

Towards an Understanding of Liminal Imagery in the Digital Domain

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Still from digital imagery developed for *Eros Eris* (2007)
Digital Imagery by Sarah Rubidge
(Access this imagery *in situ* on www.sensedigital.co.uk/EE4.htm)¹

I write this paper as a practitioner-scholar, a choreographer whose artistic work in the digital domain appeals directly to the rhythms and flows of our more subliminal modes of understanding. It is to this mode of choreographic practice, sometimes known as digital choreography that this paper is addressed. In this paper, I will be examining how embodied modes of consciousness are essential to the process of understanding liminal choreographic imagery in the digital domain, more specifically looking at these in relation to Deleuze's notions of affect and sensation (Deleuze 2003). I will also be exploring the implications of recent discoveries by neuroscientists that

seem to bear a relationship to Deleuze's discussions of affect/sensation. I suggest that the activities of the substrata of our material bodies (especially the flows of the nervous and circulatory systems and activity of the neuronal networks) constitute the hidden interfaces between human beings and their material and immaterial environments. I further suggest that the constant and automatic activities of this 'hidden' body are the underpinnings of the affective life, and of every encounter we have with the world (including the artistic), and that it is to this that many digital artists who exhibit a choreographic sensibility appeal directly.

The imagery above, which is taken from a moving computer-generated image created for the dance work *Eros Eris* (2007)² is an example of liminal imagery that has developed for and shown within the digital domain³. (Turner (1990) argues that the liminal is a site of transition, occupying the thresholds between understandings and perceptions.) Using human movement as its source material, the intention of such imagery is to leave viewers in a state in which they *sense* content in the imagery, rather than *know* what the content is.

Similarly, digital imagery of the type shown above, lies on both a perceptual and conceptual threshold, hovering in an in-between state that is replete with ambiguity and indeterminacy in both perception and conception. Colin Turnbull (1990, p. 51) argues that in order to understand the liminal we need to adopt '...a technique of participation that demands the total involvement of our whole being'. I would suggest that it is this that liminal choreographic imagery in the digital domain encourages. Neither representational nor non-representational, the imagery sits on the threshold of the two, and demands an embodied response.

The liminal digital imagery that I use as a paradigm in this paper has its precedents in the visual arts. An early example is evident in William Turner's work, for example, *Northam Castle at Sunrise* (1835-40) or *Light and Colour (Goethe's Theory)* (1843). Turner's paintings are awash with ambiguous forms, potentially representational features obscured within the more qualitative features permeating the painterly surface. Contemporary artists Mark Rothko, Anish Kapoor, and James Turrell have created similarly liminal works that opens the way for a sensory mode of understanding. In a very different mode, the work of Russian constructivist Naum Gabo whose interest in the perception of space, time and movement led him to propose that '...the *rhythm* in a work of art is as important as the structure and image' (in Zeki, 1994 p. 625) is also of relevance. Static, but alive with the rhythmic, it too inhabits a space-in-between. In all the above work our more embodied modes of consciousness must be brought into play if the work is to be 'understood' in a manner consonant with the artistic intent⁴. This, I would argue, applies equally to kinetic digital imagery.

An examination of the principles underlying the liminal digital imagery discussed in this paper affords a bridge between artistic, philosophical and scientific understandings of the artistic response. Imagery such as this is not concerned with representing objects as we see (cognise) them, but in reaching below their representational surface to nōetic levels of

consciousness, whereby the objects reveal what Jacques Rivière calls their 'sensible essence' in Zeki, 1998 p. 5)⁵. Examples of such imagery can be found in *Hidden Histories* (2001)⁶, m, and *Sensuous Geographies*, (2003)⁷. When viewing such digital imagery the rhythm of the traces of motion seems to invite an embodied mode of understanding.

