyarre (figure 55) are of the Kurrajong tree which is believed to date back 50 million years. The dense pattern of thousands of her painted leaves produces a dynamic work seemingly responding to an unseen breeze. Her work forms a pattern based on the elements of leaves, which is similar to the pattern of my work with the canoes, that is, placement of one element determined the location of the others. Both works are determined by natural elements; hers wind against leaves, mine water against canoes.

Petyarre is also representing the wind/breeze on the leaves and the randomness of the elements on the visual. *First Light I, II & III* also represents the unpredictable interactions of the natural world.



Figure 55. Gloria Petyerre, *Bush Medicine Leaves*. Acrylic on linen 204x139cm. (ONLINE) Available at: <http://www.japingka.com.au/collections/gloria-petyarre-paintings/> Retrived August 1, 2016.



## 5.6 Lyre and the Lyrebird

Fascinated by emerging organic patterns, I further refined my canoe works by representing visual symbols more relevant to the research. I selected the lyre, a stringed instrument that was a popular symbol of the French revolution; a symbol which was said to represent harmony, wisdom and moderation. The second symbol selected was a native Australian bird, the ground dwelling Superb Lyrebird. I choose the Superb Lyrebird because it is a native bird of New South Wales and was first illustrated in 1799 by Major-General Tomas Davies.



Figure 56. Gabrielle Somers, *Lyre*, Initial condition. Graphite on paper 55 x 75cm.

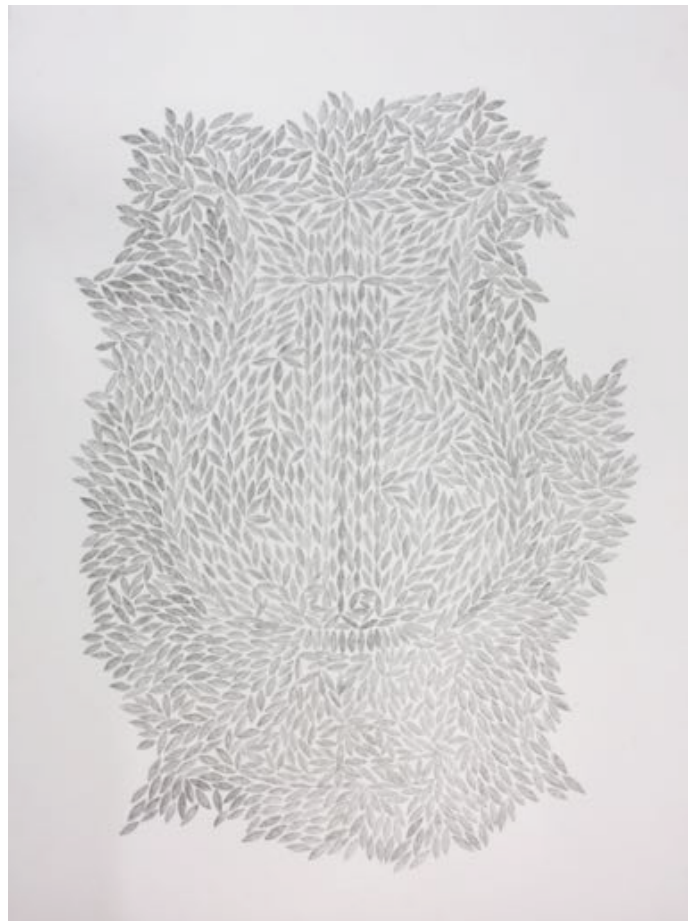


Figure 57. Gabrielle Somers, *Lyre*. Graphite on paper 55 x 75cm.



Figure 58. Gabrielle Somers, *Lyrebird* Initial condition Graphite on paper 55cm x 75cm.



Figure 59. Gabrielle Somers, *Lyrebird*. Graphite on paper 55cm x 75cm.

In my earlier works I discussed self-organizing patterns organically formed regardless of the embedded symbols. Nonetheless the more rectilinear the line the more difficult the symbol was to hide. In the work *Cross* (figure 54) I concealed the symbol into the work as metaphor for camouflage, subterfuge and prejudice.

