Title: 'Merleau-Ponty, Neuroaesthetics and Embodiment:
Theorising Performance and Technology'

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Abstract

Assisted by the rapid growth of digital technology, performance is an increasingly popular area of artistic practice.

This paper contextualizes this within two methodologically divergent yet complimentary intellectual tendencies. The first is the work of the philosopher Maurice 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.

Introduction

In this paper, I will examine two different approaches in interpreting contemporary performance practice, giving examples throughout. The first approach is contained in the writings of Maurice Merleau-Ponty, working in the European phenomenological tradition, whose work predated our recent capability to investigate brain functioning. Of course, the methods and premises of phenomenology are quite distinct from those of experimental science. For me, Merleau-Ponty has a dual role for contemporary performance: both a thinker who anticipated a more intimate relationship between the body and technological instruments, and also a theorist who might provide a clue as to why this relationship seems so compelling when realised in performance.

The second approach is this very recent scientific investigation into brain functioning, and how it relates to what we call consciousness, especially our powers of visual perception. I will argue that its insights appear to indicate that consciousness is a result of distinct but collaborative functions within the brain, and 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 seem to manifest in states of consciousness which would not be reliable or consistent enough to interpret or interact with everyday situations. It could be said that these states in effect 'defamiliarize' our experienced world (a notion which I will revisit). Such an incapacity for unambiguous construal may be a necessary condition for our judgement that these experiences are of aesthetic significance, and, therefore, that the performances which give rise to them are of artistic value. (If this sounds to you like a faint echo of Kant's notion that the aesthetic is necessarily resistant to 'usefulness' in the everyday world, then I think you would be correct, and I will return to it later). This field, covering the special cases of brain function in encounters with objects or occasions of artistic value, is known by the generic title 'neuroaesthetics'.

Context

 'Performance' is the current title for a variety of artistic practices which fall between the zones of drama, dance, mime, happening and installation, usually incorporating elements from several of these. It embraces the sub-genres of Live Art, Physical Theatre, Dance Theatre, Verbatim Theatre and what used to be called Performance Art. Its origins lie, firstly, in the experimental, text-less theatre developed by such figures as Jarry, Artaud and the Dadaists, subsequently developed by Brecht, Grotowski, Mnouchkine, Le Coq, Bausch and Brook; secondly, in the live art and happenings of such groups as the Situationists and Actionists in the sixties and seventies, which were frequently gallery- rather than theatre-based. In the last two decades, performance has entered new territory. As far as presentation goes, it has 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 have enlarged too, embracing plurally-layered content which attempts to address more elusive and broader themes, reflecting our enveloping experience of the contemporary world. 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 too. The analogue processes of film and magnetic tape have frequently served in the past as components and amplification of live performance, but the relationship with the performer 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. Because it could break down information into mutable combinations of bits, it gave the performer 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. I would suggest that, as a result, our culturally engrained

sense of our bodily frontiers has undergone a radical enlargement, and so too has our conception of the 'incarnate' nature of consciousness. I regard Merleau-Ponty's theorization here as prophetic. I also contend that the field of neuroaesthetic analysis might provide some insight into why the more obscure instances of contemporary performance have the artistic value that we often 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 restate the importance of the body in aesthetics and perception, and unsurprisingly Merleau-Ponty has been frequently cited here. His methodological context is the later phase 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 to take as its point of departure the acting adult subject, already engaged with, and directing different modes of attention onto, the world. This contrasts with the passive, somewhat disembodied self, common to both Cartesian and classical empirical positions, who disinterestedly derives conclusions about the world from a position of willed skepticism, (for Descartes the famous 'hyberbolic doubt'). But the ambition of phenomenologists to lay bare a fundamental grammar of elements of consciousness has not been unproblematic, since these founding acts and objects 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, extravagant rhetoric .The international intellectual climate has become less oppositional, but it has to be recognized that, though he was aware of contemporaneous neurological research, Merleau-Ponty does not write with the caution of a scientist, and as a

phenomenologist, he would consider science as very much an *a posteriori* construction, which makes a causal narrative to *explain* consciousness, rather than addressing it directly. So it is unsurprising that Merleau-Ponty, in an Anglo-Saxon context, has until recently received far more attention from cultural and aesthetic theorists than from analytical philosophers.

