Sue Broadhurst

Professor in Performance and Technology,

Drama Studies,

School of Arts

Brunel University,

London,

UB8 3PH, UK

Direct Line: 01895 266588

Fax: 01895 269780

Email: susan.broadhurst@brunel.ac.uk.

Merleau-Ponty and Neuroaesthetics:

Two Approaches to Performance and Technology

Notes on Author

Susan Broadhurst is a writer and performance practitioner and Professor of Performance and Technology in the School of Arts, Brunel University, London. Her published books include: *Liminal Acts: A Critical Overview of Contemporary Performance and Theory (*London: Cassell/New York: Continuum, 1999), *Performance*

and Technology: Practices of Virtual Embodiment and Interactivity (2006), *Digital Practices: Aesthetic and Neuroesthetic Approaches to Performance and Technology* (2007), *Sensualities/Textualities and Technologies: Writings of the Body in 21st Century Performance* (2010) and *Identity, Performance and Technology: Practices of Empowerment, Embodiment and Technicity* (forthcoming 2012) all published by Palgrave Macmillan. She is also co-editor of the online journal *Body, Space & Technology* now in its eleventh year of publication

Abstract

Assisted by the rapid growth of digital technology, which has enhanced its ambitions, performance is an increasingly popular area of artistic practice.

This paper seeks to contextualize this within two methodologically divergent yet complimentary intellectual tendencies. The first is the work of the philosopher Merleau-Ponty, who recognized that our experience of the world has an inescapably 'embodied' quality, not reducible to mental accounts, which can be vicariously extended through specific instrumentation.

The second is the developing field of neuroaesthetics, that is, neurological research directed towards the analysis, in brain-functional terms, of our experiences of objects and events which are culturally deemed to be of artistic significance.

I will argue that both these contexts offer promising approaches to interpreting developments in contemporary performance, which has achieved critical recognition without much antecedent theoretical support**.**

Keywords

Performance and technology; art and perception; aesthetic theorization; Merleau-Ponty; extended body; ‘visible’ and ‘invisible’; embodied experience; neuroaesthetic approach; visual perception; ‘micro-consciousnesses’.

Introduction

In this paper I intend to examine two different approaches to interpreting and analysing contemporary performance practice, examples of which I will furnish throughout my text. As I have mentioned, the first is contained within the writings of a philosopher, Merleau-Ponty, working in the European phenomenological tradition, much of whose work predated our recently developed scientific capacity to investigate brain functioning. It should be added that the methods and premises of phenomenology have also to be distinguished from those of such experimental science. I believe that Merleau-Ponty has a dual role with regard to contemporary performance: at once, a thinker who anticipated a more intimate relationship between the body and technological instruments, and also a figure whose theorization might provide a clue as to why this relationship, as enacted in performance, seems so compelling.

The second is inferred from the accumulated insights, yielded by recent scientific investigation, into brain functioning, and its relationship to the structure of what we call consciousness, and in particular our powers of visual perception. I will attempt to argue that, as these insights appear to indicate that consciousness is a result of distinct but collaborative functions within the brain, we can interpret the effect of recent technologically enhanced performance on spectators in terms of non-conventional patterns of stimulation of these functions. These patterns may well not amount to giving a resulting conscious state, which, in the everyday uses of life, would be reliable or consistent. In other words, this recalcitrance to plain and unambiguous construal may be a necessary, though not sufficient, condition for our judgement that these experiences are of aesthetic significance, and, therefore, that the performances which give rise to them are themselves of artistic value. This field, covering the special cases of brain function examinable in encounters with objects or occasions of artistic value, is known by the generic title ‘neuroaesthetics’.

Context

I consider that performance, which in the past has seemed to be a challenging artistic zone between drama, dance and happening, has, in the last two decades, entered new territory. As far as presentation goes, it seems to have developed from sporadically held events, staged in ‘real time’, in obscure venues, with the minimum of props, into multi-media stagings, attracting large audiences and employing a panoply of technological devices. Its artistic ambitions, too, appear to have enlarged, embracing plurally-layered

content which attempts to address more elusive and broader themes, reflecting our enveloping experience of the contemporary world. Of course in this period there has been an increasing mainstream acceptance of stage practices which depart radically from textually-based drama or traditional dance, as witness the immense impact of the late Pina Bausch. But I think our changed technological resources constitute a critical factor in this evolution. The analogue processes of film and magnetic tape have frequently served in the past as components and amplification of live performance, but their relationship to the latter was one of simple synchronicity: they ran on their course inexorably, and the performer(s) would coordinate to a greater or lesser degree with them.

