Conceptualisations of Self in Contemporary Interactive Artwork: a Case Study of Lynette Wallworth's *Duality of Light*

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Abstract

This paper, which is contextualised in terms of the broader history of the moving image, examines new media artist Lynette Wallworth's installation Duality of Light with respect to recent advances in neuroscientific research [1,8]. These have led to greater understanding of how the brain processes visual imagery. Of greatest relevance to Wallworth's work is the discovery that the binding of the largely anatomically segregated attributes of colour, motion and faces occurs asynchronously and is subject to a temporal hierarchy. Moreover, such binding is post-conscious. Further to this, following Gansing [3], while simultaneously factoring in these recent neuroscientific advances, the idea of 'interactivity' is challenged. The inadequacy of 'interactive' as an undifferentiated descriptor, often uniformly applied to diverse new media works, is also highlighted. Works such as those created by Wallworth – whose work is informed intuitively by these recent neuroscientific findings – reveal the shortcomings of such homogenising terminology. Finally, this exploratory paper, which will form the basis of further work, demonstrates the interwoven nature of the aforementioned subject matter and thematic concerns.

Introduction

Since the late nineteenth century, when moving images were introduced, artists, *afficionados* and entrepreneurs have experimented with the medium. In the past three decades the so-called 'digital revolution' has even more dramatically altered the ways in which human beings conceptualise, visualise and interact with their cultural heritage. These changes have had a profound effect on what, in 1972, John Berger described as human beings' diverse 'ways of seeing' [2].

More recently still, mostly in the past decade, neuroscientists who specialise in how the brain processes visual material have made a number of important breakthroughs. Neuroscientific understanding of how the brain processes separate attributes of visual images has expanded exponentially. Of particular significance (*inter alia*) in this context is the new knowledge recently generated about the brain's processing of animated visual information. Bartels and Zeki [1] for example, have conducted research into how the brain processes distinct attributes such as motion and colour in anatomically (largely) segregated systems and have also established that the 'binding' of such attributes is subject to a temporal hierarchy [1:2284]. These researchers write that

> *The attribute specific binding times are in line with our knowledge of the organization of the visual system, where colour and motion are processed in largely segregated systems* [1:2284].

Most tellingly Bartels and Zeki demonstrate that such binding is asynchronous and is *post-conscious* (my emphasis) [1, 8].

Based on experimentation with human subjects, Bartels and Zeki also found that binding times are dependent on the specific attributes to be bound. For example, where such binding occurs *within* attributes, that is, colour-colour or motion-motion, the binding period is more rapid than it is *across* attributes, in colour-motion binding for instance, where perceptual delays are longer. This is the case because different neural pathways are associated with each attribute. In other words, binding times are dependent on the specific attributes to be bound [1, summarized by the author].

Further to this, in earlier research [4], Halgren et al first identified the small, separate area in the human posterior gyrus that responds selectively to faces. Such new knowledge – of the segregation of areas in the brain specifically involved in visual processing and identification of their specific locations - adds another level of complexity to our understanding of contemporary visual art involving moving imagery, colour, and faces. Thus recent neuroscientific knowledge has become relevant well beyond what many people involved 'the arts' have traditionally regarded as the cloistered world of pure scientific research. This new knowledge has implications for the broader cultural arena.

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II. Implications of This Research

With respect to the brain, the fact that human beings do not have a single site of visual consciousness, but separate perceptual sites for facial recognition, colour and motion, and the discovery by researchers including Bartels and Zeki that these sites operate asynchronously and are only resolved and unified post-consciously, potentially alter our understanding of the contemporary visual - and therefore cultural - landscapes. When digital artists, gamers and others exploit this potential, whether consciously or unconsciously, it reveals that cultural shift is an almost inevitable consequence of scientific advancement.

II.i. The Moving Image and the Face

From the beginning of the history of the moving image, the human face has occupied a pre-eminent, if not sovereign, position. This has been the case particularly in the western world where, in film and television close-ups, human faces often figure prominently - a tendency that has persisted into the digital era.