I contend that the amount of prior information the viewer is privy to regarding an artwork will ultimately determine the way in which they interpret an artwork and in particular any artworks with ciphers. If the viewer is unaware there is a hidden code they will probably not look for one, if they know there is a hidden code they probably will look for one, ultimately affecting the way the work is perceived.

Interested in developing this work even further I began with three different symbols. The first work *Circle in the Sand* (figure 64) written in Braille was

inspired by the following journal entry quoted from Captain Arthur Phillip's journal of 1789, whilst he was on the beach exploring Manly Cove.

'As their curiosity made them very troublesome when we were preparing our dinner, I made a circle round us; there was little difficulty in making them understand that they were not to come within it, and they then sat down very quiet'. As cited by Smith (1789 p16).

This quote from Smith's journal could suggest a universal understanding that a line can represent a virtual wall, a wall that has presence yet is simultaneously 'empty' and in this case the wall had the meaning of exclusion. Captain Phillip's wall was a circular line in the sand. I also choose this because circles play a large part in my art practice and have been a recurring element in my work. Retrospectively I have been surprised by the discovery of the dominance of the circle to a greater and lesser degree in my work.

The second work was developed because the canoe was the initial catalyst and it seemed appropriate to start with a man standing in a simple bark canoe (figure 65).

Thirdly I reproduced the Superb Lyrebird (figure 63) again because it had a connection (albeit tenuous), with Napoleon, Aboriginal people and the invasion/colonization of NSW.



Figure 60. Gabrielle Somers, *Man on Canoe*, Initial condition. Graphite on paper 55x75cm.



Figure 61. Gabrielle Somers, *Superb Lyrebird*, Initial condition. Graphite on paper 55x75cm.