However radical their intentions, 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 (*res extensa*). 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, 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). 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 subsequently assign interpretations and meanings. Rather, these meanings are inseparable from that world, as Merleau-Ponty 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. Interestingly, a fairly recent neuroscientific paper quotes from Merleau-Ponty in order to characterize an empathetic neuronal system (Rizzolatti and Craighero, 2004: 179). In Kozel's book *Closer* (2007), she 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, Merleau-Ponty's 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 notion of '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 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. A good example of this is their 2004 performance *Surfacing*.

Fig1: Danielle Goldman in *Surfacing* (2004). Photo: Richard Termine

At these degrees of proximity it can be argued that the legacy of Merleau-Ponty, through practitioners' reading, and critical theory courses, has contributed to an *apologia* for what might otherwise be seen as inconsequential spectacles. Though he died 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 artistic intent and analysis. New *genres* of performance, now multi-layered and multi-textual, are widely intuited to have an artistic worth, but this is difficult to explain in terms of the more discursive criteria applied to traditional drama or dance. I suggest that he provides a few 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 the mechanical, the semi-intelligent and the biological.

In performances by the Australian 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*, 2001.

Director: Sue Broadhurst. Technology: Richard Bowden, Image: Terence Tiernan.

Fig 4: Audience interacting with Jeremiah in *Blue Bloodshot Flowers*, 2001.

Director: Sue Broadhurst. Technology: Richard Bowden, Image: Terence Tiernan.

Finally, and perhaps in fulfilment of Merleau- Ponty's 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 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).
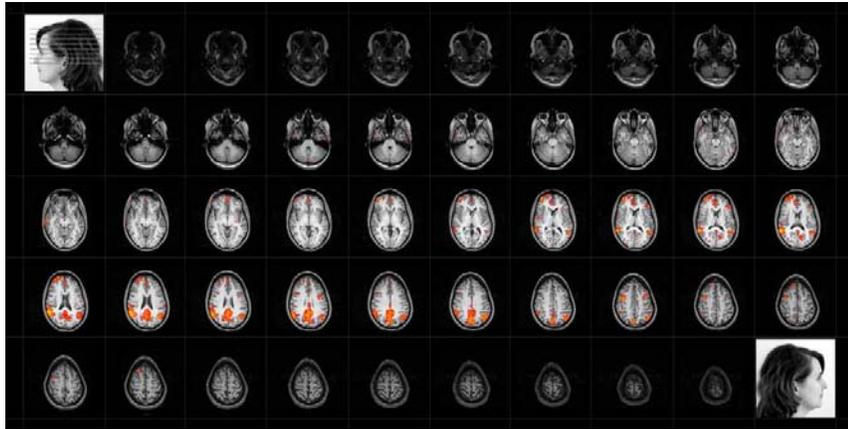

Fig 5: ***Portrait: Self-portrait while drawing.*** 2005 (© Marta de Menezes)

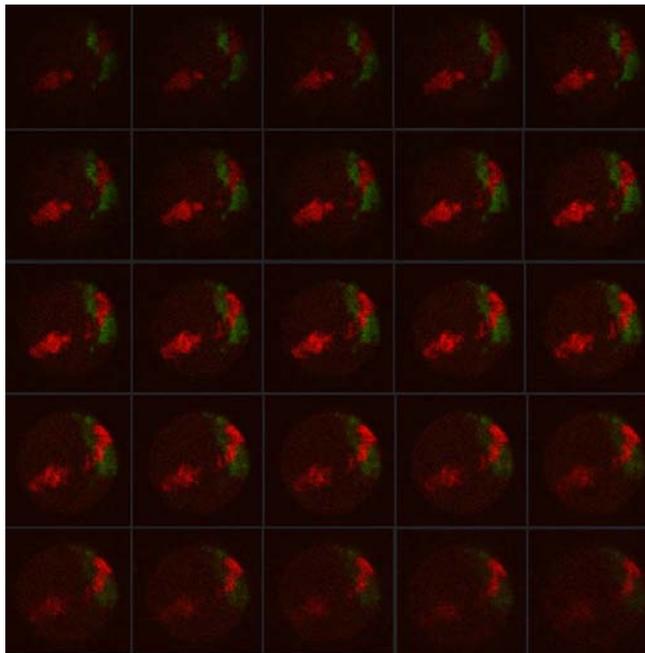And fluorescent DNA in *NucleArt* (2001).

Fig 6: 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: stimuli and electronic impulses, *then* coordination of these, *then* interpretation of them. 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. Psychologists have called the reciprocal entailment of perceiving, and continuous interaction with, the world, the 'Action-Perception Loop' or 'Sensorimotor-Causal Loop', adopting a variety of positions as to how separable are these entailed states when analyzing perception (Block, 2005). As a result of this research, we may be more intellectually aware of the distinction between what we *see*, and what we *know* and believe we see (Richard Gregory, 1998: 2), but 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', a causal account of a phenomenon, but as a discipline in search of causes, cannot address it directly.