Susan Sontag has written about how the privileged status of the face in Western culture over-determines our

> *...evaluation of physical beauty and physical ruin. All the debunking of the Cartesian separation of mind and body by modern philosophy and modern science has not reduced by one iota this culture's conviction of the separation of face and body, which influences every aspect of manners, fashion, sexual appreciation, aesthetic sensibility - virtually all our notions of appropriateness. This separation is a main point of one of European culture's principal iconographical traditions, the depiction of Christian martyrdom, with its astounding schism between what is inscribed on the face and what is happening to the body...Our very notion of the person, of dignity, depends on the separation of face from body, on the possibility that the face may be exempt, or exempt itself, from what is happening to the body*. [6:39-40]

> Sontag goes on to say that in Western cultures
> *...there can be no real argument against the aristocracy of the face*. [6: 40]

The historically informed - but continuing - primacy of the face in contemporary visual media not only has important implications for the emerging field of cultural heritage knowledge visualisation, but also has relevance for the previously cited neuroscientific research. Furthermore, perhaps unsurprisingly, given its historical prevalence in visual conceptualisations of the self, and its continuing pervasiveness in contemporary visual media, the human face plays a significant role in the artworks of Lynette Wallworth.

III. Where New Media Meets Neuroscience: Lynette Wallworth's *Duality of Light*

The balance of this paper is devoted to a case study of Australian new media artist Lynette Wallworth's 'interactive' work *Duality of Light.* Certain recent shifts in the culture of the moving image become sharply defined at the critical interface where the moving image, visual art, aesthetics, technology and recent neuroscientific findings and new knowledge meet, to forge unexpected alliances. The cultural shifts that are taking place at this critical junction are key to understanding Wallworth's *Duality of Light.*

Wallworth has become a major player in the field of new media, creating works that transcend the traditional boundaries or 'the great divide' that has historically existed between the arts, sciences and technology. It also needs to be noted that Wallworth works predominantly within a 'fine art' paradigm, rather than in a commercial, populist context.

III.I. The Language Question

Art critics, (for example, Wendy Walker in 2009) and gallery visitors alike have routinely described Lynette Wallworth's visual works as both 'immersive' and 'interactive' [7]. Neither term actually does Wallworth's work justice. 'Interactive' has become an umbrella term potentially leading to loss of semantic accuracy and depth. As Gansing suggests, animated visual artworks and commercial games have too often been described generically and inexactly as 'interactive', whereas, as a *concept,* interactivity needs to be understood as existing along a continuum [3]. Gansing attempts to go beyond simplistic analyses of digital media by exposing the conceptual weakness of the entrenched binary conceptualisation of users being either 'active' or 'passive'. As Gansing writes, it appears that there is

> *...common agreement that technological inactivity through new media can have an empowering effect that takes place through a liberation of a subject – the once passive couch potato, becoming active, 'clicking away' media composer. Parameters for judging states of activity and passivity do not seem to enter into consideration.*

> *...The criteria for interaction, including commercial interests and power structures are seldom mapped out and neither are ties that these structures have to individual works and their strategies for interaction.* [3:40]

To Gansing's analysis I would add that in any discussion of the *oeuvre* of new media artists, individual works should be examined on a case-by-case basis to determine the level of 'interactivity' (if any). 'Interactive' is not an adequate word to describe the complexities of viewing audiences' relationships with the work of any new media artist. This certainly applies

to Wallworth's (literally) moving artworks, where rather than playing an 'interactive' role, spectator/participants often play a mutually constitutive role.

It does not necessarily follow that spectators/participants have the power or control to determine the end result of a new media work, simply because their presence is required to trigger that work, or even when such presence is integral to the realisation of a given work. In other words, human presence (or even participation) alone does not *ipso facto* constitute (inter-) activity. In fact the reverse is quite true with some new media: in some instances human participants are consigned to passivity, despite their presence being required to initiate the moving image.

III.ii. Discussion: Lynette Wallworth's *Duality of Light*

Notwithstanding questions about interactivity and whether this concept has now exceeded definitional usefulness, Wallworth's recent work provides a example exemplifying some aspects of the previously cited neuroscientific research. Of particular import in this context are the perceptual delays in binding colour, motion, and faces into an apparently unified whole. The recent explosion in neuroscientific knowledge has important implications for understanding the cultural shifts that have been enabled by, have become more pronounced as a result of, or are a byproduct of, the introduction of so-called 'interactive' new media or other forms of new media.

The preceding comments are applicable to Wallworth's installation *Duality of Light*, first exhibited at the Samstag Museum of Art in Adelaide, South Australia, in an eponymously named survey exhibition (19 February – 24 April 2009), and more recently at Carriageworks in Sydney (7 – 24 January 2010) in her exhibition *Invisible by Night, Evolution of Fearlessness & Duality of Light*.