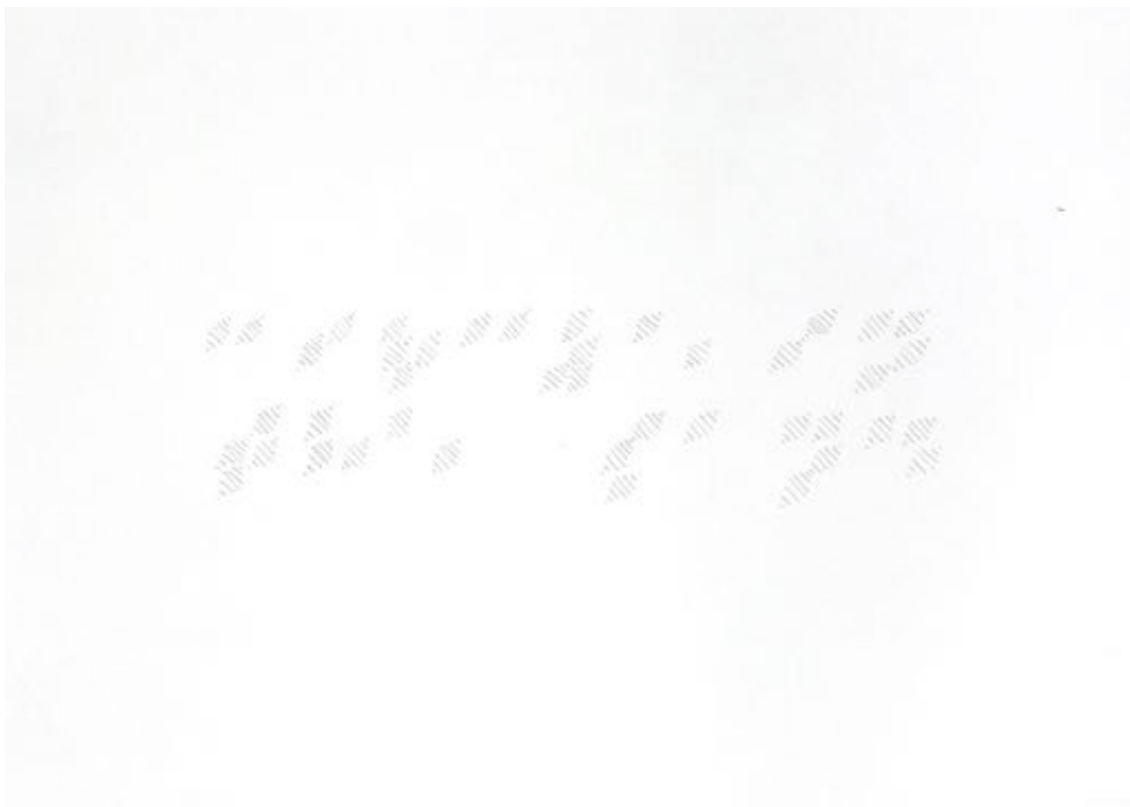


Figure 62. Gabrielle Somers, *Circle in the Sand*, Initial condition. Graphite on paper 55x75cm.

I went on to further develop the work and experimented with the shape of the canoes and rather than produce a solid shape with curves, I decided to represent the canoe with a series of small parallel lines, starting with a point at both ends and building to a straight line no larger than 5mm in the centre. It further changed the dynamic of the work, insofar that within the work there are no curved lines only rigid straight lines, yet the works appear soft and organic with a dynamic energy. So while the works appear to be made up of visual curves they are only made up of small straight lines, which the mind completes and approximates into curves. At another level it is a cipher and visual illusion. The lines are concealed by the visual illusion of the empty curve.