This is not to say that the two standpoints are innately opposed. 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. 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 abandonment of the '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 necessary 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, 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 patterns of 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.
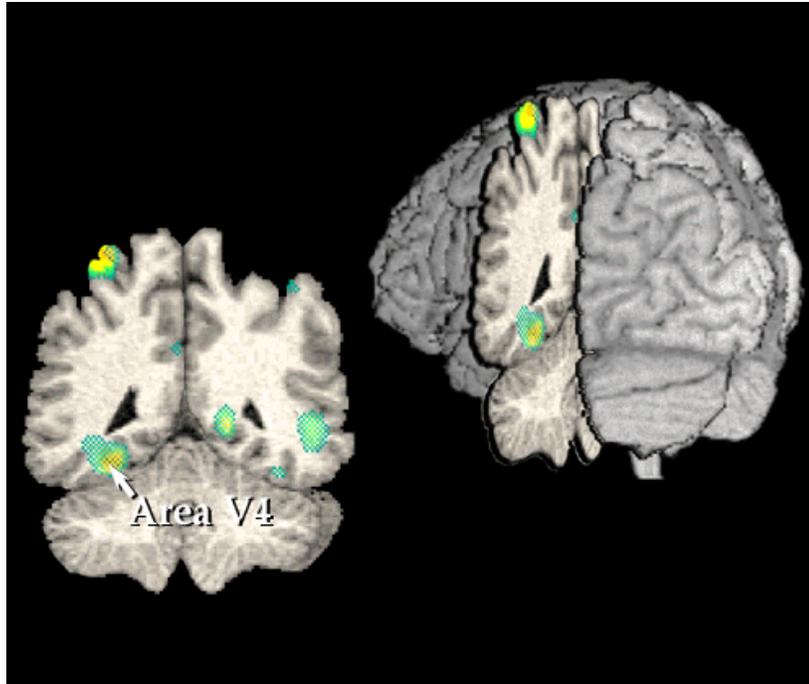
Fig 7: Area V4 of the brain. Photo Courtesy of Professor Semir Zeki.

From the Laboratory of Neurobiology at UCL, www.vislab.ucl.ac.uk

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 of the brain, which may generally respond to the unusual or 'irregular patterns' of stimuli, (Zeki, 2009: 16).

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). This notion of an irreducible plurality of functions is now known to scientists and some philosophers as *modularisation*.

 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).

Such knowledge, of course, is not largely derived from individual encounters with inanimate objects; a presently speculative area of neuroscientific research supports the notion that we are deeply disposed to 'insert ourselves' into the actions of others and possibly to learn from them. Various Neuroscientists have established the existence in monkey brains (area F5) of 'mirror neurons', associated with the performance of actions *by* the subject, but which also discharge when the subject observes others perform actions. They have adduced indicative, though not conclusive, evidence that humans possess them too (in Area 44 and adjacent Ventral Area 6). Thus when observing others act, the same neurons discharge as when we are asked to physically *imitate* their actions, whilst a suppressant activity stops us doing so (Gallese, Keysers and Rizzolatti, 2004; Rizzolatti and Craighero, 2004; Rizzolatti, 2005) (Just a note that I am collaborating on a project with Vittorio Gallese who is based at the University of Parma, involving empathy in performance). In a way quite distinct from more considered perceptual judgements, it seems we are impelled neuronally to perform unenacted rehearsals of observed actions. Rizzolatti and Craighero conjecture that such functions have facilitated skill-acquisition

and language-development (2004: 180-87). For performance, as for all kinetic art-forms, the implications of such research are obvious. Audience mentally 'moves with' performers, and, with interactive technology, both 'move with' the performers' projections or avatar companions. Little wonder Gallese 2012, Rizzolatti and Craighero, saw fit, in their writings, to quote Merleau-Ponty (Gallese, Rizzolatti and Craighero 2004: 179). (And incidentally, stress on the importance of 'imitation' in all learning processes can be traced back to Aristotle's *Poetics*).

As I said at the start, Kant is the most notable of thinkers who, when seeking to define aesthetic experience, single out its non-utilitarian quality, claiming that an experience, which we consider qualitatively aesthetic, of something, is not that casual mode of attention that sees that thing as a tool or instrument to realize some given purpose; insofar as we judge a thing to have aesthetic value, that thing resists being given pragmatic status: it is not a means, it is somehow an end in itself, (Kant's term for this self-sufficiency, was, as you probably know, *Zweckmassigkeit*, translated into English as 'purposiveness').