Duality of Light is designed to be experienced, ideally, by a single viewer at a time. As one walks along a long, dark, narrow passageway, to the hypnotic sound of water rhythmically dripping from cave walls, one rather suddenly encounters a life-sized, looming figure moving in one's direction. It takes a moment to realize that this portentous presence in one's field of vision, walking towards oneself, *is* in fact oneself. The realization is disquieting and for some with whom I discussed the experience, confronting. A short time after one's encounter with oneself as a unified entity, this virtual 'self' explodes (or implodes), shattering into tiny particles of shimmering light. Eventually the light disperses and disappears, and to quote Shakespeare, the rest is silence. [5, Act 5, Scene 2: 416]

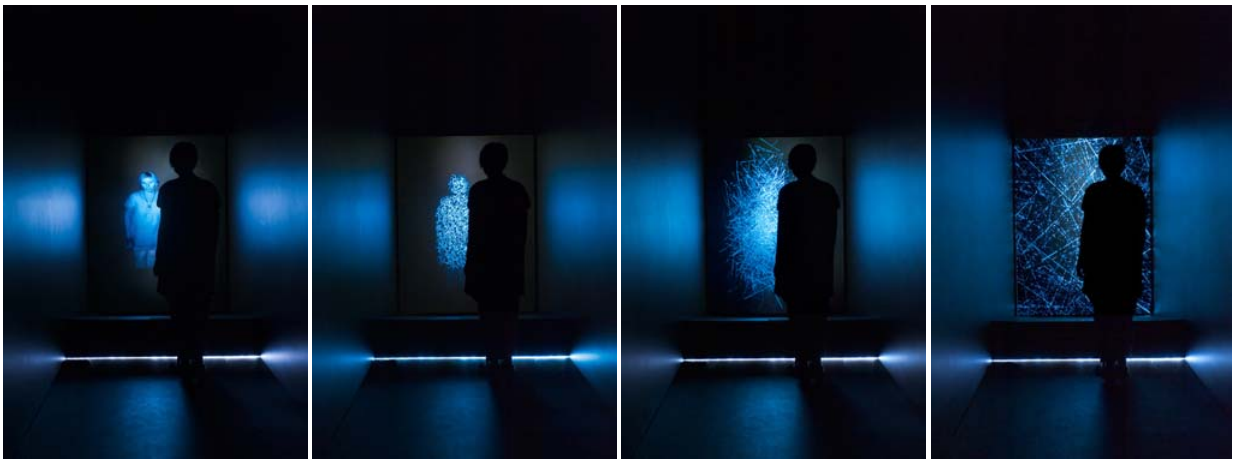

Figure 1 Lynette Wallworth, 2009, *Duality of Light*, (stills), images courtesy of the artist and the Samstag Museum of Art, Adelaide, South Australia, photographs by Grant Hancock.

For all who participated in this remarkable experience, there was a delay in comprehending that it is actually the *self* that one encounters in *Duality of Light*. The initial 'mis-recognition' of oneself *as* oneself, or at least as a virtual iteration of oneself, whilst one is still engaged in the act of walking towards oneself, and the consequent sense of discombobulation that this engenders, was also generally experienced. For some, including myself, such 'mis-taken identity' or lag in self-identification, was a relatively short-lived matter. Nevertheless the perceptual delay in self-recognition provides an explanation for the shock that occurs when realisation dawns.

However, a number of people (with whom I later discussed the experience) did not realize at any point during or afterwards that the encounter had actually been with their own *doppelgänger*, or an abstracted version of it. When, after leaving the exhibit, some people learned this, in a number of instances there was strong resistance to the idea that the encounter inside the *Duality of Light* tunnel had in fact been with the self, or at least, with one's shade.

At this point it needs to be pointed out that Lynette Wallworth is first and foremost a visual artist, and that her primary focus is aesthetic. Along with others, I was drawn to this work because of its beauty and honesty. Wallworth's artworks also exemplify, in ways that are both embodied and abstract, the age-old struggle of light with darkness, a theme that has inspired visual artists (again, particularly in western art) from time immemorial.