Many digital artists whose work resonates with that of the artists above take movement as their starting point. The digital imagery they produce suggests the flows of energy that betray those unseen becomings, which enliven the material world. An example of this can be found in *Fugitive Moments* (2006)⁸. This imagery is perceived through what is often called the 'kinaesthetic' sense, through the eyes, evoking as it does an interweaving of rhythmic flows that seem to articulate the intensities that lie *within* the perceived motion. The sensations experienced at this deeper level are not the sensations of the flesh. Rather they reflect, in Deleuze's terms, the mobile forces that constitute the work in action, forces that '... blend into one another in subtle transitions, decompose, hardly glimpsed' (Deleuze and Guattari 1994, p. 186), ever on the edge of surface consciousness as we experience the work, but never materialised as a fully formed, resolved feeling or sensation.

Here we are dealing with *affect*, that is the '...prepersonal intensity corresponding to the passage from one experiential state of the body to another' (Massumi in Deleuze and Guattari 1987 p. xvi). Interestingly Brian Massumi (1996) argues that *affect* is analogous to

... the '*intensity*' which characterises a work of art ... [it] is a non-conscious, never to be conscious *remainder* ... embodied in purely autonomic reactions most directly manifested in the skin – at the surface of the body, at its interface with things ... spreading over the generalised body surface, like a lateral backwash ... travelling the vertical path between head and heart.
(1996, p 221; *my emphasis*)

It is the ability of liminal digital imagery to create such affective resonances⁹, independent of 'content' or 'meaning' that holds my attention as both maker and viewer.

The experiential state embodied in the notion of affect is complex, indeterminate. *Affect* is not physical sensation *per se*, but is closely aligned to the notion of 'intensities'. Intensities express relations and degrees of variation, each intensity being both implicated in and responsive to the activity of other intensities. This interweaving of intensities generates a 'variable ensemble of differential relations' (Deleuze 1994), which in turn expresses a shifting, changing totality. It is of interest to me that this description could easily be a description of the human body, for beneath the mass and volume of the flesh and bone of our bodies lies a dynamic collection of interrelated systems of physiological flows and rhythms, each of which affects and is affected by the others. These flows are in a state of continuous variation, a state of transition that in Deleuze and Guattari's words (1987, p. 261) '...consists entirely of relations of movement and rest ... [and] *capacities* to

affect and be affected'. The digital imagery of which I speak, appeals directly to this substratum of our understanding.

Affect is a form of understanding that operates through the matrix of liminal perceptions in the body, and it is here that this notion begins to tally with current research by neuroscientists. The latter argue that the 'subpersonal' activity of different sets of neurons operating in parallel create networks of activity that give rise to our perceptions and affective experience of our environment. These subliminal modes of perception respond to the indeterminacies of liminal images and, through bodily resonance, constitute our embodied understanding of them. This is an entirely proper mode of understanding for liminal imagery. If our responses to the world are first and foremost 'felt' experiences, which do not necessarily reach what is generally referred to as 'consciousness', as well as seeing representations of 'what it is out there' we '*feel*' what is out there. That is, it is less important to know *what* the imagery is than to experience *how* it is. This demands a shift in the mode of consciousness employed when observing such imagery.

It appears to me that findings from contemporary neuroscience might also provide a clue as to the kind of consciousness brought to bear in the process of understanding liminal artworks. I would suggest that this form of consciousness goes deeper than either reflective consciousness¹⁰ or the phenomenological. The notions of consciousness forwarded by neuroscientists such as Antonio Damasio (1999) and Gerald Edelman (2000) are central to this endeavour, for they incorporate not only reflective consciousness but also the more subliminal levels of consciousness derived from the autonomic physiological systems. These they call 'core' (Damasio) and 'primary' consciousness (Edelman). This form of consciousness generates the kind of understandings that are frequently considered to lie outside of the remit of reflective consciousness. These understandings are less accessible than the sensation inherent in 'lived' experience, for they operate in the domain of *affect*. Although many scientists invoke the writings of phenomenologists in support of their theories on the grounds that the 'lived body' is the constitute foundation of any perception, (Gallese, 2001, 2005; Evan Thompson, 2001 and 2007; and Francisco Varela, 1992), it might be that the work of philosophers who interrogate the notion of *affect* will prove to be a more appropriate line of enquiry in the exploration of the influence of the autonomic systems on our understanding of our experience.