After the mid- nineties, however, the development of digital processing facilitated an unprecedented interactivity between performer and device, bringing hugely increased computing power to these functions, and, in virtue of its ability to break down information into mutable combinations of bits, the opportunity to mould and sculpt, so to speak, the qualities of the presented material. Digital technology transformed a fundamentally passive, recipient relationship of performer to media devices, into one of reciprocity and joint enterprise. Now I do not intend to digress and to advance this claim into making any case regarding Artificial Intelligence theory, which seems to have offered a constant ‘false dawn’ of imminent discovery over the last twenty years or more. But I would suggest that, as a result of these developments, our sense of our bodily frontiers has undergone a radical enlargement, and so too has our conception of the ‘incarnate’ nature of consciousness, in which respect I regard Merleau-Ponty’s theorization as prophetic. I also contend that the above-mentioned field of neuroaesthetic

analysis might provide some insight into why the more recondite instances of contemporary performance have the artistic value that we apparently accord to them.

Merleau-Ponty and Embodied Perception

> Vision is not the metamorphosis of things themselves into the sight of them; it is not a matter of things' belonging simultaneously to the huge, real world and the small, private world. It is a thinking that deciphers strictly the signs given within the body. (Merleau-Ponty, 1974: 292)

Much recent theoretical activity has attempted to posit, or perhaps, restate, the importance of the body in aesthetics and perception. Naturally, the work of Merleau-Ponty has been frequently cited in this regard. It is as well to characterize his methodological context before summarizing his ideas. As a philosopher he inherited features of the project of European *phenomenology*, chiefly its commitment to attempting to describe the contents of consciousness directly, without trying to prune away unsafe knowledge claims (as previous philosophical tendencies had done), and also to take as its point of departure the acting subject, already engaged with, and directing different modes of attention onto, the world, rather than a passive, Cartesian, somewhat disembodied self, disinterestedly deriving conclusions about it. But the ambition of phenomenologists to lay bare a fundamental grammar of elements by which consciousness constructs a world has not been unproblematic, since the objects of such radical description are necessarily prior

to any constructed notion of proof-procedure. For this reason much European thought within this tradition has a 'high ceiling' of assertability, which, until recently, most thinkers within the Anglo-American analytical tendency would have dismissed as unproveable rhetoric (one could add that this cultural antipathy has been echoed in the attitude of some proponents of Anglo-Saxon textually dependent theatre towards the tradition of performance as it has evolved in European drama through the last century). Though the intellectual climate has become less starkly oppositional here, it has to be recognized that, whilst being aware of contemporaneous neurological research, Merleau-Ponty does not write with the caution of a scientist, and as a phenomenologist, would consider science as very much an *a posteriori* construction, which makes a causal narrative to *explain* consciousness, rather than addressing it directly. It is unsurprising that Merleau-Ponty has probably received more attention from cultural and aesthetic theorists than from analytical philosophers.

As might be evident from this description of method, phenomenologists inherited and to some extent held on to elements of post-Kantian idealism, which in turn accepted much of the dualism, injected into European thought by Descartes, of a-physical and non-spatial mental stuff (*res cogitans*) contained within, and possessing, a physical, and spatially extensive body. Merleau-Ponty's conspicuous departure was to reject this dualism in its entirety: for him, the 'perceiving mind is an incarnated mind' and there could be no meaningful talk of a mind having proprietorship of a body distinct in kind from itself. Among the consequences that flow from this position, I highlight these: firstly, as implied above, such an embodied mind is inescapably tied to 'a system of

possible actions' (Merleau-Ponty, 1962:138), it is not commanding a 'third personal' body to do certain things which it has decided upon 'by itself'; rather, it is involved in perception as it is 'lived' in the world, and is changing, adapting and perhaps renewing itself *with* the body (Merleau-Ponty, 2000: 209). In sum, powers of perception-in-general are not decanted into a certain set of physical sense-organs, they are inseparable from embodied experience. Secondly, this position rules out the notion of an interior 'subject' deriving conclusions about exterior 'objects' that affect it, including its own body, and also implicitly rejects any sense that our subjectivity has a stable and definite frontier with an external world, to which we can assign 'our' interpretations and meanings. Rather, these meanings are inseparable from that world, as Merleau-Ponty characteristically puts it: 'I am not in front of my body, I am in it, rather I am it', which, so to speak, interprets itself and is to be 'compared, not to a physical object, but rather to a work of art … It is a focal point of living meanings' (Merleau-Ponty, 1962: 150-51). This position also rejects the prioritization of one term over another, whether in the plenary subjectivity of 'Absolute Idealism', or the plenary objectivity of 'scientific' physicalism.

