UNIVERSITY OF SOUTHAMPTON

FACULTY OF BUSINESS, LAW AND ART

Winchester School of Art

Cognitive aspects of pictorial address and seriality in art:

A practice-led investigation

by

Jason Kass

Thesis for the degree of Doctor of Philosophy

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UNIVERSITY OF SOUTHAMPTON

<u>ABSTRACT</u>

FACULTY OF BUSINESS, LAW AND ART

Fine Art

<u>Thesis for the degree of Doctor of Philosophy</u>

COGNITIVE ASPECTS OF PICTORIAL ADDRESS AND SERIALITY IN ART:

A PRACTICE-LED INVESTIGATION

by Jason Kass

The following thesis applies theories and findings from cognitive psychology to notions of pictorial address and seriality in art. It is interdisciplinary and practice-led, culminating in a written outcome and a portfolio of creative work. The thesis suggests a model for the exchange of ideas within experimental psychology, art practice and art theory.

The research evaluates historical and theoretical notions of pictorial address in light of concepts within visual cognition. Theories of address often refer to the temporal, spatial and postural qualities of art spectatorship. Here they are aligned with relevant psychological concepts including gist extraction, spatial representation and embodied simulation in order to make the underlying perceptual and cognitive processes explicit.

There is an emphasis on seriality as a mode of address and pictorial artworks that comprise multiple discrete but related instances displayed together. Two case studies consider the serial output of Claude Monet and Andy Warhol in terms of cognitive theories of concept formation and exposure effects, respectively. The direct impact of features of seriality on the viewer in each case is discussed relative to existing art theory and established art historical narratives.

The thesis culminates with presentation and discussion of the portfolio of creative work that both informed and was informed by the theoretical research. The outcomes comprise paintings, drawings, photography and mixed media installation that explore properties of variation, repetition and relational knowledge within pictorial address.

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A USB with photographic documentation of the viva exhibition is included with the hardcopy thesis.

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DECLARATION OF AUTHORSHIP

I,... [please print name]

declare that this thesis and the work presented in it are my own and has been generated by me as the result of my own original research.

Cognitive aspects of pictorial address and seriality in art: a practice-led investigation

I confirm that:

1. This work was done wholly or mainly while in candidature for a research degree at this University;

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Preface

The following thesis developed out of an eight-month residency starting in September 2011 at the Centre for Visual Cognition (CVC), University of Southampton. The residency was part of a larger project initiated by artists and researchers at Winchester School of Art. The project, 'Modes of Address in Pictorial Art' (MoA), aims to use cognitive psychology to understand the act of viewing pictorial works of art. The research employs theories and methods from experimental psychology to expand upon existing art theory and to inform art practice.

Prior to arriving at the CVC, I had been working with concepts from non-empirical psychology (i.e. psychoanalysis) in my art practice for some time and was keen to expand this to include empirical findings. I felt a need to revisit the basis of my own artistic volition and was hopeful that I would find some answers through the new perspective offered by cognitive psychology. This is essentially the reason why I wanted to pursue the PhD: in order to recalibrate my understanding of the production and reception of works of art in the context of visual cognition.

I did not start with a research question in mind and the goal was to use the residency period to determine a direction for my doctoral research. I spent the first few months familiarising myself with key concepts in visual cognition and contributed to a pilot study within the MoA project (Harland, Liversedge, Gillett, Mann, Kass, Godwin & Donnelly, 2014). At this time I also began a review of the literature examining experimental psychology applied to art spectatorship and art theories concerned with the experience of the viewer in front of a pictorial work of art.

The pilot study investigated notions of absorption and theatricality in painting as theorised by Fried (1980). Using Manet's *A Bar at the Folies-Bergére* (1882), the aim of the study was to investigate the psychological reality of the supposed 'double relation', as described by Fried, which the painting creates for the viewer. In this double relation, the viewer is acknowledged – made aware of their presence in front of the painting – as well as disregarded. The experiment used eye-tracking techniques in combination with verbal utterances to understand how the painting is actually attended to by the viewer.

Realising the creative potential of eye tracking methods, I began to explore the possibility of a gaze-responsive artwork that would in some way reflect its history of being viewed. Similar projects have previously been undertaken to varying degrees of success (see Holman, Vertegaal, Sohn and Cheng, 2004; Starker and Bolt, 1990). These attempts highlight the difficulties associated with instances of

real-time in situ eye tracking such as controlling variables in the environment and calibrating the system to the orientation of individual users.

I worked with Dr. Matt Jones of the CVC to develop a proof of concept for a gaze-responsive artwork that was exhibited at the Winchester Gallery in 2013 (Fig. 1). Using found YouTube time-lapse footage of flowers blooming, I produced an interactive video whereby the placement of the mouse onto individual flowers facilitated their opening or closing (depending on the existing state). The mouse was controlled by the viewer's eye movements but remained invisible because I wanted the interaction to be as seamless as possible.

As each viewer approached they were required to press a controller on a plinth in front the installation (instructions were provided upon entrance to the gallery). This would temporarily reveal a blue circle in the centre of the screen allowing the system to recalibrate in order to respond to the viewer's gaze. Two bright lights on the side of the screen delivered the illumination necessary for the camera below the screen to detect the position and movement of the viewer's eyes.

Figure 1. Jason Kass (2013). Installation view of gaze-responsive display proof-of-concept, Winchester
        Gallery.

This proof-of-concept confirmed the potential for eye tracking to make explicit the act of viewing a pictorial artwork. It also confirmed that the obstacles encountered by others in designing such a system remained a significant impediment to the realisation of a more advanced outcome. I understood that the skills and resources required to take this line of research further were beyond the scope of what was available and decided to shift the focus of my research in another direction.

I had sufficient knowledge of the field of empirical aesthetics and had developed an understanding of some shared concerns between visual art and the study of visual cognition. I was certain that there

was ample scope to consider cognitive aspects of pictorial address outside of aesthetic considerations (the focus of the majority of existing studies). Based on developments within my practice I became particularly interested in what I perceived to be a gap in knowledge concerning the spectatorship of artworks that do not conform to the traditional notion of an individual and autonomous picture. I recognised that little if any attention had been given to pictures that draw meaning from existing as part of a set (i.e. seriality). I refocused my research towards cognitive aspects of seriality in art, giving attention to the qualities of variation and repetition that are inherent in serial presentation.

The freedom that I was afforded at the start of my research was integral to the development of the thesis that you are about to read. Had I begun the process with a clear research question in mind, I am not sure that I would have been motivated to undertake such a wide-reaching exploration of the literature. Nor would I have felt compelled to expend energy on a proof-of-concept that had no guarantee of proving a viable area for further consideration. Although at times this relative lack of direction proved to be a source of anxiety, I now understand that uncertainty is a necessary part of any research endeavour and particularly so in the case of open-ended interdisciplinary research.

INTRODUCTION

Artworks and their spectatorship have been theorised over time using a range of critical lenses. Different as they are, what these lenses have in common is their non-empirical basis. Although there are examples to the contrary, it is not common practice within art theory for speculation about the relationship between artwork and viewer to be based on scientific method or findings. This is not a criticism per se and art theory to date has undoubtedly made important contributions to discussions surrounding the experience of the viewing subject in front of a work of art. Similarly, art practice tends to be influenced and motivated by a wide spectrum of sources and artists often draw from art theory in developing their work.

At the same time, experimental psychology systematically studies the psychological and biological factors that underlie human behaviour. Cognitive psychology looks specifically at mental processes such as attention, perception, learning and memory within an information-processing paradigm. Findings within cognitive psychology help us to understand how information about the physical world is sensed, perceived, processed and stored. Visual cognition studies the modality of vision as a source of information.

Historically, art theory and practice have had limited interaction with cognitive psychology, despite the possibility that the latter can provide new ways of understanding and framing ideas that until now have been theorised from the top down, without the support of empirical findings. The major exception to this has been the application of theories and methods from cognitive psychology to the study of aesthetic appreciation; a factor related to the spectatorship of works of art. This limited interaction is unfortunate given that artworks exist as part of the world-at-large and are subject to the same perceptual, cognitive and affective processes as everyday scenes and objects.

Accordingly, the following thesis is motivated by the notion that existing empirical findings within cognitive psychology can inform an understanding of aspects of art spectatorship previously theorised along non-empirical lines. More specifically, the thesis takes up theories of pictorial address that suggest an artwork's content, structure and style has an important bearing on the kind of viewing experience the artwork affords. The main research question is: how can existing empirical findings from cognitive psychology inform an understanding of aspects of pictorial address and art spectatorship?

The investigation is practice-led meaning that it is intended to contribute to knowledge through and about practice. Practice here refers both to art practice as well as the practice of integrating concepts

from cognitive psychology and art theory. The research aims to present a model for the exchange of ideas between experimental psychology and the field of art.

I have used my own art practice as a case study, which in turn has informed the direction of my theoretical research. To be more specific, as my practice evolved based on my interaction with the scientific literature I began to focus on the production of pictures intended to be viewed as part of set, or in series. As such, a more focused research question evolved: how can existing empirical findings from cognitive psychology inform an understanding of the spectatorship of serial works of art?

It is important to state upfront that my intention here is not to subject my own or others' artworks to empirical testing. In large part this is due to the fact that my background is as an artist rather than a scientist and my interest is in how I, and other artists, might engage with existing knowledge within the field of visual cognition to understand and motivate art practice. This does not exclude the notion that in other instances empirical testing of works of art is an appropriate means of investigation.

There are, however, on-going methodological concerns around conducting experiments with specific works of art in terms of the ecological validity and generalisability of the results (see Jacobsen, 2006; Wagemans, 2011, Silvia, 2012; Vartanian, 2014). This should not call in to question the notion that scientific research in the arts is legitimate and can generate useful new knowledge. Rather the aim is to suggest an alternative model for the application of cognitive psychology to art that does not require the collection of new empirical data.

Using existing empirical findings to generate new knowledge involves a form of thought experiment, which according to Kuhn (1977) allows for a reconceptualization of existing ideas. He states, "[Thought experiments] can suggest particular ways in which both expectation and theory must henceforth be revised" (p.261). The use of thought experiments in both scientific and philosophical contexts continues to be a source of debate, albeit one that will not be settled here. Yet as will be explained in more depth further on in the chapter, the new knowledge generated from a thought experiment often involves a rethinking of a conceptual apparatus or how existing findings can and should be applied.

The observation that empirical psychology can be useful towards understanding responses to pictorial art has been recognised since at least the late nineteenth century when Fechner (1876/1998) began testing the psychophysical traits of aesthetic appreciation. Fechner's experiments are widely viewed as having inaugurated the field of empirical aesthetics, which now boasts a

substantive literature and has begun to more fully consider aspects of art spectatorship beyond aesthetic appreciation..

Contemporary empirical aesthetics uses theories and methods of cognitive psychology to formulate models and design experiments intended to reveal universal laws of art appreciation. As previously mentioned, empirical studies of art are sometimes criticised for their lack of generalizability or ecological validity. The value of such studies are at times questioned by those who hold that artworks and their spectatorship are complex phenomena that should not be reduced to the universalism associated with the scientific method. Arguably, psychologists studying art appreciation generally fail to establish relevant art historical and theoretical concerns in their studies, limiting the value of their findings for artists and theorists. Perhaps as a result, the art establishment largely disregards the field of empirical aesthetics and in a sense cognitive psychology on the whole.

Artists, theorist and critics have previously found psychology to be a rich source of provocation, inspiration and explanation. For example, European artists at the beginning of the twentieth century readily embraced psychoanalysis and dynamic psychology, which ultimately influenced post-war American expressionists. Theories from psychoanalysis have also proven a valuable resource for postmodern art theorists and critics. Foster (1993) discusses Surrealism in terms of the Freudian death drive, Krauss (1993) frames Modernism in psychoanalytic terms, and Kuspit (1994, 2000) writes about the modern avant-garde in relation to psychoanalytic theories of the self. These are just a few instances of many.

However psychoanalysis is a non-empirical psychology and it is not difficult to understand why artists, theorists and critics are attracted to exploration of subconscious fears and desires. That is not to say that empirical psychological findings have been ignored entirely within art theory and practice. Gombrich (1960/2002) is well regarded for his application of perceptual psychology to the production and reception of visual art. Arnheim (1956), too, applied Gestalt principles to explain how visual artworks are constructed and perceived. It is generally acknowledged that Gestalt psychology and other empirically based theories of perception proved important to the practices of Bauhaus artists at the start of the twentieth century and artists in the second half of the twentieth century working in the veins of Minimalist art and Op-art.

However, since Fechner's time and indeed since Freud, Arnheim and Gombrich, psychology has undergone a cognitive revolution. Through this revolution cognitive psychology rejected the behaviourist-observational approach that preceded it in favour of a model of the mind based on the computer. Largely influenced by the field of information theory and signal processing specifically,

cognition came to be seen as a flow of information within the organism. Smith (2001) explains this best when he says:

> The new view in psychology [in the 1950s] was information processing. It likened mind to a computer and emphasized the representations and processes needed to give rise to activities ranging from pattern recognition, attention, categorization, memory, reasoning, decision making, problem solving and language (p.2141).

Smith and Kosslyn (2006) confirm that the shift from behaviourism to a cognitive information-processing paradigm allows for mental activity to be studied in a more objective manner, advancing measurable phenomena in lieu of the observation of mere stimulus-response relations. They explain, "As the limitations of behaviourism became widely appreciated, researchers became open to other approaches – but this backlash against behaviorism would have had much less of an effect if not for key technological changes, which led to a new way to envision mental activity" (p.7).

Within cognitive psychology the study of visual cognition investigates the modality of vision as a source of knowledge about the world and is concerned with the mechanisms that allow for the creation of meaningful visual representations. Pinker (1984) points out that visual cognition needs to account for the ability of the mind to represent the visual world as it currently exists before an individual (in the present), as well as the ability to form representations based on remembering previously encountered scenes and objects (in the past). Broadly speaking, this attests to the difference between the perception of a scenario in the moment and the memory of it later on. Cognition involves the mental activity responsible for storing and interpreting information in both conditions.

This explanation refers to what Pylyshyn (2003) calls the 'continuity thesis', which historically has taken the view that it is difficult to establish clear lines between the mechanisms of perception and cognition. He explains, "The idea of drawing a sharp distinction between visual perception and cognition or between stages of visual perception, has been anathema to much of psychology and contemporary scholarship in general" (p.64). This position is reinforced by Tacca (2011) when she says "To the extent that perception and cognition seem to share information, it seems there is no sharp division between the realm of cognitive abilities and that of perceptual abilities" (p.1).

Significant theoretical and empirical study has been given to defining the interrelationship between perception and cognition. As above, Tacca, for example, takes the position that

cognitive information influences perception and simultaneously cognitive processes rely on perceptual information. Pylyshyn on the other hand argues that there are perceptual stages that operate outside of cognition. Understanding the relationship between perception and cognition is fundamental to the study of visual cognition but is beyond the scope of this thesis.

For the purposes of this thesis I typically use the term 'perception' to refer to low-level visual process that lead to the identification of a stimulus. When speaking about higher-level processes that lead to understanding of semantic content or a stimulus category, I tend to use the term 'cognition'. The nuances regarding which processes are perceptual and which are cognitive are not important for the sake of this thesis.

Returning to the overall premise of this thesis, my primary aim is to identify existing findings within cognitive psychology that can inform an understanding of art spectatorship and theories of pictorial address. Pictorial address refers to how an artwork's style; its structure and content, contributes to the way a viewer attends to and experiences the artwork. Theories of address often discuss the temporal, spatial and postural aspects of viewing works of art.

In particular, I consider seriality in art, an area that has seemingly been all but ignored within the literature surrounding the psychology of art spectatorship. Broadly speaking, seriality involves the presentation of pictorial artworks in series while, more specifically, a serial artwork comprises multiple discrete but related pictorial instances shown together. The relative neglect of seriality within empirical studies of art is unfortunate given that seriality is a reasonably common feature of contemporary art.

As already mentioned, the impetus for studying seriality extends beyond this perceived neglect and was informed by my own art practice before and during the development of this thesis. More specifically, within my photographic practice, which will be examined in detail later on, I began to produce pictures intended to be viewed as part of a set in order for their full meaning to become apparent. In this way my practice-based research informed my theoretical research, which in turn fed back into my art practice.

Structure

Chapter 1 of the thesis provides a critical review of contemporary empirical aesthetics in order to establish existing applications of cognitive psychology in the realm of visual art. I address distinctions between the speculative, top-down aesthetics of the philosophical tradition and the bottom-up nature of an empirical approach. The chapter explores critical reception of empirical aesthetics over

time and anxieties about applying scientific method to ostensibly complex questions of art and aesthetics.

Dickie (1962), for example, questions the relevance of psychology to aesthetics and argues that empirical findings actually tell us very little beyond what we already know intuitively. More recently Bullot and Reber (2013) put forward a much-debated psycho-historical framework of art appreciation that intends to ease tensions between the universalism associated with the sciences and the contextual nature of historical approaches.

Empirical aesthetics is largely concerned with identifying universal laws of aesthetic appreciation. Within the chapter I consider a number of influential models of aesthetic appreciation ranging from Berlyne's (1971) psychophysical model, concerned with the individual's response to an object's collative properties (i.e. novelty and complexity), and more recent multi-stage cognitive models (Leder, Belke, Oeberst & Augustin, 2004) some of which deal with viewer processing dynamics (Reber, Schwarz & Winkielman, 2004).

Individual experiments with works of art reveal the nuances of viewer processing dynamics, for example through the manipulation of title information or stylistic features of the artworks themselves (i.e. the visual ambiguity of Cubist paintings). I discuss the role of prior exposure and other forms of expertise that can influence a viewer's experience of a work of art. I explain the use of eye tracking methods to determine how viewers attend to individual works of art and present several recent experiments using eye-tracking techniques to consider aspects of existing art theory.

In the chapter's conclusion I address on-going methodological concerns within the field of empirical aesthetics and steps that are being taken to address them. Given the perceived complexity of conducting experiments with individual artworks, I advocate an alternative model towards the application of cognitive psychology to works of art. In this model, theories and findings from studies of perception and cognition are applied to individual artworks in the manner of thought experiments. This is not to devalue the possibility of empirically testing viewer responses to works of art but rather to suggest that meaningful insights can also be drawn merely from identifying and observing shared concerns between art and psychology.

In Chapter 2 I apply existing empirical findings and cognitive theory to established theories of pictorial address in art. Theories of pictorial address describe the essential viewing experience implied by certain types of artworks. I begin by establishing what has been referred to by Foster (1988) as the hegemonic model of Cartesian Perspectivalism, initiated by the use of linear perspective during the Renaissance period. Bryson (1983) explains this model as one of

communication whereby the viewer is believed to take up a position in relation to the painting originally occupied by the artist. The perspectival viewer is theorised as disembodied, static and monocular – a single fixed eye looking through a window to a single and truthful world.

This viewer is juxtaposed against those theorised as part of alternative scopic regimes (Jay 1988). These include the Northern European painting tradition, conceived of as an art of describing (Alpers, 1984) concerned with surfaces rather than forms, and the Baroque viewer who confronts the indeterminacy of multiple spaces within a single picture (Bucki-Glucksmann, 2013). At stake within these readings of spectatorship are factors relating to the temporal and spatial configurations represented within a pictorial artwork that serve to position the viewer and substantiate their bodily presence.

The notion of viewer acknowledgment is developed in terms of absorptive modes of address that, according to Fried (1980) negate the viewer's presence through a closed narrative composition, or unity. Unity is also mentioned as a key feature of Late Modernist painting as suggested by Greenberg (1980) alongside the related notion of flatness and horizontality (Steinberg, 1972), which are also presumed to facilitate certain postural associations and time course of viewing.

The second half of the chapter aligns these concerns with related fields of study within cognitive psychology. This includes theories of scene perception and the extraction of gist as well as theories of spatial representation and frames of reference. Spatial representation refers to how individuals create internal representations of space and frames of reference describe how an individual situates themselves in relation to their surroundings. Gallese's (2005) notion of embodied simulation provides a useful theoretical framework and I extend findings within social cognition to theories of pictorial address discussed earlier in the chapter.

Chapters 3 and 4 further explore the potential to better integrate theories from art and psychology in the context of seriality in pictorial art. In one sense, seriality refers to the fact that pictorial artworks are often produced and exhibited as part of a set. Serial artworks, on the other hand, are single artworks that comprise multiple discrete but related pictorial instances. This distinction has been made by a number of art theorists, most notably Coplans (1968). I propose that existing investigations into the empirical basis of art appreciation tend to focus exclusively on the traditional concept of a pictorial artwork as individual and autonomous, effectively ignoring the perceptual and cognitive processes relevant to seriality. Seriality, in both conditions mentioned above, has been a common feature of pictorial art since at least the late eighteenth century.

Without discounting the importance of understanding the perception of singular works of art, I argue in line with Minissale (2013), that a more comprehensive psychology of art will move beyond a focus on low-level vision and perceptual processes to include higher-order cognition. Chapters 3 and 4 study cognitive aspects of seriality in terms of the characteristics of variation and repetition. I extend general observations about cognitive theories that may explain the direct impact of variation and repetition on the viewer's experience towards seriality in art.

In Chapter 3 I look at the development of seriality as an aesthetic strategy and mode of address and the suggestion that seriality disrupts the traditional aesthetic encounter (Fer, 2004). I focus on Monet's influential use of seriality and his Cathedral series in particular, which constrains a general compositional structure between instances in the set in order to study and depict superficial changes in colour and luminosity. Important to this mode of address is the assertion that the full meaning of the artwork comes from viewing the set of pictures together, which is something that Monet realised (as reported in Levine, 1978). Later generations including contemporary artists continue to produce serial pictorial artworks along this model, both photographically and through painting.

The main claim of Chapter 3 is that the viewer's experience of serial artworks produced along the model described above can best be explained via cognitive theories of concept formation and stable mental representations. I review concept formation as a fundamental feature of human visual cognition, presenting the theoretical basis of the interaction between individual exemplars and the abstraction of concepts. I highlight the distinction between prototype-based models (Posner and Keele, 1968) and exemplar-based models (Hintzman, 1984, 1986, 1988) before turning to theories of face recognition.

Face recognition, which requires the abstraction of a concept based on multiple and varied interactions with the same stimulus, provides a useful framework against which to consider the spectatorship of serial pictorial artworks like Monet's. In the case of his Cathedral series this is in part due to the obvious connection between a person's face and the façade of a building. Considering the potential mechanisms of face recognition, specifically the power of averaging, I infer that unlike single pictures that are experienced in a direct and spontaneous manner, serial pictorial artworks are experienced indirectly via the formation of an abstracted mental concept of the artwork. I discuss this claim in terms of art historical narratives that tend to favour the perceptual basis of Monet's serial explorations rather than the role of seriality in concept formation. I go further to propose that Monet's cathedrals and his related projects planted early seeds of conceptualism that were only explicitly developed in the second half of the twentieth century.

Whereas in Chapter 3 I investigate variation as a characteristic of seriality, Chapter 4 looks at repetition. I start the chapter with a brief review of myriad ways that repetition figures within visual art, including repeated exhibitions, motifs and ultimately within seriality. From there I discuss the notion of mere exposure (Zajonc, 1967), a robust psychological phenomenon whereby repeated presentation of a stimulus tends to increase positive affective response to it. The effects of exposure in the realm of visual art have previously been considered over time but not in terms of the in-situ viewing of an artwork that employs repetition within its mode of address.

I apply the idea of exposure effects in the context of Andy Warhol's *Death and Disaster* series within which he repeats an image multiple times usually across a single canvas. Warhol had indicated that the works in this series responded to his presumption that repetition serves to dull the negative emotional impact of troubling or gruesome imagery. Using existing empirical findings around a subject's history of exposure to a stimulus, I consider whether the negative affect of Warhol's chosen imagery may in fact be neutralised by the artist's distinctive use of repetition.

The chapter's main claim is that Warhol was correct that repetition provides a source of perceptual fluency that can increase positive affect. However, he failed to acknowledge that for negative images other sources of information enhance access to semantic content to overcome fluency-based mere exposure effects (Reber et al., 2004). I argue that fundamentally the issue is one of time course of viewing and the observation that the baseline experience of a viewer of repetition is subject to a number of simultaneous processes, none of which can be taken in isolation.

The findings within Chapters 3 and 4 are based on different instantiations of seriality. In Chapter 3 I am dealing with seriality in the form of artworks comprised of multiple discrete but related elements. Chapter 4 deals with artworks that present multiple instances within a single frame. Fundamentally, the perceptual and cognitive processes that are discussed in relation to once should be applicable to the other. This is based on the notion that in both cases viewers are prompted to attend to the repeated elements sequentially and over time, a claim that is substantiated in Chapter 4.As a practice-led investigation the production of artworks has been integral to my thinking and analysis of existing theory and the realisation of new insights within the thesis. Although I briefly refer to my practice throughout the thesis, Chapter 5 serves to fully articulate the impact of theory on my art practice and the reciprocal impact of my practice towards an understanding of theories of pictorial address. I have chosen to examine my practice in a single final chapter to allow reflection on the creative work in its entirety and to draw connections between ideas that appeared early on but were further developed and articulated at a later stage.

I start the chapter with an evaluation of the potential for psychology to inform art practice drawing distinction between the influence of empirical and non-empirical approaches. Following on from this I discuss a number of contemporary artists whose work directly incorporates knowledge of perceptual and cognitive processes. I indicate that although in actuality there may be further examples of the explicit integration of visual cognition into art production that such practice can in fact be difficult to identify unless put forward in those terms.

The main section of the chapter focuses on four related bodies of work that I produced alongside the written thesis and including photography, drawing, painting and mixed-media installation. I begin by explaining my use of photography in relation to capturing the flux of the perceptual stream and as an attempt to distance myself from the process of perception per se. An initial collection of photographs confront Gibson's (1971) assertion that pictures can replicate information but not sensations and I discuss the artistic volition to document my own aesthetic experiences. This initial body of work makes clear my motivation to research seriality both in theoretical and practical terms.

Later works demonstrate my exploration of seriality by way of conceptual production and as a formal device. In the first case I respond to Barthes' (1981) reading of the photograph as a source of likeness and in relation to his own quest to 'find' his deceased mother in the family photographs that she left behind. I suggest, based on knowledge of stable mental representations, that Barthes' attempt was in a sense failed from the start and that it is only in the collection of images that he might find what he was looking for. The artworks engage with the possibility of building up a likeness through serial presentation and a process of averaging while responding to a certain coldness I perceive when dealing with cognitive psychology's information processing approach.

A subsequent body of work examines the structure of seriality and the potential relationship between repetition, boredom and affect, taking account of Deleuze's (1968/2004) theoretical framework in those terms. Instead of working with negatively charged images as in the study of Warhol, I consider the aesthetics of boredom and the possibility of generating interest in otherwise mundane features merely from repetition. The works created repeat in order to reveal sameness and difference and to examine the rapport between multiple discrete but related instances.

Most recently a mixed-media installation adapts to the notion of relational knowledge (Minissale 2013) and the Joselit's (2013) notion of networks and populations of images. I consider seriality, both in terms of art in series and serial art, and the possibilities inherent in displaying sets of images. In the case of the latter, I argue for a kind of active spectatorship and co-creation made possible by the presentation of seemingly unrelated images and objects.

Methodology

The research for this thesis is both interdisciplinary and practice-led. Interdisciplinary research, which I detail below, involves using the concepts, theories and methods of one discipline to address the concerns of another. Practice-led research as I will explain includes research through and about practice. The research has been both reflective and heuristic, requiring periods of gathering information, contemplation and ultimately creative synthesis. This primary research has been supported by an extensive review of the literature and analysis of existing theory. My approach uses a form of thought experimentation whereby I use existing empirical data to generate new understanding about phenomena.

Interdisciplinary Research

An academic discipline comprises the "tools, methods, procedures, exempla, concepts and theories" that account coherently for a particular worldview (Klein, 1990, p.104). The institutional reasons for disciplinarity aside, the existence of disciplines can be thought of as a way of organising knowledge (Aldrich, 2014). Interdisciplinary research, on the other hand, aims to synthesise discrete sources of knowledge wherein "the concepts and insights of one discipline contribute to the problems and theories of another" (Klein, 2010, p.20). Accordingly, this thesis is interdisciplinary in that I use concepts and insights from cognitive psychology to contribute to an understanding of aspects of pictorial address and seriality in art.

As an approach, interdisciplinarity does not comprise a fixed or prescriptive set of research methods and refers more to an overall attitude towards solving problems. Klein (2010) explains that integration and interaction are at the core of interdisciplinary research. In line with Nissani (1997) who emphasises that disciplines naturally go through a cycle of normativity and revolution, Klein (1990) states that interdisciplinary research involves a process of restructuring, "a criticism of not only the state of the disciplines being restructured but, either implicitly or explicitly, the prevailing structure of knowledge" (p.27).

Mitchell (1995) echoes this sentiment in his use of the term 'indiscipline' to signify "a moment of breakage or rupture, when the continuity is broken and the practice comes into question" (p.541). I would not be so bold as to imply that my research will lead to an entire restructuring of the fields of art practice, theory and criticism, however it is my intention to initiate even a small rupture in the relatively rigid walls that surround the structuring of knowledge and ways of working within these disciplines. Similar to what Currie, Kieran, Meskin and Robson (2014) explain in relation to the empirical challenge to philosophical aesthetics, I ask whether artists and theorists must "ensure that

what is being claimed is consonant with or even supported by what best current science tells us" (p.10).

In terms of method, Klein (1990) explains that within interdisciplinary research

> Individuals and groups draw from a repertoire of examples, images, understandings and actions. The process is necessarily iterative and dynamic, because it starts with partial information. Insight develops through exploration and experimental application of familiar techniques to new situations (p.222).

Nissani (1997) highlights this process by referring to the interdisciplinary researcher as a disciplinary migrant who brings with him or her fresh insights and methods to the problem at hand. In my case, this migration worked in two directions. I was required to temporarily invest in the knowledge base of cognitive psychology in order to return to my home discipline with a new perspective and in order to suggest alternative approaches to existing concerns.

Interdisciplinary research can share characteristics with what Gibbons, Limoges, Nowotny, Schwartzman, Scott and Trow (1994) position as Mode 2 knowledge production, which is among other things: non-hierarchical, socially accountable and heterogeneous. According to Gibbons et al., Mode 2 knowledge is "produced under an aspect of continuous negotiation", where the form of the final outcome will tend to go "beyond that of any single contributing discipline" (p.4). The term 'transdiciplinary' is sometimes used to refer to this kind of research that transcends the interests of any one discipline or group (Mittelstrass 2011).

Hirsch Hadorn et al. (2008) explain that transdisciplinarity includes a concern with real-world problems or situations, or according to Jahn (2008) an "everyday life mode". Transdiciplinary research combines disciplinary paradigms in order to change outlooks and foster a "unity of knowledge beyond disciplines" (Hirsch Hadorn et al., 2008, p.29). At this stage I do not position my research as transdisciplinary, although it may wander into transdisciplinary territory at times. However, cognitive science can be considered transdiciplinary in that it brings together methods, concepts and insights from fields such as psychology, philosophy, linguistics, anthropology and neuroscience to study language, cognition and learning. Empirical aesthetics may be viewed as interdisciplinary in that it applies theories and methods of empirical psychology to questions of art and aesthetics.

Interdisciplinary research undertaken between two or more disciplines within the sciences, biology and chemistry for example is arguably less difficult than bridging methods and worldviews from across the sciences and the humanities. This could be due, in part, to what Lindauer (1998) explains

about humanists placing "their trust in compelling arguments" and "leaps of intuition" (p.2) and the condition by which "relatively narrow facts disclosed by the sciences are not related to the larger contexts discussed by the humanities" (p.1).

Thought Experiments

The tension between the universalism associated with empirical scientific inquiry and the contextual nature of studies within the humanities has been cited as a source of discontent regarding experiments using works of art. The particular nature of these concerns will be discussed in Chapter 2, although generally speaking they involve the perceived inability to extend empirical findings beyond the specific art stimuli under investigation towards wider conclusions as well as the difficulty in recreating ecologically valid conditions of spectatorship in the laboratory setting.

Historically, thought experiments have been used as a valid way of understanding aspects of the physical world and in terms of generating new knowledge. Within the philosophy of science and related literature there is no single definition of a thought experiment or an agreed upon set of criteria for what constitutes a thought experiment. The pertinent characteristic of thought experiments though is their existence as mental operations rather than concrete experiments. Concrete experiments, unlike thought experiments provide observable phenomena and allow for the collection of new empirical data about the natural world.

Kuhn (1977) is a seminal voice in debates surrounding the feasibility and role of thought experiments in scientific inquiry. In presenting a thought experiment as a rethinking of old empirical data he asks, "How, then, relying exclusively upon familiar data, can a thought experiment lead to new knowledge or to new understanding of nature?" (p.241). He first offers the possibility that thought experiments are less about new understanding of the natural world and more about what he calls the scientist's conceptual apparatus (p.242).

He proceeds to argue that "from thought experiments most people learn about their concepts and the world together" (p.253). Ultimately, he concludes, thought experiments provide a useful means for rethinking existing theoretical claims and for developing new theoretical frameworks. For Kuhn, thought experiments offer a form of reconceptualization, which at their best can lead to revolutions in in the manner in which a given discipline generates ideas.

Nersessian (1992) builds on Kuhn's foundation when she says:

> Thought experimenting is the principal means through which scientists change their
> conceptual structures. I propose that thought experimenting is a form of 'simulative model-

based reasoning'. That is, thought experimenters reason by manipulating mental models of the situation depicted in the thought experiment narrative (p.292).

Nersessian contends that resistance to thought experimentation is the result of a limited view of what constitutes reasoning. She asserts that thought experiments are "a species of thinking by means of which we grasp alternatives, make predictions, and draw conclusions about potential real-world situations we are not participating in at that time" (p.292).

Likewise, according to Bishop (1999), "Without any new information from the world, thought experiments can yield new information about the world" (p.535). This complies with the experimentalist view described by McAllister (1996) whereby "a thought experiment, like a concrete experiment, provides evidence about the world; and a thought experiment establishes or discredits a scientific claim in the way a concrete experiment does, in the light of the evidence about the world that it provides" (p.233).

Sorenson (1992) embodies this experimentalist point of view and sees thought experiments as controlled speculation just as valuable as concrete experiments. He explains that ""when we explain the informativeness of thought experiment, we cannot appeal to the inflow of fresh information, We are forced to look for ways that old information can be rendered more informative" (p.4).