Nevertheless, even the inclusion of the phenomenological aspects of viewing art works would appear to many to sit uncomfortably with the work of neuroscientists, who are frequently charged by artists with diminishing the intrinsic values of the art experience through their reduction of that experience to physiological systems operating in the brain. This is not entirely fair, as many scientists who are actively interested in understanding how art is perceived, even whilst seeking to isolate and identify the detail of neuronal responses to artistic imagery, acknowledge that such mechanisms alone do not provide a sufficient explanation of the aesthetic experience (Freedberg & Gallese, 2007; Zeki and Lamb, 1994)¹¹. They recognise that their scientific investigations offer only an understanding of the neurological mechanisms

that underlie our engagement in art works, and thus that, although neuronal activity is a *necessary* condition of the aesthetic experience, it is not a *sufficient* condition. Indeed, scientists Semir Zeki and M. Lamb argue that ‘...aesthetic experience must involve a great deal more than [the neurological] – learning, memory, individual variation and much more besides will pay a role’ (1994, p. 607).

Even though neurological explanations are only partial I would suggest that this does not diminish their importance in understanding how art affects its audience. Like any phenomenon, art can be studied from a number of perspectives, and discussed at many levels of description, all of which can contribute to our understanding of that phenomenon. Zeki and Lamb’s 1994 study of the neurobiology of kinetic art shows that some scientists recognise this. Zeki and Lamb suggested that the work of kinetic artists *and* of scientists are symbiotic, as the former could be said to be addressing directly in their art works the very issues with which neuroscience is concerned. The two scientists argue that,

...when executing a work of art the [kinetic] artist unknowingly undertakes an experiment to study the organisation of the visual brain.... Just as physiologists have managed to identify visual areas in the cerebral cortex specialised for visual motion, so [kinetic] artists through their experiments, have unknowingly developed an art form seemingly tailored to an optimal stimulation of these visual clues.

(Zeki & Lamb, 1994, p. 608)

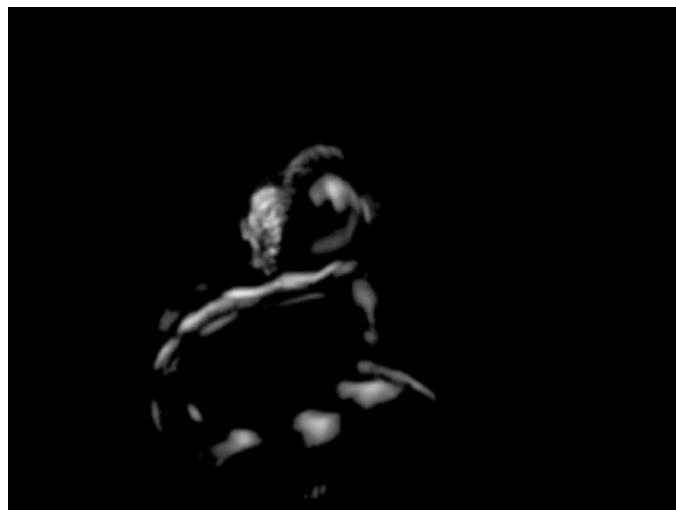
By extension, they suggest, kinetic art might very well provide optimum conditions for the scientific study of certain facets of visual perception. Noting that motion is one of the most primordial of visual percepts, they argue that the kinetic art of the 1970s, by focusing primarily on motion (rather than shape, colour or imagery), stimulates the earliest activity in the neurological visual pathways. This would be of great value to scientists interested in studying the activity of the somatosensory neurological systems.