How can one associate these positions with the phenomenon of performance today? I suggest that there are, so to speak, three degrees of proximity: influence acknowledged *by* performer; concurrence of performer's creative intent *with* previous theorization; use of such theories to retrospectively *analyze* performer's work.

An example of the first degree lies in the work and writings of the performer Susan Kozel. As I have said, Merleau-Ponty's non-dualistic stance entails a running together of domains, investing the mind into the body, and the body into the 'outer' world. In his later writings (*Eye and Mind* (1974), *The Visible and The Invisible* (2000)), he took the latter investment still further, using the phrase 'the flesh of the world' (2000, 248) to attempt to capture how the empathy with surroundings which we have to achieve in order to negotiate them, breaks down subject/object antinomy. 'Flesh', a membrane which 'has no name in any philosophy' (2000, 147), is 'reversible' (149); both object passively receiving sensation and subject actively giving it. It also has undefined horizons, 'the flesh of the visible' (136) entails its correlate in our invisible (to ourselves), yet apprehended carnal presence.

In her book *Closer* (2007), Kozel consciously attempts to apply these later positions to the use of technology in performance. She considers Merleau-Ponty's notion of 'the invisible … significant to digital media because it challenges the supremacy and literality of vision'. His notion of 'lived perception' posits additionally a full integration of the senses, and accordingly she argues for media including 'sound and haptics' rather than mere 'simplistic notions of moving images'. For her, the later (and uncompleted) theorization affords a groundwork for the inclusion in performance not only of 'corporeal roots of vision but also kinetic and kinaesthetic qualities' (2007, 40-41).

Instances of both first and second degrees, acknowledged influence and concurrence in intent, can be found in the topic of instrumentation. Consequent on his notions of such

‘bodily plasticity’, it is natural that Merleau-Ponty saw how ‘the body adapts and in effect, extends itself through external instruments’ (Merleau-Ponty, 1962, 146); it invests itself into the tools and devices it uses, as a ‘virtual body’, its phenomenal place defined by task and location (25). A common demonstration of this is how one’s car becomes an ‘outer skin’ when reversing into a small parking space.

Such an everyday feature of consciousness has been dramatically exhibited by the development, enabled by digital processing, of magnetic or optical motion capture, now used widely in performance. Sensors are applied to the performer’s body, which then permit a ‘skeletal reading’ of their movement to be taken, which can then be ‘clothed’ by animation to produce an avatar. Kozel records her early improvisation with ‘mocap data’, where she experienced an ‘“open circuit” between her body and the figure’. Her avatar provided direct extensions of her movement, but there was no convergence ‘between her and the visible figure’. She adopts Merleau-Ponty’s term ‘encroachment’ to capture this symbiosis (2007: 230), and continues:

> The figure with which I perform is always at the same time both my own body and another body; it manages to be this because of the way I perceive the world dynamically while I am enmeshed within the world. If we follow Merleau-Ponty, perception is more than just the neurophysiological mechanisms by which I apprehend the world. Perception is constitutive of who and what I am, perception is ontological.
> (2007: 239)

Motion tracking gives the effect of a direct interface between the physical and virtual bodies, and so has been used especially in live performances, such as Merce Cunningham's *Biped* (2000), where pre-recorded dancing avatars, rear projected onto a translucent screen, are made out of abstract images and figures hand drawn by Shelley Eshkar, animated by motion capture data provided by dancers other than those on stage.

The second and third degrees of proximity are exemplified by the proliferation of other forms of digital instrumentation, notably, MIDI (musical instrument data interface), MAX (a real-time programming environment that has the special advantage of being interactive with visual and network technologies) and OSC (Open Sound Control)[1]. All of these are central to the performances of the renowned ensemble, Troika Ranch (Composer and Software Engineer: Mark Coniglio; Choreographer and Director: Dawn Stoppiello). They have pioneered the use of MidiDancer and Isadora software, which can interpret physical movements of performers so as to manipulate the accompanying sound and visual ambience in a variety of ways, enabling a dance theatre, in which captured live or pre-recorded images freeze, fragment, speed up, slow down, or warp in a shimmering effect.

Fig 1: Danielle Goldman in *Surfacing* (2004). Photo: Richard Termine

At these degrees it can be argued that the legacy of Merleau-Ponty, filtering through practitioners' own reading, and through critical theory courses and publications, has helped create a convincing *apologia* for what might otherwise be seen as inconsequential spectacles. Dying about two decades before technology made these possible, his attempts to address the embodied nature of consciousness in the everyday 'lived' world have themselves become incorporated into the world of artistic intent and analysis. If we take it as given that the new *genres* of performance, now multi-layered and multi-textual, have an artistic worth, which we intuit, but cannot explain in terms of the more cerebral and discursive criteria applied to traditional drama or dance, then I suggest that he provides at least some elements for such explanation: 'we cannot imagine how a *mind* could paint; it is by lending his body to the world that the artist changes the world' Merleau-Ponty, 1974: 283).