He pushes back against what he sees as "the inductivist's demand that every scientific claim be backed by an experiment" (p.49). He goes on:

> The proper attitude toward experiment is to see that it rationally persuades in two ways. Its most striking mode of persuasion is the injection of fresh information about the world. But ordinary experiments also persuade by the methods associated with armchair inquiry: by reminder, transformation, delegation, rearrangement, and cleansing. Once we see that these factors were there all along, we can stop viewing thought experiment as introducing a *new* mode of persuasion. Thought experiment only reveals the hidden persuaders involved in ordinary experiments by taking away the most obvious persuader (p.251).

What I have presented here is a summation of otherwise nuanced arguments towards the validity of thought experiments as a source of new knowledge and as providing sufficient evidential significance on which to base claims. I acknowledge here the apparent differences between thought experiments and their real-world counterparts that deliver new empirical information. However, I also acknowledge that thought experiments can be a valuable tool through which one can not only construct hypotheses but also generate new knowledge about real-world situations. With regard to this thesis, I have conducted thought experiments by suggesting scenarios involving the

spectatorship of works of art. I have made predictions and drawn conclusions from them based upon existing empirical data about perceptual, cognitive and affective processes. These thought experiments have allowed for the development of robust theoretical frameworks that can be translated by others into concrete experiments.

Practice-led Research

The turns of phrase 'practice-based research' and 'practice-led research' tend to be used interchangeably within the arts despite a lack of consensus about their definitions. At stake is the relationship between the written outcomes of research and the production of artefacts (or music, performances, etc.) either as part of the research methodology or as a result of more traditional forms of research. Arguably, all research involves practice in some form or another and there are those who claim that writing itself is a practice, rendering separate classifications unnecessary. The need for assigning a particular term to research that includes artistic production seems to arise from an epistemological uncertainty as to if and how creative output can embody and describe new knowledge.

Candy (2006) asserts that practice-based research refers to cases where the production of artefacts is the basis for the contribution to new knowledge and the written component of the thesis serves to contextualise the creative outcomes. Alternatively, practice-led research results in new knowledge about and often through practice whereby the "primary focus of the research is to advance knowledge about practice, or to advance knowledge within practice" (p.1). According to Candy, in practice-led research the production of artefacts can be considered part of the methodology and a way to further the insights arrived at through more traditional research methods. A concern within practice-led research is sometimes that the artefacts will exist as an illustration of the knowledge produced, which is often considered to be undesirable.

As an example of the lack of agreement about the terms, Burgin's (2014) view on practice-led research is that "the writing contextualises the practical work – offering critical insights into the history of the art practice in question and critically interrogating the various theories that may inform and legitimate it" (p.9). This definition overlaps with Candy's explanation of practice-*based* research. Bell (2008) argues that practice-led research is "motivated by a research design within which a studio practice methodology…is a major investigative context and strategy in advancing [the] research" (p.177). This seems to be in line with Candy's approach although it remains unclear what the characteristics of a studio practice methodology might be. Nonetheless, in Bell's reading the practice forms part of the research and the new knowledge is not necessarily contained in the creative outcomes themselves.

Questions about the role of research in art and design and related concerns about terminology have their roots in Frayling's (1993) seminal paper delivered to the Royal College of Art in London. In his paper, Frayling puts forward three possibilities regarding the function of research in the context of art and design: research *into* art and design, research *through* art and design, and research *for* art and design. Much like the positions described above, the differences between each category relate to the role of practice and nature of the research outcomes in terms of where new knowledge can in fact be identified.

According to Frayling's categorisation, research *into* art and design involves consideration of social, political, cultural factors that influence art and design practice, resulting in a purely written thesis. This would be considered a form of traditional research that is not special to art and design, for example purely art historical or art theoretical theses. Research *through* art and design examines materials, processes and technologies resulting in a significant creative project and "substantial research report" (p.5). This seems aligned with what Candy terms practice-based research and Burgin's definition of practice-led research. Frayling deems research *for* art and design the most problematic in terms of knowledge production in its framing of research as the gathering of visual and other material in preparation for the production of works of art. In those terms Frayling wonders if every significant artist throughout history would be seen as deserving of a research degree.

Macleod and Holdridge (2006) expand on Frayling's work and discuss the additional category of research *as* art (or art as research). Their definition of art as research could be considered analogous to Candy's reading of practice-led research in the sense that the artworks are produced as part of the research process. Research as art, according to Macleod and Holdrige, introduces questions about quality and how to assess the value of art as research (i.e. must art as research be 'good' art). This relates to concerns that practice-led research results in illustration rather than artworks per se.

Ultimately it seems as though the pressure to assign a label and definition to research endeavours that involve art and design outcomes is institutional in nature. If the conferring of a doctoral degree requires the original contribution to knowledge then it stands to reason that the relationship between a written exegesis and creative outcomes be made explicit. In addition to this pragmatic reasoning is the more philosophical question of what constitutes knowledge and how knowledge can be communicated and expressed.

For the purposes of this thesis I subscribe mostly to Candy's description of practice-led research as intending to advance knowledge about, within and often through practice. My research involves both traditional methods such as literature review and analysis of theoretical discourse as well as the art-specific method of the production of creative outcomes. These methods in combination are intended

to produce knowledge that will contribute to the way that art theorists, artists and indeed cognitive psychologists approach their practice.

The creative outcomes that I have produced represent my process of thinking through the many theoretical ideas that I encountered when trying to map cognitive theory onto existing art theory. Although typically viewed pejoratively I do not have a problem with the artefacts being considered illustrations of theoretical insights. I am also less concerned with the status or quality of the outcomes as art objects in the sense that they are not intended to be exhibited and disseminated as part of the commercial art system.

In another respect I could think about the artworks produced as hypotheses in some instances and as visual experiments in others. An important part of the process of creative synthesis involved exhibiting the artworks in a gallery setting as this required thinking more deeply about the their modes of address and how they communicate with one another, aspects that I do not always explicitly consider when producing the work.

Heuristic Research

Bell's use of the term studio practice methodology suggests that artists devise their own methods within the studio that are unique and appropriate to their individual practice. Research, however, is defined by systematic processes of inquiry and if art practice is to be considered as part of a research undertaking it would seem important that the systems or processes used be made explicit. In disciplines outside of art and design where research about and through practice forms an integral part of the generation of new knowledge, the term 'action research' is often applied to describe the methods used.

McNiff and Whitehead (2010) explain that action research comprises a cycle of "action-reflection" (p.95), two sides of the methodological coin that work together to discover insights and identify areas for further inquiry. McIntosh (2010) explains that in action research learning is rooted in experience and that reflection is necessary to "create depth of knowledge and meaning" (p.2). Along with accounting for the ways in which personal values can be embedded in the research process, action research, according to McIntosh, provides a way to think about the relationship between theory and practice. He explains that within action research:

> Existing theoretical knowledge is drawn from a whole range of sources and disciplines….
> This knowledge can be tested as to its usefulness, exploring the suitable application of ideas
> to the field of study and where necessary building on theories in ways which refine and
> illuminate the data (p.51).

Action research is a common method when seeking to illuminate ways to improve practice within an institutional context. For example, it is a common methodology within the areas of nursing and pedagogy, where a cycle of action and reflection can improve the status quo and contribute to new knowledge about the practice in question. Possibly due to its emphasis on the researcher as practitioner and the manner in which the researcher-practitioner often becomes embedded in the research process, action research is often put forward as an appropriate method for research that involves art practice.

I find that the methods of heuristic inquiry provide an alternative paradigm that better captures how I have used practice as part of my research methodology. Heuristic inquiry developed out of humanistic psychology in the mid-twentieth century providing a phenomenological methodology capable of capturing the nuances and articulating the nature of particular experiences. Moustakas (1990) defines heuristic research as "a process of internal search through which one discovers the nature and meaning of experience and develops methods and procedures for further investigation and analysis" (p.9). In his founding study using heuristic methods, Moustakas investigated the experience of loneliness.

Like action research, heuristic research requires that the researcher is present throughout the inquiry and that the topic under consideration is understood in increasing depth over time. On-going reflection is also central to heuristic inquiry with the added caveat of creative processes undertaken throughout to integrate insights made along the way. With roots in theories of self-actualisation heuristic research investigations take as their focus questions that matter personally but that can also open out to larger social or even universal significance.

The methods of heuristic inquiry comprise six individual but related phases of research starting with initial engagement through to creative synthesis. The phases in between – immersion, incubation, illumination, and explication – allow for periods of concentrated focus, breakthroughs and understanding. In the creative synthesis the researcher enters the process "thoroughly familiar with all the data…qualities and themes and in the explication of the meanings and details" (Moustakas, 199, p.31).

I believe that this description best captures how my research inquiry developed. I spent the initial period of immersion coming to terms with the concepts, theories and methods of cognitive psychology, using creative practice as part of this process. I subsequently gained some distance from theoretical concerns through a period of incubation and a more focused approach to my practice. The process of incubation resulted in illumination and a deeper understanding of the shared concerns between cognitive psychology and visual art, explicated through the development of the

written thesis. The creative synthesis is in effect the written thesis and accompanying portfolio of work.

Claim of Originality

My claim of originality is based on the novel application of existing knowledge resulting in new knowledge. In Chapter 2 I apply existing knowledge of the mechanisms of scene perception, spatial representation and embodied simulation to prevailing theories of pictorial address, thereby providing new knowledge around the psychology of art spectatorship and pictorial address. I demonstrate that art theory can be reframed in psychological terms and that there is value in drawing connections between existing theories across disciplines.

In Chapter 3 I apply existing knowledge of the formation of stable mental concepts to the presentation of variation in Monet's Rouen Cathedral series and in Chapter 4 I apply existing knowledge of exposure effects to the use of repetition in Warhol's *Death and Disaster* series. Both series have been studied extensively but not in terms of the direct impact on the viewer's perceptual and cognitive processing. In each case, the novel application of existing knowledge leads to the creation of new knowledge about the artworks and their modes of address.

With regards to Monet's work the original contributions to knowledge are, in the first instance, the claim that unlike single pictures that are experienced in a direct and spontaneous manner, serial artworks comprising multiple discreet but related pictures are experienced indirectly via the formation of an abstracted mental concept of the artwork. Following on is the assertion that Monet's series display characteristics that relate to conceptual practices of the late twentieth century that reconfigured the role of the spectator.

With Warhol the original contribution to knowledge involves the role of repetition in the in-situ viewing of pictorial works of art. More specifically, the proposition that Warhol was correct in one sense about the effects of repetition in his *Death and Disaster* series on the viewer's emotional state and incorrect in another. Despite his observation that increased fluency leads to positive affect, Warhol seemingly failed to recognise that in the case of negative imagery repeated exposure increases access to the negative semantic content resulting in an affectively negative response. This theory supports previous art theoretical suppositions on the dual-functionality of repetition within this series by Warhol.

The originality of my arguments around seriality and concept formation, and in turn regarding repetition and affective response to viewing works of art have been validated via acceptance for

publication in two separate peer-reviewed journals. Findings within Chapter 3 have been published in the journal *Art & Perception* under the title 'Abstracting the set: Monet's cathedrals and stable mental concepts from serial pictorial artworks. Insights from Chapter 4 have been published in the journal *Leonardo* as 'Warholian repetition and the viewer's affective response to artworks from his *Death and Disaster* series'.

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Chapter 1: Contemporary Empirical Aesthetics

1.1   Introduction

Contemporary empirical aesthetics explores various aspects of our involvements with works of art although the field has historically been concerned with a scientific basis for aesthetic appreciation. Based on an increased breadth of focus and related experimental methods in recent decades, Tinio and Smith (2014) have attempted to rebrand empirical aesthetics as 'the psychology of aesthetics and the arts'. They maintain that this new terminology takes better account of a full range of human experiences with artworks involving "the traditional subjects of psychology…such as sensation, perception, memory and emotion" (p.3). For simplicity sake I will continue to use the term 'empirical aesthetics' to mean the same thing.

My aim here is to consider the history and basis of empirical aesthetics through to recent advances in method, while taking account of challenges still facing the discipline. I am not the first to offer such a review and in fact a number of recent reviews have provided a strong foundation on which to base my own (see Silvia, 2012; Vartanian, 2014). However, my review differs from these and other reviews by psychologists in that it is informed by my position as an artist and is particularly concerned with opportunities and challenges as they relate to the production and reception of visual art.

I begin the chapter with a historical overview to establish the distinction between the top-down approach native to philosophical aesthetics and Fechner's (1876) bottom-up psychological aesthetics introduced towards the end of the nineteenth century. This is followed by consideration of the initial reception of empirical aesthetics and discussion of the nature of support and resistance to the field in its first one hundred years. Central to this debate is the notion of ecological validity, or the ability to extrapolate laboratory findings to real world scenarios.

Next I review the development of psychological models of aesthetic appreciation, ranging from Berlyne's (1971) psychobiological model to a more recent one based on viewer processing dynamics (Reber et al., 2004) and those in between. I go on to discuss the relationship between these models, which aim to account for universal laws of aesthetic appreciation and works of art, addressing the point that artworks and their spectatorship are often thought of in more complex terms.

Based on this point I offer evaluation of a selection of recent experiments using artworks as stimuli, which seek to reveal particular aspects of spectatorship such as preferred levels of ambiguity (Jakesch & Leder, 2009; Muth, Pepperell & Carbon, 2013) and the effects of prior exposure to works

of art (Leder, 2001; Meskin, Phelan, Moore & Kieran, 2013). I introduce experiments that extend beyond concern with aesthetic factors to consider other perceptual and cognitive processes, and new methods such as eye tracking that provide insight into the real-time experience of viewing a work of art. I point out that despite these advances, issues remain surrounding the universalist versus contextualist approaches espoused by the sciences and humanities respectively (Bullot & Reber, 2013) and the general lack of consideration of conceptual and other contemporary art practices within empirical aesthetics (Minissale, 2013).

Towards the end of the chapter I summarise the issues that have been raised against empirical aesthetics from its inception through to present day. I introduce recent attempts to mitigate these issues and discuss those factors that remain unaccounted for. One such factor involves the general disregard for artworks that transcend the masterpiece concept of an individual picture to include sets of discreet but related pictures. I acknowledge the relative lack of engagement with empirical aesthetics by artists, curators, theorists and critics and suggest reasons why this may be the case.

1.2   Bottom-up Versus Top-down Aesthetics

Although contemporary empirical aesthetics is more diverse in its approach, historically empirical aesthetics has been the psychological complement to philosophical aesthetics; inherently interested in aesthetic experience and judgements of taste and beauty. Thus in order to understand empirical aesthetics it is important to consider the development of aesthetics more broadly. However, there is neither the space nor need here to go in depth and instead I will speak only briefly to the origin and concerns of modern philosophical aesthetics before moving on to the elaboration via empirical methods. I recognise that an interest in the nature of beauty and art dates back at least as far as Plato and Aristotle although will not be discussing that here (see Cahn & Meskin, 2008).

Modern philosophical aesthetics is widely agreed to have its roots in Baumgarten's use of the term in 1750 to suggest a theory of knowledge through the senses as opposed to the intellect (Kristeller, 1951/2008). Baumgarten's was the first attempt at rational principles of taste and judgments of beauty and reflected an early interest in determining universal and objective aesthetic principles. Hume (1757/2008) and Kant (1790/2008) developed Baumgarten's thesis into a mature branch of philosophy concerned with beauty and taste, with later writings expanding the field to include the ontological basis of art (Hegel, 1835; Schopenhauer, 1818). Contemporary philosophical aesthetics has dealt with institutional theories of art (Danto 1964, Dickie 1974) and the role of historical narratives in differentiating artworks from everyday objects (Carroll, 1993).

Both Hume and Kant concluded that beauty is experienced subjectively but is intimately tied to objects themselves. They acknowledged that beauty results from individual acts of perception yet maintained that certain objects could or should lead to such experiences in a universal fashion. Hume avowed that "Beauty is no quality in things themselves: It exists merely in the mind which contemplates them; and each mind perceives a different beauty" (1757/2008, p.104). He recognised that we should not expect that "in every individual the pleasure [of an object] will be equally felt" (p.104) but explained that in situations where the expected pleasure is not felt we must assume that something has hindered the viewer's experience and proper perception.

Kant later reiterated Hume's account stating that:

> If we wish to discern whether anything is beautiful or not, we do not refer the representation of it to the Object…we refer the representation to the Subject and its feeling of pleasure or displeasure. The judgement of taste, therefore…is aesthetic – which means that it is one whose determining ground *cannot be other than subjective* (1790/2008, p.131, emphasis in original).

Like Hume, Kant maintained that although taste and beauty are subjectively experienced "the judgement of taste…must involve a claim to validity for all men…i.e. there must be coupled with it a claim to subjective universality" (1790/2008, p.134).

Almost a century after Hume's writing, Zimmerman (1861/1998) issued a call for the reform of aesthetics as an exact science. He remarked that "Just as natural science seeks to reduce large and complex phenomena to their simplest elements, so too [scientific] aesthetics seeks initially to reduce the most complex expressions of taste…to those original factors which are incapable of further analysis" (p.609). His insistence as such reflects a more general shift at the time away from speculation towards the scientific method. The incumbent use of experimentation to understand human behaviour effectively transitioned psychology from a branch of philosophy to a proper science (see Koch and Leary, 1985).

Fechner is widely recognised as the father of modern empirical aesthetics having initiated experimental methods to investigate aesthetic preference. These early experiments coincided with a larger programme to explore the qualitative relationship between physical stimuli and the sensory-perceptual experience of a subject. Fechner's early experiments presented subjects with manipulated geometric forms in order to gather data on subjective levels of pleasure or displeasure. One such experiment investigated the psychological reality of the Golden Section (a theoretically ideal set of proportions) on hedonic value. Using subjects' self reports, Fechner found empirical

support for the theory that forms adhering to the Golden Section are experienced as more pleasing than others. Fechner's results have since been questioned (Hoge, 1995) yet the veracity of the Golden Section continues to be debated.

Both philosophical and traditional psychological aesthetics aim to develop universal laws of aesthetic appreciation but their respective methods approach the task from different starting points. Fechner explains that philosophical aesthetics seeks knowledge from above and "starts out from the most general ideas and concepts and descends to the particular" (1876/1998, p.632). In practice, this involves philosophers drawing on their own experiences and insights and extrapolating these to explain specific phenomena. Conversely, aesthetics from below begins with empirical observation at the level of the individual and extends these findings to propose a basis for common experience. Despite the same end goal, this difference in approach is ideological and a potential source of conflict between individuals mired in the ethos of their respective disciplines. According to Fechner philosophical and empirical aesthetics are not at odds with one another but "as long as the conceptual explanation of aesthetics is not completed with an explanation of the laws of aesthetics, it must remain an empty frame" (1876/1998, p.635).

Despite Fechner's diplomacy, the reception of empirical psychology into the realm of philosophical aesthetics has been lukewarm. While there are some who have advocated that aesthetics is precisely an empirical psychological issue, others have insisted that empirical psychology can tell us very little about aesthetic experience and the preference for certain artworks over others. Currie et al. (2014) have described this range of views in terms of a spectrum of acceptance. Sceptics are on one end with radicals on the other and moderate in between.

The radical view presumes that "traditional philosophical aesthetics is replaceable by scientific approaches to the problems [of aesthetics]" (Currie et al, 2014, p.12). The defence for such an approach is grounded in the assertion that "[philosophers] should not go around offering theories of interpretation which are not supported by what we know [scientifically] about semantic and pragmatic processing, or theories of pictorial perception that are not supported by the best vision science" (Currie et al, 2014, p.12).

The sceptical view maintains, "aesthetic experience, understanding and the normativity of artistic reasons, principles and values are to be accounted for in ways discontinuous with scientific explanation" (Currie et al., 2014, p.10). Along this line of reasoning, aesthetic problems are those of understanding, not explanation, and require a logical and analytic approach rather than a scientific (i.e. empirical) one.

For the moderate "rather than view empirical work as a possible source of challenge, perhaps it is the responsibility of the philosophical theory builder to ensure that what is being claimed is consonant with or even supported by what best current science tells us" (Currie, et al., 2014, p.11). This is in line with Fechner's assertion that empiricism need not replace philosophical inquiry but that the two must cultivate their shared concern in a manner that satisfies the aims and interests of both.

Bullough (1919) was an early radical who considered artworks in terms of "the conditions in which they produce their effects…variable and diverse, not merely in point of time, but also between different persons and in face of different kinds of objects" (p.44). It is the investigation of these conditions, he argues, that forms the basis of aesthetic inquiry and he asserts that this inquiry is "almost wholly a question, not of speculation or theory or doctrine, but of *bare psychological fact*…open to observation and often to experiment (p.44, emphasis in original). Beardsley (1958), a preeminent philosopher, reinforced this view and claimed that the nature of aesthetic experience is a psychological question for which mysteries remain.

Although Morgan (1950) agreed in principle he argued "we have not yet learned very much about art by the kind of experiment and measurement which has been going on" (p.93). He arrived at this anecdotally by concluding that one does not learn much about preference for an El Greco painting by comparing cardboard triangles. His view is rooted in apprehension around ecological validity, which can be summarised as follows: "discrete observations gleaned in the sterile atmosphere of the usual psychological laboratory…[prohibit] *any* very interesting or useful generalisations about the aesthetic experience" (Morgan, 1950, p.94, emphasis in original).

Dickie (1962) was perhaps the most vocal sceptic towards psychological aesthetics and offered a detailed critique with regard to two categories of experimentation. The first category proposes questions of logic that Dickie believed are easily answerable through careful analysis. This includes issues of meaning in works of art and also matters of preference. He argued, "this sort of inquiring is not a scientific one to which the collection of data is relevant; it is a logical [one]" (1962, p.291). He ardently disagreed with Beardsley's assertion that the nature of aesthetic experience is a matter of psychology. Speaking of the largely accepted conditions of aesthetic experience at the time (i.e. fixed attention, intensity and unity) Dickie proclaimed:

> That aesthetic experience has these characteristics is, I suppose, beyond doubt. But what more is there to be said about aesthetic experience? What are the mysteries which Beardsley says remain? What sort of scientific experiments could be set up to plumb these mysteries? (1962, p.296).

He maintained that "works of art which hold our attention are generally intense, coherent, and complete, and therefore are enjoyed, and we recommend them" (p.226). As such, he believed that any further insight can be achieved through hard analysis and does not require input from scientific discovery.

Scepticism around the relevance of psychology to aesthetic appreciation exists to the present day. Speaking to current methods employed in empirical studies of aesthetics, Reber (2008) has stated "Empirical psychology today is not any closer to being relevant to questions of aesthetics than Dickie clamed some decades ago" (p.371). He suggests that empirical research can merely "examine whether the predicted experience [of an artwork] matches the actual experience" (p.367) thereby determining its artistic value.

Jacobson (2006) asserts, "the problems that have to be faced today are the same as in the past: for instance, the conflict between the degree of experimental control on the one hand and the range of generalizability of the findings on the other" (p.156). Echoing Morgan's (1950) apprehensions, Wagemans (2011) has readily admitted, "There is an overwhelming number of [empirical] studies…that have actually not worked with real artworks (or reproductions thereof) but with very simple, artificial stimuli such as rectangles, geometric shapes, and polygons" (p.651).

Although empirical studies of aesthetic appreciation increasingly use actual works of art as stimuli, Bullot and Reber (2013) have pointed out that in many cases the artworks are considered devoid of their historical and cultural contexts. They attribute this oversight to the disharmony between the universalism favoured by the sciences and the emphasis within the humanities on specific cases. In their own words they assert:

> Because of its focus on the mind's processes and the brain's internal structures, psychological research often ignores the *historical approach* to art, which focuses on the role of historical contexts in the making and appreciation of works of art. The psychological and historical approaches have developed conflicting research pro- grams in the study of art appreciation and of art in general. They offer diverging accounts of the degree to which historical knowledge is involved in art appreciation (p.123, emphasis theirs).

They go on to assert that empirical studies of art and aesthetics need to better account for art historical context, which they believe must not be ignored when considering the viewer's experience with a work of art. Their argument highlights issues within disciplinary research that does not look outside of its own boundaries to arrive at insights.

Minissale's (2013) critique of contemporary empirical aesthetics centres on what he sees as lack of attention to contemporary art practices within the field. He points out that much of the art produced in the last fifty years has eschewed the notion of an artwork as a stand-alone object but rather as part of a complex network. Additionally, contemporary artworks often promote conceptual aspects over the perceptual. Minissale explains "Cognitive science and psychology need to be informed by trends in contemporary art that provide an emphasis on conceptual production rather than the formalism of traditional aesthetics that serves as the bases for most empirical studies (xvi). Minissale's evaluation infers that the aesthetic aspect of art appreciation is perhaps no longer a major concern of contemporary art.

1.3   Psychological Models of Aesthetic Appreciation

Like Hume and Kant who deliberated the relationship between objective stimulus features and the viewer's subjective experience, recent empirical models of aesthetic appreciation recognise that aesthetic response is likely the result of interaction between stimulus features and the viewer's individual response. To a degree, it could be argued that philosophical accounts recognised that certain stimuli, taken in isolation, should produce a positive aesthetic response but that there are mitigating factors brought about by the experience of the individual that can hinder such a response.

A universal model of aesthetic appreciation would account for specific perceptual, cognitive and affective processes that lead to aesthetic response in artworks and also everyday scenes and objects. As with any bottom-up methodology, such a model is formed from the collation of data gleaned at the level of the individual. As is common within the scientific method, an accepted model will hold ground for some time until new knowledge becomes available that requires the model to be replaced or updated. An established model typically reflects the prevailing scientific paradigm in place during its formation and it is possible for multiple accepted models to coexist, each attracting its supporters and detractors. The same holds true for psychological models of aesthetic appreciation.

There are a number of key models or theories of aesthetic appreciation that have gained traction over the past several decades. As Vartanian (2014) comments about the promulgation of any particular model, "although each theory is associated primarily with a single person, in reality [the] theories represent a family of approaches that enjoyed contributions from multiple researchers" (p.9).

Berlyne's (1971) psychophysical model is rooted in motivational and behavioural theories of psychology and considers the collative properties of stimuli. He associates aesthetic appreciation with objective stimulus features and the collative properties to which he refers include novelty, complexity and clarity. Berlyne uses the term 'hedonic value' to mean the extent to which the stimulus produces a positive affective response in the viewer.

Like Fechner's original experiments on aesthetic preference, Berlyne's dealt with levels of pleasure and displeasure correlated with certain stimuli. Berlyne (1971) investigated the influence of novelty and complexity on the pleasingness and interestingness of the stimuli. He initially found that both pleasingness and interestingness seem to increase with novelty. Taken together (hence the term 'collative') he shows that "the hedonic value of complex stimuli tends to rise as they become less novel while the opposite holds true for simple stimuli" (1971, p.284). Ultimately, his model is one based on arousal potential whereby "pleasure in general and aesthetic pleasure in particular are functions either of an arousal *boost* or of an arousal *jag*" (Machotka, 1980, p.116).

Although highly regarded for his role in reinvigorating interest in empirical aesthetics after a period of stagnation, Berlyne's model has largely been shelved. This is due in part to the cognitive turn in psychology, already influential in Berlyne's time, but which later became more influential. Cognitive models are based on information processing and emphasise the transmission of information via stages within a system. Martindale, Moore and West (1988) updated Berlyne's theory for the cognitive era by shifting attention from arousal towards the assimilation of stimuli into mental schemata. According to the theory put forward by Martindale et al., "aesthetic preference is a…function of the degree to which the nodes coding a stimulus are activated" (1988, p.82). Further to this theory is the idea that typicality is an objective stimulus feature that serves as a "potent" predictor of preference (p.93). In other words, according to the model, the more typical a stimulus is the more likely it is to activate relevant nodes, this leading to increased aesthetic pleasure. Like Berlyne's, Martindale's model is objectivist in that it positions aesthetic preference by way of objective stimulus features and relies on activation of a system by a stimulus.

Conversely, Silvia's (2005) appraisal model of aesthetic appreciation is subjectivist by assigning importance to the viewing subject's evaluation of events and the emotions that result. Appraisal theories of emotion assert that emotions come from the evaluation of events (stimuli) rather than directly from the events themselves. Evaluation can mean with reference to one's goals, ability to cope and personal or moral standards among other conditions. Speaking of Berlyne's earlier claims regarding stimulus novelty, Silvia explains that "appraisal theories would recast this by contending

that an 'objectively complex' object will affect aesthetic responses only inasmuch as a person subjectively appraises the object as 'complex'" (2005, p.346).

In a similar vein, Leder et al.'s (2004) cognitive model proposes multiple stages of processing leading to aesthetic appreciation. They explain that "concerning the psychological understanding of aesthetic experience, the better the understanding of [a stimulus], the higher the probability that it produces aesthetic pleasure" (p.491). Understanding, in their model, results from a number of sequential phases starting with perceptual processing, moving through to memory integration, classification, evaluation and cognitive mastering, ending with affective and emotional processing. The model includes aspects contingent on objective stimulus features as well as higher-level processes that can be influenced by factors such as prior knowledge and expertise.

Likewise, fluency-based models like the one proposed by Reber et al. (2004) are 'interactionist' in that they focus on "the processing experiences of the perceiver that emerge from the interaction of stimulus properties and perceivers' cognitive and affective processes" (p.365). The basic premise of their model is that the "more fluently the perceiver can process an object, the more positive is his or her aesthetic response" and that "processing fluency feeds into judgments of aesthetic appreciation because people draw on their subjective experience in making evaluative judgments" (p.366). Building on this premise, Forster, Leder and Ansorge (2013) have recently demonstrated that subjective feelings of fluency can be as influential as objective fluency.

Stimulus features such as symmetry, contrast and clarity and the viewer's history with a stimulus (including priming and exposure effects) determine fluency. Reber et al. (2004) point out that processing fluency involves both perceptual fluency (i.e. stimulus identification) and conceptual fluency, or the attribution of meaning to a stimulus. A more recent fluency-based model (Graf and Landwehr, 2015) introduces a dual process perspective, the second process involving the viewer's elaboration of perceptual fluency achieved in the first phase. As they explain:

> Preferences based on the first, stimulus-driven processing level reflect aesthetic evaluations of pleasure or displeasure. When stimulus and/or perceiver motivational components are sufficiently pronounced, a subsequent processing at a higher processing level can emerge. This conditionally activated processing is characterized as perceiver driven and can give rise to aesthetic evaluations of interest, boredom, or confusion (p.11).

The above models of aesthetic appreciation are based on findings from experiments that often use simple forms as stimuli. This fact has already been cited as the basis for questions surrounding the generalizability of results towards works of art, which are often more complex.

Perhaps in response, empirical aesthetics studies increasingly use works of art likely to circumvent this issue. The next section will review a selection of these experiments and the insight they provide into the aesthetic appreciation of works of art.

1.4   Art Spectatorship as Information Processing

In the models of aesthetic appreciation just described (Berlyne's notwithstanding), successful processing of a stimulus produces a positive affective (i.e. aesthetic) response. Leder et al. (2004) frames this in terms of classification and cognitive mastering whilst Reber et al. (2004) equate affective processing dynamics with perceptual and cognitive fluency. Silvia's (2005) appraisal model suggests that aesthetic appreciation can result from the viewer's subjective evaluation of their ease of processing, whilst Martindale's theory includes prototypes, which are generally processed more easily and lead to more favourable preference judgments.

These models share a basis in an information processing approach to perception and cognition. The cognitive paradigm is being applied to works of art with increasing frequency, effectively positioning art spectatorship as an exercise in the processing of information. As Russell (2003) explains, potentially "some of the pleasure derived from looking at a painting stems from successfully interpreting it and 'picking up the artist's message'…[and o]ne way of testing this hypothesis is to manipulate the information available to the viewer" (p.100). According to this hypothesis, information that aids in the successful processing of an artwork should make it more meaningful, pleasing and increase the overall aesthetic appreciation.

Following on from an earlier experiment (Russell and Milne, 1997), which found that abstract and semi-abstract paintings presented with their titles were rated as more meaningful but not more pleasing, Russell (2003) tested the effects of information available to the viewer above and beyond the artwork's title. In a series of experiments in which artworks were presented alone, with titles only and then with descriptions, he found that "given appropriate, within-participants methodology, it is possible to detect an increase in the hedonic value of a painting associated with information that aids its interpretation and heightens its meaningfulness. This effect is consistent with the effort after meaning hypothesis" (2003, p.108).

Belke, Leder, Strobach, and Carbon (2010) also tested the effects of information on the higher-order processing of works of art with the intention of understanding the contribution of fluency to aesthetic appreciation. They state that "higher-order processing fluency—on the level of meaning assignment, stimulus interpretation and cognitive evaluation—seems particularly important for

modern and contemporary art, which often provokes processing of conceptual, complex, and ambiguous information to be experienced as aesthetically pleasing" (p.215).

Their experiments presented subjects with a range of paintings styles including representational and abstract exemplars and over three conditions: no title, real title and counterfeit title. In support of earlier fluency models (Reber et al. 2004), Belke et al. (2010) found that "Changes in appreciation for paintings resulting from priming of semantically related, unrelated, and no titles hint at an affective marking mechanism of facilitated and obstructed processing on the level of meaning assignment and understanding" (p.219). Levels of facilitated and obstructed processing vary between representational and abstract paintings, for example with lower levels of facilitation for Cubist paintings that display high degrees of ambiguity relative to those where a representational object is more easily identified.

In a recent experiment, Muth et al. (2013) further considered the ambiguity of Cubist paintings in relation to visual indeterminacy in art (see Pepperell, 2006). Fundamental to their hypothesis is the claim that "art theorists and perception researchers have proposed…a relation between appreciation and emerging order from disorder, ambiguity, or indeterminacy" (p.488). For example, Jakesch and Leder (2009) have looked at preferred levels of ambiguity in art appreciation, taking as their starting point the assertion that modern artworks "are considered a class of real-world objects, which not only allow some degree of ambiguity…but might actually owe their value to their ability to elicit challenging states of ambiguity" (p.2105).

The results indicate that aesthetic appreciation is higher in cases when viewers are able to decipher concealed objects within the paintings (Muth et al., 2013). The researchers recognise that beyond matters of fluency, Cubist paintings may provide opportunity for 'elaboration': for the viewer to become involved in solving the 'problem' of the painting. They propose, "it is the presence of novelty, uncertainty or other challenges evoked by a stimulus that promotes dynamic aesthetic processes not the fluency or immediacy of recognition per se" (p.489). In this sense their findings support objectivist theories of aesthetic appreciation.

Leder (2001) conducted experiments around the notion of mere exposure and the belief that we tend to prefer what is familiar to us (likely because we can process it more easily). The idea of mere exposure states that the mere or unreinforced exposure to a stimulus is condition enough for an enhanced attitude towards it (Zajonc, 1968). Although a robust phenomenon (Bornstein, 1989), mere exposure effects had previously been ambiguous in the case of artworks. In his experiments using Van Gogh paintings, Leder shows that familiarity can increase liking in the case of artworks but that exposure effects can be short-lived and are easily overridden by other factors.