They further point out that the visuo-association cortex is involved in advanced multisensory and sensorimotor integration in response to our experiences. This process of physiological integration, one could surmise, facilitates connections in between what we *experience*, what we see, and what we ‘know’. As such this system might have some effect on the way in which we might non-consciously make sensory connections when watching liminal kinetic digital imagery based in human movement, and through making those connections emerge with a sense of a content that is not explicitly represented¹².

Perhaps more significantly for an understanding of such imagery, recent experiments (1996-2009) by Giacomo Rizzolatti, Vittorio Gallese and Leonardo Fogassi, neuroscientists at the University of Parma, have identified what they call a Mirror Neuron System. This system exhibits very similar behaviour both when we engage in an action (expressive mode), and when we observe someone/thing engaged in that action (receptive mode), particularly if the observer has direct physical experience of the action,

whether it be grasping a stick or dancing.¹³ This they call ‘embodied simulation’. If the Mirror Neuron System generates an embodied simulation as a response to seeing human motion, it might be that this system is of particular relevance when watching apparently non-representational kinetic imagery that has human movement as its source.¹⁴ David Freedberg and Vittorio Gallese surmise that an element of an aesthetic response to art consists of an activation of the embodied mechanisms initiated by Mirror Neuron Systems, and that this constitutes an aspect of the experience of viewing both figurative and non-figurative art works (Freedberg and Gallese, 2007). If this is the case then the Mirror Neuron System might be an important mechanism in the process of viewing art works. Freedberg and Gallese argue further that the Mirror Neuron Systems can simulate *implied* actions, emotions and corporeal sensation represented in art works. They also suggest that even in non-representational works the relationship between a feeling generated by the embodied simulations in the Mirror Neuron System and the qualitative dimensions of the art work is an important element of the artistic experience. It is therefore possible that corporeal sensation activated through the Mirror Neuron System is initiated not only by representational images of motion but also by non-representational kinetic images such as those created by choreographically inclined digital artists.

Neurological mechanisms that allow us to experience a sense of corporeal empathy when we view even non-representational art, offers some kind of explanation for the liminal sensations that we experience when we view non-representational imagery that is grounded in human motion.



Digital imagery from *Eros Eris* (2007)

This imagery, created by Sarah Rubidge, is derived from traces of the motion of a dancer's intricate circular arm gestures

(Access this image in motion on www.sensedigital.co.uk/EE5.htm)

If one marries Zeki's theories with the developing theories of ‘mirror neuron’ theorists, it is possible to speculate that viewers have an empathic physiological response to the human motion implied in non-representational

liminal imagery created by digital choreographers. Certainly Freedberg and Gallese's hypotheses (2007) seem to support this. In their paper they argue that in painting, even when there is not overt emotional content in an image, or the image is non-representational, a sense of bodily resonance can arise, for the movements that are implied in the physical traces of a static image can generate a bodily resonance with the 'state' that was embodied in the movement enacted by the artist when making the work.¹⁵

One could speculate that, if mirror neurons can respond to the implied motion perceived in a static image, kinetic images grounded in human movement, such as those created by many digital choreographers who favour the nonrepresentational, might generate an even stronger embodied simulation in viewers familiar with the source movements, and thus engender an embodied understanding of the human movement implied in the non-representational images. As an artist I have been working intuitively on this basis for many years. My preference for non-representational digital imagery grounded in human movement offers the viewer the 'sensible essence' of the subject, and follows the precept of early twentieth century artist Malevich that '...objective reality is only a starting point [for art], a motivation for the creation of new forms' (Zeki, 1998, p. 9). This paper suggests that, when taken in the light of the discoveries of contemporary neuroscience, this artistic intuition might have its foundation in something beyond the merely aesthetic.

Notes

¹ Clicking on any of the URLs referenced in the text gives immediate access to a moving version of the digital imagery.