My intention therefore in the following analysis is not to be reductive, nor to diminish the achievement of *Duality of Light* by considering it solely in terms of its neuroscientific constituents. Rather, the aim is to elucidate some of the reasons for its success as an artwork. In part this entails identifying the (for some, powerful) subliminal effects of this artwork. As a significant corollary, it is important to pre-empt that one important finding of the recent neuroscientific research cited is that the (visual) sum of what we see when we engage with moving visual imagery - that is, what we see *after* we have processed all of the separate pieces of visual information that we receive, and eventually synthesise these into what appears to be a unified whole - is in fact significantly greater than its parts [1;8]. The latter point is also important in terms of understanding the power of *Duality of Light* as a coherent, aesthetically pleasing artwork.

The numinous presence of Wallworth's artworks arises to a considerable extent from her adroit handling of the unique properties of light, colour and motion. This we see in *Duality of Light.* Nonetheless, to account for the 'shock factor' and the lag in (and even, in some circumstances, the resistance to) self-recognition experienced by many who ventured into *Duality of Light*'s darkened tunnel, it is necessary to turn to the recent breakthroughs in neuroscience for an explanation.

To recapitulate and to expand on the most significant aspects of these developments, in recent years neuroscientists have identified distinct geographical locations in the area of the brain involved in processing visual material. These distinct sites can be mapped onto functional specialisations in the visual cortical system. Zeki [8] demonstrated that there are separate loci controlling micro-consciousness for colour, for the visual motion system, and for faces.

Each of these individual loci has an important role to play in processing visual information, notwithstanding their interaction with one another. As Zeki demonstrated, each has its own "*distinct, and characteristic anatomical inputs, despite the many anatomical opportunities for them to interact*" [8:214]. There is also direct evidence that cortical sites are perceptual sites. [8:215].

With respect to the relationship between Wallworth's artworks and these recent scientific findings in the field of visual perception, Zeki et al's most important discovery is that these visual processing sites are *not* unified. In other words, the attributes of visual perception are not processed simultaneously, but asynchronously. Although the time differences (or time lags) involved in processing different aspects of visual knowledge are very small, nevertheless they are significant in terms of the time taken for the human brain to process colour, motion and faces. Colour is perceived before motion, for example. As Zeki explains, "*this perceptual asynchrony is not limited to colour and motion, because it has also been shown that locations are perceived before colours, which are perceived before orientations*" [8:215]. As earlier stated, it is of the utmost significance is the fact that the 'binding' of these separate elements is "*distributed in time and space*" and that such binding is post-conscious. [8:215]. In other words, there is a temporal hierarchy, in terms of integrating the various aspects of what we call 'seeing'. Equally relevant in this context is that such related research findings are "*not limited to a visual precept*" [8:215]. Auditory components are also processed in different locations of the brain and at different times. This is also relevant in this context, and to the history of the moving image more generally, because moving imagery is more often than not accompanied by an auditory component.

So, there is a demonstrable connection between the research into how human beings process visual information and Lynette Wallworth's *Duality of Light,* insofar as it engages viewers' using several distinct visual processing loci, as well as an auditory one. As one walks towards oneself one sees a moving, white, somewhat ghostly figure (a simulacrum of oneself) comprising several differing visual components (motion + colour + face), all of which are processed separately with small time lapses between the perception of each. This visual material is also accompanied by an auditory component (the sound of dripping stalactites or stalagmites). Taken together, these elements are perceived by the viewer as "*constitut*[ing] *a distinct new entity*" [8:217]. The perception that a 'new entity' has appeared before us is a result of that temporally hierarchical relationship of the individual visual elements with respect to each another - and the auditory element in *Duality of Light* also needs to be factored in to this sensory hierarchy. This accounts for the realisation, for some unpalatable, or even shocking, that one has actually come face to face with oneself.

As Zeki explains, these separate micro-consciousnesses, as opposed to a single, sovereign macro-consciousness (as is still commonly believed to be the case) collectively govern human beings' processing of visual material, ontogenetically sitting at the apex of the hierarchy of consciousness [to paraphrase 8:217].

