

The background of the cover is an abstract, colorful image with swirling patterns of yellow, orange, and purple. A solid yellow rectangular box is positioned in the upper half of the cover, containing the title and editors' names in white text.

Research Methods in Theatre and Performance

Edited by Baz Kershaw
and Helen Nicholson

Researching Digital Performance: Virtual Practices

Steve Dixon

INTRODUCTION

Since the mid-1990s, computers and their software have become central to research processes across all academic disciplines. Critical writing is honed using word-processing packages, research data is stored and analysed via computer applications and, in theatre and performance studies, video editing and DVD authoring software is utilised to document and disseminate practice-as-research performances. In tandem, the World Wide Web has become one of the most important global research resources, providing immediate literature searches and a plethora of easily searchable and accessible materials, and it is becoming a key forum for research discussions, debates and collaborations. In theatre and performance studies there has been a burgeoning of specialist online journals, theatre sites and blogs, data analysis systems, resource hubs and arts archives, while performance companies' websites and portals such as *YouTube* provide ready access to video files of performances. The Web has thereby become a key platform for both performance documentation and the dissemination of research outputs. Just as significantly, the computer screen has become a new type of theatre proscenium, in and through which to create new modes and interactive genres of theatrical (as well as social) performance. Hence the web can be considered as 'the largest theatre in the world, offering everyone fifteen megabytes of fame' (Dixon 2007: 4).

In theatre and performance studies, the use of new technologies has not only significantly transformed traditional research methods and methodologies, but it has also led to an extension or evolution of theatre practice itself. This chapter's main focus is what I term 'digital performance': theatre/performance events where computer technologies play a key role in content, techniques, aesthetics or forms of delivery. It centres on three case studies of projects that adopt innovative research methods towards the creation of interactive works

which attempt to push the technological and aesthetic boundaries of theatre practice-as-research. They concentrate on individuals and groups within academia and the theatre – an established university practice-as-research group, a leading professional multimedia theatre company and a PhD student – each of which has devised distinct research methods in order to realise specific technological-aesthetic objectives:

- *Case study 1.* The Chameleons Group: to devise ways to enhance the sense of ‘liveness’ of a digitally projected performer, and to establish new models of stage–screen interaction and integration.
- *Case study 2.* The Builders Association: to design a new type of ‘virtual architecture’ on stage that appears to ‘enmesh the performers in the media . . . by collapsing the video space into the stage space’.
- *Case study 3.* Sarah Atkinson: to conceive a multi-linear and multi-perspective interactive video drama that enhances the sense of spectator agency, and to utilise specialist embedded software and external eye-tracking systems to document and analyse audience reception.

A further aim of the chapter is to review recent theories within the field of digital theatre/performance and to analyse the key issues and debates surrounding theatre’s conjunction with new media. As a relatively new area of practice, it offers both significant opportunities and daunting challenges to the researcher. These relate to three main aspects of digital creative research more generally. Firstly, to the search for new theories and paradigms, and its development and testing of new methodologies. Secondly, to its multidisciplinary nature, as it draws upon and interrelates practices, perspectives and knowledges from established disciplines – such as theatre/performance studies, media/communications studies, computer science – as well as emergent ones, such as interactive arts and cyber/posthuman theory. Thirdly, to its technological basis, which necessitates considerable skills acquisition and development, ranging from elementary levels of effective operation/mastery of new software/hardware systems and technical problem-solving to more advanced levels that create new custom-built virtual systems and original performance manifestations, platforms and genres.