² A collaboration between choreographer Liz Lea and myself. Video imagery can be accessed on www.sensedigital.co.uk/EE1.htm

³ Most of the illustrations of, and references to digital imagery in this document are taken from my own collaborative work (see references and bibliography). Movies of the imagery and the artistic works of which it is a part can be found on www.sensedigital.co.uk.

⁴ The notion of the artistic intent differs from that of the 'artist's intention' (which tends to imply the use of the psychological intention of the artist as a justification for a critical interpretation, which gave rise to the influential 'intentional fallacy' argument of the 1950s (Beardsley & Wimsatt, 1954). They, along with Kuhns (1960), argue that the psychological intention of the artist is quite different from the *artistic agency of the artwork*, that is, the 'work' of the work (Benjamin 1994), although the two might overlap. It is in this latter sense that 'artistic intention' is used in this paper.

⁵ For Husserl the *nöetic* was the intentional consciousness, transcendental in nature. Strictly it is 'intuitive consciousness', knowing unmediated by the workings of the intellect.

⁶ A collaboration with digital artist Joseph Hyde and myself. Video imagery can be accessed on www.sensedigital.co.uk/hh1.ht

⁷ A collaboration with composer Alistair Macdonald and myself. Video imagery can be accessed on www.sensedigital.co.uk/sg2.htm

⁸ A collaboration with scientist Beau Lotto and computer scientist Erwan Le Martelot of Lottolab, University College London and myself. Video imagery can be accessed on www.sensedigital.co.uk/FMIMovs.htm

⁹ The resonances are generated as the perception of the digital imagery '...intervenes on the microscopic variations of a body's biology, anatomy, movement and perception, while at the same time multiplying and re-mixing these variations.' (Portanova, 2005, p. 1). I would argue

that this is as true of liminal visual imagery as it is of the sonic imagery that Portanova uses as her paradigm.

¹⁰ The paradigm on consciousness in Western cultures.

¹¹ The use of the term aesthetic in relation to the experience of viewing art works raises certain questions, which there is not room to address here. These must be reserved for another paper.

¹² Gallese (2005) has also noted that perception is physiologically multimodal, as the pre-motor and parietal areas of the brain are neurally integrated, leading to the establishment of a multimodal cortical network.

¹³ In dance specific experiments by Calvo-Merino and her colleagues it was shown that neural activity was greater in the brain of a capoeirera dancer when watching capoeirera dance than when watching ballet. The opposite obtained when the subject was a ballet dancer (Calvo-Merino et al, 2005).

¹⁴ Scientists offer some support for this notion though their experiments with biological motion, whereby the reduction of a motion captured image of a person walking to a series of dots were recognised as such by subjects. (The study of biological motion in psychophysics was initiated by G.Johanssen in 1973, but continues to attract the interests of psychophysicists such as Kourtsi Z, 1999; Thornton et al, 2003.)

¹⁵ Although experiments have not yet been done with non-figurative art, a group of scientists have shown through experiments that a motor simulation of the gesture used to write a single letter or symbol is generated in the brain when simply looking at the written letter (Knoblich et al, 2002). Freedberg and Gallese hypothesise that if this is true of letters it should be true of other forms of marks with which we are familiar.

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Biographical statement

Sarah Rubidge is Professor of Choreography and New Media at the University of Chichester. A practitioner-scholar she specialises in developing large-scale choreographic digital installations that focus on the use of the haptic senses as the primary medium of understanding. Her artistic research also draws on the liminal histories embodied in old buildings. Her work, which is normally made in collaboration with other artists, has been shown in London, Los Angeles, and Brisbane. Along with her collaborators Sarah has created works which can accommodate improvisational choreographies (formal and informal) that become integral choreographic elements of the installations. In her academic writing she addresses the interweaving of the philosophical and scientific ideas that are embodied in both her work and that of other artists working in this field, in this way advancing understandings of the intricate interplay between artistic and philosophical practices.