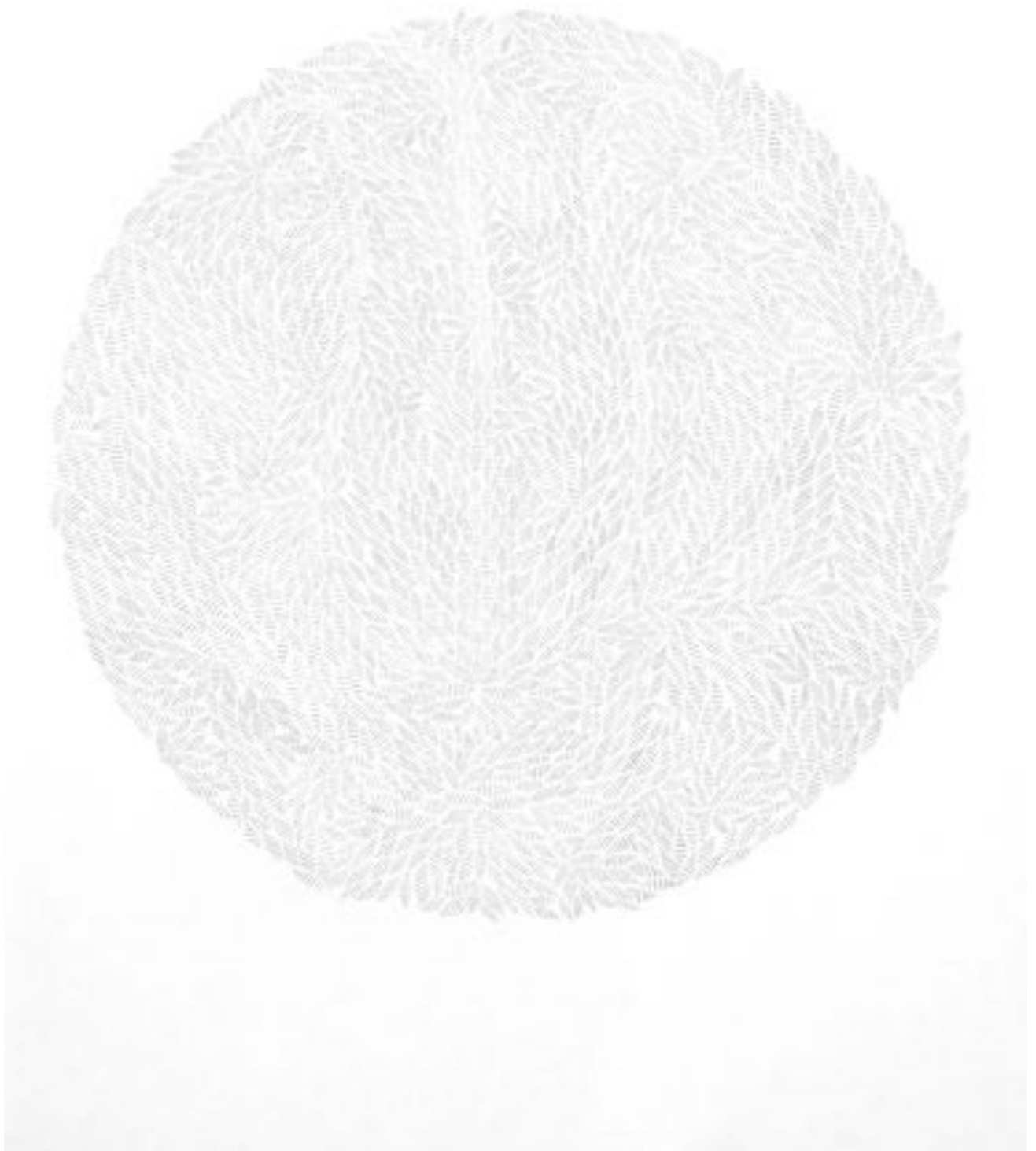


Figure 63. Gabrielle Somers, *Superb Lyrebird*. Graphite on paper 55x75m.