Cutting (2003, 2006, 2007) explored mere exposure effects as they relate to the formation of artistic canons. Based on a series of unique experiments he claims that "artistic canons are promoted and maintained, in part, by a diffuse but continual broadcast of their images to the public by museums, authors, and publishers" (2003, p.335). The claim relies on the notion that we prefer artworks that we have seen previously over those that we have not seen; something that Cutting demonstrates using Impressionist works of art. Meskin et al. (2013) elaborated this claim by testing the hypothesis against 'bad art'. Their findings indicate that repeated exposure to substandard works of art actually decreases aesthetic appreciation in some cases and that canon formation must rely on some other aspect of aesthetic judgement.

Expertise has been considered as a factor influential to the processing of artworks and their appreciation. Augustin, Leder, Hutzler and Carbon (2008) explain "Experts are assumed to interpret artworks on the basis of art-specific concepts, while non-experts probably draw upon their personal experiences and everyday knowledge" (p.137). Their experimentation supports this claim and demonstrates that experts and novices process artworks along different parameters: style for experts and personal feelings for non-experts. The findings of Belke, Leder and Augustin (2006) also "support the prediction that art expertise mediates influences of stylistic information on appreciation of abstract art" (p.125).

The studies just mentioned go some way in addressing concerns about ecological validity and the trouble with extending findings using simple forms to artworks that are complex both perceptually and in terms of conceptual information. I would argue that in some cases the artworks serve as convenient stimuli and their status as artworks is incidental to the experiment. The contextualisation of the artworks and their place in the art historical canon remains relatively limited. For example, the findings in terms of Cubist paintings are interesting but the authors do not effectively apply their findings to related art historical and theoretical narratives and concerns.

The issue remains of the environment in which the subjects are viewing the artworks under consideration. Morgan (1950) referenced the sterility of the laboratory, which although perhaps not so distant from the white cube model of the contemporary art gallery (see O'Doherty, 1986) it still does not accurately capture the typical environment whereby an artwork is encountered. Theories of embodied and situated cognition (see Robbins & Aydede, 2009) would stipulate that it is not sufficient to consider cognition solely at the level of the individual without reflection on the context in which cognition takes places.

1.5   Eye-tracking and Visual Attention

Increasingly diverse methods are employed to empirically investigate the experience of viewing artworks, providing new kinds of data that can be combined with more traditional qualitative explorations. For example, brain-imaging technologies, such as fMRI, are being used with increased frequency to measure neural activity during encounters with works of art. Such experiments are based in Neuroaesthetics (see Zeki 1999), a subfield of empirical aesthetics concerned with identifying mechanisms in the brain that are responsible for aesthetic appreciation. Researchers in Neuroaesthetics maintain, "no theory of aesthetics is complete without an understanding of its neural underpinnings" (Chatterjee, 2011). Undoubtedly important as it is, I will not be considering Neuroasthetic investigations here.

Eye-tracking methods, which serve to quantify the allocation of a viewer's attention while viewing a work of art, are also being used with increased frequency. The eye, whose retina allows for only a small area of foveal (i.e. focused) vision, is constantly moving in pursuit of useful visual information. The eye stops or 'fixates' at various points and the quick movements between fixations are called 'saccades'. The combination of saccades and fixations can reveal much about how a scene has been attended to and ultimately perceived. The basic premise of eye movement studies is to draw conclusions about the viewer's perceptual experience by recording fixations and saccades as they explore a scene. Eye-tracking methods are often combined with more traditional qualitative methods allowing for deeper insight.

Though previously established, eye-tracking technologies saw significant advances just prior to the new millenium. As Wade (2010) explains: "It is the question of what drives the selection of particular locations upon which to fixate that was eventually to assume unrivalled prominence in both eye movement and attention research late in the 20th century" (p.58). Buswell (1935/2012) is largely considered a key figure in eye movement research and some of his experiments explored the distribution of attention to different areas of paintings over time.

Yarbus (1967) was another pioneer of eye movement research and was concerned with the influence of task descriptions on how a viewer scans a scene. He occasionally used paintings as stimuli and in at least one instance presented a viewer with the same painting seven times, differing the task with each presentation. Wade explains "This elegant experiment confirmed Buswell's earlier observation that the instructions given to an observer can radically change the places that the observer fixates" (2010, p.59).

Buswell and Yarbus used artworks because they made for convenient stimuli and not necessarily in order to reveal anything in particular about art spectatorship. However, empirical aesthetics researchers have recently recognised the potential for eye tracking to provide insights into aesthetic appreciation and understanding. For example, Locher, Krupinski, Mello-Thoms and Nodine (2007) used artworks to present a two-stage model where "The gist information acquired during the first few fixations of [exploring an artwork] drives the second phase… that consists of visual scrutiny…" (p.56). According to the researchers, their findings "demonstrate that knowing the way viewers visually explore and think about an artwork as they judge its hedonic value provides valuable insights into the perceptual–cognitive processes that underlie an aesthetic experience with visual art" (p.76).

Quiroga and Pedreira (2010) also offer findings on the perception of works of art using eye tracking. They find that despite the expected variability between viewers, there are basic patterns of fixations that are common to all. Speaking more broadly they assert that:

> The perception of art is a very complex process conditioned by factors at different levels. On the one hand, there are basic visual principles, such as contrast and saliency, which introduce some uniformity in the gazing pattern of different subjects by driving the attention to particular areas and, on the other hand, there are also more complex cognitive factors, such as previous experience and knowledge, which introduce a large variability across subjects (p.5).

Fuchs, Ansorge, Redies and Leder (2010) used eye tracking to confirm the importance of visual salience in art perception and demonstrate the impact of 'bottom-up' influences on the way paintings are viewed. Their findings confirm that salience models (Itti and Koch, 2011) are robust predictors of visual attention but that salience effects were relatively short lived. They emphasise that the influence of salience as a bottom-up indicator of gaze behaviours does not discount the presumption that 'top-down' influences such as prior knowledge are also important in art spectatorship.

Accordingly, Hristova and Grinberg (2011) looked at bottom-up influences such as visual style alongside 'top-down' influences including task and the presentation of titles. All three variables were found to modify saccade patterns and related fixation points. Most recently, Locher, Krupinski and Schaefer (2015) investigated the influence of viewer's beliefs about the authenticity of artworks on the way they are visually explored and aesthetically evaluated. This particular top-down influence, they find, also mediates visual responses to art.

A number of eye tracking experiments in recent years have considered a single artwork or the work of a single artist. Dipaola, Enns and Riebe (2010) investigated the impact of textural agency on the viewer's exploration of a number of portraits by Rembrandt. Their experimental design required them to effectively recreate Rembrandt's paintings as photo-illustrations to be able to manipulate textural detail and track the influence on viewer's gaze patterns. The researchers explain that their results "clearly suggest that relative differences in textural detail guide the modern viewer's gaze when inspecting a portrait" (p.150).

Kapoula, Bucci, Yang and Bacci (2010) used eye movements as part of a study of perception of space in Piero della Francesca's *Annunciation* (1464*).* Through a combination of eye tracking and qualitative methods they found robust results across naïve viewers to suggest successful integration of spatial cues in the painting. These findings confirm the prediction that spatial cues in the painting would drive viewer gaze behaviour regardless of prior art knowledge. More recently, Harland et al. (2014) examined the viewer's visual exploration of Manet's *A Bar at the Folies-Bergére* (1882) against related art theory about the work using a combination of eye tracking and the recorded verbal utterances. The study found that, in fact, some viewers do experience the painting along the lines of what the art theory describes although there are distinct differences between the way experts and novices explore the scene. As such, eye movement studies with artworks can be highly informative and can also provide further substantiation to qualitative findings.

1.6   On-going Concerns

Since its inception and despite a growing literature through to the present day, empirical aesthetics has garnered its share of criticism. Some of this criticism has been made explicit, in the form of philosophers and psychologists openly expressing concern about their perceived limitations of and within the field. A more implicit kind of criticism might be the lack of engagement and involvement with empirical aesthetics by artists and other art professionals. In this discussion I will examine what I consider to be the main concerns and review recent attempts to mitigate them.

One of the earliest issues raised about empirical studies of aesthetic appreciation was the ecological validity and generalizability of results gleaned in the laboratory using simple stimuli to typically complex works of art. Largely there is value in continuing investigation into basic laws of beauty and aesthetic appreciation and in that sense there should be no issue with developing universal models that offer broad strokes via experiments that do not use works of art or consider the everyday circumstances of aesthetic interactions. If we were to discount these approaches, we would be

discounting the basis of scientific inquiry, which relies on broad generalisations gleaned from even the simplest conditions.

Although the use of works of art as stimuli removes concerns about ecological validity to a degree, it does not solve the problem in entirety. I already mentioned that theories of embodied and situated cognition would argue that a more robust level of ecological validity would involve conducting experiments in the social and cultural conditions in which artworks are typically encountered. In fact, researchers have begun to take heed of this.

The eye-tracking study by Harland et al. (2014) was conducted in situ at the Courtauld Gallery in London in order to preserve ecological validity. Gartus and Leder (2014) and Gartus, Klemer, and Leder (2015) recently investigated contextual factors influential to aesthetic appreciation. Their studies suggest that viewing art in a museum context affects the way the artworks are perceived. Brieber, Nadal and Leder (2015) also investigated how the museum context enhances the valuation and memory of art. Their findings indicate that art is better appreciated and remembered when viewed in situ as opposed to on a computer screen in a psychologist's laboratory. As such, it seems as though empirical aesthetics researchers are moving in the right direction in an attempt to render their findings more robust.

A similar sea change may also be at play with regard to contextualising a work of art rather than treating it as an incidental stimulus. In response to what they have identified as a tension between universalist and contextualist approaches to empirical studies using works of art, Bullot and Reber (2013) have proposed a psycho-historical framework:

> The psycho-historical framework suggests two additional requirements for productive experimental research on art appreciation: First, researchers have to consider sensitivity to art-historical contexts when they choose the independent variables in their studies. Second, instead of focusing exclusively on mental processes related to basic exposure, investigators might instead measure dependent variables that track processes specific to other modes of appreciations (p.133).

A review of commentaries on the original article demonstrates however that there are opposing views towards adopting such a framework. Some believe that Bullot and Reber have proposed a workable solution; while others argue that scientific studies are not designed to reveal insights at the fine-grained level of individual works of art.

Minissale's (2013) criticism regarding lack of attention to conceptual production and relational knowledge is evident from the fact that the overwhelming majority of studies discussed focused on

the perceptual aspects of art appreciation. Those that do touch upon conceptual concerns still do so in terms of the individual artwork as a stand-alone object divorced from a larger contextual network of relational knowledge. This is a point that I will take up in relation to seriality.

Lastly, I want to address what I earlier referred to as implicit criticism by artists and others working in the arts. I made this assertion based on the anecdotal observation that very few art professionals seem to integrate findings from empirical aesthetics and cognitive psychology more widely into their practices. This is not to say however that such interdisciplinary work is not taking place at all. Wagemans (2011) has conducted research that openly invited practicing artists to contribute to empirical studies based on their work and ultimately to feed their findings back into the process of creation. He now supports "close collaboration with active artists who are scientifically interested and motivated to tackle research questions of joint interest…yielding results that are both scientifically and artistically valuable and useful" (p.673). It is more difficult to identify examples of artists working independently who incorporate findings from psychology into their work, although I recognise that this does not confirm that such practices are not taking place. I will address this issue further when reflecting on my own practice later on in the thesis.

From the vantage point of art theory, very few of the studies I reviewed seemed to take account of related theoretical positions on art spectatorship and pictorial address. If the remit of empirical aesthetics is to explore a variety of experiences and interactions with works of art it would seem sensible to begin with the kinds of questions that have already been explored through a speculative approach. There is opportunity, although this too could garner criticism, to explore the psychological reality of certain phenomena that have been theorised in relation to works of art.

1.7   Conclusion

In this chapter I have explored the field of empirical aesthetics including its emergence as a discipline, critical reception and contemporary practice. The aim of my review was not to take account of the entirety of the field but to highlight the nature of insights, identify key concerns and ultimately to be able to develop productive ways forward. My review revealed the fact that empirical aesthetics is a growing field and perhaps in light of on-going debates continues to evolve and take on new directions. I began with discussion of universal models of aesthetic appreciation, which has been a significant focus of research over the last four decades. The interactionist model put forward by Reber et al. (2004) provides a useful way to think about the shared roles played by the object and subject in the generation of an aesthetic response. Their model bears interesting connections to

early philosophical models that recognised the subjective nature of aesthetic experience but also the importance of objective stimulus features in generating such experiences.

Consideration of a selection of experiments using works of art revealed that there is the potential to better integrate scientific findings with shared concerns within the arts. Nonetheless, it is apparent that empirical aesthetics research remains unduly focused on individual artworks as perceptual targets without fully taking into account developments in contemporary art that favour conceptual production or serial artworks that themselves comprise multiple discrete but related instances.

I mentioned in the introduction that my position as an artist provides me with a unique vantage point as opposed to reviews conducted regularly by psychologists practicing in the field. The research conducted towards this chapter has informed my understanding of my own aesthetic experiences within the visual world and also how I relate these experiences through pictorial production. Moving away from an objectivist model of aesthetic appreciation produces a new set of challenges from the vantage point of artistic production. In that regard I can take account of the viewer's interaction with works that I produce, deciding for example to manipulate the fluency conditions either within the works themselves or through their presentation.

Chapter 2: Cognitive Aspects of Pictorial Address

2.1   Introduction

Artworks are part of the visual world-at-large and are subject to the same visual processes as ordinary scenes and objects. Following on from this, it stands to reason that an understanding of how artworks are experienced visually would benefit from knowledge about visual experience more generally. This has been recognised for some time, most notably by Gombrich (1962), an art historian, who in the middle of the twentieth century stated that "We have to get down to analysing afresh, in psychological terms, what is actually involved in the process of image making and image reading" (p.21). Decades later Steer (1989), also an art historian, made a similar plea "for a more systematic exploration of how paintings work in relation to the workings of visual experience as a whole" (p.105).

The inherent relationship between art and psychology has been supported from within psychology itself. Arheim (1956) states "All seeing is in the realm of the psychologist, and no one has ever discussed the process of creating or experiencing art without talking psychology" (vii). On the philosophical front, Hall (1981) following on from Merleau-Ponty (1964/1993) urges that "painting in particular, and art in general, will be related to perception inasmuch as the sense of things within the experience of artist and observer will be based upon the sense of things within perceptual experience" (p.291).

The previous chapter demonstrated that while sufficient attention is given to the psychology of aesthetic appreciation of works of art other aspects of art spectatorship have received less attention. More specifically, it revealed that there is additional scope to attend to the implications of certain characteristics of artworks towards the *quality* of the viewer's experience. Quality here is used in the sense of 'constitution' or 'make-up' rather than indicating standards of excellence. In psychological terms, we can say that there is further opportunity to investigate and consider the direct impact of particular stimulus features on the perceptual, cognitive and affective processes of the viewer and how the viewer attends to and experiences a work of art.

Consideration of the viewer's experience in front of a work of art has typically been the remit of art theory and criticism. From Diderot's early Salons in the eighteenth century through to present day, one role of the art theorist-critic has been to determine how an artwork's style, structure and content may produce a certain kind of subjectivity for the viewer. This production of subjectivity and

the viewer's experience thereof will be referred to from here on as an artwork's mode of address (in the sense of how the artwork addresses the viewer). Many theories of pictorial address exist, some of which will be discussed in this chapter. These theories often speculate on the creation of meaning in an artwork, the kind of viewing experience afforded both temporally and spatially, and the manner in which certain compositional or narrative features influence the viewer's response and may make them aware of their own role as a spectator.

As with the speculative tradition of philosophical aesthetics, art theory and criticism involves a priori reasoning. In the last chapter I discussed the spectrum of viewpoints regarding the extension of empirical psychological methods towards questions of aesthetics. Some believe that we are compelled to verify theoretical claims against what the best current science tells us. Less radical scholars assert that empirical psychology can help to fill in gaps left by previous theories and provide a more complete picture of otherwise hazy concepts. There have also been those who criticise an empirical approach and claim that experimentation does not necessarily tell us anything of value beyond what we already know intuitively. Arguably, this same range of views can be applied to other theoretical aspects of art spectatorship besides aesthetic appreciation and this is a point I will address towards the end of the chapter.

Some of the studies referenced in the previous chapter approached theoretical notions of pictorial address experimentally. Dipaola et al. (2010) pursued an existing theoretical framework around modes of address in early modern painting (Berger Jr., 1998), choosing to deal with the textural mode, which they explain "as an interpretive act, calling for an interpretive response from the viewer" (p.147). Using eye-tracking techniques they found that, in fact, textural agency as used by Rembrandt in his portraits effectively guides the viewer's eyes across the work as predicted. The researchers refer to their findings in terms of a shared perspective between art and science.

Harland (2014) et al. considered Fried's (1980, 1996) seminal theory on theatricality as he later developed it via Manet. The team, of which I was part, investigated the supposed 'double relation' that the artist built into the depicted subject's gaze to simultaneously acknowledge and disregard the place of the viewer in front of the artwork. The study, also dealing in eye movements, found that the double relation is perceived by expert viewers but not novices who are typically more forgiving of visual ambiguities in works of art and pictures more generally. This study helps to clarify the theory under consideration.

The present chapter reviews a number of theories of pictorial address dealing with artworks from the Renaissance period through to Late Modernism. I identify specific points within the theories that speak to the supposed impact of the artwork's features on the experience of the viewer and, in some

cases, the conditions that produced the features. It becomes clear as per Arnheim that art theories often make implicit reference to psychology and my aim in this chapter is to make connections between theories of address and findings from psychology explicit. I highlight existing research into the direct impact of such findings on the experience of the spectator of works of art and conclude the chapter with suggestions for future directions within research into the cognitive aspects of art spectatorship.

2.2   Theories of Pictorial Address

Pictorial works of art are studied through various critical and epistemological lenses in order to observe aspects of their production and to theorise the nature of their reception. Noteworthy among these are social-historical, semiotic, iconographic and formalist approaches. An iconographic approach considers the symbolic nature of pictorial art and the role of culture in producing meaning (see Panofsky, 1962, 1969). Formalist methodologies focus on issues of style (see Wöllflin 1950) whilst Marxist readings of art history survey the social and economic circumstances from which artworks emerge (see Clark, 1973, 1982,1985). Semiotic analyses understand artworks as a system of signs to be interpreted by the viewer (see Bal & Bryson, 1991).

An artwork can also be studied by its mode of address or how its style, structure and content function to position a viewer, both literally and figuratively. Particular modes of address are believed to afford particular ways of looking and seemingly imply certain kinds of viewing experiences. An artwork's mode of address is not divorced from the social, cultural and aesthetic factors of its production but informed by them. As such, it can be difficult to disentangle an artwork's mode of address from these related factors. Theorising an artwork's address often builds on knowledge of its cultural production to focus on the mechanisms of its reception and the features and psychology of the viewing subject.

2.2.1   The Perspectival Tradition

I begin my discussion of pictorial address with linear perspective, a technique developed during the Renaissance period to afford the depiction of three-dimensional space onto the two-dimensions of a painting's surface. The development and subsequent deployment of perspectival rendering has been sufficiently documented so I will not recapitulate those findings here. Whether or not the use of perspective in paintings is mere convention or a necessary means of representing reality has also been widely discussed and will remain outside of my concerns (see Panofsky, 1991). Instead, and in line with my aims in this chapter, I will briefly touch upon the kind of viewing subject and viewing

experience that perspectival pictures have been theorised to imply. It is important to acknowledge that the viewers discussed within the following theories are notional, a point that will become clearer as individual theories are discussed.

During the Renaissance period, artists adopted the use of linear perspective in a quest for the truthful and accurate depiction of what they saw onto the two-dimensions of a painting's surface (see Edgerton, 1975; Kubovy, 1986). Perspective employs mathematical principles to construct the illusion of depth and space and involves establishing a horizon line and vanishing point within the scene depicted. It is generally agreed that the Italian architect Brunelleschi first demonstrated the principles of linear perspective, which were later articulated and written down by Alberti.

Bryson (1983), via Husserl, aligns the adoption of linear perspective with the 'natural attitude' towards painting. Within this natural attitude, the goal of the painter is to reproduce in a picture the appearance of the visual world to the greatest degree of verisimilitude. In this sense, Bryson explains, that the "domain to which painting is said to belong is that of *perception*" in which a "binary epistemology defines the world as anterior and masterful, and the painter's function before it as the secondary instrument of its stenographic transcription" (1983, p.6, emphasis in original).

The natural attitude and resultant rules of linear perspective establish painting as a model of communication "from a site of origin, replete with perceptual material…towards a site of reception, which will, in ideal conditions, reproduce and re-experience the prior material of perception" (Bryson, 1983, p.38). The site of origin is the artist and the site of reception is the viewer. In this model of communication a painting's mode of address is such that it recreates what Bryson refers to as the artist's Founding Perception. He goes on to explain that in "the Founding Perception, the gaze of the painter arrests the flux of phenomena, contemplates the visual field from a vantage-point outside the mobility of duration…while in the moment of viewing, the viewing subject unites his gaze…in a perfect recreation of that first epiphany" (p.94).

For Bryson, in the natural attitude the "eye of the viewer is to take up a position in relation to the scene that is identical to the position originally occupied by the painter" (p.104). The viewer is in fact "monocular, a single eye removed from the rest of the body and suspended in diagrammatic space" (p.10). Jay (1988) corroborates this view when he explains that the "basic device [of linear perspective] was the idea of symmetrical visual pyramids or cones with one of their apexes the receding vanishing or centric point in the painting, the other the eye of the painter or the beholder" (p.6).

The theoretical viewer implied by linear perspective's mode of address is a single disembodied eye. They have no autonomy or body with which to negotiate space. The eye itself is presumed to be immobile, meaning that the viewer can only focus in on the painting's vanishing point and nothing else. Bryson (1988) describes this viewer's experience in terms of 'the gaze', where the viewer as immobile eye exists outside of duration. In other words, the painting does not unfold in front of the viewer but is presented in its entirety from the start.

This model has been referred to as Cartesian Perspectivalism (Foster 1988) for its disassociation of the mind from the body, and emphasis on a singular and truthful natural world. The relationship between picture and viewer in this model has in turn been visualised as a window for the viewer to look through or as a mirror of reality reflected back to the viewer. Jay (1988) describes the model in terms of "a lone eye looking through a peephole at the scene in front of it" (p.7).

Crary (1992) aligns Cartesian Perspectivalism with the widespread acceptance of the camera obscura as a model of vision. This model of vision, he claims, produced a "dominant paradigm through which was described the status and possibilities of an observer" (1992, p.27). As opposed to Bryson's reading in which pictorial practices produce a certain kind of subjectivity, Crary implies that a prevailing notion of subjectivity can inform pictorial practices.

The camera obscura functions by allowing a pinhole of light to enter a darkened room resulting in an inverted image of whatever is outside of it to appear on the opposite interior wall. As a model of subjectivity, the device implies an internal viewer cut off from the outside world. As with Bryson's reading of Albertian space, Crary claims that a "function of the camera [obscura] was to sunder the act of seeing from the physical body of the observer, to decorporealize vision" (p.39). An association is made between the camera obscura's aperture in relation to the interior wall and the pupil of the eye in relation to the eye's retina. Again here, the viewer is theorised as a single eye lacking autonomy; the passive recipient of whatever is presented to them.

The window and mirror metaphors of the Albertian model imply a sense of framing and a bounded world limited by the picture's edges. Similarly, the camera obscura as a model of pictorial representation indicates a "cut or delimitation" (Crary, 1992, p.34) whereby the viewer is afforded access to a predetermined visual field. Like the subject produced by the visual cones of linear perspective, the camera obscura defines a viewer as "isolated" and "enclosed" (Crary, 1992, p.39).

Despite similarities between the perspectival tradition and the model of representation imposed by the camera obscura, Crary explains that "[u]nlike a perspectival construction, which also presumed to represent an objectively ordered representation, the camera obscura did not dictate a restricted site

or area from which the image presents its full coherence and consistency" (Crary, 1992, p.41). In other words, whilst the perspectival viewer is punctual – fixed to a single point in space – the implied viewer in the camera obscura model is not fixed to a single point but is more likely bounded by particular spatial confines. However, within those confines there is a relative sense of autonomy.

Whereas the split from the perspectival tradition is often positioned in terms of Modernist abstraction (starting with Manet), Crary locates the modernising of vision much earlier on in the nineteenth century. He maintains that the introduction of new optical devices at that time, which acknowledged the binocularity and serial nature of vision, caused a split away from the camera obscura model. He also cites simultaneous interest in visual phenomena such as the retinal afterimage that placed vision back in the body of the viewer. "The stereoscopic spectator", Crary says, "sees neither the identity of a copy nor the coherence guaranteed by the frame of a window" (1992, p.128).

He goes on to say that it "is only in the early nineteenth century that the juridical model of the camera obscura loses its preeminent authority. Vision is no longer subordinated to an exterior image of the true or the right. The eye is no longer what predicates a 'real world'" (Crary, 1992, p.138). He points to Turner's light-filled paintings to confirm a new status for the viewer in place by the 1840s. Crary claims that Turner's conjoining of viewer and optical experience reflects a proper breakdown of the perceptual model giving way to the modernisation of vision and new models of representation.

2.2.2   Alternative Scopic Regimes

The attention given to this split away from models of representation concerned with the representation of visual space suggests that, in terms of a painting's ability to position a viewer, these models held solid ground for a period of several hundred years (i.e from the fifteenth to nineteenth centuries). As part of a larger discourse that questions this seemingly "dominant, even totally hegemonic, visual model" (1988, p.4), Jay reminds us of alternative scopic regimes which serve to position an essential viewer much different than in the perspectival model. A scopic regime in this context refers to the prevailing set of visual practices in a given time and place. Arguably, different scopic regimes embrace different pictorial practices leading to particular modes of address.

Buci-Glucksmann's (2013) characterisation of Baroque pictorial practices provides one such example. She describes the baroque model of address to be topological, open and serial, requiring an emotional and embodied viewer. Baroque painting, she asserts, aims "to decenter vision in order to experience its effects, its *indeterminacy*, its anamorphosis…as the means of destroying the Renaissance notion of ideal form" (2013, p.13, emphasis in original). The establishment of multiple

spaces, intersections and encounters – ultimately an unstable viewer – stages the "madness" of this decentred vision.

The Cartesian denial of the body as a sensual source of information gives way in the Baroque model to a phenomenology of vision. Vision is tied to the body and, according to Buci-Glucksmann, there is "no baroque without the body" (p.39). It is this corporeal determinacy that modulates the major differences between the perspectival model and the Baroque model. The phenomenology of vision establishes a viewing subject less interested in knowing the world than experiencing and feeling it (similar to Crary's reading of Turner). The durational viewing lacking in the Albertian model's gaze returns in Baroque vision and pictorial address.

Alpers' (1983) art of describing in Northern Europe – a scopic regime simultaneous with Renaissance perspective – veered in a different direction in its move away from a single, narrative and illusory space. Alpers explains that the "aim of Dutch painters was to capture on a surface a great range of knowledge and information about the world" (1983, p.122). She aligns the Northern tradition with cartography, or the mapping of physical space onto a surface. This is analogous to but distinct from the topology of Baroque space. Both refer to open expanses of space that can be perused at will, however the mapping metaphor implies a more uniform and organised surface in contrast to the disorder and variability of the latter.

Northern European Renaissance paintings imply a world beyond their borders and the frame serves less to delimit a window with an arranged field of view and more as an arbitrary limitation of the visual field that could easily be shifted left or right, up or down without great overall impact. This feature along with other tendencies within the Northern tradition, such as interest in rendering textures and patterns and the incorporation of text onto the painting's surface – and the depiction of actual maps – position and address a viewer characteristically distinct from the viewer in the Southern (i.e. Italian) tradition.

Alpers explains that the Northern viewer is "neither located nor characterized, perceiving all with an attentive eye but leaving no trace of his presence" (p.27). Although the body of this viewer superficially remains ghostlike, their eye (still monocular it would seem) regains movement and is able to scan the surface of the picture. The resulting accumulation of views leads to a "syncopated effect". "There is no way", Alpers continues, "that we can stand back and take in a homogeneous space". Bryson (1983) proposes a similar definition of the term 'glance' (as opposed to the gaze) that "addresses vision in the durational temporality of the viewing subject; it does not seek to bracket out the process of viewing" (p.94). The glance unfolds serially over time and constructs a reality rather than taking in a preconfigured one.

Bryson (1983) also uses the art of the North to make a case for pictorial practices that eschewed the use of linear perspective embraced in the South. Speaking of linear perspective he states that "the architecture of the scene, and the gestures, postures and facial expressions of the figures turn towards the spectator in direct invocation: the spectator is the absent focus of these glances and walls, and of this whole dramatic action, mounted, one might say, for his particular benefit (1988, p.111). This kind of space is conceived theatrically as opposed to the space depicted in the work of Vermeer, which Bryson says, "belongs to a different spatial regime and stages nothing" (1988, p.111); the viewer is an unexpected presence rather than acknowledged audience.

2.2.3   The Unacknowledged Beholder

The notion of theatricality raised by Bryson and issues around an artwork's acknowledgement of the viewer relate to Fried's thesis, developed and expanded over the last fifty years. Fried (1967/1995) first mentions theatricality as a mode of address in his critique of what he calls literal art (since referred to as Minimalism). The failure of minimalist artworks, according to Fried, is in the way that they declare themselves to the viewer.

He explains that such work is "theatrical because, to begin with, it is concerned with the actual circumstances in which the beholder encounters [the] work" (1967/1995, p.125). Furthermore, this concern produces a situation in which "the beholder knows himself to stand in an indeterminate, open-ended – and unexacting – relation as *subject* to the impassive object on the wall or floor (1967/1995, p.128, emphasis in original).

Fried (1980) provides further explication of the supremacy of anti-theatricality in his reading of eighteenth century Salons written by the critic Diderot. In this context Fried expands his critique of theatricality to developments in French painting in Diderot's time. His thesis centres on the dualism of absorption and theatricality. Theatricality, as above, is characterised by an overt play for the viewer's attention and undue acknowledgement of her presence in front of the work. Anti-theatricality, on the other hand, negates the existence of a beholder. In large part this negation is achieved by presenting the figures within a composition as being wholly absorbed in their own activities oblivious to the viewer's presence. Fried is not neutral in his views on anti-theatrical address and clearly privileges such a mode above theatricality.

Fried deems the nature of anti-theatrical address as a supreme fiction; a problematic that emerged for painting in eighteenth century France, which artists had no choice but to deal with in increasingly inventive ways. He explains the issue as the need for a painting to presume that "the beholder did not exist, that he was not really there, standing before the canvas" (1980, p.103). It was only when

these conditions were met that, according to Fried, the viewer could be held in front of the painting for hours at a time.

The extended viewing to which Fried refers is different however to the limitless duration of Bryson's conception of the gaze as it applies to perspectival art. In the first instance, Fried's viewer is corporeal – the experience of the work is very much about the presence of the body. And perhaps counter intuitively Fried's assertion that certain pictures could arrest the viewer for long periods of time is contingent upon its ability to be taken in at a glance.

Fried uses 'glance' in the colloquial sense, not in the way Bryson or Alpers do. The glance that Fried suggests refers to instantaneity, or the ability to take in the impact of a picture in a single look. The paradox, as Fried explains it, is in the supposition that the pictorial unity that leads to the refusal to acknowledge the beholder and offers itself up in an instant should be the same aspect of the work that causes the beholder to be "stopped and held, sometimes for hours at a stretch" (1980, p.132).

The beholder's attention is thus contingent on a kind of pictorial unity characteristic of the anti-theatrical or absorptive mode of address. Fried refers to "the dramatic representation of action and passion, and the causal and instantaneous mode of unity that came with it" (1980, p.103). This dramatic representation of individuals deeply engaged in their own actions and thoughts ultimately closes off (psychological) access to the viewer and denies her existence while at the same time demanding her attention. Fried explains this narrative aspect of a work's composition as integral to achieving the desired outcome in terms of the production of subjectivity.

As time wore on though and at the risk of seeming disingenuous artists could no longer rely on the depiction of absorptive states in order to engage the viewer. Instead, Fried claims that artists devised alternative ways (both compositional and psychological) of arresting the viewer in front of the work and establishing complex relationships between the viewer's acknowledgement and disregard. In the case of Courbet, the painter-beholder effectively paints himself into the depicted scene taking all future viewing subjects with him (Fried 1990). In this sense, Courbet aims to affirm "[the viewer's] active presence not merely at but *in* the scene of representation" (p.123, emphasis in original). Of the relationship between painting and viewer Fried states "there would be no one before [the painting] looking on because the beholder who had been there was now incorporated or disseminated within it" (1996, p.262).

Courbet's technique renews the supreme fiction that the beholder does not exist in front of the work. Manet's paintings in the late nineteenth century acknowledge the viewer's presence head on. Fried (1996) theorises this in terms of the notion of 'facingness' where the figures within the painting

face directly towards the viewer thus enforcing the viewer's presence in front of the scene. However, whereas this facingness would have previously contributed exclusively to a theatrical mode of address (as with most portraiture), according to Fried, Manet circumvents the issue by creating an ambiguity around the painting's acknowledgement of the viewer's presence. This is achieved through a combination of facingness (that demands the viewer's presence) and the depicted figures' seemingly vacant gaze that looks through or beyond the viewer barely acknowledging their presence if at all.

2.2.4 Towards Modernism

Facingness, in one sense, deals with the space within the represented scene but in another it alludes to the flatness of the work itself (its surface). Manet's handling of paint and move away from shading and modelling towards a more sketchy rendering of figures and objects and inclusion of flat areas of colour contributed to "the foregrounding of the literal flatness of the support" (Fried, 1996, p.17). This flatness can be aligned with developments after Manet towards Impressionism; an "essentially surface mode of unity" (Fried, 1996, p.408) often discussed as a key feature of Modernist pictorial practice (I am referring here and on-going to Late Modernism).

According to Greenberg, Modernist painting retains the flatness of the picture plane initiated by Manet but gets rid of, for the most part, illusory space (1960/1995). For Greenberg this "ineluctable flatness of the surface" is what "Modernist painting orientated itself to…as it did to nothing else" (1960/1995, p.87). Of this new flatness, he says that the "spectator can no longer escape into it from the space in which he himself stands" and that the "eye has trouble locating central emphases and is more directly compelled to treat the whole of the surface as a single undifferentiated field of interest" (1948/2003, p.61).