More recently, the Russian formalist thinkers, most conspicuously Shklovsky, postulated that the necessary condition for such experiences is, *ostranenie*, an artwork's capacity to make the world strange in order for it to be seen better, to *defamiliarize* it. Brecht subsequently developed defamiliarization (*Vefremdungseffekt*) as a theatrical technique (Brecht, 1964).

For me, Josette's quote regarding 'alienation in multi-media performance' is central here:

> The processes of alienation at work in the theatre of Brecht ... have been: fragmentation of the narrative; rupture in the order of representation; displacement of the subject of enunciation; decentering of the spectator's point of view with respect to the event; passage from reality to fiction and from fiction to reality; placement of the part within the context of the whole ... Contemporary theatre, and to a greater extent the multi-media arts, have transformed the bulk of these

procedures into an aesthetic form which today signals the contemporaneity of the performance.

(Féral 1987: 469)

I believe that neuroaesthetics may provide at least some underpinnings for such theoretical attempts to found aesthetic experience as an exemption from routine utility or comprehensibility, and this illuminates why certain technologically enhanced performances have the resonance that they do. I suggest that the effect of such works is to disrupt and to disintegrate the ostensibly coherent representations of the world we need for everyday survival, provoking from us an attempt at re-integration of these experiences 'in another mode'. If, as Zeki argues, consciousness seems to be the unified result of a complex of mutually contributive, 'micro-conscious' processes, then in order to be effective, this disruption does not have to challenge all of them, rather, it needs merely to activate some and not others. It both arouses and thwarts the promise of coherence.

I think an 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 8: *"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 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.

Of course you will be well aware of the dissemination of this notion in Baudelaire's critical writings, and it could be argued that synaesthetically overwhelming effects underpin the ambitions of that project of Baudelaire's contemporary Richard Wagner in

the *Gesamtkunstwerk*. Synaesthesia is a significant concept for the analysis of performances by Troika Ranch and Palindrome where the interaction of physical and virtual creates 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 argued 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 Husserl's phenomenological phrase) certain layers and processes of consciousness for particular attention, and in so doing it 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 9: 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.

Fig 10: Traces of the performer's hands and feet leave multiple curved white traces, a development of the white line seen earlier in *16 [R]evolutions* (2005), Performer: Lucia Tong, Photo: Richard Termine.

This notion of a theatre of our own experience reaches its consummation in de Menezes' *Tree of Knowledge* (2004-2005), which, combining imaging of neuronal cells and tissue culture technologies, creates three-dimensional living sculptures.
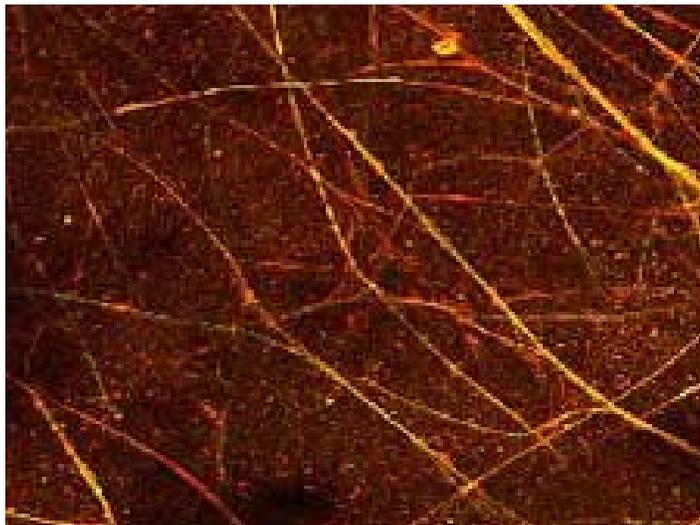

Fig 11: Marta de Menezes – Tree of Knowledge 2004-5

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 patterns 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 has 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. Analytically, 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; as a field of study it is about as young as digital technology itself, and experimental research is still rapidly increasing. Its disciplinary purpose (as Zeki puts it), to provide 'an understanding of the biological basis of aesthetic experience' is often channelled into those fashionable experiments which 'wire-up' people's brains when encountering conventionally lauded paintings and music. But these are not easily applied to *genres* which, though given artistic status, escape being receptive to traditional aesthetic criteria. In this paper I have argued by analogy, and I 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

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[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.

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