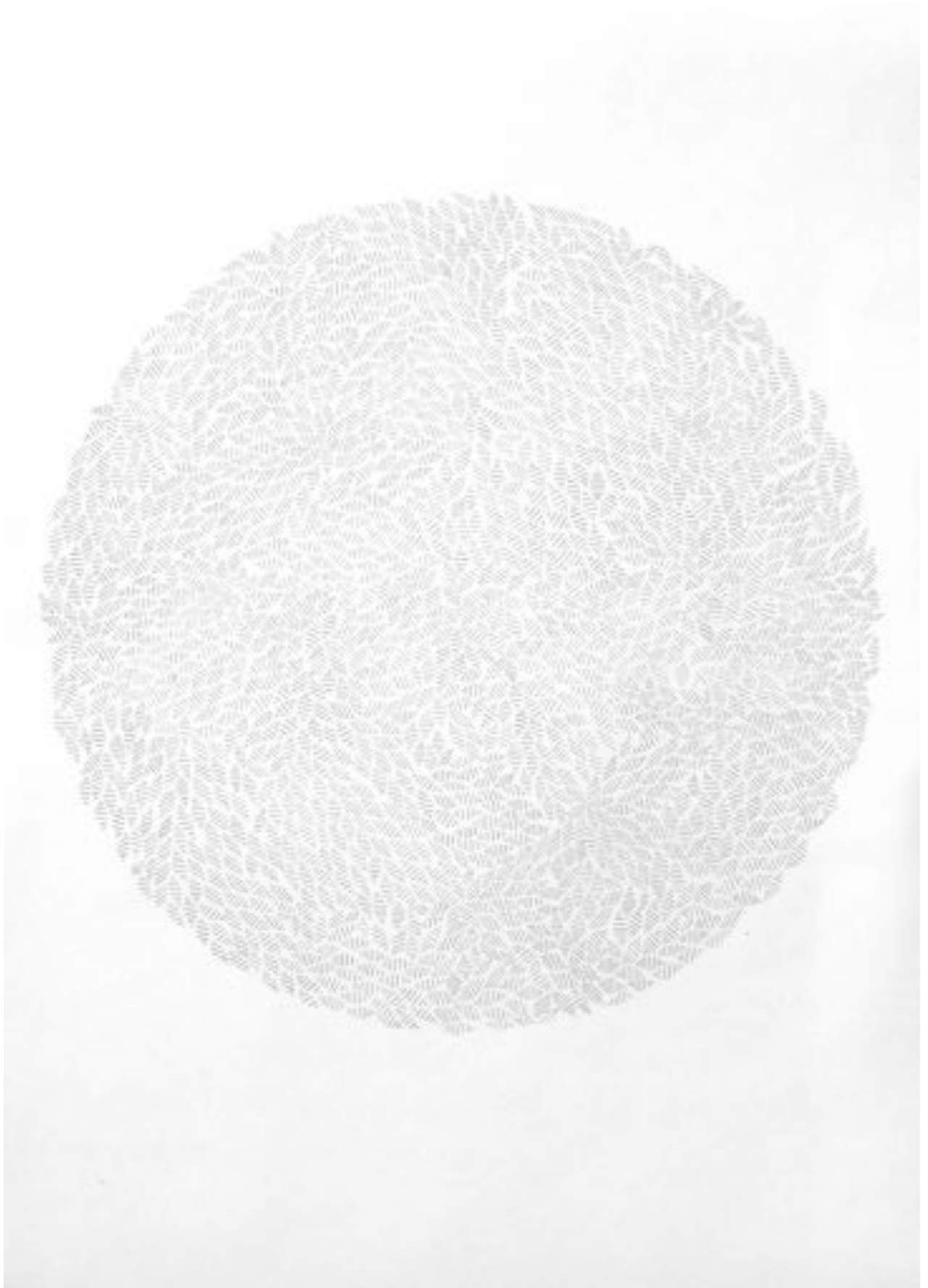


Figure 64. Gabrielle Somers, *Circle in the Sand*. Graphite on paper 55x75m.