I conclude this section with a brief consideration of examples which push the boundaries of the performer's body into dimensions of, respectively, the mechanical, the semi-intelligent and the biological.

In performances by the Australian Cypriot artist Stelarc, the body is coupled with a variety of instrumental and technological devices that are appropriated by it. One such is *Muscle Machine* (2003), where he constructed an interactive and operational system in the form of a walking robot. Rubber muscles are inflated with air, and as one set of them lengthens, the other shortens, so as to produce movement, translating human bipedal gait into a six-legged insect like motion.

Fig 2: *MUSCLE MACHINE*, Gallery 291, London (2003). Photographer: Mark Bennett. STELARC

The results of research into artificial intelligence have permitted the construction of avatars who respond to performers' bodily presence in more colloquial ways. Jeremiah is one such, developed from 'intelligent' surveillance technology. In *Blue Bloodshot Flowers* (2001) his vast spectral face focuses on and tracks the movement of these like some deity, the figures he perceives being literally *sub specie aeternitatis* ('under the gaze of eternity').

Fig 3: Elodie Berland and Jeremiah from *Blue Bloodshot Flowers*, 291 Gallery, London, 2001. Director: Susan Broadhurst. Technology: Richard Bowden, Image by Terence Tiernan

Finally, and perhaps in fulfilment of Merleau- Ponty's above-mentioned reference to the body as 'a work of art', Marta de Menezes considers that, in bioart practices, 'we are witnessing the birth of a new form of art: art created in test-tubes' (de Menezes, 2005). Since her first work of bioart, *Nature?* (2000), involving the microsurgical modification of live butterfly wing patterns, she has employed a variety of scientific technologies including images derived from her own brain FMRI in *Functional Portraits* (2002b), fluorescent DNA in *NucleArt* (2001) and protein synthesis in *Proteic Portrait* (2002c).

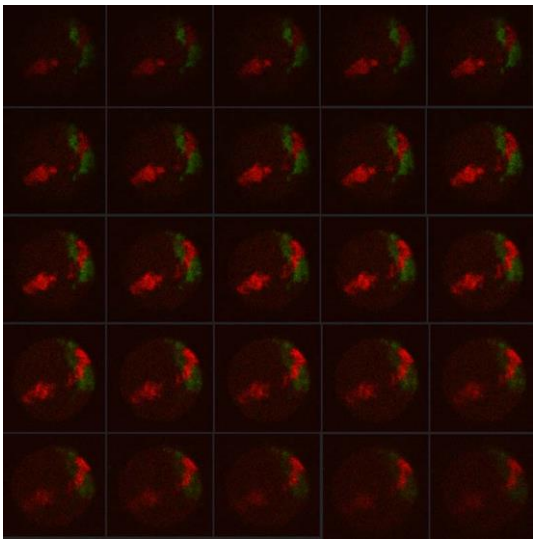

Fig 4 Marta De Menezes *NucleArt* 2000-2002
Human cell with painted chromosomes.
Frame from video-installation, projected onto
3D screens

A Neuroaesthetic Approach: The Complexity of Perception

In the last thirty years neurological research has reached a point where we can examine in some detail the nature of brain activity involved in sustaining states of consciousness, and in directing different modes of attention towards particular features in the world. There seem to be three main zones of enquiry which such research has addressed: the relationship between various sensory stimuli and neural activity, the coordination of these to produce a coherent representation of the world, and the involvement of such factors as memory, expectation and imagination in interpreting it. Traditional empirical approaches, predating this research, would have regarded these three zones as very much sequential: stimulus-electronic impulse-coordination-interpretation. What is now apparent is that they are highly reciprocal. Stimuli are not received as discrete events to which interpretation is 'applied', rather they are sorted and enriched by use of associable memories (themselves often completed by imagination), and by expectations derived from these. Philosophers have called this condition 'theory-laden-ness', which implicitly rejects a notion, historically called 'empirical atomism' that we are immediately aware of interpretation-free data. As a result of this research, though we may be more intellectually aware of the distinction between what we *see*, and what we *know* and believe we see, (Gregory, 1998: 2), we cannot claim to be able, in attempting to introspect the fabric of our own consciousness, to separate the first from the second; we cannot directly access what can be called 'pre-epistemic' perception. This point exhibits conveniently the difference between scientific and phenomenological standpoints: science has provided an 'aetiology', that is, a causal account of a phenomenon, but by its nature as a discipline in search of causes, cannot address it directly.