Modernist flatness advances notions of compositional unity and instantaneity, familiar terms from Fried's earlier description of an absorptive mode of address. However, with Fried this unity is achieved through narrative means and a play towards the psychology of the viewing subject. Modernist unity relies on the surface of the work of art lacking in narrative entirely. Regarding instantaneity, Greenberg rhetorically asks: "Doesn't one find so many times that the 'full meaning' of a picture – i.e., its aesthetic fact – is, at any given visit to it, most fully revealed at the first fresh glance?" He answers that with "many paintings…it is as if you had to catch them by surprise in order to grasp them as wholes – their maximum being packed into the instantaneous shock of sight" (1945/1986, p.34). This taking by surprise is also reminiscent of Fried's thesis wherein the denial of

the viewer's existence is what counter-intuitively captures their interest and leads to full engagement with the scene.

Flatness in late Modernism also informs a sense of the viewer's corporeality and physical location in relation to the painting (or lack thereof). Steinberg (1972) explains the postural associations between the picture and the viewer: Renaissance pictures, with their rendering of illusory space, affirm verticality and correlate the top of their plane with the head of the viewer (both of whom are vertically orientated). Modernist painting produces works akin to a 'flatbed picture plane' that unlike earlier traditions does not locate the viewer in a particular space. In part this may be due to the fact that many of these works were produced in a horizontal mode, with the canvas placed on the floor and the artist working above and around it.

Steinberg proposes that Modernist paintings "no longer simulate vertical fields, but opaque flatbed horizontals. They no more depend on a head-to-toe correspondence with human posture than a newspaper does". These kinds of pictures, he goes on, "insist on a radically new orientation, in which the painted surface is no longer the analogue of a visual experience of nature but of operational processes" (p.84). This view shares features with Alpers' art of describing, which could be understand as an early nod to the flatness of the painting's surface and move away from the kind of virtual space that locks the viewer into a certain position.

In this way Steinberg's outlook can be considered alongside other perceived ruptures with dominant scopic regimes. Of the nature of this particular split he explains that: "What I have in mind is the psychic address of the image, its special mode of imaginative confrontation, and I tend to regard the tilt of the picture plane from vertical to horizontal as expressive of the most radical shift in the subject matter of art, the shift from nature to culture" (p.84). Although artists like Pollock often painted on horizontal canvases, later to hang them vertically, Steinberg is referring to an ideological tilt rather than a purely literal one.

The move from visual experience to operational processes, from nature to culture, that Steinberg promotes can be read as a shift away from a privileging of the visual as a mode of address towards a conceptual paradigm in which artworks were intended for the mind rather than the eye. Arguably, this shift towards conceptual art produces alternative pictorial practices in which an emphasis is placed on cognitive processes rather than perceptual ones. This emphasis has been articulated by artist like Bochner (1967) and Lewitt (1967/1999) and in relation to seriality as a pictorial mode of address. I will return to this idea later in the thesis.

2.3   The Psychology of Pictorial Address

The theories discussed above represent only a small portion of a larger literature on pictorial address but sufficiently demonstrate the type of concerns typically taken up by such theories. Even in this relatively narrow subset there are a number of themes that emerge. Broadly speaking, theories of address deal with the temporal and spatial aspects of the viewing experience implied by pictorial artworks with certain features.

The role of the viewer's body is often integral to understanding the operations of particular modes of address. In some cases the viewer is theorised as disembodied – a single and immobile eye. This is true of linear perspective according to Bryson, of Alpers' art of describing and in Crary's explanation of the camera obscura model. Of course none of these scholars believes the viewer to be literally disembodied. Instead, in the cases to which they attest, the body is seemingly not integral to the perception of the work and the paintings themselves are effectively addressed to the eye. In opposition, Buci-Glucksmann argues that the body and its emotional capacity are essential to the phenomenology of Baroque painting. The body is also important to Fried's theories around absorption and theatricality, for instance in the case of Courbet and Fried's point that the body of the painter-beholder itself becomes implicated in the work.

Presumed spatial and postural associations also vary across the numerous theories. In the Southern European tradition the hypothetical viewer is punctual, fixed in space and vertically orientated as if looking into a mirror or through a window. The imaginary Northern viewer remains vertical but has no secure position in relation to the painting. According to Steinberg, the 'all-overness' of Modernist composition and the flatness of the picture plane (i.e. lack of illusionistic space) releases the viewer from the vertical orientation associated with the easel painting tradition.

In terms of temporality, Bryson articulates a perceived duality between what he terms 'the gaze' and 'the glance'. According to him the gaze exists outside of duration and is frozen in time whilst the glance unfolds in order to build up meaning. Fried also uses the term 'glance' but to refer to the quality of instantaneity or the ability of an artwork to be comprehended immediately and in a single moment. Artworks that employ linear perspective fall into this category while Baroque and Northern paintings are theorised as requiring an extended temporality. Fried and Greenberg champion the notion of instantaneity as an important aspect of an absorptive mode of address and Modernist abstraction, respectively.

To use Steer's phrasing, these theories articulate ideas about how paintings work. And as Arnheim rightfully suggested, talking about the experience of art naturally involves consideration of

psychology. Arnheim and Gombrich sought to make the psychological basis of the experience of artworks explicit yet the nature of their insights was limited by the available knowledge at the time. More so, I would argue that although both scholars made invaluable contributions to the scientific study of works of art they did relatively little to bridge psychological theory with art theory as is my aim here.

In the next sections I will consider research within the field of visual cognition that may provide insight into the psychological reality of some of the phenomena proposed by the theories of address previously discussed. In reframing the art theories in psychological terms we can ask questions about the embodied nature of vision, how and when meaning is created over time, the impact of the emotions, attitudes and postures of others on our own and the relationship we form with our surroundings through locating ourselves in space.

My purpose is not to prove or disprove established art theory but to demonstrate the possibility of exploring pictorial modes of address in explicitly psychological terms. The areas within cognition that I explore are decidedly complex and would require significantly more room than I have here in order for their potential scope to be fully understood. What I present here is a small step towards what I believe can be a more productive relationship between theories of art and knowledge within psychology.

2.3.1   Scene Perception and Gist Extraction

I have already pointed out that a main concern of some theories of address is the timeframe during which the meaning and impact of an artwork unfolds across different pictorial modes. A similar concern exists within the realm of scene perception, which studies how and when scenes are understood and attended to. Henderson and Hollingsworth (1999) define a scene as "a semantically coherent (and often nameable) view of a real-world environment comprising background elements and multiple discrete objects arranged in a spatially licensed manner" (p.244). This definition could equally refer to a significant percentage of representational pictorial works of art. Due to the practical challenges of experimenting in the natural environment studies of scene perception often use pictures of scenes as their stimuli making extrapolation of findings towards pictorial works of art straightforward.

Oliva (2005) explains, "with just a glance at a complex real-world scene an observer can comprehend a variety of perceptual and semantic information"(p.251). Perceptual information refers to identification of structure and overall layout whereas semantic information includes conceptual understanding of objects and their relationships. Comprehension at a glance is more properly

referred to as the extraction of a scene's gist. It is well understood that viewers are able to perceive the gist of natural scenes almost instantaneously (i.e. in under 100ms) and within a single fixation of the eyes. The nuances of gist extraction continue to be studied.

In addition to gist, studies of scene perception also explore the mechanisms of visual search and what drives viewer gaze patterns. Wolfe (1998) explains, "We need to search because we are simply incapable of processing all visual stimuli at the same time" (p.27). To recall, the architecture of the visual system is such that the eye must fixate on an area in order to perceive detail before moving rapidly (via saccades) to fixate a further area of interest. As explained in Chapter 1, eye movement studies investigate bottom-up features such as saliency as well as top-down influences such as task.

Also raised in the last chapter, a number of studies exist that have explored these concepts specifically with works of art. Fuchs et al. (2010) investigated the impact of salience and found that "strong local feature contrasts, such as a color difference or a luminance edge, capture attention regardless of the participants' search goals or intentions" (p.25). Hristova and Grinberg (2011) explored the time course of eye movements during painting perception and found a difference in the gaze patterns resulting from viewing paintings by Dali and Carravaggio. They explain, "The result is probably due to the different compositions and different number of objects depicted in the artworks" (p.10), which would have been a reasonable conclusion to reach even without experimentation. Nonetheless it provides empirical confirmation that different modes of address prompt different ways of looking.

The notion of gist has also been explored in the context of pictorial works of art. Locher (2015) has reviewed a few such studies including some of his own (Locher et al., 2007) in order to summarise findings. Broadly speaking the findings evidence that viewer preference for a work of art emerges very early on only to be confirmed through further viewing. Aesthetic appreciation aside, gist is particularly interesting in the context of theories that speculate on the ability of certain pictorial modes to either facilitate or preclude the rapid extraction of gist.

To reframe earlier arguments in psychological terms, Bryson claims that the nature of perspectival images is such that they present an immediate global impression and effectively do not require (or in a more extreme sense allow) local exploration. This stands in contrast to both Alpers' art of describing and Buci-Glucksmann's take on Baroque painting whereby the gist of the scene is confounded by the integration of multiple spaces within a single picture. In the latter case, it is presumed that a global impression of the artwork is inoperable and that it is only through exploration at the local level that the viewer can grasp the picture.

To reiterate, Alpers goes as far as to say about Northern counterparts to Renaissance paintings "There is no way that we can stand back and take in a homogeneous space" (1983, p.27). Buci-Glucksmann's use of the phrase 'indeterminacy' implies a similar condition for Baroque art. These points seemingly refer to perceptual gist whereas Fried's speculations about paintings produced according to the absorptive mode refer more so to conceptual gist driven by a unified narrative. Greenberg's concept of instantaneity implicates abstract artworks, which are by his own admission not real-world scenes and therefore have little bearing on mechanisms of scene processing.

Oliva (2005) indicates that certain properties can impact the ease with which a scene's gist can be extracted. In addition to colour, one such property includes spatial frequency or the amount of detail available as modulated by various factors such as contrast, edge sharpness, and texture. Oliva argues that lower spatial frequencies (i.e. blobs or volumetric forms) and a scene's overall structure are often perceived before high-spatial frequency features such as surface texture and object detail (see also Oliva and Schyns, 1997; Schyns and Oliva, 1994). This point can also be articulated in terms of a preference for coarse over fine processing. Considering the theories of address previously articulated, Southern Renaissance paintings could be described as having lower spatial frequencies than their Northern counterparts that favour description of surfaces over the volumetric depiction of space.

As such we can imagine a viewer at first presented with a typical Southern Renaissance painting that employs linear perspective and then with a typical painting produced in the Northern tradition. Based on existing empirical findings within scene perception and the relationship between spatial frequency and gist in particular, we can reason that the former would be perceived more quickly, in line with what Bryson and Alpers theorise.

Bryson, Alpers and Buci-Glucksmann together made distinctions between the global impression favoured by Renaissance pictures and the presumably serially unfolding nature of Baroque pictures and those in the Northern tradition. It would be interesting to explore in more depth if existing findings within scene perception would support this notion and if so which cognitive mechanisms in fact contribute to the different viewing experiences that each mode of address affords. Additionally a comprehensive analysis of stimulus features across Renaissance, Northern and Baroque paintings might reveal if differences in style and structure – and spatial frequency – provide further clarification towards the ease through which gist is extracted and the scene understood.

2.3.2   Spatial Representation and Frames of Reference

In addition to temporal concerns theories of address take account of the spatial relationships created between artwork and viewer or how particular modes of address serve to position the viewer. Etlin says, "Our aesthetic response to scenes of nature and to works of art, to their qualities of line, form, and mass, is a composite sentiment that involves a bodily sense of self, which also has its spatial dimension" (1998). This idea relates to a fundamental concern within visual cognition regarding how individuals position themselves in relation to their surroundings and represent space internally (Maselli, 2015). Serino A, Alsmith A, Costantini, M., et al. (2013) explain that "We not only experience our bodies as our own, we also experience ourselves as occupying a given location in a world with a given perspective" (p.1244). Accordingly, achieving a sense of bodily self-consciousness results in the ability to self-locate.

Self-location, according to Brewer (1992), "provides its subject with the impression of herself as in amongst the very objects of her perception, by representing these objects as standing in various spatial relations with her." (p.18). The ability to self-locate relies on adopting a particular frame of reference based on perceptual cues in the environment (see Evans, 2010). Various terms are used to describe the frames of reference that are available for representing the locations of entities in space.

Carlson-Radvansky and Irwin (1993) explain, "In a viewer-centered frame, objects are represented in a retinocentric, head-centric, or body-centric coordinate system based on the perceiver's perspective of the world" (p.224). The terms 'egocentric' and 'allocentric' are commonly used within the literature to describe frames of reference. Klatzky (1998) asserts, "there is general understanding that in an egocentric reference frame, locations are represented with respect to the particular perspective of a perceiver, whereas an allocentric reference frame locates points within a framework external to the holder of the [spatial] representation and independent of his or her position" (p.2).

Empirical studies of viewer frames of reference often present the subject with a spatial layout for a given period of time. The stimulus is then removed or a translation is made before asking the subjects to recall aspects of the layout or reposition themselves in relation to a representation stored in memory. As far as I am aware no empirical studies exist that investigate spatial representation and frames of reference with specific regard to pictorial works of art. Relatedly however, several studies consider the importance of spatial perception in driving the visual exploration of paintings and the relative importance of art expertise (Kapoula, Z., Yang, Q., Vernet, M. & Bucci, M. P., 2009; Kapoula et al., 2010).

The importance of spatial representation and frames of reference (specifically) for the experience of works of art has not been ignored entirely by psychology. Kubovy (1986) writes about the perceptual and cognitive bases of linear perspective in Renaissance paintings. He asserts that besides the more practical function of perspective in allowing for the rational representation of space, from a phenomenological position it plays " a subtle role, having to do with the spectator's experience of his or her location in space with respect to the physical surface and with respect to the room in which the painting is viewed" (p.16). Effectively, according to Kubovy, the dissonance between the actual point-of-view represented in perspectival renderings and the felt point-of-view of the viewer results in a spiritual sense of transcendence. Kubovy hypothesises that this phenomenology is potentially fundamental and likely an intentional aspect of Renaissance artist's use of linear perspective to construct pictorial space.

Considering the previous theories of address more broadly, and in terms of the distinction made between the notional experience of the viewer of Southern Renaissance paintings and those in the North as well as Baroque art, we can infer that the former promotes an egocentric frame of reference while the latter do not. Returning to Klatzky's definition, perspectival paintings can be reframed by way of the representation of entities with respect to the position of the viewer. This aligns with Bryson's reading of the natural attitude towards painting. Alper's assertion that Northern artworks do not locate or characterize the viewer and Buci-Glucksmann's claim that Baroque artworks determine an unstable viewer with a decentred vision, would suggest that these kinds of pictures promote a non-egocentric or allocentric frame of reference.

2.3.3   Embodied Simulation and Social Cognition

As previously indicated the viewer's body is also implicated in a number of the theories of pictorial address. In particular I am interested in implications towards the viewer's body proposed via Fried's theories on absorption and theatricality. The role of the body in cognition and the principle that knowing about the world is bound to and through the body continues to be debated within studies of human cognition. Smith (2005) explains, "The embodiment hypothesis is the idea that intelligence emerges in the interaction of an organism with an environment and as a result of sensory-motor activity" (p.279). The notion of embodied cognition is often framed in terms of distributed or situated cognition, which maintain that cognitive processes extend beyond the individual into the environment (see Reboul, 2015) and are context dependent (see Brinck, 2007) or social.

Within the context of embodied cognition the notion of simulation refers to the phenomenon whereby an individual's mental state or process simulates that of another (Gallese & Sinigaglia 2011).

Gallese (2014) states, "When exposed to others' expressive behaviours, reactions and inclinations, we simultaneously experience their goal directedness and intentional character" (p.5). Accordingly, embodied simulation relates to the experience of another's bodily state and associated cognitive and affective processes. This idea potentially bears on the experience of visual art in interesting ways. In the first case by way of the representation of artworks that depict human bodies and in the second instance with regard to the bodily actions implicit in the creation of the work of art and embedded in its materiality.

In fact, Freedberg and Gallese (2007) have looked at the notion of embodied simulation with regard to works of art and focussing "on the embodied phenomena that are induced in the course of contemplating…works of art by virtue of their visual content" (p.197). Their underlying thesis is explained as follows:

> Our capacity to pre-rationally make sense of the actions, emotions and sensations of others depends on embodied simulation, a functional mechanism through which the actions, emotions or sensations we see activate our own internal representations of the body states that are associated with these social stimuli, as if we were engaged in a similar action or experiencing a similar emotion or sensation (p.198).

In the case of figurative works of art this might involve forming an embodied relationship with the postures or perceived emotional states of the individuals depicted. The authors make the point that simulation is not exclusive to figurative works but can also be present in response to architectural forms and other spatial representations. This point may bear on the notion of frame of reference discussed earlier.

Non-representational artworks can also prompt a sense of embodied simulation. Freedberg and Gallese clarify, "With abstract paintings such as those by Jackson Pollock, viewers often experience a sense of bodily involvement with the movements that are implied by the physical traces – in brushmarks or paint drippings – of the creative actions of the producer of the work" (p.197). As with Steinberg's observation noted earlier in the chapter, this may contribute to the experience of Modernist works of art, many of which were produced horizontally, beyond the vertical posture expected of more traditional easel paintings.

Returning now to Fried's theory of the dichotomous nature of absorptive and theatrical pictorial modes of address, if Fried is right that the former provides more opportunity for engagement than the latter then perhaps this is due in part to the emotional states depicted in each mode respectively. Absorptive address requires that the subjects are absorbed in their own world, oftentimes looking

away or into the distance, seemingly detached from the world outside of the painting. Arguably and via embodied simulation, this sense of detachment might foster engagement do to the viewer's propensity to understand their intentions and desires. It might be that theatrical address makes these more explicit thus affording a lower level of curiosity and engagement from the viewer.

To build on the notion of intersubjectivity, theories of gaze cuing and joint attention also speak to the perception of another's mental state afforded through looking. Kleinkle (1986) explains, "Cognitive-affective assessment reflects the influence on reactions to another person's gaze of attributions made about the gazing person's intentions and motives" (p.90). More recently, Frischen, Bayliss, and Tipper (2007) make the point that "eye contact has profound effects on the receiver" (p.5) and "Seeing a face with direct gaze engages observer's attention, perhaps because of the social significance conveyed by eye contact" (p.6). This would also support the idea that processes within social cognition may drive the distinction between absorptive and theatrical address but perhaps counter intuitively to Fried's thesis.

2.4 Conclusion

I began this chapter with a review of numerous art theories of pictorial address. The constituent theories relayed concerns about the temporal and spatial aspects associated with viewing pictorial artworks across a number of historical periods. I demonstrated, in line with Arnheim's observation, that talking about the experience of art by nature involves consideration of psychology. Furthermore I used existing empirical findings to reframe art theory in cognitive terms. Doing so provided the opportunity to make predictions and draw conclusions regarding the psychological reality of certain aspects of the theories of address presented.

To summarise, findings within studies of scene perception and the extraction of gist suggest a possible explanation for the proposed difference in viewing time associated with Renaissance artworks and similar works in the Northern tradition as well as Baroque paintings. The distinction may be a result of a number of stimulus features that can affect the ease with which a scene is perceived including spatial frequency. At the same time, theories of spatial cognition and frames of reference support a conceivable proposition that perspectival artworks favour an egocentric frame of reference while others promote self-location in an entirely different manner. I used the concept of embodied simulation and related ideas within social cognition to explore a cognitive basis for aspects of Fried's theory of absorption and theatricality.

By mapping existing findings to art theory I have achieved my aim of making connections between theories of address and findings from psychology explicit. I have also shown that there is opportunity to explore via psychology aspects of art spectatorship outside of aesthetic appreciation.

The insights arrived at are effectively the result of thought experiments that imagine viewers presented with theoretical artworks that are typical of a given mode of pictorial address. It might be possible to empirically investigate the psychological reality of theories of address although there would be some challenges in doing so. As discussed in Chapter 1, these challenges include ecological validity and the generalisability of findings. Historically, questions have also been raised about the need to conduct experiments on concepts that can equally be addressed through rational analysis. Dickie (1962), for example, asserted that empirical investigation of aesthetic experience does not tell us anything we do not already know intuitively.

This chapter has demonstrated in practice that there is value in applying existing findings from cognitive psychology towards understanding aspects of art spectatorship and pictorial address. It has embraced the view that experimentation need not replace a priori reasoning but that psychology can provide a way to frame previously theorised notions of art appreciation. It serves, in a sense as a middle ground between a top-down approach based on intuition or speculation and a bottom-up approach that relies on observable and measurable phenomena. At the same time, it develops a number of theoretical frameworks that could be explored by others through concrete experimentation.

This chapter has discussed the spectatorship of artworks that comprise single pictures experienced in a direct one-to-one manner by the viewer. Pictorial artworks though are often presented in groups, in the broadest sense as part of a series within a single exhibition. More so, since at least the late nineteenth century artists have intentionally produced pictures that are meant to be viewed as part of a set.

I have often produced pictures that rely on being displayed alongside other related pictures in order to be fully understood. Most recently my exploration of visual perception resulted in pictures intended to be viewed as part of a series and whereby variation and repetition were paramount. In consideration of the perceptual and cognitive aspects of how these artworks are experienced it became clear that artworks employing seriality have been neglected within the psychological literature. This realisation fuelled a more explicit investigation of seriality within my own practice as well as an interest in understanding the direct impact of seriality as a pictorial mode of address.

The following two chapters explore the perceptual and cognitive bases of seriality in art, using two case studies. The first case study considers Monet's series of paintings of the façade of the Rouen cathedral and the second takes up Warhol's *Death and Disaster* series. With Monet, seriality is the result of studying variation in colour and luminosity of a single subject across multiple discrete but related canvasses. Warhol's paintings repeat a single gruesome photographic image multiple times on a single canvas. In each case there are separate but related perceptual and cognitive processes at play and it is to these processes that I now turn my attention.

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Chapter 3: Seriality in Art and Stable Mental Concepts

3.1   Introduction

The previous two chapters investigated the value of applying theories and methods from cognitive psychology to art spectatorship. I looked at perceptual and cognitive aspects of aesthetic appreciation, followed by exploration of art theories of pictorial address in cognitive terms. In both cases, the pictorial artworks under consideration consisted of single pictures that facilitate a direct one-to-one relationship with the viewer.

Throughout the course of art history some pictures have been presented as part of a set. This has been true of narrative painting cycles going back two thousand years through to the modern practice of producing artworks in series. Stuckey (2007) says: "today…countless visual artists (not just painters)…make multiple versions of a single subject (representational or abstract) and present these together in solo exhibitions, as if the display of variations on a single theme in itself was inherently a modern mode of art expression" (p.83).

Seriality taken in the sense of artworks created and shown in series is commonplace within contemporary art. In this model, individual pictures can be taken in and understood on their own but gain additional significance from being viewed as part of a set. Serial artworks are of a different order in that they employ seriality within the artwork itself (rather than between several artworks). Serial artworks are defined by the construction and presentation of multiple discrete but related instances whereby the full meaning of the artwork is only made available when the set is shown together. This practice was introduced by Monet in the late nineteenth century and remains influential today. My interest here is with serial artworks and it is to this that I chiefly refer when I use the term seriality.

Seriality has been theorised both in terms of the factors of production as well as the resultant effects on the viewer. Yet there has been little if any consideration of the perceptual and cognitive processes that directly impact on the spectator's experience of seriality in art. This is the issue that I take up within the present chapter. I start by introducing seriality from an art historical point of view and also by way of theorists who have examined seriality as a pictorial mode of address. I draw attention to historical and contemporary art practices that employ seriality and reasons why artists have engaged seriality as an aesthetic or conceptual strategy.

Having identified seriality as a notable practice within the last century, I turn to the psychological processes that may contribute to the way that serial artworks are experienced and understood. More

specifically, I relate the spectatorship of seriality in art to the premise of concept formation and the perceptual and cognitive mechanisms that allow for the navigation of a highly variable visual world. Central to the notion of stable mental concepts or robust representations as they are sometimes called, is the idea of abstracting essential information across multiple discrete encounters with a stimulus. I extend this notion of abstraction to multiple discrete but related pictorial instances characteristic of serial works of art.

I consult theories of face recognition, which account for the visual system's ability to deal with the sometimes-extreme variation between perceptual experiences each time we encounter the same face (e.g. due to changes in lighting, surroundings, hair and makeup styles). In particular I consider theories that propose a process of averaging as key to the formation of a stable mental concept or prototype either at the time of storage or retrieval in memory.

Using Monet's series of the façade of the Rouen Cathedral, I demonstrate that the same principle can be applied to the spectatorship of seriality in art. This allows for the conclusion that serial artworks function by prompting the formation of a stable mental concept as the result of higher-level cognitive processes. In the case of Monet this proves especially interesting given that the artist himself aligned his artistic endeavour with perceptual concerns, which ended up being a criticism of his work by a new generation of artists interested in the conceptual aspects of art. Contrary to traditional art historical narratives, I maintain that Monet's introduction of seriality towards the end of the nineteenth century unintentionally planted early seeds of conceptualism in art that were developed into the twentieth century.

3.2   Serial Pictorial Art

The typical and popular notion of an artwork is a single picture in which the meaning of the work is self-contained, what Coplans (1968) calls the 'masterpiece concept'. Yet artworks are often shown as part of a group and sometimes a single artwork contains multiple discrete but related pictures. In both of these cases, the works in question exhibit seriality: "a type of repeated form or structure shared equally by each work in a group of related works made by one artist" (Coplans, 1968, p.10). Coplans is quick to distinguish art in series from serial artworks. He explains that within a series individual pictures can be appreciated along the masterpiece model but achieve greater meaning when viewed as part of a set. Serial art, on the other hand, involves sets of pictures that are necessarily viewed together in situations that "abandon the conspicuous uniqueness of each painting" (Coplans, 1968, p.9). Coplans' continues:

Meaning is enhanced and the artist's intentions can be more fully decoded when the individual Serial work is seen within the context of its set. In earlier or non-Serial art, the notion of a masterpiece – of one painting into which is compressed a supreme artistic achievement – is implicit. However, with Serial Imagery the masterpiece concept is abandoned. Consequently each work within a series is of equal value; it is part of a whole: its qualities are significantly more emphatic when seen in context than when seen in isolation (1968, p.11).

Pictorial art has been produced in series for many centuries and Coplans cites Ruben's portrait cycle of Marie de' Medici as a good example. He maintains that whilst it is true that viewing the set of portraits together increases the overall meaning, each work is in fact complete and can be viewed in isolation.

Art in series like Roman and Byzantine frescoes and Renaissance cycles such as Titian's celebrated Old Testament cycle tend to focus on narrative content spread across pictorial instances. Klein (1998) explains that "The traditional agent of unity in a series of paintings is the subject matter; the traditional form of this agency is liturgical, narrative, allegorical or cyclical" (p.121). Thomas Cole's *Course of Empire* (1833-36) is a good example in that the five canvases depict a fictitious civilisation's rise and fall through a cycle of prosperity and demise (Fig. 2). The first, *The Savage State,* makes reference to a time before the onset of empire, while the final picture, *Desolation*, portrays a similar view after the empire's downfall. Each of the paintings in the series can be appreciated as an individual picture yet the moral lesson implied only becomes apparent when the paintings are viewed as a set.

Figure 2. Thomas Cole (1833-36). *Course of Empire: The Savage State* (left) and *Desolation* (right). Courtesy of The New York Historical Society.

Contemporary artists often produce art in series and for a variety of reasons. On the one hand it could be said that producing multiple related works allows the artist to effectively work through

a theme or an idea. In this sense, merely creating one example of a picture may not be enough to get the point across. On a more practical level, creating art in series provides an opportunity in the sense of the art market, allowing the artist to sell multiple iterations of the same idea.

Although interesting in its own right this is not this kind of seriality that I am most interested in here. Instead, I am concerned with a class of seriality whereby elements are repeated from one picture to the next resulting in either pure repetition (identical instances) or compositionally stable pictures; where the structure repeats despite descriptive changes.

Coplans describes this as "a particular inter-relationship, rigorously consistent of structure and syntax…produced by a single indivisible process that links the internal structure of a work to that of other works within a differentiated whole" (1968, p.11). This kind of seriality is usually identified as having originated with Monet's serial painting projects towards the end of the nineteenth century including his haystacks, views of the River Thames in London and the façade of the cathedral in Rouen.

3.2.1   Origins, Influences and Effects

It is well known that artists now associated with Impressionism were interested in fleeting visual sensations and sought to capture on canvas the transient nature of perception. Monet, for his part, responded in turn by painting the effects of weather and time of day on what he saw before him. He did so with scenes of haystacks, poplars and notorious city views. The variable canvases bear no narrative relation to one another and the differences across the individual paintings are merely descriptive, both in terms of colour and luminosity. For this reason and the fact that by the time he painted his now highly-regarded views of the façade of the Rouen Cathedral, Monet recognised the impact of exhibiting the full series together (see Levine, 1978), it is possible to read the set of cathedral paintings as a serial artwork rather than simply an example of art in series.

Sieberling (1981) posits that Monet's serial projects relate to "a shift in the mid-nineteenth century away from the single and static presentation. Processes like photography and printmaking multiplied the variants of one scene and provided a collection of views, no one of which was final" (p.29). Levine (1978) makes a similar observation about the impact of new technologies on Monet's adoption of serial address. He refers to explorations contemporaneous with Monet's by the Lumiére brothers, which led to early forms of cinema and moving image. Both sought "traces of a phased process of being-in-the world" (p.442). Although Monet's employment of seriality undoubtedly relates to technological, scientific, and artistic innovations at the time, my interest here is less in the factors of their production and more so on those of their reception.

Sagner-Duchting (2002) explains that Monet's late paintings "defined a new relationship between viewer and work" whereby the viewer "actively contributed to completing the image" (p.25). Echoing Coplans earlier observation, Sagner-Duchting asserts that Monet's initiation of seriality "immediately diminished the meaning of the traditional idea of the individual masterpiece, and introduces a radically new aesthetic conception relevant to modernism: an emphasis on pictorial process, sequentiality and progression, continuity and creative production, challenging the viewer to virtually complete the open structural design presented to his eye" p.26). She goes on to speculate that Monet's serial projects "can be experienced only through the act of perception, a creative reliving of moments of time recorded in our own memory. Thus the series, as an aesthetic form, reveals more about the nature of perception than about the things perceived" (p.26).

Monet's pictorial innovations and use of seriality influenced later generations of artists. In the mid-twentieth century a number of artists now associated with Minimalism and conceptual art practices reinvigorated Monet's model of seriality and further articulated the nature of serial art. Bochner (1967) writes that "Serial order is a method, not a style" (p.28) and furthers the notion that serial artworks are fundamentally different than art in series.

Monet's serial projects were born out of an interest in aspects of perception, while Bochner and his peers were concerned with mathematical processes and seriality derived from self-exhausting systems such as permutation, progression, rotation and reversal. In his own words, Bochner (1967/1995) explains, "Systems are characterized by regularity, thoroughness and repetition in execution. They are methodical. It is their consistency and continuity of application that characterizes them, Individual parts of a system are not in themselves important but are relevant only in the way they are used in the enclosed logic of the whole" (p.99).

Writing about serial artworks produced by Bochner's contemporaries, both European and American, Fer (2004) defines seriality in terms of "a number of connected elements with a common strand linking them together, often repetitively, often in succession" (p.3). For her, a shift to serial methods in the mid-twentieth century introduced a new kind of temporality into pictorial works of art. She explains about seriality, "It brings with it a whole set of assumptions about the nature of aesthetic experience as direct and spontaneous…" (p.4). She adds "That is, I want to place the question of seriality there, in the apparent discrepancies between seeing the thing that is the artwork and spending time with it, between the proposal and the duration, between idea and affect"(p.67).

3.2.2   Seriality in Contemporary Art

Seriality as initiated by Monet continues to have an influence on contemporary art practices. Ann Craven and Peter Dreher, both of whom are painters, explore seriality in their work. Craven, for example, paints 'moonscapes', constraining the size and shape of each canvas while varying the position and phase of the moon. She has exhibited her moonscapes as single artworks in various configurations in groups as large as four hundred (Fig. 3). Likewise, since 1974 Dreher has made thousands of paintings repeating a single drinking glass against a non-descript background. The size and composition of each painting is identical, revealing minute differences in colour and detail reflected in the glass. He too shows his paintings as a single artwork in multiple site-specific configurations (Fig. 4).
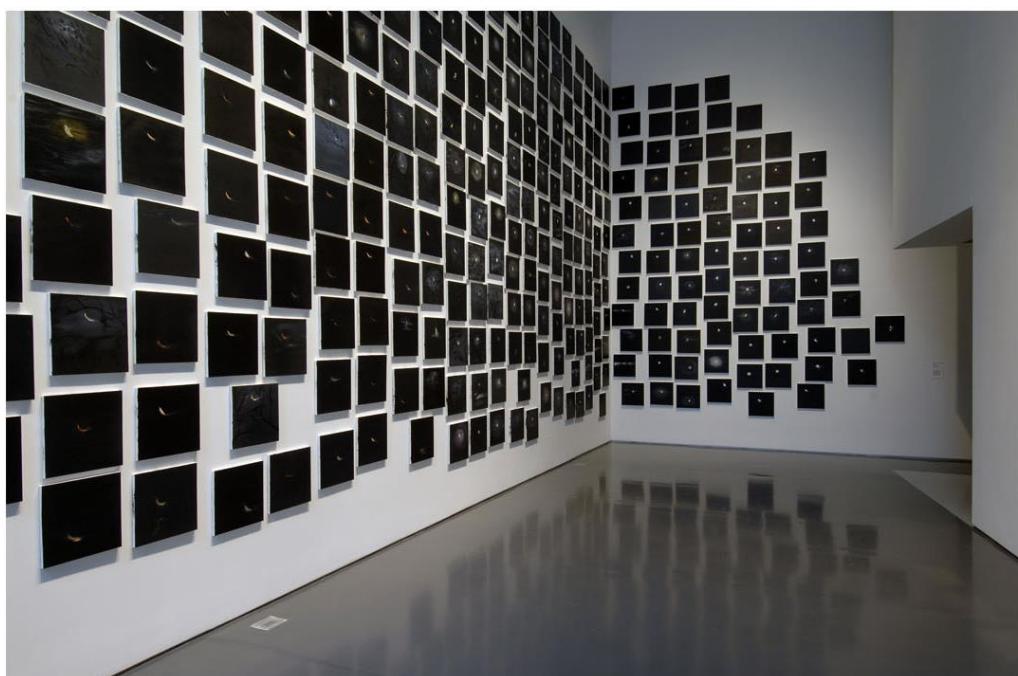
Figure 3. Ann Craven (2006). Installation view of *Moon (400 Copies)* exhibited at Contemporary Art Center Cincinnati. Courtesy of the artist and Maccarone Gallery, New York.