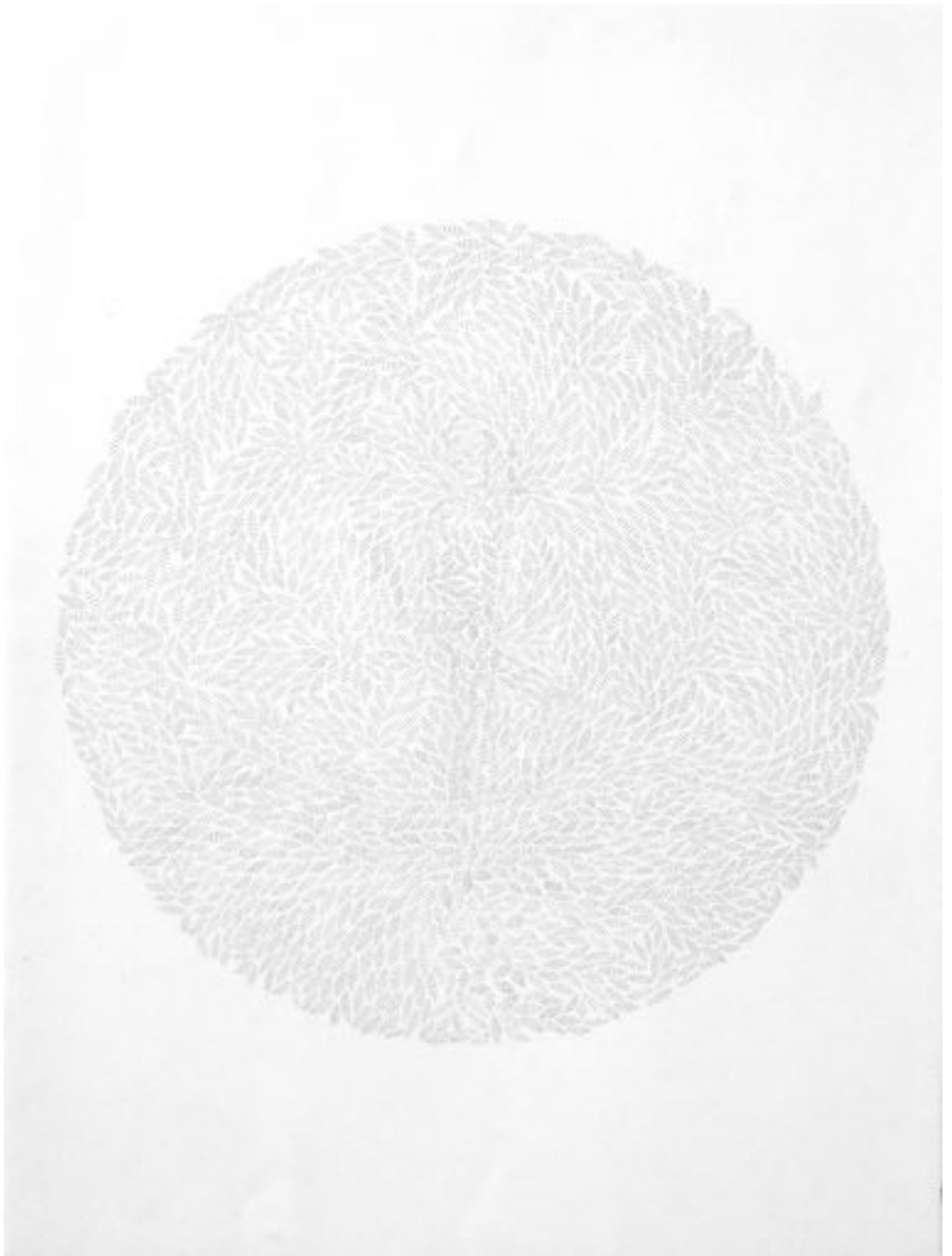


Figure 65. Gabrielle Somers, *Man on Canoe*. Graphite on paper 55x75m.



## CHAPTER 6 - CONCLUSION

*"...man is related to the whole thing, related inextricably to all reality, known and unknowable... the knowledge that all things are one thing and that one thing is all things - plankton, a shimmering phosphorescence on the sea and the spinning planets and an expanding universe, all bound together by the elastic string of time."*

John Steinbeck

Quoted from 'The Log from the Sea of Cortez, 1951

The research, *Subterfuge, Camouflage, and Emptiness: Nothing, Matters* is an investigation into the realm of hidden information within the framework of visual art, literature and science.

The research began with a short explanation of quantum mechanics and scientific ideas that affect our visual subjectivity. It was informed by the quantum theory that subatomic particles lack a definite position, lack solidity, lack materiality and take all possible trajectories to get from A to B but amazingly do not transition the space between A and B.

The research focused on philosophy, science, history and literature. In particular, it was concerned with areas of interconnectivity and works that were considered to represent aspects of emptiness, whether knowingly or not. These investigations exposed the idea that concealments, deliberate or not, also affect our understanding of phenomena/matter. Moreover these understandings go on to affect our perspectives and preferences and are constantly shaping and perpetuating our personal history, inadvertently generating preferences, discriminations and 'prejudices'.

Matter can often contain hidden meaning that is embedded in the substrate of other information and this information can be overlooked and/or unseen.

Artists such as Anish Kapoor, James Turrell, Cornelia Parker, Christo & Jeanne-Claude, Olafur Eliasson Do-Ho Suh, Tom Wilkinson, Rachel Whiteread, Charles Petillon & Mikala Dwyer were referenced as I considered them to have adopted some principles of physics into their work, that is, they have demonstrated subterfuge, camouflage or emptiness. The artists variously represented hidden and 'empty' information.

Regardless of how the artists represented the 'empty' information, their work alluded to meaning/matter that could be buried beneath or embedded within other meaning/matter and information. The artists further supported the idea that the universe is not filled with 'things' but with perturbations, contextual information, disturbances and events.

Matter can often appear as patterns concealed or camouflaged. Patterns can be embedded in ciphers, or just hidden because its innate nature is empty. The Braille alphabet was introduced into the work as a way of displaying pattern and subterfuge. Artworks were developed as a result of the research into Braille and they variously express the idea of camouflage, subterfuge, emptiness and universal interconnectivity. Within many of these works, mirrors were used to reflect the immediate environment and the observer in order to demonstrate the interconnectivity of all things and to reflect upon our preferences and prejudices.

Matter and the meaning we ascribe to it is ultimately inferred and is the result of our connections with and observations of matter. The observer infers meaning to matter by means of their personal history, which is used as an instrument to interpret and evaluate.

This research has shown that everyone, everything and every phenomenon are in constant exchange with everyone, everything and every phenomenon. The result of this unfathomable interconnectivity matrix is an unpredictable and ever-changeable future, with immeasurable interactivity. Matter is constantly interacting, emerging and interconnecting with other matter.

The research in *Camouflage Subterfuge and Emptiness: Nothing, Matters* set out to better understand the direction of my art practice. It has resulted in an understanding of the duality of matter due to its unfathomable interconnectivity with other matter and its relationship with the observer. I hope that this research has presented ideas and concepts that stir a new awareness of the duality of existence where 'nothing' really does matter.

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