This is not to say that the two standpoints are innately opposed. As I said, Merleau-Ponty took a close interest in the neurological research of his time, and in one work (*The Phenomenology of Perception*) discussed the implications of a case of brain injury extensively. It could be said that phenomenology has served as a spotlight on features of consciousness which neuroscience has subsequently sought to explain; it has, in effect, directed lines of research without pre-empting their conclusions. For many neurological questions, conclusions have yet to be drawn; for instance, as regards our vision, there is still 'no clear idea of how we see anything' (Crick, 1994: 24). Certainly fragments of this process can be understood, but matters relating to colour interpretation, facial recognition and perception of motion still remain obscure.

As a consequence of their abandonment, by different routes, of the above-mentioned 'atomistic' model, the two approaches coincide on laying stress on our tendency to see *complexes* of stimuli rather than separate instances. We are disposed immediately to look for 'images' and 'processes' (using these terms across the senses) in uniting these stimuli, and the strategies by which we do so, are, of course, already laden with remembered experience (whether personal or evolutionary) and the symbolic values we have attached to these (in this regard Merleau-Ponty acknowledged a debt to *gestalt* theory). What is epistemically 'seen' has thus pre-conformed to an acquired semiotic system. Clearly, unless brain injury or disease is present, we can distinguish between those images 'actually' viewed which cannot be changed at will, and those, in imagination and memory, which generally can; but these are overlapping domains. Just as memory enriches perception, so perceived images can be used as material for recombinant, 'new'

imagery. This ability to be creative with imagery, to have an imagination, is a necessary condition for our developed understanding of the world, that is, cognition (Kosslyn and Koenig, 1992: 129; Kosslyn, Thompson and Ganis, 2010: 4).

Turning to the special case of neuroaesthetics, as defined in my introduction, it is evident that its disciplinary aim, to provide 'an understanding of the biological basis of aesthetic experience' (Zeki, 1999: 2) presupposes that we already have a publicly accepted, linguistically useful concept of what it is to have such an experience. Neuroaesthetics intends to provide some account of the occurrence of the experience, not to redefine the concept in question. It is also, obviously, a sub-discipline of neurology, and though concerned with the differences as regards brain-function between an 'ordinary' and an 'aesthetic' experience, it cannot be assumed that these differences lie in different kinds of brain-function, rather, as I shall argue, they may lie in the same kind of function adapting, or failing to adapt, to different stimuli.

Taking our leading sense, vision, as an example, it is relevant to briefly sketch out how complex these functions appear to be. New research has shown that some areas of the brain involved in visual processing are '*topographically organized'*; that is, these areas use spaces on the brain's surface to represent 'space in the world'. When an object is viewed, the pattern of activity on the retina, converted into electronic impulses, is reproduced (though with some distortions) on this surface; literally presenting a 'picture in your head'. Edward Smith and Stephen Kosslyn argue that: 'brain areas support genuinely depictive representations'. They suggest that a similar process occurs with

eyes closed and a remembered object visualized (Smith and Kosslyn, 2009: 16). These inputs from the retina seem to be connected only with a fairly localized area generally known as the 'primary visual cortex' or area 'V1' (Zeki, 1999: 15). Adjacent areas of the retina then connect with V1, recreating a visual map of the retina on the cortex. Though this system seems to be present at birth, it needs early exposure to the visual world to function fully (Zeki, 2009: 34).

The perception of colour within this system is equally complex; our responsiveness to a particular range of light frequencies is an evolutionary accretion of brain activities confined to certain *genera* of animals, and not a direct encounter with any 'objective' characteristics of this range. Colour perception seems to be handled primarily by the 'V4' complex, located in the fusiform gyrus, together with specialized cells in V1, 'V2' and locations in the temporal lobe. Although it is possible to assign such a function to these areas, it does not follow that each of these is dedicated to this task alone. We know that from colour perception, form is inferred, then motion, a process taking approximately 80-100 milliseconds (Zeki, 2009: 37-38). The brain is unable to combine these perceived features 'instantaneously'; it takes this time to unify the results of processing into an integrated experience. The extraction of form from colour, entailing the perception of colorific boundaries is itself a separate process (Zeki, 1999: 195), whose operation in turn alters our response to colour: where we can see it as applied to objects, a process of 'colour constancy' leads us to minimize its subsequent variations in different lights, making possible our perception of individual objects as being stably 'coloured' in a specific shade (Zeki, 2009: 29). Where we cannot see definite shapes, it seems that a

separate process for viewing abstract colour, known as ‘automatic computation’ takes place. This appears to be located in the middle frontal convolution[2] of the frontal lobe, which may generally respond to the unusual or ‘irregular patterns’ of stimuli, (Zeki, 2009: 16).