Keegan (2007) explains, "Craven's artistic practice…resides at the hub of a network of issues central to artmaking today – repetition, systemization, permutation, and their intersections with time…They insist on memory in a space designed for forgetting" (p.87). Comparing the artist's work to Monet's serial explorations Knight (2014) says "the lovely repetition of moons turns typical serial imagery into something distinctive: Rather than a direct dialogue with the shifting nuances of ephemeral daylight…Craven converses with light's reflected glow.

In her own words, Craven explains: " I like to think that my work acts like a memory bank…I am acknowledging the passage of time when I repeat a subject…to revisit something again and again, to track the variances and transformations" (quoted in Indrisek, 2015, pp.50-51). Echoing earlier observations about the presentation of seriality and speaking of the artist's moonscapes specifically, Keegan adds that "the portfolio of images shown here helps move towards one version of a 'whole response'" (2007, p.89).

Speaking of his on-going project 'Every day is a good day', Dreher (2012) says "an individual painting loses its relationship with reality as soon as it is repeated" (p.148). Similarly, Tillman (1996) has observed about Dreher's endeavor that "when you produce and show hundreds of [paintings] it does become abstract and conceptual". As for the supposed impact of the display of the paintings together in a gallery setting, Hall (2014) explains that "The premise can be digested in an instant but comprehending the series scope requires more than a glance…The basic thing becomes a vehicle for a kind of abstraction – for the play of shape and tone – but remains (stubbornly, amazingly) concrete" (p.378).

Figure 4. Peter Dreher (1974-on-going). Installation view of works from his *Every Day is a Good Day*. Retrieved from http://peter-dreher.de/Fotos [Accessed 2nd May 2016].

Artworks comprising sets of multiple related pictures are not restricted to painting. In fact, Bernd and Hilla Bechers' 'typologies' are series of black and white photographs of industrial architecture displayed in neat and ordered grids. Their work has a decidedly ethnographic and cultural dimension and influenced contemporary photographers such as Frank Brewer and Stephen Berens. More recently, artist Penelope Umbrico (Fig. 5) works with groupings of mostly found photographs, speaking to the mass proliferation of photographic imagery in the digital age. Umbrico herself explains that "The sheer quantity and accessibility of digital images neutralizes the personal, particular, individual, and transforms the local into the impersonal, abstract, collective and global" (2012, p.81).

Also interested in the mass proliferation of images in the digital age, Joselit (2013) writes that "Artists have invented analogous strategies of aggregation and variation to demonstrate the behavior of images within populations. The crux of this effect is to shift the figure/ground dynamic from the internal composition of an artwork, to a broader oscillation between the work and it's aesthetic environment." (p.32). Speaking to the work of Sherry Levine, he goes on to explain that "A spectator is thus pulled in two directions at once: drawn in and pushed out…in a complex passage from the internal logic of the artwork to its framing logic" (p.34).

Regarding Umbrico's works but just as easily extended to serial artworks more generally, Hartshorn (1992) explains that the works "are suggestive of the mental operations through which we recognise and understand basic physical forms and give them meaning…These works primarily provide us with experience, more than meaning, making us aware of the connection between the physical act of seeing and the cognitive act of understanding".
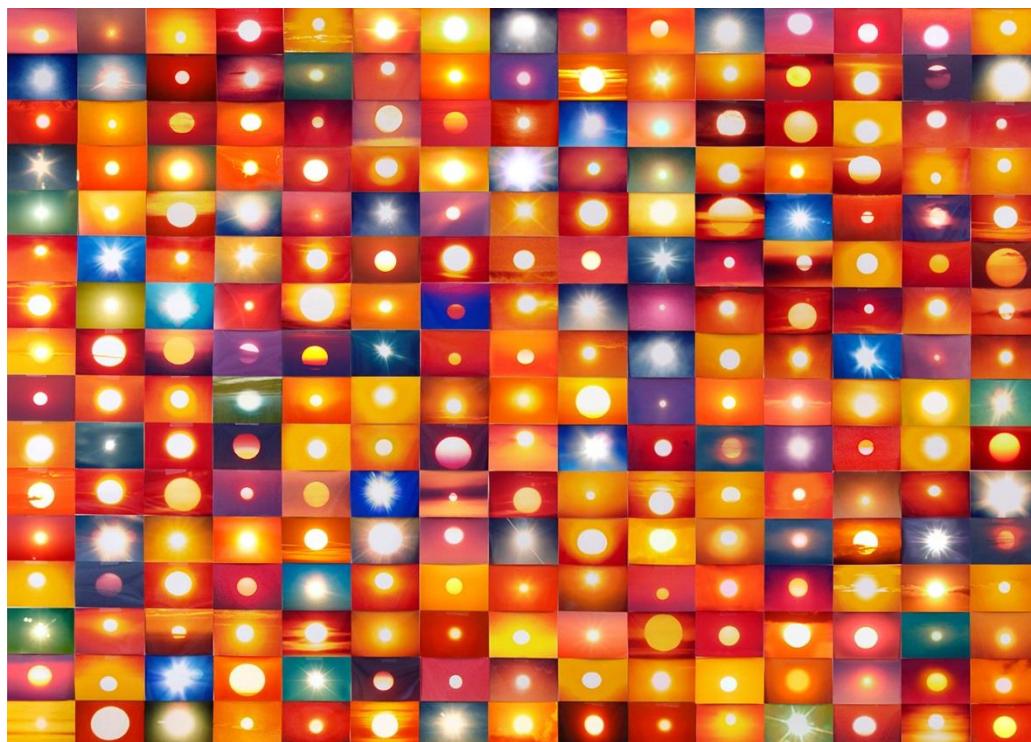
Figure 5. Penelope Umbrico (2006-on-going). *Suns (From Sunsets) from Flickr*. Retrieved from
http://www.penelopeumbrico.net/Suns/Suns_Index.html. [Accessed 2nd May 2016].

3.3 Stable Mental Concepts

The feature of serial artworks that I want to explore via perceptual and cognitive processes is their presentation of multiple discrete but related instances. More specifically, and with regard to the work of Monet, Craven and Dreher in particular, the structural integrity of each instance remains the same whereas the descriptive information provided changes from instance to instance.

A fundamental aspect of human visual cognition is that we can abstract stable mental concepts (often just 'concepts' moving forward) from sets of related instances. For example, we store a concept of a dog in memory, based on individual encounters with many dogs. The formation of concepts is key to navigating a complex and variable visual world. However, the mechanisms by which concepts are formed and retrieved remain a subject of debate within the field.

3.3.1 Exemplars and Prototypes

At the heart of this debate is the relationship between exemplars (individual instances) and prototypes (stable mental concept). Prototype-based models put forward that the visual system abstracts and stores a prototype based on encounters with exemplars and containing essential

features thereof. Posner and Keele (1968), early supporters of the prototype model, frame the issue in the following terms:

> The philosophical notion of abstract ideas is vague but it does suggest that information which is common to the individual instances is abstracted and stored in some form. In its strongest sense, this might be translated operationally into the hypothesis that the commonalities among a set of patterns are abstracted during learning and that they alone are stored. In the case of patterns…this suggest that [the subject] abstracts the prototype (p.354).

Alternatively, exemplar-based models suppose that every instance of a category is stored and that abstraction takes place during the retrieval process. Hintzman (1984, 1986, 1988) put forward an exemplar model based on the storage and subsequent retrieval of multiple traces of encounters with individual instances. He explains that "The key   assumption is that although a separate trace of each episode is stored, the traces are activated in parallel by a retrieval cue, and abstractions can be retrieved through the summed responses of those traces that are the most strongly activated by the cue" (1984, p.101).

Prototype-based models were previously the favoured of the two but more recently exemplar-based models have been given more credence. Vanpaemel and Storms (2008) have challenged this traditional dichotomy, pointing out the insufficiency of each in turn. In their own words:

> A prototype representation has appealing economy but fails to provide the information people actually use. In contrast, an exemplar representation provides detailed information but is not economical. A natural way to resolve this tension would be to propose a representation that combines the benefits of both economy and informativeness. Such a representation would provide just enough representational information to describe the category structure in a sufficiently complete way (p.733).

For my purposes here it is not necessary to resolve the debate but rather to recognise that proper categorisation of concepts in a dynamic world relies, to some degree, on abstraction.

3.3.2   Face Recognition through Averaging

When we talk about stable mental concepts we are in fact making reference to the storage of a stable mental representation in memory. Abstracting mental representations from sets of variable instances is a robust phenomenon evidenced from cases of simple dot patterns to multiple encounters with the same face. Face recognition must account for the visual differences inherent in each successive encounter with a particular face. Correct identification is contingent on overcoming

the superficial visual differences arising from lighting conditions or changes in facial hair, hairstyle or makeup, resulting from a set of varied encounters over time. Identification of these differences is first and foremost the result of perceptual processes that define invariant properties across instances (see Wagemans, Van Gool, & Lamote 1996; Wagemans, Lamote & Van Gool, 1997).

Research into the mechanisms of face recognition has focused on the particular mental operations that facilitate the formation of stable visual representations. Early on, Bruce and Young (1986) hypothesized that structural codes from faces must be harnessed towards the abstraction of a stable mental representation. Building on this idea, Benson and Perrett, (1993) have looked to averaging as the basis for the formation of prototypes from a set of variable exemplars. Averaging, in both the colloquial and scientific sense refers to the identification of a central or typical value in a set of data (Fig. 6).

Figure 6. A subset of nearly fifty portrait images of my mother (left) and an averaged composite of the full set created in Photoshop (right).

According to averaging models of face recognition invariant information across instances is retained while extraneous superficial details are eliminated (Young & Bruce, 2011). This is akin to the visual system ascertaining something of the essence of a person's appearance (Jenkins, Burton & White, 2006). Furthermore, the strength of an average increases with increased variation offered by repeated exposure to a stimulus. The more variation that exists within a set of instances, the easier it will be to identify what visual information persists and to form a stable concept as a result (Bruce, 1994). Exposure strengthens familiarity in that it provides further opportunity for variation to be

identified and for useful information to be gleaned (Burton, Jenkins, Hancock, & White, 2005; Burton, Jenkins & Schweinberger, 2011).

3.4   Monet's Cathedrals and Cognitive Aspects of Seriality in Art

Applying these same ideas to seriality in art we can understand from the vantage point of experimental psychology, how Monet's use of seriality may have a direct impact on the viewer's experience of his art and more generally how seriality functions as a mode of pictorial address. In his series of paintings of Rouen Cathedral, Monet repeated and varied the motif across multiple canvases, resulting in nearly thirty paintings that share a similar composition yet differ substantially in colour and tone. It is well understood that Monet's interest in creating the series was based on his desire to represent the fleeting quality of visual experience and the momentary nature of perception. He recognised the impossibility of any single true depiction of the cathedral – "everything changes, even stone" (quoted in Bernier, 2007, p.73) - and endeavoured to paint the building in a variety of weather conditions and at different times of day.

3.4.1   Monet's Intuition

Monet realised (perhaps intuitively) that in order to explore what changed from one moment of perception to the next it was essential to apply constraints to what he put down on canvas (see Zeki, 1999 for a related discussion). To depict the cathedral through multiple canvases, Monet might have considered painting from a variety of viewpoints or focused on the building at large and also in fine detail. He also could have pursued temporal narrative in the series, but instead, he painted essentially the same view and scale within his compositions to map the changing qualities of his perceptual experience. Monet also understood the value of viewing the individual instances as part of a set, when he indicated that the canvases gain importance through comparison within the series (Levine, 1978).

As a result of having constrained his composition in terms of viewpoint and scale, we can apply the averaging process to a set of Monet's cathedrals (Fig. 7). Abstracting a stable concept from the multiple stances effectively undoes Monet's initial enterprise by taking discreet moments of perception and averaging them into an efficient and general concept of the cathedral. Whereas the individual paintings are emphatic in their portrayal of a specific time of day and weather condition, their average is, as would be expected, more generic.

Monet acknowledged the importance of the series being exhibited as a set and understood that the individual instances viewed together established a more meaningful experience for a spectator. What Monet likely did not grasp was the basis for the cognitive and perceptual processes responsible. There is no evidence that Monet comprehended, outright, that his approach to painting the cathedral would result in a more stable concept and robust mental representation of the cathedral in the minds of those viewing the series. Regardless, his innovation effectively broke with tradition and as was previously mentioned influenced future generations of artists up to the present day.
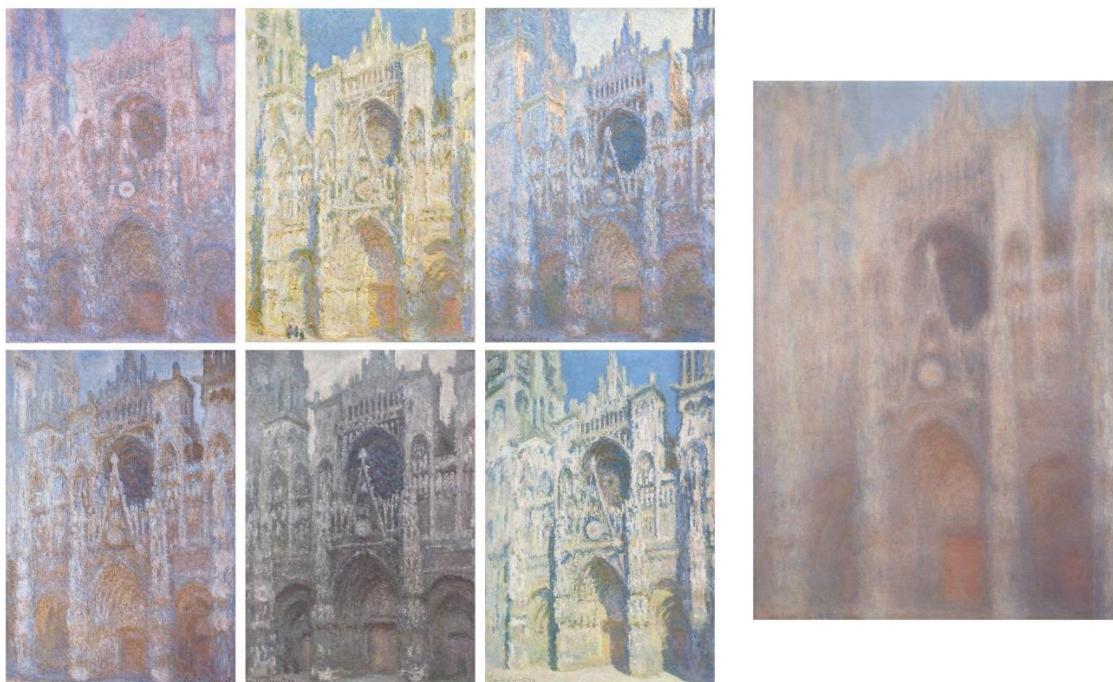
Figure 7. A subset of nearly thirty paintings by Monet of the façade of the Rouen Cathedral (left) and an averaged composite of a subset of the paintings sharing a composition created in Photoshop (right). The individual canvases on the left represent the variation amongst instances: clockwise from top left (i) *Rouen Cathedral: Setting Sun (Symphony in Pink and Grey)*. National Museum Wales (ii) *Rouen Cathedral: West Façade (Sunlight)*. National Gallery of Art, Washington DC. (iii) *Rouen Cathedral: West Façade*. National Gallery of Art, Washington DC. (iv) *Rouen Cathedral: Harmony in Blue and Gold (Sunlight)*. © Musée d'Orsay, Dist. RMN-Grand Palais /Patrice Schmidt. (v) *Rouen Cathedral: Harmony in Grey*. © Musée d'Orsay, Dist. RMN-Grand Palais /Patrice Schmidt.(vi) *Rouen Cathedral: Harmony in Blue (Morning Sun)*. © Musée d'Orsay, Dist. RMN-Grand Palais /Hervé Lewandowski.

3.4.2   Challenges to Art History

Although not a central concern or intention for Monet at the time of their production, serial artworks like his paintings of Rouen Cathedral question the manner in which an artwork can be experienced. Unlike single pictures that are experienced in a direct and spontaneous manner, serial artworks comprising multiple discreet but related pictures are experienced indirectly via the formation of an abstracted mental concept of the artwork. Art historical discourse tends to emphasize the contribution of Monet and his peers regarding artistic volition and a move away from mimetic painting that had dominated previous generations.

Undoubtedly, the Impressionist approach to colour and the application of paint, and the underlying interest in visual perception, had significant implications for the development of abstraction in Western painting in the early Twentieth Century (see Thomson, 2000). Less attention, however, has been given to the manner in which Monet's serial artworks inadvertently questioned the nature of spectatorship; by defying the notion of a single original picture and authorship in the way in which the set of instances prompt the formation of a mental concept in the mind of the spectator. According to this criterion, Monet's serial artworks can be thought of as displaying characteristics that relate to conceptual practices of the late twentieth century that "…redefined the conditions of receivership and the role of the spectator" (Buchloh, 1990, p.107).

In a conceptual work of art the concept or idea offered to the spectator is of equal or additional importance than notions of beauty or sensual experience. In 1967, Sol Lewitt, a pioneer of conceptual art practice noted that "Conceptual art is made to engage the mind of the viewer rather than his eye or emotions" (1999, p.15). Although there is no evidence that Monet intended to engage the mind rather than the eye (in fact the opposite is probably true), here I have argued that serial artworks like Monet's prompt mental processes to establish stability across their variations due to the nature of the human visual cognitive system. I suggest that the conceptual aspects of Monet's series are at least as important as their formal and material merits (of which there are many). What is particularly interesting about this assertion is that influential artist Marcel Duchamp thought broadly of Impressionism as producing paintings that were purely 'retinal' in nature (Krauss, 1990; de Duve, 1996).

Duchamp, most famous for introducing the Readymade artwork in the form of an upside-down and signed urinal, was interested in artworks that went beyond the eye and aimed for something more cerebral and concept driven (an obvious influence on Lewitt and his peers). Duchamp compared Monet and the Impressionists to housepainters whose only interests were with colour and painting for painting's sake. Although Duchamp cannot be denied his significant influence on later

developments in Conceptual Art, Monet may have planted early seeds for such developments. To be bold, based on the premise put forth in this chapter, the influence of Monet's seriality can even be extrapolated as an influence on relational aesthetics popularised towards the end of the Twentieth Century along with other forms of installation art.

The distinctive character of the latter has been theorised in terms of the fact that "the ensemble of elements within [an installation], are regarded in their entirety as a singular entity" (Bishop, 2005, p.6). Similar language is used in a discussion of the former, which posits the artwork as "an ensemble of units to be re-activated by the beholder-manipulator (Bourriaud, 1998, p.20). In both cases the relationship between individual elements and the resulting mental concept contributes to the meaning and experience of the artwork, a claim I have applied to Monet's cathedrals.

There are examples of painters prior to Monet who aimed to go beyond the purely 'retinal' (such as Cornelius Gijsbrecht and his *Reverse Side of a Painting* (1670) that depicted the back of a canvas in order to fool the viewer) and any artwork is conceptual in that it involves mental processes in order to be understood. However, the conceptual inclination of serial artworks produced along the model of Monet's Cathedrals is distinctive in its particular play to human perceptual and cognitive functioning due to the presentation of discrete but related elements.

Based on the mechanisms of concept formation discussed here, I argue that such artworks encourage the formation of mental concepts that transcend the physical presence of the paintings and persist long after the viewing experience. It is not possible, based on the findings presented, to assume the same of tromp l'oeil paintings like Gijsbrecht's, which are seemingly meant to be experienced directly and in the moment and that involve a single pictorial instance that presents a global impression. These two modes of visual experience have been explained in terms of the "iconic" and the "conceptual" qualities that form a spectrum onto which any artwork can be mapped (Koenderink and van Doorn, 2013).

3.4.3   Seriality and Aesthetic Response

One should not dismiss Monet's, or any other artists use of seriality as being overtly conceptual or anti-aesthetic. In fact the same features responsible for driving the formation of mental concepts can be thought of in terms of their impact on the aesthetic experience of the viewer. There is literature surrounding the idea of the positive affect associated with stability from variation and the way that averages and prototypes result in a pleasurable sensory experience for a viewer. It is possible that viewer processing dynamics (Winkielman, Schwarz, Fazendeiro, & Reber, 2003; Reber et al., 2004; Belke et al., 2010) and the impact of the 'mere exposure effect' (Zajonc, 1968) on perceptual fluency

may contribute to an enjoyable response to repetition within serial art. The mere exposure effect refers to the positive response to a stimulus simply from having been exposed to it previously and can develop from instances that repeat or that share a common characteristic or underlying structure (Zizak & Reber, 2004). Positive affect can also be associated with the pleasure derived from problem solving, for example through the resolution of ambiguity. In terms of aesthetic appreciation, this idea has been elaborated by way of the 'aesthetic aha' (Muth & Carbon, 2013). Arguably, serial artworks provide an opportunity for the spectator to resolve the 'problem' of the relationships between instances and offer the possibility that the averaged mental prototype could be akin to a true Gestalt.

The notion of adaptation for aesthetic appreciation can also be informative in relation to serial artworks. Adaptation, whereby new visual information becomes habituated, has been discussed in terms of the dynamics of aesthetic appreciation and as a way of explaining changing artistic tastes from one period to another (Carbon 2011). For example, adaptation can help to explain how an innovation in style that is initially rejected can become favourable. French Impressionism demonstrates this quite well since Impressionist works of art initially repulsed and offended audiences whereas today they produce blockbuster exhibitions in major museums (see Thomson, 2000).

3.5   Conclusion

The aim of this chapter was to consider the perceptual and cognitive processes potentially related to the viewer's experience of seriality. I began the chapter with art historical and theoretical perspectives on seriality, making the distinction between art in series and serial artworks. Discussion of both historical and contemporary examples of seriality and related criticism evidenced an intuitive understanding by a number of theorists of the key factors that distinguish seriality from the masterpiece model of pictorial address. Sagner-Duchting (2002) framed seriality in terms of establishing a new relationship between artwork and viewer. Fer (2004) asserted that seriality adds a new dimension of time to art spectatorship thereby questioning the direct and spontaneous manner in which artworks are assumed to operate on the viewer.

My objective then was to make the mental operations behind the spectatorship of serial pictorial art explicit. Consulting cognitive theories of abstraction and concept formation provided a useful framework within which to position the viewer's experience of the multiple discrete but related pictorial instances inherent to serial art. Discussion and evaluation of robust representation specifically in terms of face recognition and the extension of insights towards serial art allowed for

initial conclusions about the direct impact of seriality on art spectatorship. Noteworthy amongst these conclusions is the idea serial artworks, as Fer deduced, are experienced over time via concept formation. I related this emphasis on conceptual over perceptual interaction to art historical narratives, asserting that perhaps the shift from art as percept to art as concept had early seeds planted by Monet.

Within this chapter I have used existing knowledge of concept formation from psychology and applied it in a new context, namely serial artworks as exemplified by Monet's Cathedral series. The resulting contribution to knowledge is that the spectatorship of the Cathedral series and later artworks that follow the same model can be understood along the same lines as everyday processes such as facial recognition. More specifically, viewing artworks like the Cathedral series likely prompts the formation of a robust mental concept that can be experienced long after the initial viewing experience takes place.

In the context of my own practice I have considered the possibilities opened up by thinking about conceptual production resulting from the presentation of multiple discrete but related instances. In Chapter 5 I will discuss a body of work that responds to Barthes (1981) exegesis of photography and the essence of likeness. Using insights derived from consideration of studies within face recognition I consider the inherent challenge in recalling robust mental representations even in terms of those with whom we are most familiar. Like Barthes, I confront the limits of memory and pictorial representation and explore this through painting, drawing and photographic works using images sourced from the internet.

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Chapter 4: Seriality, Repetition and Affective Response

4.1   Introduction

In the last chapter I suggested that cognitive theories of concept formation provide a pragmatic way to conceive of the viewer's experience of serial works of art. The salient feature of seriality I attended to was variation as exemplified by Monet's Cathedral paintings. Monet retained a similar composition across the nearly thirty canvasses he painted while varying the colour and luminosity in each depiction of the cathedral's façade. Using insights afforded by studies of face recognition I inferred that the variation between individual pictures in serial artworks like Monet's naturally prompts the formation of a robust mental representation akin to an average of the pictures in the set. This acknowledgment of the cognitive aspects of variation within seriality support earlier art theoretical observations about seriality as a mode of address.

My focus was on the quality of variation rather than on repetition, which is an inherent feature of seriality and in fact a necessary condition for variation to exist (i.e. something must be repeated for something to change). Dyer (2011) explains the relationship as follows: "serial iteration is an active process in which a new term in a series is constructed out of an antecedent term, and…in this way involves repetition" (p.2). Repetition can refer to an underlying structure or grammar common between images or in the purest sense can mean repetition of identical instances.

The present chapter is concerned with cognitive aspects of repetition in visual art and the potential impact of repetition on the viewer's affective response. The chapter begins with a brief discussion of repetition in visual art and with regard to various twentieth century art practices. I highlight some of the social and cultural factors that provided impetus for artists to engage repetition as an aesthetic strategy. Following on from this I introduce the notion of mere exposure, a cognitive framework that stipulates the simple repeated exposure of an individual to a stimulus is enough to increase his or her positive affect towards it (Zajonc, 1968). Although the exact mechanisms and nuances of mere exposure remain debated the effects have proven robust and there is widespread agreement that they can play a role in affective judgments.

Recent studies of aesthetic appreciation have shown that repeated exposure to a work of art over time can have a cumulative effect towards increasing the viewer's preference for it over others. Repetition of this kind within visual art is commonplace in terms of both the repeated exhibition of

works of art in different contexts and also their repeated broadcast via publications and online sources.

Yet some artworks employ repetition in situ, meaning that images are repeated within the individual artwork and repetition is therefore experienced at the time of viewing. This is true of a range of serial artworks past and present such as Andy Warhol's *Campbells Soup Cans* (1962) and Josh Smith's *First Sign; Second Sign; Third Sign; Final Sign* (2012) (Fig. 8). Images are sometimes repeated multiple times within a single frame. This is the case with much of Warhol's oeuvre but is equally applicable to the work of contemporary artists such as Ellen Gallagher. The potential effects of repetition on the viewer's effective response to these kinds of artworks has not been explored and as such forms the basis of the second part of this chapter.

Figure 8. Josh Smith (2012). *First Sign; Second Sign; Third Sign; Final Sign.* Retrieved from http://moussemagazine.it/concatenation-blainsouthern/ [Accessed 2nd May 2016].

In particular, artworks from Warhol's *Death and Disaster* series are unusual in their repetition of images with negative semantic content and valence. Mere exposure effects with negative images have received relatively little attention in the literature. However, existing findings from cognitive psychology can still provide a way to conceive of the impact of repetition in artworks from this series on the viewer's affective response. Application of existing findings partially reinforces Warhol's

stated intentions about his work while also leading to some contradictions. In the chapter's conclusion I discuss the possibility of further experimental work into the psychological reality of the hypothesis presented and highlight related challenges of experimental investigations of art.

4.2   Repetition in Visual Art

Repetition features regularly within visual art whether considered more broadly over time or regarding individual artworks and artistic practices. In terms of individual practices, there are any number of reasons why an artist might repeat a theme or a subject, including responding to the market or as a way to work through an idea or concept. In this section I will briefly touch upon a number of examples of repetition at both macro and micro levels.

4.2.1   Exhibition and Reproduction

Individual artworks are regularly exhibited in different venues and over a period of many years, increasing the chances that a viewer will encounter the work in person more than once. Works that remain in permanent collections and never leave their home institution are still subject to being viewed multiple times by repeat visits. Even those who do not actively visit museums and galleries are likely to encounter particular artworks again and again in printed form or online.

Benjamin touched upon this latter point in his now oft-cited essay on the work of art in the age of mechanical reproduction (first published in English in 1968). He believed that the repetition of images via their reproduction effectively destroys the 'aura' of the original, questioning notions of authenticity. Joselit (2013) revisits this thesis in the age of television, internet and social media (particularly mobile phones) and what he terms an 'image explosion'. He replaces Benjamin's concept of aura with his own concept of 'buzz'. According to Joselit, buzz is the new aura in that it creates a sense of coherence around an image within larger image populations. This point becomes clear after entering the name of any well-known historical painting into a Google search. The grid of images that results, repeating the image to varying degrees of fidelity to the original, coalesces a sense of the artwork as disseminated in bits and bytes across both local and international borders.

4.2.2   Genre and Motif

Artworks themselves often repeat subject matter, as is the case with both genre and motif. Genre includes landscape painting, still life and portrait, which are commonly repeated through to present day. Motif refers to themes returned to again and again such as scenes of bacchanalia, which have

been repeated across a number of centuries. Likewise, the subject of bathers has been explored in the seventeenth and eighteenth centuries by the likes of Poussin and Fragonard (based on earlier allegorical paintings by Titian and others), more recently by Cezanne, Renoir, Seurat and Matisse and by contemporary artists such as David Hockney. A more acute example would be Gerhard Richter's revisiting (1966) of Duchamp's cubist masterpiece *Nude Descending a Staircase* (1912).

Artists also repeat formal devices as exemplified by the emergence of art practices in the mid-twentieth century that recapitulated concerns of artists several decades prior. Foster (1994) says: "In postwar art the problem of repetition is primarily the problem of the neo-avant-garde…who reprised and revised such avant-garde devices of the 1910s and '20s as collage and assemblage, the readymade and the grid, monochrome painting and constructed sculpture (p.5).

4.2.3   Seriality

As stated, repetition is a key feature of seriality and can be considered integral to a number of aesthetic strategies in the twentieth and twenty-first centuries. In the context of postmodern artists, Fer (2004) highlights "the strategies of remaking art through repetition in the wake of the exhaustion of a modernist aesthetic" (p.2). The aesthetic that Fer is referring to is typified by the expressive work of abstractionists such as Pollock, which championed the importance and uniqueness of individual paintings.

Rauschenberg's Factum I/Factum II of 1957 took up this point when he attempted to recreate marks and strokes from one canvas to the next. In this work (see Neil, 2005 for discussion of the paintings as a single artwork), the artist created one canvas complete with appropriated images (themselves demonstrating repetition) alongside expressive brush strokes and paint splashes. He then produced a second canvas on which he repeated verbatim the gestures of the first.

Repetition became commonplace as an aesthetic strategy particularly in the art of the 1960s in America. Flatley (2004) points out "how new technologies of reproduction and the challenges made to art by the forms of mass culture that these technologies enabled constituted an important historical context" (p.55). For example, Donald Judd repeated industrially manufactured geometric forms to create objects he believed to exist somewhere between paintings and sculptures. Flatley positions this kind of work in terms of an aesthetics of boredom, which is a notion I take up in my practice and discuss in the next chapter.

Daniel Buren also repeated basic geometric forms en masse. Speaking of his own practice and relating it to his colleagues work he explains:

> The repetition which interests us is that of a method and not a mannerism (or trick): it is a repetition with differences. One could even say that it is these differences which make the repetition and that it is not a question of doing the same in order to say that it is identical to the previous—which is a tautology (redundancy)—but rather a repetition of differences with a view to a same (thing) (1970/1999p.151).

This statement by Buren relates to Bochner's (1967) claim that "serial order is a method, not a style" (p.22).

In the context of Pop Art and speaking about the work of Andy Warhol specifically, Barthes (1992) explains:

> Repetition is a feature of culture…Pop Art…repeats spectacularly. Warhol proposes a series of identical images which differ only by some slight variation of color. The stake of these repetitions (or of Repetition as a method) is not only the description of art but also (moreover, they go together) another conception of the human subject: repetition affords access, in effect, to a different temporality (p.238).

Warhol's use of repetition as a way to comment on aspects of modern life resulting from mass production of commodities and mass proliferation of images in the news media has been widely acknowledged.

4.2.4 Contemporary Art

Repetition continues to be a driving force behind the work of contemporary artists and Allan McCollum is one such example. McCollum is known for exhibiting clusters of generic paintings of monochrome fields set inside variable sized frames. Echoing Buren's earlier remarks and speaking about McCollum, Owens states: "This contradiction between difference and repetition is intrinsic to the serial mode of production itself—a mode which proceeds from, but is not identical with, the mass production of commodities" (1994, p.119). Damien Hirst's spot paintings are another example. In these multifarious works produced for over twenty years, the artist (via his assistants) repeats patters of coloured dots in different shades and at different sizes. Repetition is also commonplace within contemporary art photography, as in the work of Lucinda Devlin who has photographed execution rooms throughout the United States or Stephen Beren's project '40 Views of Rome'.

4.3 Exposure Effects and Aesthetic Appreciation

Repetition is a fundamental feature of visual experience. As most would attest, the scenes and objects that we see on a daily basis are often repeated, from the face of the person we may wake up next to, to view out of an office window. In the last chapter I explained how repeated exposure to a stimulus (or underlying structure amongst variable stimuli) provides for the formation of a robust representation and stable mental concept. Here I am interested in the affective aspects of repetition and previous investigations of repetition and aesthetic appreciation of works of art.

4.3.1 Mere Exposure

There is a significant body of research showing that positive affect increases through repetition, at least with images of positive or neutral valence. At the most basis level this increase in positive affect is the result of what has been termed 'mere exposure'. In more formal terms, Zajonc (1968) states the "mere repeated exposure of the individual to a stimulus is a sufficient condition for the enhancement of his attitude toward it" (p.1). This attitudinal enhancement is not based on positive reinforcement or reward bias (i.e. there is nothing to gain from liking the stimulus) and the term 'mere' is used to suggest that the only necessary condition for the effect is that the stimulus is made accessible to perception.

Zajonc's influential paper on mere exposure prompted a large number of experiments in the years that followed. Bornstein's (1989) meta-analysis of these experiments found that repeated exposure effects are indeed robust across most categories. There continues to be widespread agreement that repetition leads to increased positive affect despite continued study of the exact mechanisms and nuances of the effects. There is no need to develop those nuances and mechanisms here.

4.3.2 Repeated Exposure to Works of Art

Mere exposure effects have also been tested in the realm of aesthetic appreciation of art. Although in relation to other collative variables such as novelty and typicality of artworks, mere exposure effects have shown to be less important (see Martindale et al. 1988), several experiments in recent years have provided evidence for meaningful results of exposure effects with works of art. For example, Leder (2001) used reproductions of Van Gogh paintings to test the relationship between prior exposure (familiarity) and preference judgements. The results revealed a positive correlation between familiarity and liking. These results relate to the fluency model of aesthetic appreciation put forward by Reber et al. (2004).