THE QUEST FOR ORIGINALITY

Research is concerned with the production of ‘new knowledge’, and the word *originality* holds a central position within academia – from its formal requirement in PhD submissions to its status, alongside ‘significance and rigour’, in evaluation of university research outputs during the UK 2008 national Research Assessment Exercise (RAE). In the emergent field of digital

performance there are clear opportunities to develop truly original methodologies, hypotheses, arguments and creative outputs, and many academics and practitioners have developed pioneering work. For example, the performance company Blast Theory has created new genres of interactive performance by combining gaming and theatrical paradigms with high technologies such as Virtual Reality (*Desert Rain*, 1999) and GPS systems (*Uncle Roy All Around You*, 2003). In 2001, Susan Broadhurst produced the first theatre performance to feature a fully autonomous Artificial Intelligence ‘synthespien’ called Jeremiah (designed by Richard Bowden), whose actions could not be predicted from performance to performance. Broadhurst relates the work to the ‘becomings’ and ‘intensities’ of Deleuze and Guattari (1988), and her ambitious methods concerned not only the quest to (digitally and dramatically) theatricalise these notions, but also to create original performance paradigms and ontologies:

The hybridization of the performance . . . [and] these imperceptible intensities, together with their ontological status, give rise to new modes of perception and consciousness . . . [T]echnology’s most important contribution to art may well be the enhancement and reconfiguration of an aesthetic creative potential which consists of interacting with and reacting to a physical body, not an abandonment of that body. For it is within these tension filled (liminal) spaces of physical and virtual interface that opportunities arise for new experimental forms and practices. (Broadhurst 2005)

The development of pioneering software systems has been important in the advance of digital performance, with theatre companies such as the Wooster Group utilising applications such as *Imagine* to manipulate and ‘scratch’ live-feed video in real time. Other software programs such as *Max/MSP/Jitter* have been used widely as real-time interactive systems to respond minutely to the actions and voices of actors (or interactive installation users), transforming the data into metamorphosing video projections and sonic effects. Applications that activate media events in response to the position or motion of performers on stage, such as *Isadora* and *EyeCon*, have been specially designed by and for theatre and dance companies.

The search for the ‘new’ has been grasped firmly by both practitioner-researchers in digital performance and analytically oriented researchers writing about these practices. But while many original critical perspectives have been formulated, no overarching new ‘meta-theory’ has yet emerged, with the possible exception of Philip Auslander’s *Liveness* (1999), which is discussed below. The inter- and multi-disciplinary nature of the performing arts has led most writers to adopt an eclectic methodology which combines

and interrelates established theoretical constructs with new ideas. Thus the methods of 'old' sources are melded, extended and supplemented to create new methodologies, and all the key recent monographs in the field demonstrate that established disciplines and fields of thought have provided the methodological starting point: psychoanalysis (Matthew Causey's *Theatre and Performance in Digital Culture*, 2006), deconstruction (Nick Kaye's *Multi-Media: Video, Installation, Performance*, 2006), phenomenology (Susan Kozel's *Closer: Performance, Technologies, Phenomenology*, 2007), postmodern philosophy (Gabriella Giannachi's *Virtual Theatres: An Introduction*, 2004) and theories of the early twentieth-century avant-garde (Steve Dixon's *Digital Performance: A History of New Media in Theater, Dance, Performance Art and Installation*, 2007).

Theoretical researchers have also turned their attention to science in general, and biosciences and neuroscience in particular, as a lens through which to examine the field. Johannes Birringer's *Performance, Technology and Science* (2008) focuses on scientific paradigms from computation and complexity to self-organising systems and biotechnology, while his edited collection with Josephine Fenger, *Tanz im Kopf/Dance and Cognition* (2005) centres on neuroscientific analyses, as does Susan Broadhurst's monograph *Digital Practices: Aesthetic and Neuroesthetic Approaches to Performance and Technology* (2007). New developments (or claims) within neuroscience have had a particular appeal to researchers studying digital performance, as well as the performing arts in general. The AHRC-funded *Watching Dance: Kinesthetic Empathy Project* (2008–11), for example, uses neuroscience techniques such as Functional Magnetic Resonance Imaging (fMRI) and Transcranial Magnetic Stimulation (TMS) to probe and analyse the neural and cortical functions, pathways and excitability patterns of spectators when they watch dance performances, with the aim to provide insights into audiences' cognitive, sensory, emotional and empathetic responses.