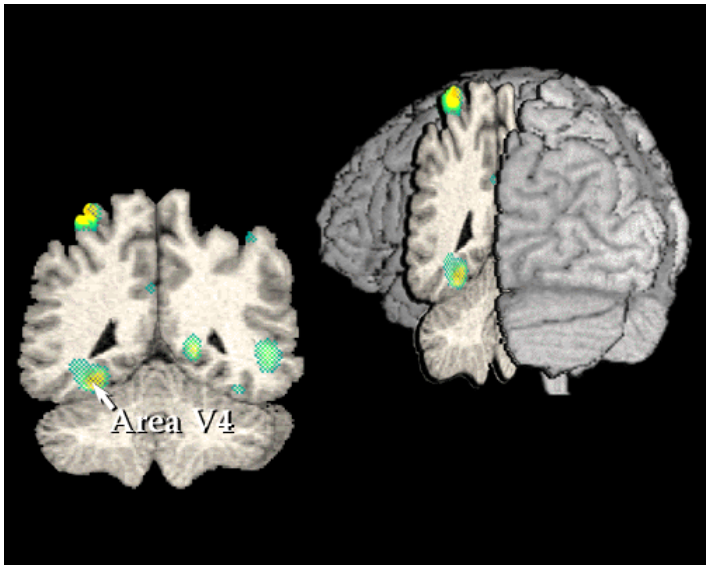

Fig 5: Area V4 of the brain. Photo Courtesy of Professor Semir Zeki. From the Laboratory of Neurobiology at UCL, www.vislab.ucl.ac.uk

This sketch supports two main points. Firstly, there seems to be no evidence for the notion of a ‘master area’ of the brain understanding all perceptions. For Zeki, such a notion is a ‘logical and neurological problem’, inasmuch as there would still be the question of who was ‘“looking” at the image from the master area’ (Zeki, 1999: 65). Such words seem to be the scientific echo of Merleau-Ponty’s rejection of the concept of an interior subject inhabiting a sensing object. Specialized visual areas are interconnected,

all receiving and sending signals to each other but there is no pattern of connections with any one individual area receiving and understanding all information (Zeki 1999: 71). Secondly, the teleology, the implicit purpose of this complex, is that of mapping out a representation of a stable world of objects which is comprehensible and therefore negotiable in everyday life, or as Zeki puts it 'we see in order to acquire knowledge of the world' (4).

Many thinkers, when seeking to define aesthetic experience, single out its non-utilitarian quality, claiming that an aesthetic experience of something is not that casual mode of attention that sees that thing as a tool or instrument to realize some given purpose; as an aesthetic object, in the widest sense, that thing resists being given pragmatic status: it is not a means, it is somehow an end in itself. I believe that neuroaesthetics may provide at least some underpinnings for this exemption, and in so doing, illuminates why certain technologically enhanced performances have the resonance that they do. I suggest that, whilst routine patterns of brain functioning support a mode of consciousness that enables us to survive in the world, the effect of such works is to disrupt and to disintegrate the ostensibly coherent representations this mode creates, whilst provoking from us an attempt at re-integration of these experiences 'in another mode'. If, as Zeki argues, consciousness seems to be the seemingly unified result of a complex of mutually contributive, 'micro-conscious' processes, then in order to be effective, this disruption does not have to constitute a challenge to all of them, rather, it needs merely to activate some and not others. It both arouses and thwarts the promise of coherence.

I think a salient example of this is the Berlin ensemble Palindrome's *Shadows* performances, where the traditional theatrical technique of 'shadow play' is combined with digital technology, particularly, motion sensing and real time audio image signal processing. By using such multilayered, distorted, and delayed effects, 'integrated experience' is denied to the spectator, and yet the audience's active participation is sought in the production of meaning. For this ensemble such shadow performances are intended to be 'a reminder of the organic connection between body-image and body-reality', exhibiting 'the shifting border between body and mediated virtual body image'. The shadows shift seamlessly between what is '*known*' and what is '*surprising*' making 'the piece fascinating to watch' (Dowling, Wechsler, and Weiss, 2004: 5).

Fig 6: *"Solo4>Three"* (2003). Dance and Choreography: Emily Fernandez. Interactive video system: Frieder Weiss. Photo credit: Ralf Denke

But performance can exploit unusual features of consciousness without such obviously challenging effects. Probably due to the adjacency of two differently functioning areas in the fusiform gyrus, some individuals, otherwise normal, experience sensations in modalities other than the modality that is being directly stimulated (Ramachandran and Hubbard, 2001: 4). Some visualize colours when they view numbers, others see distinct colours each corresponding to a musical note. This mingling of the senses or *synaesthesia* (from the Greek *sun*: joining and *aisthesis*: sensation), has historically been associated with creativity, and it seems to improve memory and linguistic development.