In a more complicated set of studies Cutting (2003, 2006, 2007) explored the diffuse effects of repetition over time on the maintenance of artistic canons (the culturally sanctioned collections of important artworks). By presenting his unsuspecting students with reproductions of a selection of Impressionist paintings (those most frequently reproduced in textbooks) and then testing their preference of these against a control group, Cutting confirmed a correlation between prior exposure to art and aesthetic preference. He states, "The repeated presentation of images to the public without direct awareness or memory makes mere exposure a prime vehicle for canon maintenance. Tacitly and incrementally over time, it teaches the public to like the images, to prefer them, eventually to recognise them as part of the canon, and to want to see them again" (2006, p.44).

These results add more weight to the accepted view that repeated exposure to positive or neutral stimuli will result in increasingly positive affective response and evaluative judgement. The results also reveal the value of considering mere exposure effects in art appreciation. However, mere exposure effects have yet to be considered in the case of individual artworks and with regard to images with negative valence. In the next section I will consider mere exposure in relation to artworks in Andy Warhol's *Death and Disaster* series, which display both of these characteristics.

4.4 Repetition and Affect in Warhol's Death and Disaster Series

When Andy Warhol remarked that "the more you look at the same exact thing…the better and emptier you feel" (Warhol and Hackett, 2007, p.64) he was making a comment on the repetitious nature of popular culture. His belief about the emotional benefits of repeated viewing led him to repeat images in his own artworks. Warhol's frequent use of repetition has been extensively studied in cultural and art historical terms (see Buchloh, 2001; Crow, 2001; DeDuve and Krauss, 1989; Meyer, 1995) and through the lens of psychoanalysis (Foster, 1996). However, it has not been explored with reference to the direct impact of repetition on the perceptual and cognitive processing in those viewing his artworks.

4.4.1 Warholian Repetition

Warhol began working with repetition in the early 1960's when he painted his notorious *Campell's Soup Cans* comprising thirty-two individual canvases of all the available flavours. When he adopted the silkscreen process shortly thereafter, allowing for the quick and easy application of image to canvas, repetition became a key feature of what has been called the "Warhol Aesthetic" (Danto, 2009, p.34). Almost immediately, he began appropriating images from popular culture and printing them in grids typically across brightly coloured canvases.

The structure of repetition within these works is generally consistent. A single image is repeated anywhere from two to over fifty times usually on a single canvas (when a second canvas is present it is often left blank for dramatic effect). In most instances, the image is silkscreened in black ink against a white or painted background of a single colour: red, green, orange, blue and frequently silver. Although the silkscreen process can be quite exacting, either due to lack of skill or artistic intention, Warhol and/or his assistants usually applied the image in a sloppy manner and with inconsistent amounts of ink (Dyer, 2004).

The structure of Warholian repetition inhibits the viewer from accessing meaning or forming a gist of whole artworks. Rather, viewers must attend sequentially to the repeating component images. This means that the structured arrangement of the sets of repeating images forces a spatiotemporal inspection of his artworks to ensure spectators perceive repetition of individual images rather than each artwork as a single image. In psychological terms, he limits of component images are typically set by sharp boundaries formed from discontinuities of colour and form.

No eye movement studies of spectators viewing Warhol's artworks in particular have been conducted yet experimental studies of eye movements show that they tend to be made within rather than between objects (Theeuwes, 1992). In other words, the spatial and pictorial layout of the repeating images seems designed to support a serial visual inspection where component images are inspected in turn. In effect, Warhol has structured these images so that spectators must engage with the individual instances. Writing critically about Warholian repetition, Crow (2001) articulated this point when he stated "the viewer [of repetition in Warhol's pictures] works to draw the separate elements into a whole. The compositional choices are artful enough to invite that kind of attention" (p.58).

Extending earlier findings about mere exposure we can posit that the serial repetition in situ (i.e. within an artwork) of an image is just as suited to produce an increase in affect as the repetition of an individual artwork over extended periods of time as Cutting's experiments. A question remains however as to the specific interplay of these processes in the case of images with negative valence.

4.4.2   The *Death and Disaster* Series

An early series by Warhol engages the kind of repetition just described strayed from the artist's more uplifting and playful works by repeating images of death and disaster (Fig.9). There are two broad classes of artworks in the *Death and Disaster* series. Some artworks subtly and indirectly refer to death as with portraits of Marilyn Monroe and Jackie Kennedy. These artworks require contextual knowledge in order to understand their reference to death, for example the fact that Monroe

committed suicide just weeks before Warhol produced her portrait. Other artworks explicitly show death related imagery directly through depictions of tragedies such as fatal car crashes. In these artworks, the horror of death is unavoidable, as exemplified by the image of a woman who took her own life by jumping from a Manhattan skyscraper. It is the effect of repetition in these images that I am interested in here.

Warhol stated, "when you see a gruesome picture over and over again it doesn't really have any effect" (quoted in Goldsmith, 2004, p.19). He presumed that repeated exposure to an upsetting image results in a 'deactivating' of the negative affect. In other words, according to Warhol, once-disturbing images become banal and affectless after repeated exposure. This is an essential feature and presumably an intention of his *Death and Disaster* series*.* Fundamentally, the question to consider is whether the effect of repetition on such negative death-related imagery is to leave it devoid of affective meaning, as Warhol supposed. The alternative being that repetition either has no impact on the affective response to these images or that it sharpens the negative affective response to their presentation.
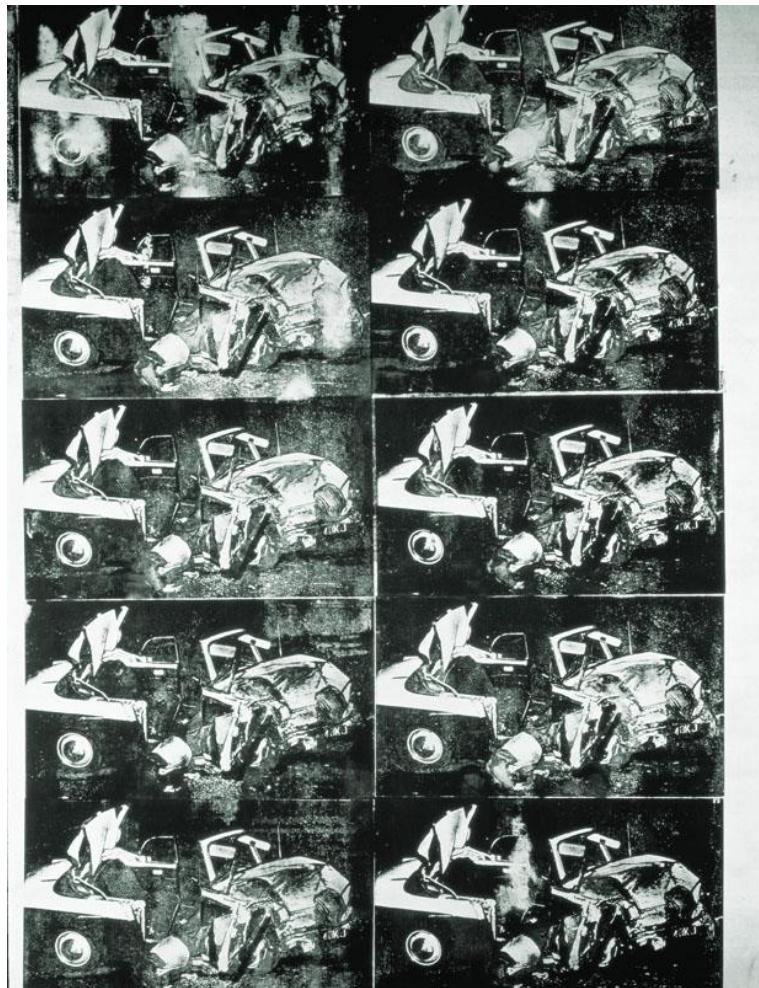
Figure 9. Andy Warhol (1963). *Silver Car Crash*. Courtesy of The Andy Warhol Foundation for the Visual Arts, Inc. / Artists Rights Society (ARS), New York and DACS, London.

4.4.3 Existing Empirical Findings

As stated earlier, experimental work on the effects of exposure to negative images is scant and the few pertinent findings that exist have provided mixed results. Some studies show that repeated exposure to negative stimuli results in images being evaluated more positively while in others the opposite has been true. Reber et al. (2004) explains these mixed results in terms of the processing fluency model of aesthetic experience and previous work on the effects of fluency on affective judgements (Reber, Winkielman, & Schwarz, 1998). In this model, preference for a stimulus is contingent upon the ease with which it can be identified and understood, such that fluent processing results in positive affect (Winkielman and Cacioppo, 2001; Winkielman et al., 2003; Forster et al., 2013).

In the case of initially negative stimuli, Reber states that fluency manipulations through repetition operate on a number of levels and to different ends. Largely, repetition affords more efficient

perceptual and cognitive processing which leads to a positive affective response. However, repeated exposure to exemplars of a stimulus also increases the strength of its mental representation and understanding of semantic content. He uses the example of the repetition of an image of a rotting carcass and explains the affective shift that will occur after the reward of processing ease is replaced with "access to the item's negativity" (Reber et al., 2004, p.15).

4.4.4   Discussion

Any neutralising of negative affect based on fluency that repetition of imagery in the series engenders will be short lived for the viewer. The strengthening of the mental representation of negative images, and the increased access to semantic (and presumably) affective memory, will act to increase negative affective response. The resulting intensity and valence of affective response will be a resolution (e.g. perhaps a simple sum) of these two conflicting sources of information. Writing about this series specifically, Foster anticipated this interplay of effects when he stated "[s]omehow in these repetitions, then, several contradictory things occur at the same time: a warding away of traumatic significance and an opening out to it, a defending against [negative] affect *and* a producing of it" (Foster, 1996, p.72).

According to this account, where Warhol was right is that repetition provides a source of information (perceptual fluency) that tends to increase positive affect. However, Warhol failed to acknowledge the importance of the sources of information enhancing access to semantic content and affective memory. Warhol did not account for the additional perceptual and cognitive processes that exist alongside the high of repeated exposure.

In many cases these processes do not disrupt exposure effects, as with symmetry and other objective stimulus features that can actually enhance processing fluency and positive affect (Reber et al., 2004). Unfortunately for negative images the robust mental representation and affective memory formed by consulting discrete but related exemplars moderate and perhaps overcome fluency-based mere exposure effects. Importantly, this does not mean that initially negative stimuli become more negative but rather that their negativity becomes more apparent.

A similar interaction (i.e. competing processes) exists between stimulus novelty and complexity. Novelty is experienced positively for simple stimuli but can be experienced negatively when complexity is increased (Berlyne, 1970). The dual-process approach to pleasure and interest in fluency based aesthetics recently put forth by Graf and Landwehr (2015) also considers a hierarchy of related processes leading to pleasure and interest. All of these findings make clear that even robust processes cannot be taken in isolation.

4.5   Conclusion

Here I have reviewed examples of repetition in visual art and the related impact of repeated exposure on aesthetic appreciation and affective response. Previous experimental investigation on longer-term exposure effects with works of art provided a foundation on which to build a more focused study of repetition in individual works of art. Ultimately the focus was on a subset of artworks from Warhol's *Death and Disaster* series considered in light of existing empirical findings from cognitive psychology.

In the account presented, perception of repeated negative images in Warhol's *Death and Disaster* series prompts two simultaneous and competing cognitive processes for the viewer. On the one hand, repetition leads to increase in processing fluency, which is affectively positive. Conversely, the repeated exposure also leads to identification of variance across exemplars towards the formation of a robust mental representation (Kass et al., 2015a). In the case of initially negative images this provides improved access to an image's negativity. Fundamentally, the issue is one of time course of viewing and the observation that the experience of a viewer of repetition is subject to a number of simultaneous processes.

Warhol made several claims about the effects of repetition on affective experience: he was right in one sense and wrong in another. He correctly observed that, in general, repeated exposure to an image leads to positive feelings for the viewer. He failed to acknowledge, however, that for negative images the effect is short lived due to enhanced recognition of the negative semantic content also due to repetition of individual instances. This partial inaccuracy should in no way compromise the value of the artworks in the series or Warhol's contribution to repetition as a pictorial mode of address.

In terms of my own practice, although I have not worked with repetition of negative imagery, I have explored the ability of repetition to create aesthetic interest amongst otherwise banal or mundane imagery. I have also further developed Flatley's (2004) notion of an aesthetics of boredom that he puts forward as essential to developments in Minimalist art practice in the second half of the twentieth century. I will discuss this in more detail in the next chapter.

Chapter 5: Reflections on Art Practice

5.1   Introduction

Chapter 1 dealt with methodology within empirical aesthetics and specifically how experimental methods can be used to understand aspects of art spectatorship, primarily aesthetic appreciation. Included therein was the relevance of psychology to questions of aesthetics and debates surrounding the application of scientific principles to existing philosophical notions. One potential implication of such an epistemological shift involves philosophers of art and aesthetics (and related art theorists and critics) revisiting how they approach their practices.

All the same, might visual artists revisit their practices based on knowledge of perceptual and cognitive processes? Although it is sometimes remarked that visual artists throughout history have tacitly explored the nature of perception and cognition in their work such explorations are rarely made explicit. Furthermore, it seems worth considering the potential value to visual artists of understanding psychological processes and to what extent such knowledge could or should be exploited.

On one end of the scale visual artists could use knowledge of these processes to construct particular modes of address designed to invoke particular psychological processes. Based on insights in Chapter 2, an artist could manipulate features of an artwork to position the viewer in a certain manner and to encourage certain viewing patterns. This might involve manipulating spatial frequency and visual saliency or including perceptual cues that prompt the viewer to adopt a certain frame of reference. In the context of aesthetic appreciation, it stands to reason that understanding empirical laws of aesthetic preference (in general and with works of art) could allow an artist to produce and exhibit artworks to maximise aesthetic effect.

Based on Reber et al.'s (2004) fluency model, an artist could work to increase the ease by which a viewer processes a work of art. Manipulating objective features within the artwork itself (i.e. increasing symmetry or contrast) or the viewer's subjective experience with the work of art (i.e. through repeated exposure or priming) would increase fluency. Taking the results of individual experiments to hand, an artist could consider manipulating levels of ambiguity within a work to achieve optimal levels or alternatively could consider the amount and kind of contextual information provided to the viewer while viewing the work. In this model, findings from psychology are explicitly applied to the construction of an artwork's mode of address and with respect to the experience of

the viewer. An historical example of this model includes Impressionist artists who used findings about colour perception to inform how they applied paint to canvas (Thomson, 2000).

Artists might also use psychology as a creative starting point and not as a formula to influence the viewer's experience. In this model, insights from studies in psychology can be used to illuminate aspects of human experience or to provide concepts that can be responded to creatively. Surrealist artists approached this model in the way that they embraced findings within psychoanalysis methods of dynamic psychiatry to inform drawing, painting and photographic practices (Gibson, 1987; Jenny and Trezise, 1989).

In terms of my own practice and the incorporation of psychology, I have previously created work inspired by Surrealist automatic drawing and informed by Worringer's (1908/1997) seminal thesis on abstraction and empathy. The foundation of automatic drawing exemplified by artist Andre Mason includes ideas regarding access to the psychological subconscious through loose and unattended mark making. Worringer positions aspects of style such as organic form or hard-edged abstraction in terms of artistic volition and an affirmative or antagonistic psychological relationship to being in the world. Both premises provided useful ways of thinking about my relationship to drawing and painting, and were explored through a daily drawing practice as well as large paintings on canvas and wall murals (Fig. 10).

Figure 10. Jason Kass (2010). An example from my daily drawing journal (left); Untitled, acrylic on canvas (center); Untitled, acrylic on drywall (right).

It is not surprising that artists have gravitated towards psychoanalysis and other non-empirical psychological frameworks for creative inspiration. There would seem to be a natural synergy between such speculative frameworks that deal with supposed mysteries of the mind and emotion, and art making positioned as an act of expression that gives shape to thought and feeling. Cognitive psychology on the other hand, with an empirical basis and information-processing paradigm can

seem cold and mechanical by comparison; more about data and computational analysis than meaningful insights about the human condition.

In the present chapter I discuss developments in my art practice that take account of an increased understanding and engagement with mechanisms of perception and cognition. In some cases the connections between the theoretical research leading to written outcomes and my practical explorations is explicit, while in others less so. With regard to the models outlined above, at times I have used knowledge of perceptual, cognitive and affective processes to construct particular modes of address or encounters with the viewer. In other instances the ideas encountered in the theoretical research have served as a starting point for practical explorations. Engaging in practice has been integral to my overall thinking about cognitive aspects of pictorial address and has fed back into and at times directed the theoretical research.

5.2   Visual Perception, Cognition and Art Practice

There are examples throughout modern and contemporary art history of artists who explore perceptual and cognitive processes in their work. The most obvious of these include Seurat's early explorations of perception in his work (Foa, 2015) or Bridget Riley's paintings of optical illusions (Riley, 1965). Less obvious examples are Robert Morris' interest in shape constancy in his sculptures (Morris, 1966), Ellsworth Kelly's interest in visual experience (Baker, 1979), and the influence of Gestalt theory on the Bauhaus movement (Behrens, 1998; Boudewijnse, 2012). The degree to which these and other artists were familiar with scientific literature on perception can be difficult to gauge. In some instances however this is not the case. For example artist and critic Mel Bochner (1967) included a quote by Gibson, a perceptual psychologist, in his essay about seriality thereby indicating an awareness of Gibson's position on direct perception.

More recently, and in some part due to efforts within the field of empirical aesthetics to engage collaborations, some artists directly incorporate theories and methods from visual cognition into their practice. For example, artist Robert Pepperell regularly creates and writes about his work in a manner that engages vision science. This includes experimental investigation into the experience of indeterminacy in art using a series of his paintings made between 2004 and 2008 (Ishai, Fairhall, & Pepperell, 2007). The results suggest that viewers attempt to resolve visual indeterminacy and "that aesthetic affect of paintings is not only independent of semantic meaning, but also independent of

the presence or absence of any meaningful content" (p.323).

Pepperell has also recognised the failure of linear perspective to effectively represent features of visual experience and creates paintings and drawings that aim to better reflect the phenomenology of perception. He has explored egocentric perspective and the artist's bodily self-perception as represented in painting. He explains about the impetus for the research:

> Whether seen in direct vision or obliquely in the periphery, the egocentric perspective, which is distinguished from the view we have of ourselves in reflections or photographs, is the one constant feature of our visual experience. On those rare occasions when it is depicted in visual media the results…lack fidelity to the perceptual structure of the experience (2015, p.424).

Accordingly, through a series of paintings Pepperell set out to depict the visual field taking into account the egocentric perspective. The results include oblong canvases with some areas painted in detail and others less so, invoking the difference between peripheral and foveal vision. We can see the artist's own body included; in one instance the side of his nose, his left hand and both legs in a sense destabilising our own position as viewer (Fig. 11). As a mode of address this brings to mind Bryson's notion of the natural attitude in painting – albeit in a more literal sense – whereby the viewer takes up a position in relation to the scene originally occupied by the artist.

Figure 11. Robert Pepperell (2012). *Self View with Feet After Mach*, oil on canvas. Retrieved from http://robertpepperell.com/as-seen/ [Accessed 19th June 2016].

Artist Rune Pietersen has used theories of visual search and eye tracking techniques to produce a body of work comprising photographs and videos examining the act of looking as a constructive process. In an interview about the project (Wilson, 2014) he says:

> For good measure, I would like to point out, that I don't consider the work to be actual science. However, in order to pose questions like 'what do we see' and 'does it make sense to speak of a reality detached from our experience of it' and try to expand them beyond a simplistic subjective framing, I wanted to use the idiom of science – in a sense to make the works less about my personal artistic experience and more about the wider philosophical implications of my findings (first paragraph).

In a series from 2009-2010 titled *Observer Effect*, Pietersen exhibited photographic prints of video footage compressed into a single frame, with each circle representing the artist's fixation on the scene in front of him (Fig. 12). The artist explains his intention to demonstrate the manner in which the brain is called upon to fill in the gaps left by the visual system.
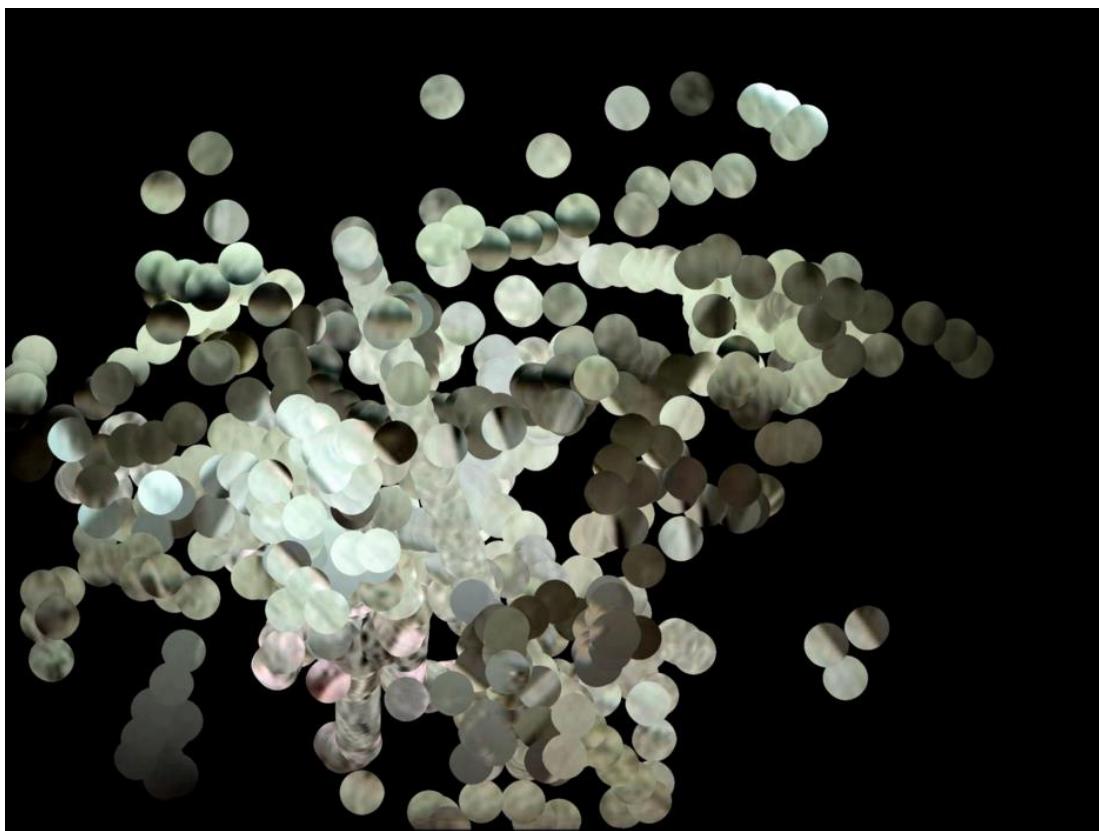

Figure 12. Rune Pietersen (2009-2010). Photographic composite from the series *Observer Effect-Ophelia*.

In the context of collaboration and as part of a project titled *Parallellepipeda* initiated by the Laboratory of Experimental Psychology at the University of Leuven in Belgium, several visual artists subjected their practice and artworks to scrutiny by way of experimentation. This was done in order to increase their own understanding of the mechanisms behind the work and presumably to inform further practice. One of the artists, Wendy Morris, conducted an experiment to test the effect of different musical soundtracks on the audience's affective experience of her drawn animations. She has also authored an essay (Morris, 2011) on the different kinds of looking that she understands as integral to the production of her final pieces. Another artist involved in the project, Ruth Loos, used eye-movement studies to explore reading as a creative act and exhibited an animation of scan paths, which she called 'eye drawings', alongside her other artistic outputs.

These are but a few examples of artists using theories and methods from empirical psychology to inform their practice. It is difficult to say if these are isolated instances or if there is a more robust movement of artists explicitly incorporating perceptual and cognitive processes in their work. In contrast with academic disciplines that publicly disseminate research through published articles, within visual art and unless an individual is engaged in interdisciplinary research that also involves writing (as with most of the examples above), the ideas behind an artist's work and indeed the work itself can often be overlooked.

To my knowledge there have been no recent attempts to exhibit the work of artists concerned with the nature of visual perception and cognition together. Such an exhibition might provide meaningful insights about the value of using theories and methods from empirical psychology to inform the production of works of art. It is worth noting that this lacking may be due to a marginalisation within more mainstream visual art culture of work produced as part of a research environment.

5.3   Reflections on Practice

In this section I will account for practical research conducted over the past few years that both integrates and has contributed to my theoretical research. As mentioned previously, prior to commencing the research for this thesis I was interested in how the act of picturing (making pictures) could serve a personal psychological need. The Surrealist practice of automatic drawing, with its emphasis on revealing inner states, and notions of empathy believed to be inherent in the will-to-art served as the primary basis for the work I produced. Engaging with the principles and key concerns of visual cognition, particularly the information-processing paradigm, initially provided a challenge to this foundation of my artistic volition. Very early on in my research I felt the need to re-evaluate my relationship to picturing based on what I was learning about visual perception and cognition.

I immediately became intrigued by the fact, likely taken for granted by vision scientists, that the stable and consistent sense of reality that we perceive is actually a sophisticated illusion provided by higher-level cognitive processes. I was surprised to learn that we do not actually see, at any one moment, all that we think we do in the sense that the eyes only fixate on a limited number of features in the visual array. In addition to this realisation I became interested in the idea that our minds make sense of a relative perceptual chaos via the constant flux of sensations reaching the visual system. These sensations first need to be formed into 'percepts' before being assigned meaning through inference based on prior knowledge and experience (see Gregory, 1966/2015).

What strikes me about this is the sheer magnitude and responsibility of the visual system to make sense of disorder, as well as the apparent subjectivity and metaphysical isolation of visual experience, as Cavell (1979) has eloquently phrased it. This provided me with a starting point from which to reconsider the psychological imperative to produce pictures but within a cognitive framework. As I further developed my research I added layers of complexity in terms of the kinds of perceptual, cognitive and affective processes that I drew from when making or evaluating work.

I have grouped my outcomes into four bodies of work including those that were produced during roughly the same period and that share similar starting points. The work presented and discussed is a fraction of larger portfolio of creative outcomes that should sufficiently demonstrate the relationship between theory and practice in the context of this thesis.

5.3.1 *Rendered Visible* (2011-2012)

Discussing the function of pictorial representation, Gombrich (1962) recognised in the act of picturing the need to stop or arrest the constant flow of perceptual material. Likewise, Davis (1986) explains "the origins of image making might lie in the discovery, conscious or unconscious, that visual perception is insufficient…. In other words, image making might be regarded as a *further* stage in the *continuing* evolution of the modern visual system…" (p.196, emphasis in original). He adds, "The mind finds forms for meanings… and determines to realize this insight in a permanent medium" (p. 199). Hodgson (2000) adds "As a perceptual phenomenon [creating pictures] is, then, an attempt to render permanent and tangible that which was formally intangible and fleeting, the seeking of order in the midst of disorder, the expression of the sense of pattern, harmony and symmetry synthesised from the immediate, ambient confusion".

Within my practice, thinking about the act of picturing in these terms, I became particularly aware of the inherent flux of the perceptual stream in a way that I would describe as a kind of meta-perception. Often in moments of solitude I would become conscious of the act of perception and this

would encourage a more focused form of looking and consideration of my surroundings. The white wall opposite my bed became an unintentional object of my attention and in a sense became a surrogate for the retinal surface.

I began to record the effects created by light as it streamed through the window at different points in the day (Fig. 13). In some cases this became a race against time as the quickly moving clouds or the sun's changing position would significantly alter the projection on the wall. The night provided a respite from this constant shifting with only the streetlight present to cast light and shadow almost as if time itself had stopped. Whereas Impressionist painters were interested in the fleeting nature of perception I suppose I was captured by its omnipresence. Without any forms present, such as Haystacks or building facades, I had managed to abstract light and colour away from the objects they describe.

Figure 13. Jason Kass (2012). Untitled, digital illustrations.

Ultimately I turned my attention to the window as the facilitator of this seemingly endless stream of perceptual material, realising the simultaneous evanescence and solidity of this arguably mundane feature of the room (Fig. 15). Frequent photographs of the window resulted in a series of images where variation and repetition were in constant competition. I realised that applying a constraint allowed for the development of visual interest simply from identifying the myriad ways that the same object could be represented.

Sontag (1973/1990) has said about photography that "photographs alter and enlarge our notions of what is worth looking at and what we have a right to observe" (p.1). Creating pictures through photographic means rather than drawing or painting significantly altered the way I produce work, initially shifting attention from my internal psychological state (via automatic mark making) to an awareness and aesthetic experience of the external world. Photography became a tool for distancing myself from my perceptions by mediating them through the camera's lens.

In Synder's (1980) terms, I began "picturing vision" or thinking about vision itself as pictorial. Sontag (1973/1990) states something similar when she says: "A way of certifying experience, taking photographs is also a way of refusing it – by limiting experience to a search for the photogenic, by converting experience into an image, a souvenir" (p.6). This was something I had begun to explore previously in my practice through photography but abandoned due to an inability to articulate my purpose (Fig. 14).

Figure 14. Jason Kass (2010). Untitled, digital photograph.

Photography has been theorised as anti-aesthetic; a decidedly objective and mechanical way of picturing that minimises artistic interpretation as afforded by painting. Bazin (1960) states "Originality in photography as distinct from originality in painting lies in the essentially objective character of photography... The personality of the photographer enters into the proceedings only in his selection of the object to be photographed and by way of the purpose he has in mind" (p.6). In this sense photographs are placed in the realm of the ready-made, existing slices of perception waiting to be captured by the photographer.
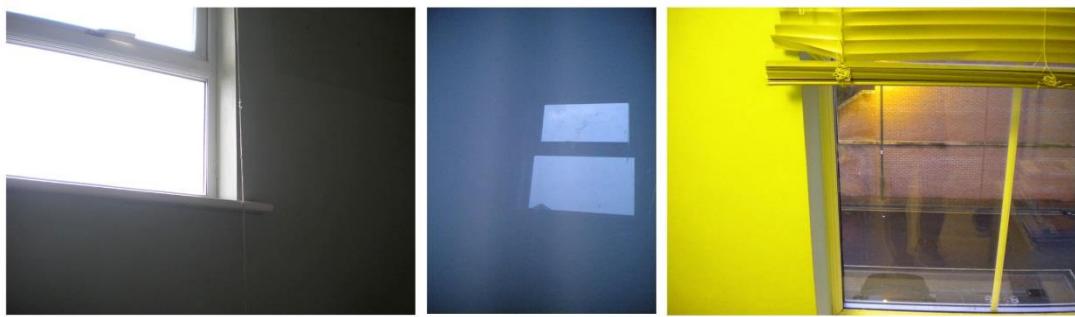
Figure 15. Jason Kass (2012). Untitled, digital photographs.

Returning to the idea of metaphysical isolation, I started to think about photography's mode of address and the way it could serve as a model of communication between the viewer and myself. As with Bryson's (1983) notion of the Founding Perception, the temptation with photography is to treat it as a way to place before the viewer a scene exactly as the artist once saw it. However the relationship between what is seen (by the artist) and what is presented (by the photograph) has been questioned. Snyder and Allen (1975) ask "…whether the photographic process itself really guarantees much of anything about the relation between image and imaged" (p.148).

Scruton (1971) argues for the role of the photograph as a surrogate for the scene or object represented. He says "A photograph will be designed to show its subject in a particular light and from a particular point of view, and by doing so it may reveal things about it that we do not normally observe and, perhaps, that we might not have observed but for the photograph" (p.595). Ideal photographs, he argues, are not in fact representations. It is only when the artist intervenes and interprets reality via the act of photography that it attains a representational quality and in fact becomes much closer to the act of painting.

Walton (1984) asks "Why not say that photographers, by making photographs show me things and also enable me to see them?" (p.261). Merleau-Ponty (1964/1993), although referring to painted pictures, posed a similar question. He says: "Things have an internal equivalent in me; they arouse in me a carnal formula of their presence. Why shouldn't these correspondences in turn give rise to some tracing rendered visible again, in which the eyes of others could find an underlying motif to sustain their inspection of the world" (p.126). Of these tracings he says that "[the artist] alone is capable and which will be revelations to others because they do not lack what he lacks – to him they seem to emanate from the things themselves…"(p.129).

I began to explore photography in this context, taking note of and recording my own aesthetic responses (Fig. 16). I realised early on the difficulty of re-presenting a subjective aesthetic experience and the fact that a photograph is limited in what it can actually recreate for the benefit of the viewer.

This challenge is articulated in psychological terms when Gibson says "*A picture is a surface so treated that a delimited optic array to a point of observation is made available that contains the same kind of information that is found in the ambient optic arrays of an ordinary environment…*Hence, an artist can capture the *information* about something without replicating its *sensations*" (p.3, emphasis in original).

Figure 16. Jason Kass (2012). Untitled, digital photographs.

In plain terms, what this indicates is that a picture – despite the way some theorists would have it – does not capture an experience although it can undoubtedly facilitate one. Even if a picture could capture and re-present an experience there is no guarantee that the viewer would experience the scene or object depicted in the same manner as the artist originally had or like anyone else for that matter.

Csikszentmihaly and Robinson (1990) explain this influence of top-down processing as follows: "Most events in consciousness are built from culturally defined contents as well as from personal meanings developed through an individual's life. Thus two persons can never be expected to have the same experience" (p.17). In terms of photography, Barthes' (1981) posits a similar feature of photographs in the distinction between the *studium* and the *punctum*. The former conveys information while the latter carries with it the more personal and emotional content.

In sum, this initial body of work served as a way for me to come to terms with basic tenets of perception and coincided with my exploration of the fundamental theories of visual cognition. Photography functioned as a way for me to quickly and easily record my own perceptions and aesthetic responses. Through the work I was able to articulate and understand on a practical level the complexity of vision in a way that I had not previously appreciated. Notions of visual saliency, top-down versus bottom-up processing and fixation were all new concepts to me and it was only

through the making of work that I could grasp, in a meaningful way, the constructive and potentially unstable act of perceiving the visual world.

Through engagement with photography and the relatively large number of pictures I was producing (relative to painting) I began to value the notion of groups of images displayed together and the possibilities inherent in displaying sets of images. In psychological terms, I started to become aware of the relational and, in fact, serial nature of visual experience. It was at this point that my theoretical research shifted its focus to repetition and variation as aesthetic strategies and seriality as a mode of address.