The search for originality and the opportunity afforded to pioneer novel theories in an embryonic field has led a number of writers to adopt explicit methodologies that seek to define and categorise emergent elements. Phaedre Bell (2000) identifies three ways in which onstage media projections operate in relation to live theatre action. She suggests that they function either as a primary, secondary or dialogic (equal) medium, according to their relative aesthetic impact or dramaturgical significance. Similarly, I propose four types of 'digital double' (reflection, alter ego, spiritual emanation and manipulable mannequin) and four hierarchical categories of interactive arts based on systemic openness and consequent level/depth of user interaction (navigation, participation, conversation, collaboration) (Dixon 2007). Other fields of technological and cultural theory also have been important in providing new perspectives apposite to digital performance. For example, in *Bodies*

in *Technology* (2002) Don Ihde proposes three types of body: *body one*, our physical, worldly, phenomenological body; *body two*, the socially and culturally constructed body; and *body three*, which exists 'in a third dimension . . . traversing both body one and body two . . . the dimension of the technological' (2002: xi).

Following a period of late-twentieth-century critical thought dominated by postmodern theories that contested the very concept of originality, theoretical methods in digital performance in the early twenty-first century challenged this perspective and pointed to the unprecedented nature of the field's technologies, techniques and aesthetics. For example, my book *Digital Performance* argues that many performance artists and theatre/dance groups work consciously to create original new theatrical forms as well as to embrace concepts that are anathema to postmodern philosophy such as 'grand narratives' (Jameson 1991). These include works which focused on

death (Dumb Type, Paul Vanouse, Mark Pauline), love (Paulo Henrique, Company in Space, Curious.com), morality (Builders Association, Joel Slayton, Natalie Jeremijenko), nature (Char Davies, Amorphic Robot Works, Brenda Laurel/Rachel Strickland), suffering (Marcel.Li Antúnez Roca, David Therrien, ieVR), foundations (Blast Theory, Gertrude Stein Repertory Theatre, Stelarc), religion (Bilderwerfer, George Coates Performance Works, Paul Sermon), biology (Eduardo Kac, Critical Art Ensemble, Yacov Sharir/Diane Gromala) and revolution (Guillermo Gómez-Peña, Critical Art Ensemble, Electronic Disturbance Theatre, VNS Matrix). (Dixon 2007: 661–2)

Case study 1: The Chameleons Group

Arguably, the most original and radical new theory related to digital performance is Philip Auslander's celebrated arguments about *Liveness* (1999). It follows on from Walter Benjamin's 1936 thesis concerning the diminution of the 'aura' of an image when it is technologically reproduced (as a print of a painting or a film of a person): 'even the most perfect reproduction of a work of art is lacking in one element: its presence in time and space, its unique existence at the place where it happens to be . . . The presence of the original is the prerequisite to the concept of authenticity' (Benjamin 1999: 214). Auslander extends this to argue that 'all performance modes, live or media-tized, are now equal; none is perceived as auratic or authentic' (1999: 50). He contends that traditional notions of theatrical liveness have been eroded so much that there now seems little difference between live and recorded



Figure 2.1 Artaudian notions of the double and new approaches to stage–screen integration are explored in the Chameleons Group's *Chameleons 4: The Doors of Serenity*.

dramatic forms, and he asserts that the digital has become culturally dominant over the live so that, for example, when watching a theatre performance combining live actors and screen-projected actors, audiences will pay more attention to the screen.

Auslander's theories are engaged and challenged by the Chameleons Group (established 1994), a digital performance research company that I direct. The Group has created theatrical events and documentation artefacts across a range of contexts, from multimedia theatre productions and CD-ROMs to interactive Internet events and video-conferenced 'virtual world' performances. The Group uses research methods that experiment with the relative 'performative presences' of recorded and live performers and equalise them so as to counter Auslander's claim that projected performers dominate live ones.