Synaesthesia is a significant concept for the analysis of performances by Troika Ranch and Palindrome where the interaction of physical and virtual creates inclusive, jarring confusions of sensory inputs. We are accustomed to the intertwining of sensory terms in literary devices, such as Shakespearean metaphor, but these ensembles attempt a direct interplay of various sense-impressions, unsettling the audience and frustrating their expectations of any discursive interpretation. They endeavour to create the effect of cross-activation of discrete areas of the brain for those who do not possess it.

It could be objected that if the only effect by performance on the brain is confusion then there is little to distinguish it from a range of narcotics. Not only would this assume prematurely that the brain-functional patterns for the two are alike or similar, but I

suggest that it would disregard the potency and subtlety of performance's techniques, particularly when technologically assisted. Traditional theatre, opera and dance offer highly formed, and frequently formalized representations which are parallel to our everyday world but share all of its perceptual features; the 'suspension of disbelief' lies in our attention to and identification with the narrative and its protagonists. Performance, I consider, has the capacity to 'bracket off' (to use a phenomenological phrase) certain layers and processes of consciousness for particular attention, and in so doing confronts the spectator with an externalised metaphor of his or her own 'first personal' experience. In effect we are offered a theatre of elements of our own consciousness. Memory and the act of remembering are explored in Troika Ranch's *The Future of Memory* (2003) by means of a multi-layered collage of imagery and sound, the technology acting as a 'metaphor for memory' itself. Using 'Isadora in tandem with MidiDancer', the performers, Stoppiello, Goldman, Szabo and Tillett, manipulate sounds and images in real-time; 'floating in a chaotic world of movement video and sound, the four characters … swirl in and out of reality as they attempt to regain the memories that define who they really are' (Coniglio and Stoppiello, 2011).

Fig 7: The Company in *Future of Memory* (2003). Photo: Richard Termine

Perhaps a more primitive layer of consciousness is exhumed by the same ensemble's *16 [R]evolutions* (2006), where motion capture software enables the body to write itself in performance, exploring through choreography and interactive media the similarities and differences between human and animal, and the behavioural evolutions that both go through in a single lifetime.

This notion of a theatre of our own experience reaches its consummation in Marta de Menezes' *Tree of Knowledge* (2004-2005), which, combining imaging of neuronal cells

and tissue culture technologies, creates three-dimensional living sculptures. Perhaps it could be said that here Merleau-Ponty's assertion of the embodied nature of experience is confronted by a counter-example: we are presented with an object made from our own patters of brain functioning. Its effect is certainly one of defamiliarization .

Conclusion

As a separately acknowledged art form, performance has only existed for about a century, though it could easily be argued that elements of it were to be found in forms of drama, dance and ritual in previous ages. As a form significantly enhanced by technology, it is at most thirty years old. So its popular artistic acceptance seems to have run on ahead of any tradition of dedicated theorization, and realizing that its effects are not adequately addressed by much earlier critical discourse, practitioners and writers alike have cast around for sources which support and explain them. Merleau-Ponty's writings have become one such, because he seems to offer both *prescription* and *analysis* of performance practice. Prescriptively, he has stimulated and informed the artistic intent of figures such as Kozel, who wish to develop work with renewed ways of using bodily presence. For the purposes of analysis, he has left materials which emancipate the spectator and critic from reliance on narrowly cerebral, literary criteria which tend to determine a search for verbalizeable narrative. In both cases he seems to fill out our lexicon of terms with fresh gradations of meaning.

The case of neuroaesthetics is quite different, in that as a field of study it is about as young as digital technology itself, and experimental research is still rapidly increasing. In the case of performance, the former's disciplinary purpose (as Zeki puts it), to provide 'an understanding of the biological basis of aesthetic experience', is directed to an art form which, though given this status, as I said, rather escapes received aesthetic criteria. So those fashionable experiments which 'wire-up' people's brains when encountering conventionally lauded paintings and music, may not be easily applicable here, and in this paper I have argued by analogy, and do not aspire to offer proof derived from experiment. I suggest, however, that this discipline promises to indicate something of *why* we consider the effects of performance are 'aesthetic'. Of course there are qualifications: there may be no one set of aesthetic qualities assignable to all performances (or to all instances of artifacts in any given medium, for that matter), accordingly we may find that spectator's brain-function patterns are equally diverse, and we will probably find that the distinction between 'ordinary' and 'aesthetically stimulated' patterns is blurred. But with sensitive consideration of its findings, neuroaesthetics might prompt a renewed discourse within aesthetics itself.