In the abstract of his previously cited major article, *Disunity of Consciousness*, Zeki [8:214] writes that:

> *Attempts to decode what has become known as the (singular) neural correlate of consciousness (NCC) suppose that consciousness is a single unified entity, a belief that finds expression in the term 'unity of consciousness'. Here, I propose that the quest for the NCC will remain elusive until we acknowledge that consciousness is not a unity, and that there are instead many consciousnesses that are distributed in time and space.*

Instinctively, Lynette Wallworth happened upon this neuroscientific truth: that we have, in fact, a number of visual 'micro-consciousnesses', rather than one, singular, unified 'visual consciousness". In discussion with Wallworth, I established that she had indeed stumbled upon this knowledge intuitively, and was not working from any explicit neuroscientific knowledge base in the making of *Duality of Light*.

Informing Wallworth's unique artistic signature is her exploitation and subtle manipulation of light, colour and motion, and the interconnections between them. Light, and the properties of light and motion are major foci of Lynette Wallworth's artistic attention and curiosity, contributing maximally to the distinctive ambience of her visual artwork and to its mythopoeic dimension. In addition, the human face often enters into the equation. Many of Wallworth's works convey an understanding of aspects of the revolutionary concepts that Zeki imparts in *The Disunity of Consciousness.* (Maybe *Duality of Light* could have been subtitled *Disunity of Consciousness)*. These important neuroscientific developments inform *Duality of Light*, enhancing its seductive appeal and making it good 'to think with'.

Conclusion

With respect to the historical beginnings of the culture of the moving image, works such as Lynette Wallworth's *Duality of Light* demonstrate just how far things have traveled since those earliest days. With the more recent, putative 'digital revolution', the pace of change has further accelerated. An inevitable accompaniment of the dramatic changes in the contemporary visual landscape is the continuing transformation of how we visualise the past, present and future. This transformation is in part attributable to the dissolution of some of the traditional boundaries between the arts and the sciences, with new technologies playing a vital, linking role. All of these factors profoundly affect how we understand the heritage of the moving image and its future.

Recent developments in the field demonstrate the need to take a more nuanced approach to discussion, whether verbal and written, about new technologies. It is becoming increasingly necessary to clarify and refine the language that we use in relation to new media, regardless of whether it falls into the commercial or fine art category. To remain content with lazy usage of 'catch-all' terminology such as 'interactive' or 'immersive' does not do justice to the diversity and subtlety of the attributes of many, if not most, new media works.

Finally, in attempting to determine why audiences are so deeply moved by Lynette Wallworth's *Duality of Light,* it is necessary to turn towards recent research in neuroscience to provide some, although by no means all, of the answers. What becomes clear is that changes in our understanding of what constitutes cultural heritage knowledge are to a considerable extent determined by the ever-expanding boundaries of scientific knowledge, which in turn is shedding new light on new media artworks. Doubtless, this trend is set to continue. To understand visual artworks like those created by Wallworth as historically informed, contemporary, aesthetic *and* scientific phenomena will not destroy our appreciation of artists' achievements, but will only enhance them.

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References

[1] Bartels, A., and Zeki, S., 2006, 'The Temporal Order of Binding Visual Attributes', in Vision Research 46, 2280-2286, Elsevier.

[2] Berger, John, 2008 (first published 1972), *Ways of Seeing*, Penguin Classic Series, Penguin Books, UK and Australia.

[3] Gansing, Kristoffer, 2003, 'The Myth of Interactivity or the Interactive Myth?: Interactive Film as an Imaginary Genre', Digital Arts and Culture, RMIT University Melbourne, http://hypertext.rmit.edu.au/dac/papers/, 39-45, accessed 16/3/10

[4] Halgren, Eric, Anders M. Dale, Martin I. Sereno, Roger B.H. Tootell, Ksenija Marinkovic, and Bruce R. Rosen, 1999, *Location of Human Face-Selective Cortex with Respect to Retinotopic Areas*, in Human Brain Mapping 7: 29-37, Wiley-Liss Inc.

[5] Shakespeare, William, Q. 1, 1603, (this edition first published by Methuen and Co. Ltd. 1982), *Hamlet*, edited by Harold Jenkins, The Arden Shakespeare, London.

[6] Sontag, Susan, 2001, *Illness as Metaphor and Aids and its Metaphors,* Picador, U.S.

[7] Walker, Wendy, May 1 2009, *"Lynette Wallworth" at Samstag Museum of Art Adelaide, Australia, Feb. 19 – April 24*, (review), in Modern Painters, New York, 68-72, Louise Blouin Media.

[8] Zeki, S., May 2003, *The Disunity of Consciousness,* in Trends in Cognitive Science, Volume 7 Number 5, p 214-218, Elsevier.