Conclusion.

This research has grown out of speculations about the processes of mapping remote space, cosmic space. The space of the night sky. A space that engages the imagination but is almost completely incomprehensible to the full range of the senses. A space largely invisible but understood through the emanation of light. The research has enabled me to undertake independent work within a broader scope of cultural relationships, and shifted my thinking and art practice into a wider field of operations. It has been what Engberg describes as 'a new kind of searching nomadism.' [1] This has taken me into unexpected territory, where an interest in astronomy and the process of mapping has grown out of more recent personal experience, as well as my experience as an artist.

I have approached the idea of mapping as a form of thinking and practice. This has evolved from earlier speculations in my work about space, time and light, together with an interest in technologies associated with observation and image capture. In my current work I have looked at the role of the observer in constructing reality through the process of mapping. This research is the result of observing nature and the senses through the prism of culture, where the data in the map stands in for first hand sense experience. It has been an opportunity to question our relationship to the night sky through a machine-produced visibility. In this way the process of mapping draws our attention to the relationship between constructed nature, 'back here' and 'out there.' It suggests that these spaces exist because they are a part of each other, or as Grosz proposes for spatiality, 'space as a layering of spaces within themselves.' [2] It is a process of observation in which a surrogate and extended visibility also extends ideas about what is meant by reality. The interaction between art, nature and technology has served to heighten awareness of the apparent contradictions within rapid

[1] Engberg, *The Labyrinthine Effect*, p. 3.
[2] Grosz, *Olafur Eliasson-Surroundings Surrounded*, p. 267.

scientific and technological development and the reconfiguration of 'nature', for our purposes.

In formulating a methodology I was interested in unearthing sources in an interactive or ecological way. My work was in the process of shifting focus, and this was an opportunity to follow some new leads without really knowing where they might take me. Gathering the information was somewhat like establishing a staging ground for an exploration and discussion. I looked for a contingent web of connections from which historical underpinnings and meanings might emerge. They became, as Pickles observes, 'genealogical traces of linkages and influences.' [3] Tendencies and patterns have been found in the practices of observation, speculation and visualization, practices common to art, mapping, science and history. These have been drawn together to discover new relationships.

The selection of artists for discussion in this text has reflected the diversity of expression within such tendencies and patterns. It emphasizes the eclectic nature of the visual responses to the understanding of cosmic space through art and science. It is an idiosyncratic selection that draws attention to the varied influences on my own work. Olafur Eliasson's installations are about the phenomena of nature as it has come to be understood through natural science. The layered complexity in Julie Mehretu's abstract graphic work alludes to a Baroque sensibility evident in contemporary art now. Her large scale layered works describe a fictional cosmology, and a hybrid complexity, that draw on cartography, architectural drawing, urban maps and abstract painting. I found resonances with my own work in Nike Savvas' 2005 installation *Atomic: full of love, full of wonder*, described by Engberg as 'asserting sensuality over clever yet brittle science.' [4] Tim Otto Roth's project, *I see what I see not*, works with telescopes and digital imaging technologies to represent an astronomical object or a subatomic particle in pixels. His models of pixel patterns, represent a 'zoomed in' fragment of astronomical

[3] Pickles, *AHistory of Spaces*, p. 89.
[4] Engberg, *Atomic: full of love*, np.

phenomena. Like Dorothea Rockburne, an interest in the visuality and observational practices of astronomy has opened up another path in my artistic thinking, and her desire to create parallel phenomena is also mine. A number of artists including Wenyon and Gamble, James Turrell, Adam Nieman, Paula Dawson and Daniel Goods, have professional scientific, technical and astronomy backgrounds. They have engaged with multi-media technologies to form interactive experiences which attempt to map and demystify cosmic space for the lay-person.

I think of my art works as markers along a journey, the final products being part of a larger process of constant reinvention. By re-contextualizing the familiar, the intention has been to draw the viewers attention to the way in which the process of mapping cosmic space has influenced ways of seeing, thinking and knowing. My research looks at the visual manifestations of the conceptual processes of mapping and the emanation of light, as well as searching for a poetic dimension in mapping through connections with art and science (to which mapping in the Western mind has traditionally belonged). Working with data and visual and aural sense experience, I have searched for historic and contemporary resonances or associations with scientific and artistic observational and spatial practices. These are related to the way in which nature is increasingly enculturated through technology, challenging or alternatively extending our ideas and experiences of what is meant by reality.