Notes

[1] Open Sound Control was created by the Center for New Media and Audio Technologies (CNMAT) at the University of California, Berkeley in the 1990s.

[2] One of the convex folds of the surface of the brain.

Reference List

Broadhurst, Susan. 2001. *Blue Bloodshot Flowers*. Performer Elodie Berland. Music by David Bessell. Technology provided by Richard Bowden, University of Surrey. Brunel University (June); The 291Gallery, London (August).

Coniglio, Mark and Dawn Stoppiello. 2011. Troika Ranch Website. <www.troikaranch.org/>, accessed 15 July 2011.

Crick, Francis. 1994. *The Astonishing Hypothesis.* London: Simon & Schuster Ltd.

Cunningham, Merce (chor). 2000 *Biped*. Computer-enhanced graphics: Paul Kaiser and Shelley Eshkar. Music: Gavin Bryars. Costume Designer: Suzanne Gallo. Barbican Centre, London, October 11.

De Menezes, Marta. 2001-2002. 'Nucleart'. Marta De Menezes' website <http://www.martademenezes.com/>, accessed 15 July 2011.

---. *Tree of Knowledge* (2004-2005). Marta De Menezes' website <http://www.martademenezes.com/>, accessed 15 July 2011.

---. Marta De Menezes' website <http://www.martademenezes.com/>, accessed 15 July 2011.

Dowling, Peter, Robert Wechsler and Frieder Weiss. 2004. 'EyeCon -- a motion sensing tool for creating interactive dance, music and video projections'. Proceedings of the Society for the Study of Artificial Intelligence and the Simulation of Behavior (SSAISB)'s convention. University of Leeds, England, (March): 1-7.

Gregory, Richard L. 1998. *Eye and Brain: The Psychology of Seeing*. 5th ed. Oxford: Oxford University Press.

Kosslyn, Stephen M., and Oliver Koenig. 1992. *Wet Mind: The New Cognitive Neuroscience.* New York: Macmillan.

Kosslyn, Stephen M, William L. Thompson and Georgio Ganis. 2010. *The Case for Mental Imagery*. Oxford: Oxford University Press.

Kozel, Susan. 2007. *Closer*. Massachusetts: MIT Press.

Merleau-Ponty, Maurice. 1962. *Phenomenology of Perception.* Trans. Colin Smith. London: Routledge.

---. 1963. *The Structure of Behavior*. Trans. Alden L. Fisher. Boston: Beacon Press.

---. 1974. 'Eye and Mind'. Trans. Carlton Dallery. In *Phenomenology, Language and Sociology: Selected essays of Maurice Merleau-Ponty*, ed. John O'Neill, 280-311. London: Heinemann.

---. 2000. *The Visible and the Invisible*. Ed. Claude Lefort. Trans. Alphonso Lingis. Evanston: Northwestern University Press.

Ramachandran, V.S. and Edward M. Hubbard. 2001. Synaesthesia: A Window into Perception, Thought and Language'. *Journal of Consciousness Studies* 8: 3-34.

Smith, Edward E. and Stephen Kosslyn M. 2009. *Cognitive Psychology: Mind and Brain*. New Jersey: Pearson Prentice Hall.

Stelarc. 2003. *Muscle Machine.* Performance Premiere. Performance Premiere, A collaboration involving the Digital Research Unit, Nottingham Trent University and the Evolutionary and Adaptive Systems Group, COGS at Sussex University. project co-ordinator: Barry Smith (DRU, TNTU, 291 Gallery, East London 1 July.

Troika Ranch. 2003. *The Future of Memory.* Created by Mark Coniglio and Dawn Stoppiello. Performed by Dawn Stoppiello, Danielle Goldman, Michou Szabo and Sandra Tillett. Premiered at The Duke, 42nd Street, New York (February).

---. 2004. *Surfacing.* Choreographer: Dawn Stoppiello. Music & Video: Mark Coniglio. Performed by Danielle Goldman, Patrick Mueller, Michou Szaabo and Sandra Tillett. Premiered at Danspace Project, New York (May).

---. 2006. *16 [R]evolutions.* Choreographer: Dawn Stoppiello. Music and Video: Mark Coniglio. Performers: Robert Clark, Johanna Levy, Daniel Suominen and Lucia Tong. Premiere Eyebeam Arts and Technology Center, Chelsea, New York (January).

Zeki, Semir. 1999. *Inner Vision: An Exploration of Art and the Brain.* Oxford: Oxford University Press.

---. 2009. *Splendours and Miseries of the Brain: Love, Creativity, and the Quest for Human Happiness*. Oxford: Wiley-Blackwell.