5.3.2   *The Unique Particular* (2013)

My research into seriality and particularly Monet's serial projects in the late nineteenth century led me to consider the mechanisms of concept formation. Kendler explains that "Concept formation is taken to imply the acquisition or utilization, or both, of a common response to dissimilar stimuli…a process that involve[s] the discrimination of a particular element common to a variety of stimuli" (Kendler, 1961, p.447-448). This psychological essentialism (see Medin and Ortony, 1981) deals with both superficial and deep properties of concepts and has its roots in the Aristotelian notions of the essence of things.

Smith and Medin (1989) explain the importance of concepts as follows:

> Without concepts, mental life would be chaotic. If we perceived each entity as unique, we would be overwhelmed by the sheer diversity of what we experience and unable to remember more than a minute fraction of what we encounter….Concepts thus give our world stability. They capture the notion that many objects or events are alike in some important respects, and hence can be thought about and responded to in ways we have already mastered (p.1).

My research into concept formation, mental representation and in particular face recognition facilitated an interest in using sets of images to abstract essential qualities. I was reminded of Barthes' writings in *Camera Lucida* focusing on the act of recognition and how photographs, like memories, provide incomplete versions of the individuals that they record. Barthes' made the observation when sorting through images of his recently deceased mother "that however often I might consult such images, I could never recall her features (summon them up as a totality)" (1981, p.63). He went on to say:

> I never recognized her except in fragments, which is to say that I missed her *being* and that therefore I missed her altogether…I recognized her differentially, not essentially. Photography

thereby compelled me to perform a painful labor; straining toward the essence of her identity, I was struggling among images partially true, and therefore totally false (p.66, emphasis in original).

In this statement, Barthes captures the struggle to generate robust representations in memory sometimes even by way of those things with which we are most familiar. He struggled to recall the features of his recently deceased mother and turned to the many photographs she left behind in order to find "the truth of the face [he] had loved" (p.67). Barthes sought a single photograph amongst the set that could evoke this truth and that embodied her as a totality. He was looking for generality in the particular.

Barthes' writing supported by research into stable representations precipitated a body of work in which I confronted my own version of Barthes' struggle (in my case my mother's death occurring twenty years prior). Echoing Barthes' frustrations in finding his mother's likeness in a single photograph and informed by my understanding of the role of variation in concept formation, I took a different approach to reconciling the indeterminacy of memory and the futility of seeking a single picture to represent the concept or essence of person.

Figure 17. Jason Kass (2013). Untitled, digital slideshow in custom frame (left); individual frames from the slideshow (centre and right).

I sought that essence elsewhere, in one instance in the online profiles of over ten thousand women who had uploaded their photographs to a free casting website. After sorting through all of the profiles – some of which comprised multiple photographs – searching for exemplars capable of triggering the memory of my own mother's face – I settled on a set of thirty instances. In this sense the act of searching was integral to the work.

These instances were presented as a digital slideshow mounted in a generic picture frame (Fig. 17). The connection between the images remains elusive to the viewer unless I provide the contextual information. Regardless, it is likely that the presentation of multiple related images (they are all portraits of women) will prompt in any viewer the formation of a stable mental concept of some kind. In this work I also considered the traditional display of serial artworks simultaneously in a grid formation. The choice of a single frame and ephemeral presentation of each portrait seemed to better capture the fragmentation that I associate with memory traces.

Figure 18. Jason Kass (2013). Untitled, framed digital inkjet prints.

In a related work, I outsourced the process of identification to the internet, using Google Image to search for resemblance based on individual portrait photographs of my mother. The resultant grids, successful in the sense of processing the superficial formal features (i.e. colour, contrast and composition) of the original photographs, again provides the viewer with an opportunity to form their own concept based on the sets of instances.

The search for meaningful characteristics across the pictures simulates my own struggle to do the same across a set of the near fifty original portraits used to generate the grids (Fig. 18). Superficially, the exercise also points to the difference between a picture's formal characteristics and its semantic content. In this case, the concurrent presentation of roughly twenty visually similar pictures questions the unique characteristics that we tend to attribute to our personal photographs. Shown together, alongside a more traditional portrait painted from a single photograph (Fig. 19), albeit

greatly reduced in detail, the body of work questions the nature of representation, moving away from a perceptual model to a more conceptual one.
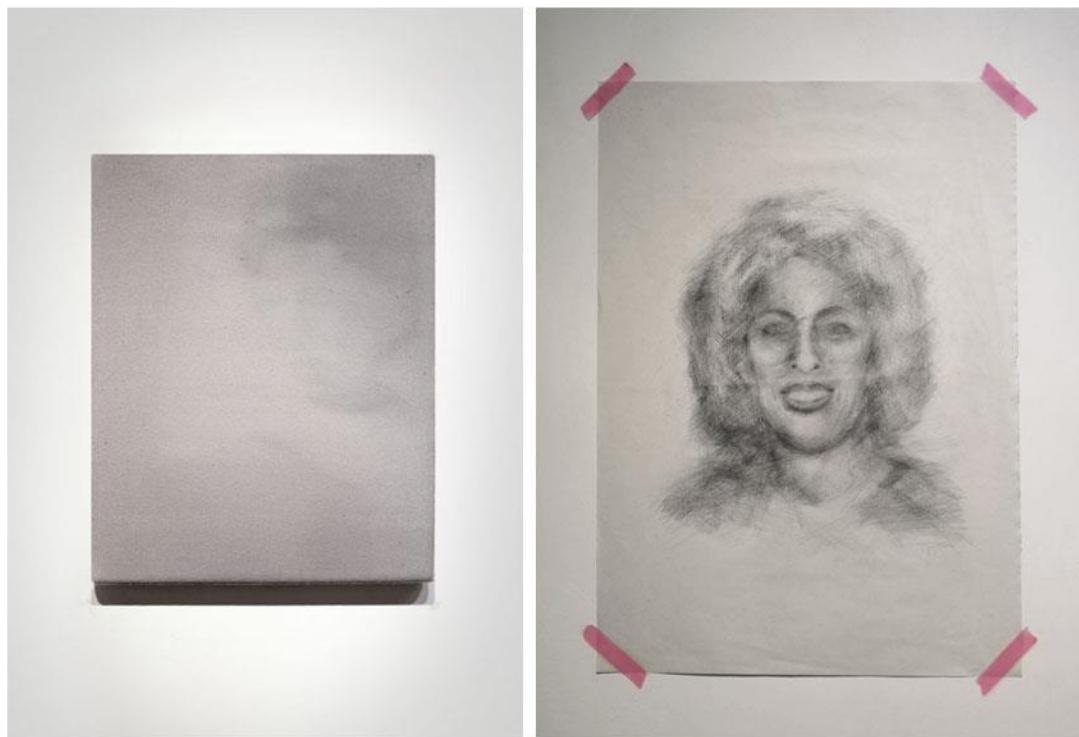
Figure 19. Jason Kass (2014). Untitled, mineral pigments on canvas (left); Untitled, graphite on newsprint (right).

In one final example, I responded to the notion of averaging as a means to generate a robust representation from otherwise variant exemplars. Artists have previously engaged digital means to average sets of images, such as Do Ho Suh's *High School Uni-Face* (1997) implicating the uniformity in Korean society and Jason Salavon's *Kids with Santa* (2004), satirising life events that seem unique but are actually generic. Rather than using digital means I created an average portrait of my mother manually, drawing layer upon layer in pencil using photographs as source material (Fig. 19). The resultant image is not a statistical average but interestingly, from my perspective, comes closer to depicting the internal representation I hold in memory of my mother than any of the individual portraits used to create it.

The works detailed in this section were exhibited together, along with the work of other postgraduate students, in an exhibition at 5th Base Gallery in London in November 2013.

5.3.3 *Objects Which Themselves Lack Memory* (2014)

Chapter 4 introduced the notion of affect and the ability of a scene or object (artwork or otherwise) to elicit positive or negative emotion or none at all. The importance of affect for visual art has been widely discussed at least since the 1960s. Minimalist and then conceptual art practices in particular were often described as banal and prosaic or in psychological terms as affectively neutral. The presentation of simple geometric shapes stood in stark contrast to the originality of Abstract Expressionism rife with formal innovation and personal expression.

Repetition was seen as a potential culprit or as Colpitt (1985) explains: "Repetitiousness, characteristic of Andy Warhol's endlessly repeated screen prints, Stella's striped paintings and Judd's boxes, was also considered a contributing factor to the boredom experienced by viewers…" (p.360). Dyer (2004) elaborates when she says, "Yet while Warhol's images are striking, they become boring when the same image is presented repeatedly" (p.37). According to these theorists boredom results from the austerity of the works themselves, or how they are presented.
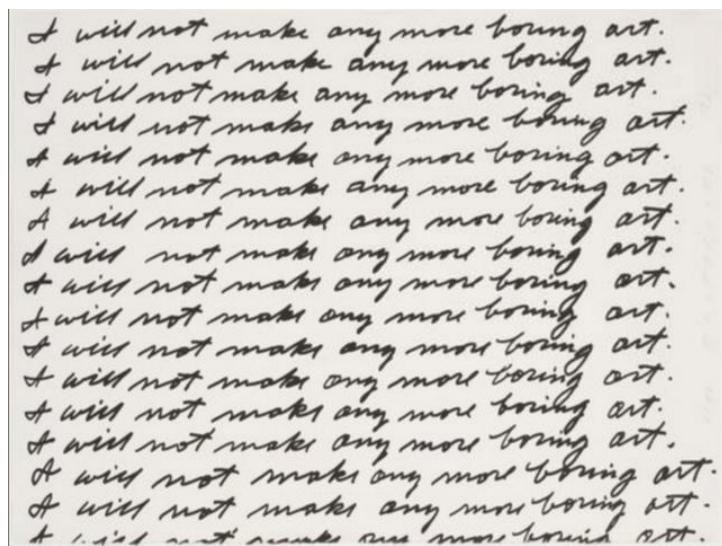
Figure 20. John Baldessari, 1971. *I will not make any more boring art*, lithograph.

The draining of affect in this context can be viewed as intentional. Artists such as Bochner and Buren indicated a desire to negate affect, using repetition as one way to distance their art from emotion. Warhol had indicated similar intentions in referring to himself as a machine and his now infamous statement "I like boring things". Conceptual art practices that developed shortly thereafter were also framed in terms of boredom, evidenced by John Baldessari's lithographic print that repeated the phrase "I will not make any more boring art" (Fig. 20).

Repetition can also be considered in terms of the production of interest. Warhol's screenprints, for example, repeated images multiple times but the imprecision of the printing process resulted in often minor and sometimes more significant differences with each impression. Deleuze (1968/2004) identifies this feature of repetition as novelty and explains: "Novelty then passes to the mind which represents itself: because the mind… is capable of forming concepts in general and of drawing something new, of subtracting something new from the repetition that it contemplates" (p.14). From this point of view repetition can facilitate interest just as it can boredom.

Figure 21. Jason Kass (2013-2014). Untitled, digital photographs.

I have explored this opposition in my work, using photography as a way to repeat both an action and a thing considered. In one case this involved photographing the front door of my house from the inside repeatedly over a period of several months (Fig. 21). Deleuze explains:

> For it is perhaps habit which manages to 'draw' something new from a repetition contemplated from without. With habit, we act only on the condition that there is a little Self within us which contemplates: it is this which extracts the new - in other words, the general - from the pseudo-repetition of particular cases (p.7).

For me, taken individually the photographs of the doorway offer little visual interest. It is only from viewing the set together and the differences that emerge through the repetition that the pictures become worth looking at.

I became interested in the possibility of extracting pure difference or taking Deleuze's words at face value, "…difference without a concept, repetition which escapes indefinitely continued conceptual difference" (p.13). I explored this by photographing a sheet of paper I had covered completely with graphite, at once creating a visual black hole while at the same time producing the perfect conditions to reflect the ambient light in my surroundings. The resulting photographs (Fig. 22) question Deleuze's assertion that "There is therefore nothing repeated which may be isolated or abstracted from the repetition in which it was formed, but in which it is also hidden" (p.17).
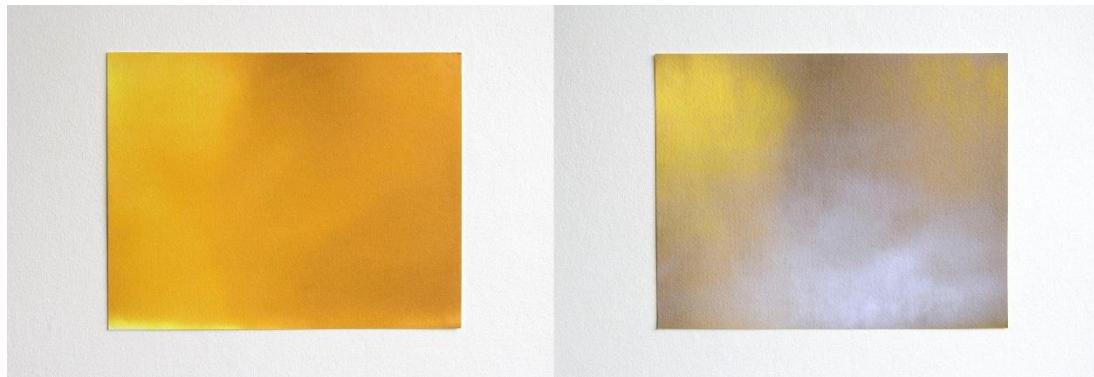
Figure 22. Jason Kass (2014). Untitled, digital inkjet prints.

Unlike Monet's variations, which by their nature allow for the formation of a robust mental concept, the presentation of variation in colour and luminosity here exists without an object to describe. I took this idea a step further in a wall drawing that traced the spaces between repeated forms once the forms themselves had been removed (Fig. 23). The resulting grid, a common form in mid-twentieth century art exists as negative space rather than the scaffolding it often provided in works by artists like Agnes Martin.
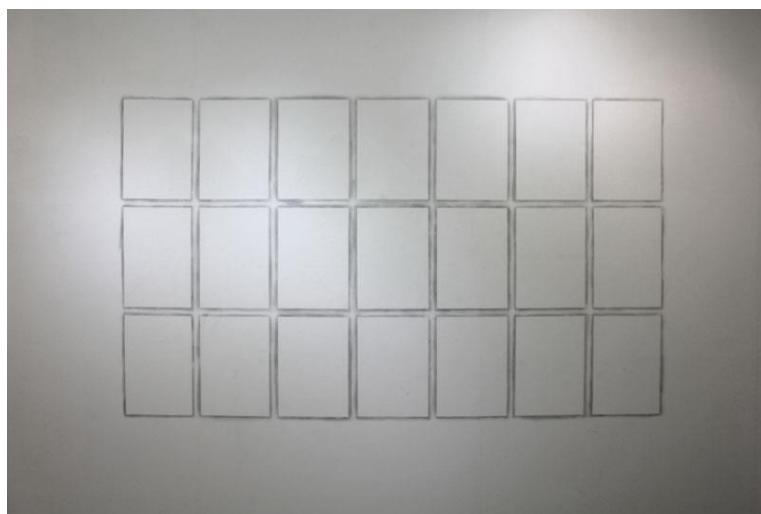
Figure 23. Jason Kass (2014). Untitled, graphite on gallery wall.

Subsequently I explored the physicality of repetition, presenting multiple canvases together in a sculptural formation as well as a drawing comprising multiple sheets displayed on the floor (Fig. 24). The pieces were shown together in an exhibition at 5th Base Gallery in London in December 2014.

Figure 24. Jason Kass (2014). Untitled, mineral pigment on canvas (top and bottom left); installation at 5th Base Gallery in East London.

5.3.4   *All Things Considered* (2015-2016)

Early on in my research I produced a number of works in response to my understanding of the constructive nature of vision. In one piece I gathered or produced disparate elements and assembled them in a single frame based mostly on formal considerations (Fig. 25). I was also interested in the potential relationships between the various components and the opportunity for the viewer to make meaning from the relative disorder. I found the idea of presenting the possibility of different relational meaning more interesting than creating any kind of fixed meaning or narrative content.

Figure 25. Jason Kass (2013). Untitled, mixed media.

Several paintings further explored this idea with the added caveat of depicting different spatial regimes on the same pictorial surface (Fig. 26). In a way, I was concerned with resisting the notion of pictorial gist and wanted to negate the prospect of any kind of immediate processing of the picture. However, I did not develop these ideas further at the time as my attention shifted to seriality and the further breakdown of the potential for meaning within a single picture.

Figure 26. Jason Kass (2014). Untitled, mineral pigment on canvas.

Seriality, as I have previously argued, prompts the formation of concepts based on the invariant qualities between instances. My focus was on the relationships between pictures within a single artwork. Minissale (2013) has stressed the role of concepts in making meaning *between* pictures comprising discrete artworks. He says, "While we regard an artwork as a stand-alone object with unique features, these features can point to [a] web of artworks creating a system of relational

knowledge that elaborates perceptions, concepts, emotions and memories quickly and automatically" (xiv). Furthering his explanation of relational knowledge he explains, "…it is extremely difficult, if not impossible, to isolate an artwork from the automatic system of contrasting and comparing with what we know and remember" (xxxii).

In support of his theory, which aims to explain the kind of post-Duchampian spectatorship required of much contemporary art, Minissale refers to a range of viewpoints from cognitive psychology. Broadly, his hypothesis is built on the notion that individuals construct a sense of reality via internal representations integrating percepts and concepts into a relative whole. He cites research on relational thinking, defined as "thinking that is constrained by the relational role things play, rather than just the literal features of those things [, which is] a cornerstone of human perception" (p.1).

Minissale believes that unlike traditional approaches to visual art that rely on direct perception, contemporary artworks exploit the propensity within cognition to integrate concepts to afford understanding. In psychological terms the 'conceptual web account' posits, "A concept can mean something within a network of other concepts but not by itself, similar to how stability may be a property of a thread within a web but not any thread taken in isolation" (Goldstone and Rogosky, 2002, p.296).

If we replace 'concept' with 'artwork' than this same account essentially summarises Minissale's argument. Interestingly, if we instead replace it with 'picture' or 'painting' we have something very close to Joselit's (2009) writing on contemporary painting functioning as part of a larger network. He says, "Certainly, painting has always belonged to a network of distribution and exhibition, but…by the early 1990's, an individual painting should explicitly *visualise* such networks (p.125, emphasis in original). He makes this claim having first quoted Martin Kippenberger's statement that "Simply to hang a painting on the wall and say that it's art is dreadful. The whole network is important!".

Figure 27. Jason Kass (2015-2016). Untitled, mixed media installation (top left) and various details.

I recently returned to the earlier investigations of conglomerating semantically unrelated content with a more robust cognitive framework to support my intentions in building a network of concepts within a single artwork (Fig. 27). What I mentioned earlier about providing the viewer with the possibility of meaning echoes Halford and Wilson's (2002) claim that "Creativity depends on using our mental processes to create novelty. However, for novelty to be creative it must be effective, either in some practical sense, or in that it establishes a coherent set of relations where no relations, or a less coherent set of relations, existed before" (p.153).

Seen as prompting creative problem solving, my most recent approach in the studio asks the viewer to produce an original or novel conceptual combination. Scott, Lonergan, & Mumford (2005) explain:

> Conceptual combination refers to the creation of new knowledge structures through the integration of previously distinct concepts, or, alternatively, the rearrangement of elements within an existing concept. With the generation of new knowledge through combination and reorganisation, new features, new relationships, or new connections may emerge (p.80).

Interestingly, and with regard to my recent work, Scott et al. cite a decades-old study by Finke, Ward & Smith (1992) in which "They found that the production of more original ideas was influenced by presenting unusual components, a wider array of components, and incongruous components" (p.80).

The installation of varied components (Fig.27) some representational and others abstract is not a closed system. By this I mean that there is no one single composition that is correct and the installation can and should function with the addition and subtraction of elements either for practical purposes (e.g. space constraints) or formal reasons. I like the idea that, returning to a point from earlier in the chapter, the grouping recreates the relative chaos of the perceptual field. It becomes the task of the viewer to select those areas that are most salient – either from a bottom-up perspective or top-down interests – and for them to build a coherent and meaningful experience.

5.4   Conclusion

In this chapter I have considered the value of knowledge of perceptual and cognitive processes towards artistic practice. I began with a review of a limited number of artists who have actively and explicitly engaged perceptual and cognitive psychology in their work. The few projects of theirs that were discussed demonstrate that understanding the empirical basis of visual experience can provide a rich source of ideas that can be applied in a concerted manner to achieve a particular effect or instead as a means of reflection.

The chapter also demonstrated how my practice has both informed and been informed by theoretical research throughout this thesis. The four related bodies of work integrate aspects of visual perception, concept formation, affective response and relational knowledge as a means of thinking through and at times illustrating the ideas encountered in the literature. This practice has been essential to my understanding of often-complex scientific concepts and has been important in leading the direction my research took along the way.

In a more holistic sense the production of creative outcomes as part of the research process has effectively changed my outlook as a practitioner and provided me with an alternative means of understanding the act of picturing and its relationship to visual experience more generally. The best way that I can explain this is to say that whereas previously my practice was almost entirely inward looking, attending to processes of perception and cognition has encouraged me to think more so about my relationship with my surroundings. An understanding of processing dynamics and the complex and multi-layered process that produce meaning about the world are now at the fore of my approach to making work.

I have also expanded my thinking around what it means for an artwork to be pictorial. This is true with regard to the employment of serial strategies, variation and repetition as well as those works that use the tools of pictorial art (i.e. canvas on stretchers) but in a more sculptural manner. I might go as far as to say that I now relate to most things as pictorial and this will undoubtedly have an on-going impact on my practice as it develops.

CONCLUSION

In the Introduction to this thesis I stated that a fundamental aim would be to apply existing empirical findings within cognitive psychology towards understanding aspects of art spectatorship. A subsequent aim was to demonstrate the effective integration of these findings with existing art theory and to relate relevant findings to the production of new artworks. In this conclusion I will reiterate how these aims were met and describe some general insights regarding interdisciplinary art and science research. I will also indicate possible directions for future research.

An initial review of the empirical aesthetics literature confirmed on-going methodological concerns within the field. At the centre of these concerns were the notion of ecological validity and the credibility of extending findings within the laboratory to the often complex and multi-faceted experience of viewing works of art in-situ. Historical and contemporary critiques of empirical approaches to art spectatorship cite a fundamental difference between the universalism of scientific inquiry and the contextual emphasis within humanities research. In the first chapter's conclusion I explained recent efforts to address the disciplinary divide and, more specifically, concerns around ecological validity. These efforts include the addition of studies in the museum or gallery context as well as collaborative research endeavours involving scientists and artists.

I also expanded on existing concerns about the general lack of consideration towards established art theory within psychological studies of art. My point was not to disparage existing empirical investigations, which undoubtedly produce meaningful insights, but to highlight the missed opportunity for truly interdisciplinary research that uses theories and methods from one discipline to describe and potentially solve problems within another. Furthermore I noted the dearth of visual artists who consult findings within cognitive psychology to inform their practices.

In that spirit, the second chapter of the thesis examined theoretical concerns around pictorial address – the way that an artwork's structure and content position the viewer and assert a particular type of viewing experience – in light of existing findings within visual cognition. Through review of a subset of well-known theories of address dealing with artworks from the Renaissance through to the mid-twentieth century, I highlighted shared concerns with the temporal, spatial and postural relations that certain scopic regimes and associated styles of pictorial production suggest.

Summarily stated, concerns with temporality across the theories concentrate on whether a pictorial mode of address promotes an instantaneous viewing experience or requires meaning to unfold over time. For example, explaining the hegemonic perspectival model of pictorial representation Bryson

(1983) argues that the use of linear perspective to depict illusory space suggests that meaning is presented to the viewer's gaze outside of duration (i.e. directly and suddenly). Alternatively, Alpers (1983) reading of paintings in the Northern tradition coinciding with the Renaissance period, and equally Buci-Glucksman's (2013) explication of Baroque art, suggests that in these cases the viewer must attend to the picture across an extended temporality, building up an understanding through multiple views over time.

I positioned these analyses in relation to cognitive theories of scene perception and gist extraction that deal with the timeframe within which a scene can be identified and understood. Empirical studies as such suggest that formal features including colour and spatial frequency can modulate the different time course required to perceive and interpret natural scenes (Oliva, 2005; Oliva & Schyns, 1997). I suggested that these and related findings are useful in establishing an empirical basis to the art theories presented. More specifically, I offered the conclusion that Southern Renaissance paintings, generally speaking, are more open to gist processing than their Northern counterparts and Baroque paintings and that this might account for any supposed difference in the time course of viewing that each suggests.

The same art theories that describe the temporality implied by particular modes of pictorial address speak to the spatial associations that certain modes imply. Renaissance paintings are theorised to position the viewer at a specific point in space (i.e. the viewer is imagined to take up the same view as the painter originally had) whereas in the Northern tradition and with Baroque pictures there is a level of spatial indeterminacy resulting in more autonomy for the viewer.

I related these interpretations to theories and findings within the cognitive study of spatial representation and self-location that deal with a subject's frame of reference (Carlson-Radvansky & Irwin, 1993; Evans, 2010; Klatzy, 1998). An egocentric frame of reference internally represents space through an acknowledgement of the position of the body in relation to objects in the environment. On the other hand an allocentric frame of reference promotes self-location through relating objects to one another. In line with Etlin's (1998) contention that viewing artworks involves a bodily and spatial sense of self I extended notions of spatial frame of reference to theories of pictorial address.

Bryson's notion of the 'Founding Perception' that locks viewers of Renaissance perspective into a punctual viewing experience can be articulated in psychological terms. It is possible to deduce that perspectival images that depict a scene from a certain vantage point encourage the adoption of an egocentric frame of reference by the viewer. In other words, the viewer adopts the painter's original frame of reference when viewing the work. Conversely, Alpers' and Buci-Glucksmann's beliefs regarding alternative spatial regimes may encourage the adoption of an allocentric frame of

reference. This would be in line with idea that there is no inherent point of view depicted in the paintings. As such viewers may struggle to locate themselves, reiterating for instance the indeterminacy and anamorphosis that Buci-Glucksmann describes.

Lastly, Fried's (1980) theory on absorptive and theatrical modes of address speaks to the experience of the viewer based on the psychological states in the depicted scene. Fried argues that in theatrical address the 'action' in the scene is unabashedly presented to the viewer, implying that the 'actors' within the scene have full awareness of the viewer's presence. Alternatively, an absorptive mode of address disregards the viewer's presence in many cases through the depiction of individuals absorbed in their own mental and emotional state. Fried favours this latter mode of address and claims it is more effective in drawing the viewer in and holding their attention for long periods of time. Fried has developed this thesis over a period of more than fifty years and has discussed how artists since the nineteenth century have taken steps to avoid theatrical address.

I consulted findings within social cognition to offer an empirical basis to the foundation of Fried's claims. Theories of embodied simulation, for example, suggest that viewing actions or mental and emotional states in another individual activates similar mechanisms and prompts internal representations of the same body states in the viewer (Gallese, 2014; Gallese & Sinigaglia, 2011). In the context of Fried's theory this supports the idea that an absorptive mode of address facilitates a sense of embodied simulation that may increase the viewer's interest and absorption into the work itself. I also explored theories of gaze-cueing that suggest the importance of another's gaze in driving attention and visual interest. Within Fried's theory and in particular the work of Manet the direction of the depicted gaze is important in establishing an anti-theatrical address.

The chapter on cognitive aspects of pictorial address demonstrates the potential to better integrate knowledge of cognitive theory and art theory. The connections made therein between established art theory and existing findings in visual cognition represent first steps in the integration of disciplinary knowledge. I have drawn connections to provide psychological frameworks within which to consider pictorial address that suggest possible resolutions. Simple thought experiments allowed for the extraction of meaningful insights surrounding the psychological basis of certain modes of address.

My stance at the end of the chapter was that going beyond a thought experiment such as those I have conducted may not be necessary. This is due in part to the disciplinary divide between the sciences and the humanities and how knowledge construction is approached and the complexity of layered perceptual and cognitive processes. I believe that merely reframing existing art theory in psychological terms provides sufficient opportunity to think through the potential impacts of

different modes of address. This is in line with Fechner's and other moderate views that bottom-up investigation need not replace top-down evaluation but that the two can work in tandem. Similarly, an appreciation of the potential psychological processes and mechanisms that may drive certain modes of address raises questions that can be explored through practice, which might be considered its own form of experimentation. I do not, however, exclude the notion that concrete experimentation by others could follow based on the theoretical frameworks established here.

At the end of the second chapter I turned attention to pictorial artworks that do not subscribe to the traditional notion of a single autonomous picture that determines a direct and spontaneous relationship with the viewer. Historically and within contemporary art practice pictorial artworks are often exhibited as part of a series. More explicitly, serial artworks are made up of multiple discrete but related (pictorial) instances exhibited as a single work and meant to be experienced as such. The distinctive characteristics of seriality as a mode of address have received critical attention within art theory (Coplans, 1968; Fer, 2004). However, serial artworks and seriality more broadly have not received much attention within the psychological or empirical aesthetics literature.

Chapters 3 and 4 addressed this gap in knowledge while also furthering the notion that framing established art theory in psychological terms could provide meaningful and interesting ways of thinking about pictorial address. In turn the chapters investigated variation and then repetition as features of seriality in art and with regard to the work of Claude Monet and Andy Warhol, respectively.

Variation as a feature of seriality is exemplified by Monet's serial projects in the late nineteenth century whereby a basic composition is repeated but colour and luminosity varies from one instance to the next. In particular my research considered Monet's painted series of the façade of the Rouen Cathedral at different times of day and in different weather conditions. Monet influence on later generations of artists is evident and his model of seriality can be seen in the work of contemporary artists like Ann Craven and Peter Dreher.

In order to understand the psychological aspects of viewing a serial artwork I explored findings within empirical studies of the abstraction of concepts and the formation of stable mental representations (Hintzman, 1984, 1986, 1988; Posner & Keele, 1968). In order for individuals to manage the sheer mass and diversity of visual information encountered and to store that information efficiently requires abstracting concepts from sets of instances. Accordingly this provides a useful psychological framework within which to consider variation within serial art. I reported on studies of face recognition that consider the mechanisms by which we can identify a face as familiar despite superficial changes with each encounter we have with a face (Bruce, 1994; Bruce & Young, 1986).

In particular I presented research within face recognition that argues for abstracting an averaged prototype of a face, based on the collection of individual encounters, thus allowing for ease of recognition despite superficial changes (Burton et al. 2005). Extending this to the abstraction of concepts more generally and then to Monet's serial projects I made the claim that the experience of serial artworks resides in the viewer's formation of a stable concept from the set of instances presented. This would indicate that in line with existing art theory, serial artworks present a mode of address entirely different than within the masterpiece model. Serial artworks promote the production of stable concepts and imply an extended temporality and call upon the viewer's higher-level cognitive processes.

I concluded that based on this premise Monet's serial artworks in the late nineteenth century can be considered as having planted early seeds of the move away from perceptual experiences with works of art that was developed by artists in the twentieth century (Kass et al., 2015a). This runs counter to traditional art historical narratives that position Impressionism and the work of Monet as resolutely perceptual in nature. Without disregarding the perceptual emphasis of the paintings of Monet, and accepting that the artist likely did not have explicit understanding or intention towards concept formation, the thought experiment conducted provides a new way of thinking about the address of serial artworks.

In terms of practice I explored the inherent possibility of concept formation resulting from the presentation of multiple discrete but related instances. This resulted in a body of work comprising drawings, paintings and found photographs. The work explored portraiture from the vantage point of concept formation rather than an attempt at perceptual likeness as portraits are often approached. Using Barthes (1981) writings on photography as a starting point I experimented with using seriality and the presentation of multiple discreet but related exemplars to drive the formation of a mental concept of my mother's likeness. I also worked with the idea of averaging, recreating a computational process manually through a hand drawn composite portrait based on layering a series of individual pictures.

In the subsequent chapter I turned to repetition, which is an inherent feature of seriality and a counter feature to variation. Repetition is prevalent within visual art outside of seriality inclusive of the repeated exhibition and broadcast of particular artworks and the repetition of genre and motif across historical periods. Unlike in these examples, in the case of seriality repetition is experienced in situ rather than over an extended period of time. Repetition has been theorised in terms of difference (Deleuze, 1968/2004) and also in the context of the mundane (Dyer, 2011) and an aesthetics of boredom (Flatley, 2004). Regarding the work of Andy Warhol theorists such as Foster

(1996) and Crow (2001) have spoken about the role of repetition in the artists screenprints and in relation to the opening up or closing off to affect.

Within visual cognition, the connection between repetition and affect has been widely studied by way of mere exposure (Zajonc, 1968). Mere exposure effects are explained as an increase in positive affective response towards a neutral or positive stimulus simply from having been presented with it previously. Such effects have been shown as robust across categories with neutral and positive stimuli (Zajonc, 1989) and even with artworks broadcast repeatedly over time. Mere exposure has not been considered to great effect with negative stimuli or with regard to repetition within a single artwork.

My research considered Warholian repetition and the serial presentation of images within his *Death and Disaster* series (Kass et al., 2015b). Through his statements about the artworks Warhol theorised that the repetition of gruesome images lessens the associated negative affective response. Consideration of the existing psychological literature suggests that Warhol was correct in the sense that repetition increases positive affective response. Yet in the case of images with negative semantic content it is likely that such exposure effects are superseded by the additional access to the negative semantic content afforded through repetition (Reber et al. 2004) and the formation of a more robust mental representation of the negative imagery.

This finding reiterates the complexity of art spectatorship (and visual experience in general) and reminds that individual perceptual or cognitive processes should not be considered in isolation. Theorists of Warhol's work had correctly deduced that within the *Death and Disaster* series the viewer is both closed off from negative affect as well as confronted by it in turn. However, the research brings up the issue of findings from psychology as contradictory to artist's stated intentions and what this should mean in a larger sense. Returning to the distinction made by Currie et al. (2014) there are various points of view as to what role empirical investigation should play in terms of previously speculative claims.

I am of the view that it should not be a matter of findings being used to prove or disprove previous theory. In other words and in the context of art history it is of little consequence that Warhol was partially incorrect in his assumptions about repetition. Such a realisation should not detract from the artist's accomplishments or contribution to pictorial practices. In essence Warhol offered a hypotheses that he experimented with through artistic practice. Part of his hypothesis has since been corroborated while another appears to be incorrect. This is not an unusual occurrence within the sciences and in that sense hypotheses that are eventually falsified are still useful towards the advancement of knowledge.

Taking on the notion of art practice as a form of experimentation I produced a body of work that explored aspects of repetition and in relation to an aesthetics of boredom. This resulted in a group of related outcomes comprising paintings, drawings and photography. For example, I investigated the potential for repetition to make an otherwise uninteresting visual experience worth remarking simply from the act of repeated looking. I also explored the physical aspects of repetition using painted canvases in a sculptural capacity. Through both photography and drawing I considered repetition devoid of semantic content and the spaces between repeated forms left behind when the forms themselves are removed.