My interest has been in the processes by which ideas in a scientific context can be transferred into works of art. However I have been mindful of the fact that I am working as an artist, not a scientist. The intention has been to heighten our awareness of the possibility for relationships between the rationalism of science, and the exploration of the sub-conscious in art. The research has looked at observational practices in both art and astronomy to find relationships between space, light and time that enable the poeticizing of science. Unlike the scientist, the artist who is drawn to the remaking of nature is not accountable to demonstrate proof. Although mapping is seen as

constructing objective realities, whether scientific or otherwise, I have been mindful that mapping is always embedded in the subjective conditions of human thinking.

The function of mapping is to give a form of visible reality to an invisible reality through the process of deconstructing and reassembling selected components in space. Mapping with light through space and satellite photography has, in recent times, reconfigured space and revealed something of a reality beyond our reach. Computerization and digital manipulation have mapped a new form of reality generated by electronic data, which Cosgrove suggests has 'destabilized the conventional architecture … of mapping and maps.' [5] This has caused a rethinking of the role of the senses and perception and the way in which reality is understood. Deleuze has suggested that maps are 'an experimentation in contact with the real.' [6]

During the early stages of my research I experimented predominantly with painted objects and other media, (light, mirrors and digital prints, that could be regarded as part of the extended field of painting), to explore the process of mapping through geometry, light and reflection. The intention was to set up a perceptual play of relationships between images and objects in and of the space. Later experimental work was also made with sounds from space accessed through the Parkes and Jodrell Bank radio observatories, and video material from the Magellan Observatory.

The major part of the research became the body of digital prints made for the exhibition in 2005 in the U.K. titled *Which Way Is Up?* Printmaking referenced the European visual tradition in which art and science once shared a field of inquiry with cartographic practice. The research material for these works was sourced from my research at The National Maritime Museum at Greenwich in 2004. Material was also sourced from NASA , from

[5] Cosgrove, *Apollo's Eye*, p. 258-9.
[6] Deleuze and Guattari, *A Thousand Plateaus*, p. 12.

the astronomer David Malin's time lapse star trail images, and from the Crux Collection of rare maps at the State Library of New South Wales. The making of the digital prints involved assuming the role of editor in the process of recycling visual references, recontextualizing information in 'found' and existing cultural material, and organizing technical assistance.

The mapping strategy that emerged in my work was a transparent layering process. Although to some extent determined by the capabilities of the computer software, my earlier paintings and prints had revealed a strong tendency towards these kinds of layered surfaces. For this research I created synthetic or imagined maps of hidden phenomena. Each layer had its own content, but when the separate layers were overlaid together they formed a transparent surface and a stratified amalgam of relationships amongst parts. They became a montage of multiple and hybrid elements where one layer was intended to become legible though the lens of another. Embedded in these works and their imaging technologies were layers of information that appeared simultaneously. These layers were evidence of a mapping process that has taken place through intervention and observation of an indeterminate reality of complex systems in the night sky.

Our understandings and representations of the night sky and the relationship between the observer and the observed, have evolved with the study of light. This has happened in conjunction with the emergence of the new physics, as well as inter-related technologies and phenomena such as electricity, magnetism, photography and computerization. In both direct and indirect ways these technologies have been employed in the making of my work. My intention has been to gain an understanding of the process of observation and image capture in the context of the mapping of remote cosmic space, where astronomers employ telescopes, computers and light in the full range of the electromagnetic spectrum to reveal the invisible. It has raised the question of how we orient ourselves to accommodate increasing revelations about cosmic space in terms of nature and culture.

The natural world is continually being remade on the basis of new understandings in art and science. Scientists today are searching for ways in which to visually represent complex problems and data that arise in this process. This involves the continuing invention of new technologies. In the current social climate art seems valued predominantly for some wider social benefit. However art, as a process of invention, also reveals the potential to play an educational and imaginative role in de-mystifying science in more poetic ways. My research has developed into an ongoing engagement with the process of mapping space as a form of thinking and practice. It has opened up an exploration of the night sky, a space in my purview, but paradoxically, largely beyond the visible. By making imagined maps of this space my intention has been to discover a poetic dimension or insight that through art might speak of things outside art in new ways.