The final chapter presented summation and evaluation of a wider collection of creative outcomes produced alongside the theoretical research. I discussed my desire to recalibrate my relationship to making art in cognitive psychological terms, having previously been interested in aspects of psychoanalysis as a non-empirical psychology. I explained how becoming familiar with the features of human visual cognition and related perceptual and cognitive practices provided opportunity to rethink my own pictorial practices. This was explored mostly through photography, which included aspects of variation and repetition.

Further creative outcomes produced alongside my writing investigated possibilities within variation and repetition as features of pictorial address. Towards the end of my research I worked on a more substantial outcome that incorporates painting in the more traditional sense but also some painted sculptural elements. The piece represents a synthesis of many of the ideas encountered throughout the duration of developing the thesis and more specifically the notion of populations or networks of images (Joselit, 2013) and relational knowledge as described by Minisalle (2013). I introduced an empirical basis to the idea that through the presentation of multiple discrete images the viewer is prompted to search for meaning and to imagine potential relationships between the various components.

I contend that my research has demonstrated through practice that there is value in applying existing findings and insights from psychology to aspects of art spectatorship. For me, and as I believe I have shown, that value exists in providing a more explicit manner in which to talk about pictorial address and, effectively, how paintings work. From the perspective of art practice, exploring the psychological bases of modes of address provides opportunity to reflect on possibilities in the construction of pictorial address. Equally, art practice can further understanding of modes of address through practical experimentation and engagement with a cycle of immersion and reflection, incubation and creative synthesis.

For psychologists there is the advantage of understanding the importance of empirical findings beyond the everyday and in the context of meaningful interactions in the world. Considering the often-rigid walls between disciplines, applying psychology to art as I have done here demonstrates the existence of shared concerns that benefit from examination through multiple perspectives. There is also the possibility that psychological studies of works of art can move areas of study within psychology forward in their own right. For example, consideration of Warhol's work has revealed that there is relatively no literature on mere exposure effects with negative imagery. This is an area that psychologists might pursue outside of the art realm, especially given the increasing frequency with which negative images are shared in the news and on social media.

Highlighting shared concerns also presents a hurdle requiring the development of a shared language that is understood and valued by all those involved. This has been a significant challenge throughout the development of this thesis and one that benefited greatly from preparing manuscripts to submit to academic journals. Such an exercise required a level of clarity in order to formulate an argument both convincing and beneficial to multiple disciplines simultaneously. I believe that this is an area that will need further attention should the field of empirical aesthetics hope to garner more interest from art theorists and art practitioners. In essence this is an opportunity for the field of empirical aesthetics to expand and to develop a sense of shared ownership between art theorists, practitioners and psychologists.

In the context of my research there is an opportunity to further develop the hypotheses presented in the second chapter. There is scope to look more closely at cognitive theory and related findings in order to offer more robust hypotheses about the functioning of a wider range of pictorial modes of address and by way of art theories. There is the potential to explore other features of seriality in cognitive terms such as the grid structure, which is a feature of many serial artworks. Further work on relational knowledge as implicit within artworks that involve networks of images could be productive, as could exploration of cognitive aspects of motif within art spectatorship. There is also the chance to further develop the creative outcomes put forward as part of the research process.

In conclusion, this thesis has demonstrated through practice that there is value in applying theories and findings from cognitive psychology to aspects of art spectatorship. Doing so provides meaningful insights regarding pictorial practices and modes of address, which sometimes support established art theory and at other times calls them into question. In particular, the research has revealed perceptual and cognitive processes that underlie the experience of viewing seriality in art, namely concept formation and exposure effects. The production of creative outcomes has advanced the theoretical research and has been motivated by it. The research has revealed a number of challenges

within interdisciplinary art and science research but has ultimately confirmed the potential for a more inclusive and well-rounded approach to psychological investigations of visual art.

Postface

The viva exhibition brought together a range of creative outcomes produced during the period of developing the thesis (Appendix A). In doing so I was able to further reflect on the manner in which certain ideas and themes developed. Presenting the work in a gallery setting also brought forward more focused consideration of audience response and how the artworks might be understood and experienced by a viewer.

The exhibition served primarily as a showcase of work for the examiners. Artworks were not labelled or contextualised as might be expected within an exhibition with wider public access. There was no introductory text or catalogue accompanying the exhibition to situate the work in relation to key themes. Had I intended the exhibition as a public-facing initiative I would likely have engaged at least some of these conventions.

However, given the nature of the thesis and its focus on spectatorship and pictorial address, it would have been a missed opportunity not to consider how some of the works might be received and comprehended by viewers. Although not intended to elicit specific viewer responses, some of the outcomes were produced with a play to certain perceptual, cognitive or affective responses. There were some questions that came to mind when seeing the work displayed.

For example, I was curious as to whether the audience would identify relationships between sets of images shown together. I wondered if they would respond differently to photographs displayed in isolation versus those shown in pairs and as part of a group. I was interested in how the audience would relate the seemingly disparate elements of some of the later works comprised of discrete pictorial elements and painted objects. More generally, I wanted to know if and how they would attempt to make sense of the presentation on the whole (i.e. how one work relates to the others).

Through good fortune I was able to gather initial audience impressions, some of which provided insight into the points raised above. In the afternoon following my examination there was an induction event for students beginning their studies on the MA Contemporary Curation course at Winchester School of Art. It was agreed with their Programme Leader that as part of their induction activities these students would be invited to view the exhibition and would be asked to write down some thoughts about particular works that I had pre-selected. I gave students the following instructions:

The artworks currently installed in the Winchester Gallery are part of a doctoral thesis that explores notions of pictorial address and seriality in art.

Please take a few minutes to look at the artwork or group of artworks that you have been assigned and, individually, write a caption for it/them below. Your aim is to, without knowing the context of the work or the artist's intentions, provide another viewer with an entry point into the work. You might think about the work's formal characteristics, its narrative content or emotional aspects. If you would like you can write about the work in relation to the other works on display.

This directive provided minimal context in that it mentions pictorial address and seriality but I did not expand on what these terms refer to or how they were explored in the works on display. Some of the students engaged wholeheartedly with the task while others were somewhat reluctant, however all of the students, 19 in total, agreed to participate and consented for me to use their responses as part of my reflection on the exhibition. The full text is included in Appendix B and some key quotes are presented and discussed below. It should be noted that for some of the students English was not their first language resulting in grammar, syntax and spelling errors. Within the following quotations I have left the wording as is except in cases where the intended meaning became convoluted, in which case I have made corrections placed within brackets.

I asked several of the students to respond to the series comprising collections of images sourced from Google (Fig. 18). Each collection (there were six in total) was the result of entering a photographic portrait of my mother into Google's search by image function.

S1 focused on the emotional aspects of the work and the expressions on the faces of the people portrayed in the individual pictures. S1 did not mention anything about the relationships between the pictures in each collection or within the series. On the other hand, S2 seemed to consider the relationship between pictures in each collection and said "Look pictures have the common features. The face look different, but the colour is similarly". S3 made a similar point by saying "Personally it reads as portraiture of similarities and diversity" and S4 suggested that "each separate piece appears to group a range of people in a certain way. Each group of images arranged by image saturation/colour".

Although few in number, these responses indicate that there was at least some level of viewer acknowledgement that a relationship exists between individual instances. It would also appear that this acknowledgement is based in part on a recognition of similarities and differences; perhaps as a result of the visual system's natural predilection to make sense of a flux of perceptual information. It would be interesting to know to what degree the presentation of the sets of images contributed to

viewer's responses. In other words, was the grid formation essential to the extraction of similarity and difference?

I also asked a number of students to consider the installation presented on the right hand side of Fig. 30 and in Fig. 31, which I explained comprised a single work.

S5 described the piece as "A work exploring what can be contained in a frame or outside of it. The objects are not bound by the frame but by their associations". S6 focused less on the associations between elements and more on what particular forms might represent. S6 did, however, recognise that rocks were an element that appeared a number of times and suggested that perhaps this referred to a tool that bridges passion with rational thinking.

Like S5, S7 picked up on the emphasis of framing within the work and mentioned that "This work examines that which lies almost outside the frame. It draws the eye to the things which are not quite inside nor outside. Its dismantled nature makes you ask what belongs where or if anything has any place of belonging at all". S8 also focused on symbolism in the work and suggested that the work might reflect the artist's inner thoughts displayed in the form of a visual diary.

It is difficult to draw any particular conclusions from these disparate remarks although it is worth highlighting that framing was identified as an important aspect of the work and that there was some recognition that there might be a connection between the various components. In particular, S5 used the term 'associations', which again suggests that there was an inclination towards making sense of the components simply from them being placed next to one another and within a single frame.

Another group of students was tasked with writing comments about the floor piece shown in Fig. 36. S9 seemingly did not understand the task and only tried to identify the media used to create the work. S10 stated "This work suggests that there is a subtle communication between artwork and viewer" and offered the possibility that placing the work on the floor rather than a wall was "to give a different perspective". S11 surmised that one purpose of the work is "to explore elements of the pictorial image" and believed that "Tonal, texture and viewpoint play a key component to this piece as a singular piece".

There seems to have been acknowledgment by S10 and S11 that part of the artworks mode of address involves the positioning of the viewer. I find it interesting that S10 specifically referred to the work as pictorial, although this may have been the result of my having used the term in the task's instructions. The use of the term 'singular piece' by S11 also seems important as it implies that what could be considered a serial artwork has been perceived as the functioning as a single unit. Again, I

wonder if the way the individual elements have been placed next to one another is responsible for this effect.

The remaining two groups of students looked at the photographic works. One group of students spent time considering the single photograph presented in Fig. 32, while the other contemplated the series of photographs shown in Fig. 33.

In the first instance the students focused unanimously on formal analysis of the work as well as evaluation of what the picture might represent. S12 made mention of the potential relationship between the picture and viewer, saying that the artist is "Using light to attract people and instruct audience to focus on small things in our life". S13 picked up on the potential banality of a roll of toilet paper and explained "Maybe the artist want to show the two opposite sides of daily life, one side is light while the other side is dark". S14 said "When we meet some challenges, some problems, not only one side of these things, but also have other side that what said in China, everything have two sides when we meet a bad thing, it may me a good thing for us". S15 also made reference to light and dark in the picture, indicating that perhaps the students had consulted with one another (I had not specified that they should do otherwise).

In considering the series of photographs in Fig. 33, S16 suggested that the artist's aim was to "express creative ideas about daily life including some common factors e.g. windows, walls". S17 focused on the use of light and shadow in the works and focused on their potential affective impact, stating that they might "make the audience feel depress". S18 commented on the differences between two of the pictures shown side by side stating " the two pictures display the different positions" and that "It shows the origin of change". S19 compared the sets of pictures displayed together, commenting on the viewer's experience as well as the artistic volition behind the works. S19 said "First two works expressed artist's feelings when he just woke up and staring at his room's wall and windows" and "Fifth and sixth pictures are looked quiet and silent. People will feel calm when they pass through these two pictures".

The insights provided by the students' written comments about the photographic work are notably different in focus from the other pieces. More specifically, there seems to have been a greater interest in the works' formal qualities (i.e. the use of light) as well as the emotional aspects of what was presented. I did find it compelling though that one student remarked that the photographs of walls and windows might have resulted from the artist's affective response in the moment of perception, which was then captured. This is not far off from describing how, in actuality, the images came about and it was enlightening to read that this simple explanation was picked up on by at least one viewer.

As an exercise, collecting viewer responses to a number of works on display was enlightening. Although not a rigorous collection of data, there is at least some indication that the viewers responded to certain aspects of the works' modes of address. It is difficult to tell what features in particular contributed to the viewers' reactions although this could be an area to pursue through further, more structured research with the artworks.

Appendix A
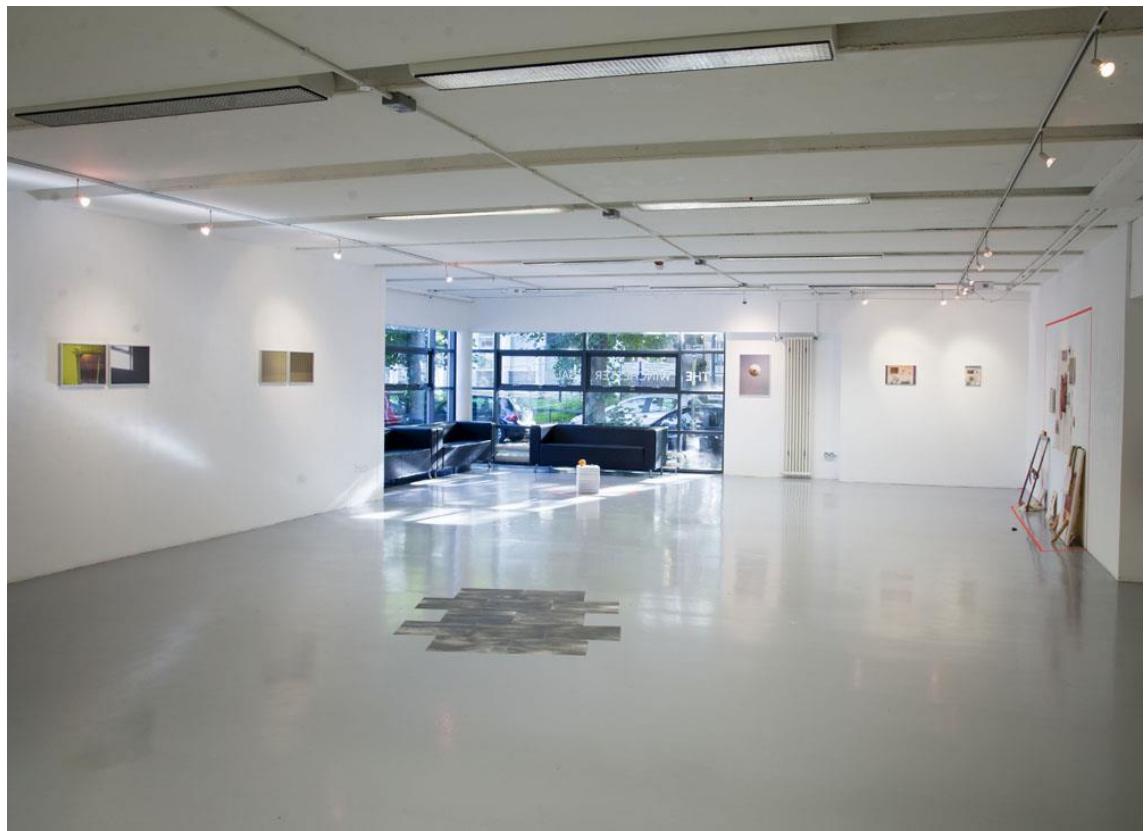
Figure 28. Viva exhibition installation shot.
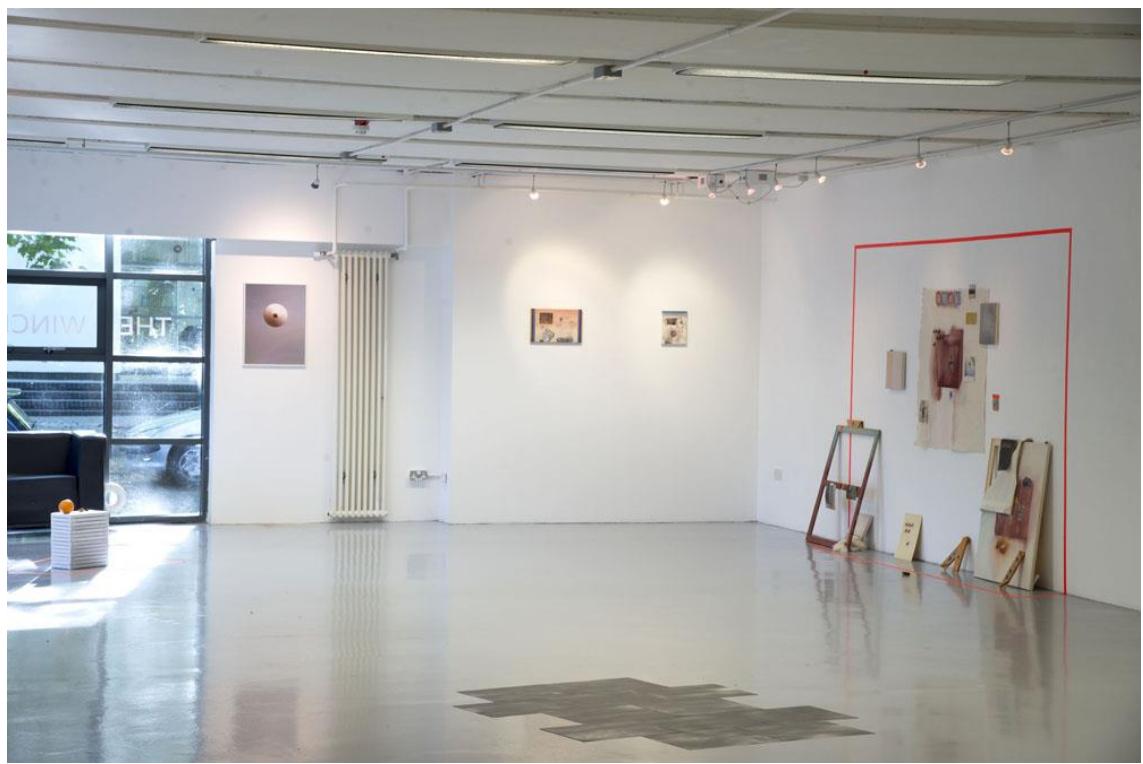
Figure 29. Viva exhibition installation shot.


Figure 30. Viva exhibition installation shot.
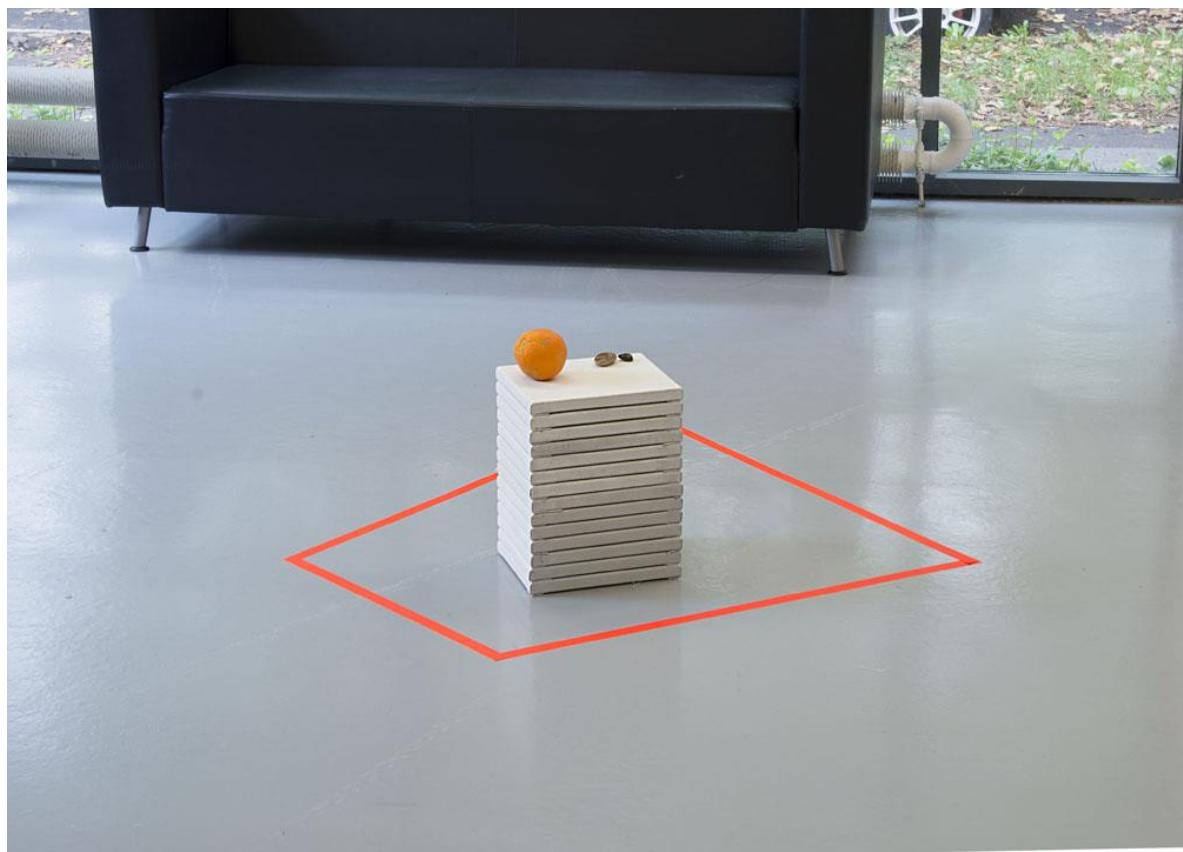
Figure 31. Viva exhibition installation shot.
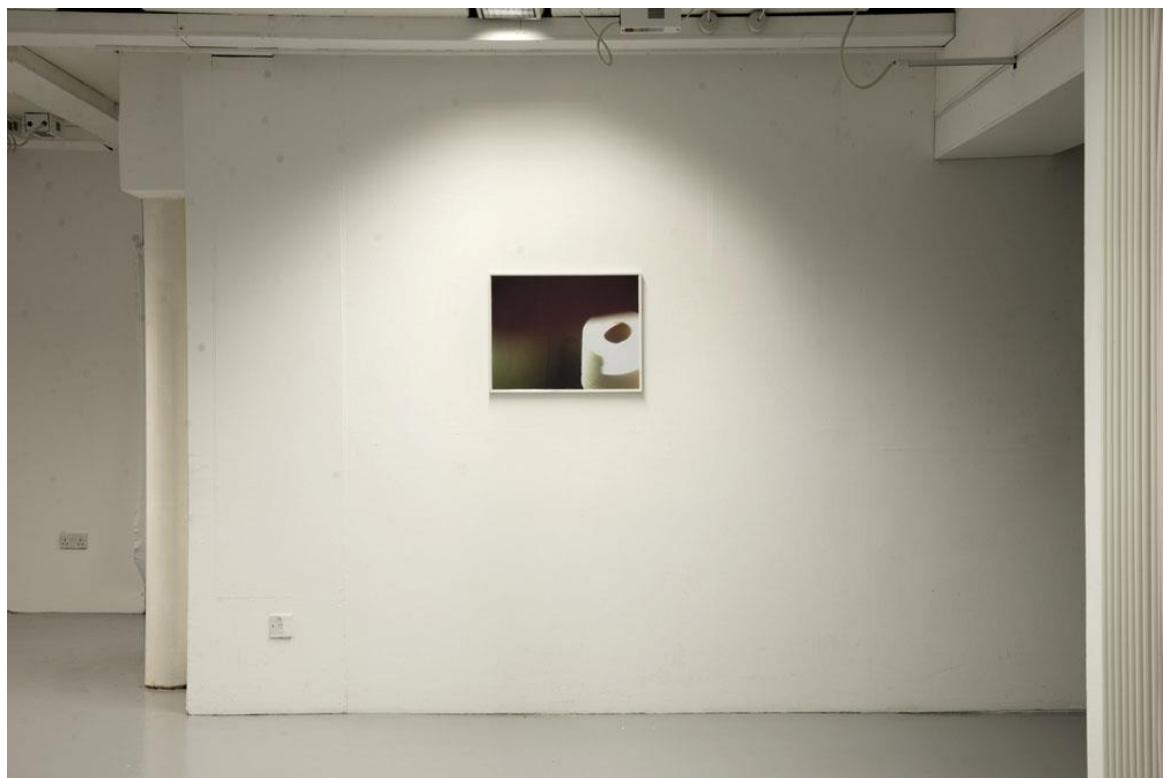
Figure 32. Viva exhibition installation shot.

Figure 33. Viva exhibition installation shot.

Figure 34. Viva exhibition installation shot.
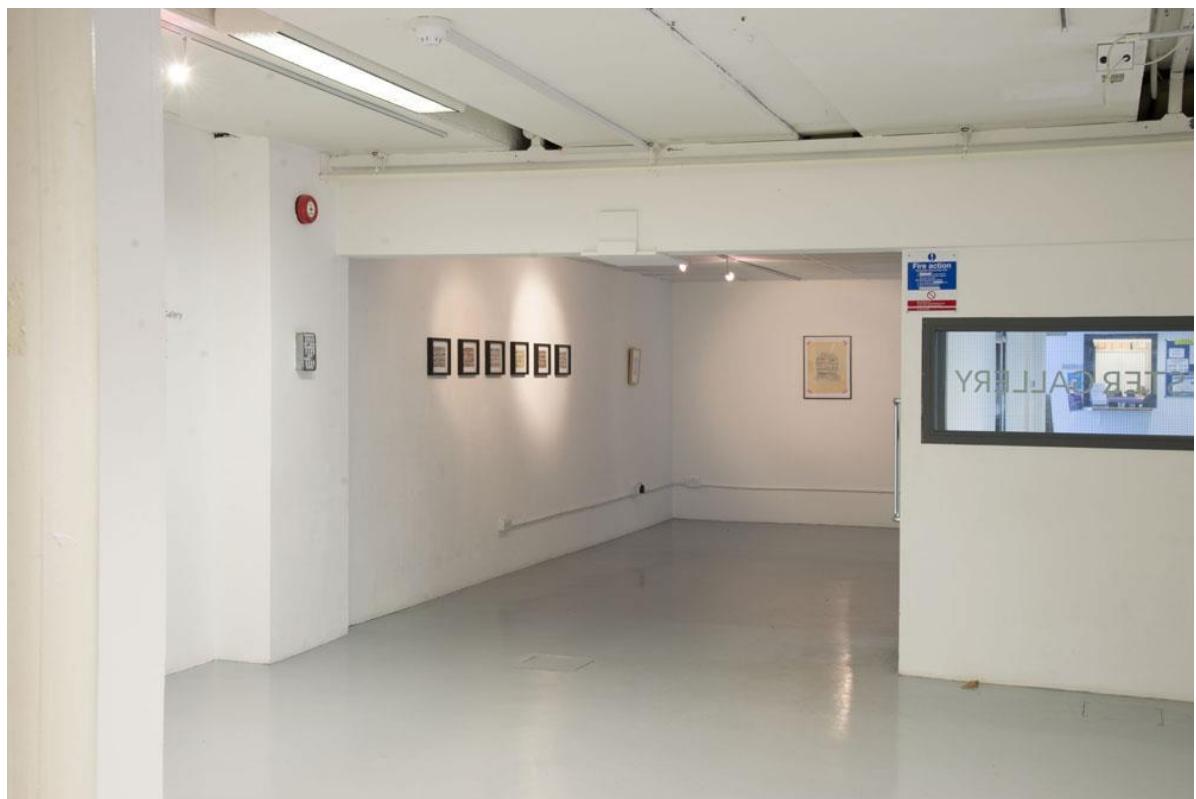

Figure 35. Viva exhibition installation shot.
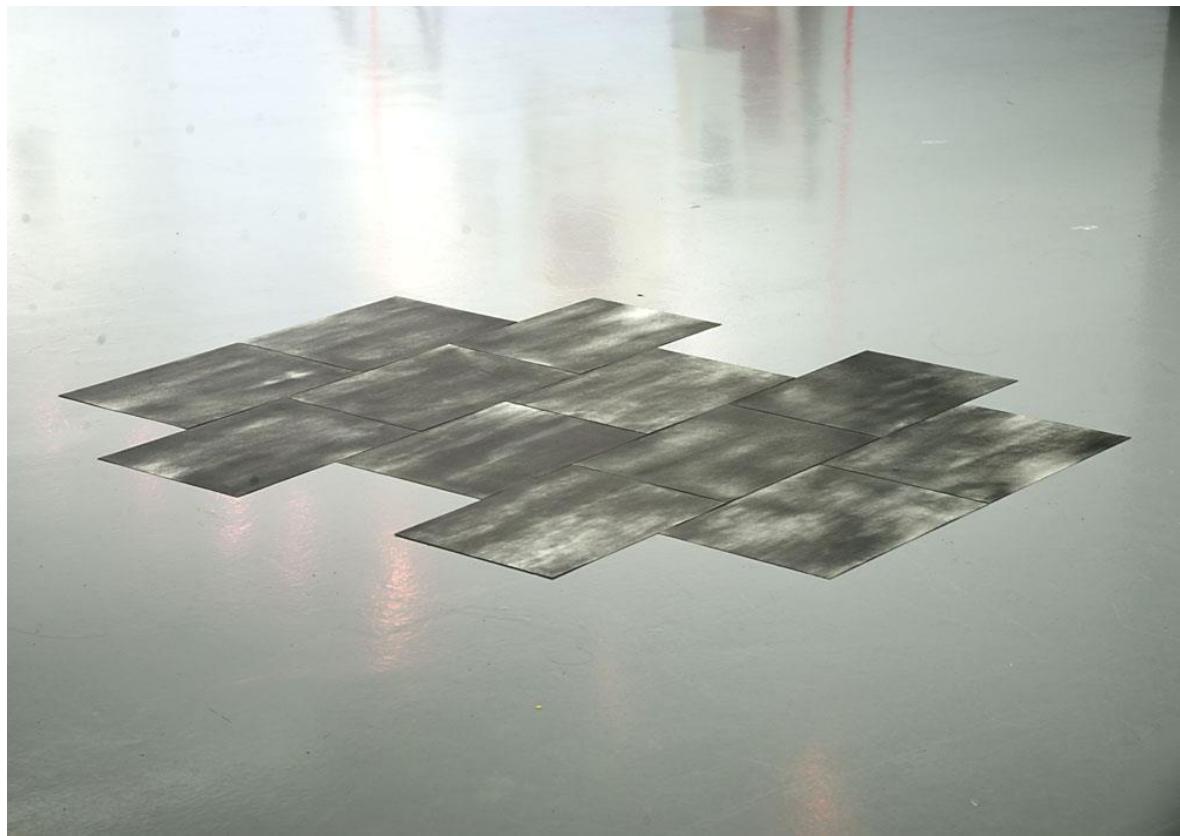
Figure 36. Viva exhibition installation shot.

Appendix B

S1: "I think those six photos consist of selfie and photo taken by others, express the feeling of happiness and sorrow, together with a little bit of I don't care.

And personally, I think sixth from the left side should be placed in the middle, because I can feel this picture's feeling is stronger than others.

Generally, I think these pictures trys to tell people have feelings and these one can be captured or fixed. Every time you reopen the photo book it will just jump out again".

S2: "The colourful face from all over the world. Look pictures have the common features. The face look different, but the color is similarly. Also include the hair, color, expression.

The face. The world."

S3: "At first the artwork seem overly curated, however as I observed further the details it became clearer the ethinographical and the taxiconomy forced on the viewer. Personally it reads as portraiture of similarities and diversity".

S4: "A series of 6 individual photograph montages compiled of a mixture of (human faces/facial expressions) each separate piece appears to group a range of people in a certain way. Each group of images arranged by image saturation/colour".

S5: "A work exploring what an be contained in a frame or outside of it. The objects are not bound by the frame but by their associations".

S6: "This particular artwork, which contains 2 pieces relates with the idea of 3d inside painting. Its bright orange stripes surround an area that moves beyond the materiality of the elements. Also there is a clear symbolism regarding cave paintings and basic shapes which could directly guide us to our

animal instincts and the way we first developed language. On the other hand, the rocks as an element that keeps appearing throughout the artwork create the idea of the tool, as a bridge between our passions and rational thinking".

S7: "This work examines that which lies almost outside the frame. It draws the eye to the things which are not quite insides nor outside. Its dismantled nature makes you ask what belongs where or if anything has any place of belonging at all.

This piece contrasts a sense of stability and precariousness".

S8: "From my perspectives, it's a dairy collections which represent the artist's deeply mind and inner emotion by exhibiting objects from bedroom. Bedroom is quite private and personal space for everyone, and everyone may have some dreams which are symbolized by the image of sheep with tales. The sheep looks abnormal but creative, so it could be presenting as the dreams are creative as well. Lots of squares (boxes) in the artpiece, but these sheeps are out of the boxes, it could be something like out of tradition and think outside of boxes as contemporary art. Basically, it places in the bedroom, and try to view from the window to explore the world".

S9: "Name of the artist

The name of the art

Materials: charcoal

Intentions of the art/ the thought of art pieces

S10: "This artwork displayed its charcoaled tiled paper on the floor to give a different perspective and to associate relevance to having tiles/brickwork on the ground. It's almost camoflauged onto the ground to almost convey how artwork can blend into an environment. This work suggests that there is a subtle communication between artwork and viewer".

S11: "The artist has used the media of charcoal to explore elements of the pictorial image. Creating an abstract yet geometric structure to suggest an ordering to an image that is unknown. Tonal, texture and viewpoint play a key component to this piece as a singular piece and also as a whole show".

S12: Paper role is people's daily necessary. Using light to attract people and instruct audience to focus on small things in our life. The role is not complete shape which a sign of coma, let's stop for a while and enjoy the light".

S13: "It's a roll toilet paper which is very normal article of daily use but with the amazing light. Maybe the artist want to show the two opposite sides of daily life, one side is light while the other side is dark. The roll toilet paper is very light in this dark art work, so maybe it means people want to break free from the dark life".

S14: "As we see in this artwork, I see a roll paper in a black background. The atmosphere of false and true, black and white was artist want to express. A striking contrast can make me to think more of our life, study, membership and so on. When we meet some challenges, some problems, not only one side of these things, but also have other side that what said in china, everything have two sides when we meet a bad thing, it may me a good thing for us".

S15: "In this artwork I can see a roll paper and under the sun. this is a very bright and extreme dark contrast. The feeling of light and strong. I am very appreciate the method which the artist has showed us. How to express the artwork. It is shock my heart".

S16: "These six works of art express creative ideas about daily life including some common factors e.g. windows, walls or _____ by using light and shade structure the whole picture without usual methods. The methods mentioned above make this series of craft unique".

S17: "This is a group of artworks about the combination and contrast of light and shadow. The shadow has different shape due to the different directions of light using. This group of crafts make the audience feel depress".

S18: "The sunshine came from the window; the two pictures display the different positions can appear different art. It shows the origin of change.

Different angle gives different results, and the yellow and black color give visual shock to the people.

The comparison of different beauty for symmetry design and dissymmetry arts".

S19: "1. Lights and window shades. (First two works expressed artist's feelings when he just woke up and staring at his room's wall and windows)

2. Third and fourth pictures, they might be taken in morning and at night, which artist want to deliver different mood and made huge contrast with two photos.

3. Fifth and sixth pictures are looked quiet and silent. People will feel calm when they pass through these two pictures".

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