The Group's use of precisely timed conversations between live performers and their pre-recorded video alter egos is one method employed to ensure the live performer's presence is not overcome or upstaged by the screen's presence. This technique has been utilised by a number of artists, including Mary Oliver, who shares a concern to engage with Auslander's theories and considers that the cultural dominance of screen-based imagery means

that audiences are more 'accustomed' to seeing performers on screen and, importantly, that they are also more 'comfortable' doing so. Oliver writes: 'This has created an unequal relationship between the actual and virtual performer. The creator of digital performance now needs to forecast the level of screen seduction that will take place and counter it where necessary or else suffer from the "fifty-watt light bulb syndrome"' (2008: 61). This references Auslander's argument that the live performer's presence can be like a low-wattage light bulb in comparison to the high-wattage imagery of onstage screens. So while Oliver very much embraces and allies herself theoretically with Auslander's ideas, her research methods in practice aim to counter their implications by establishing a creative rationale through which both stage and screen characters 'can exist independently but not to the exclusion of the other . . . in a symbiotic relationship' (2008: 65). She achieves this by using methods such as quick-fire comic dialogues between them to ensure that audience attention is constantly switched between and directed to both her live and on-screen characters.

The Chameleons Group's research methods for the multimedia theatre production *Chameleons 4: The Doors of Serenity* (2002) involved migrating and infusing Artaudian theatrical theories into contemporary digital performance practice. Once the methodological starting point was conceived, the group identified four prime research objectives, the first summarising the overall methodology and the others indicating the project's practical methods: (a) to reinterpret and realise Artaudian and surrealist theories of performance for the digital age; (b) to establish new models of stage–screen interaction and integration; (c) to devise ways in which the sense of 'liveness' of a digitally projected performer may be enhanced; and (d) to create a distinctive digital performance aesthetic which is experimental and avant-garde, but also narrative-based, populist and accessible to a wide audience.

The production's methods were designed to blend both traditional and non-traditional techniques. In devising the show, for example, conventional techniques such as brainstorming and improvisation were complemented by more experimental ones, such as surrealist automatic writing techniques, that aimed to draw on the writer's unconscious mind (conducted with the performers 'in character'), as well as the creation of scenarios based on the performers' actual dreams. These methods were used to evoke the darker, more 'primitive' aspects of Artaudian theatre, and were found to induce the types of violent and visceral images that Artaud advocated, as summarised in relation to his film scenarios: 'eroticism, cruelty, the taste for blood, obsession with the horrible, dissolution of moral values, social hypocrisy, lies, false witness, sadism, perversity' (1931: 23).

Artaud's notion of 'the double' was explored using practical experimentation with dialogic interactions between the live performers and their

pre-recorded digital doubles, and by discovering how 'dual texts' of live and recorded performance could be devised to produce different semiotic, narrative and psychological effects. A number of scenes were developed where the performers engage in rigorous and minutely timed interactions with the screen. For example, the two male characters each conducted 'solo' scenes involving long three-way dialogues with two simultaneously projected recorded versions of themselves, while the two women characters held a six-way conversation interacting live on stage with two on-screen alter egos each. In pre-recording the projection sequences, acting methods were employed to highlight pace, energy and adrenalin so as to emulate theatrical liveness. Since studio recordings commonly lack the comparative tension and vigour of a performance for a live audience, the aim was to bring a comparable and equal sense of performative interactivity to the recorded characters. These methods were employed so that when the live actor met the supposed 'absence' and the 'past tense' of her projected double, the doppelgänger could assert itself as doubly 'present', both in time and space and in terms of equal theatrical presence. As the flesh-and-blood actor meets her virtual self, the physical 'absence' of the digital body becomes a palpable presence and past (the time when the video image was recorded) becomes present (in theatrical time and space). The image of the body and its double pervades the show and relates to the shadow figure of the doppelgänger, Freudian notions of the uncanny (Freud [1919] 1985) and the subconscious Id ([1923] 2010), Lacan's conception of the mirror stage and the *corps morcelé* (the body in pieces) (Lacan 2007), and the Narcissus myth.

Artaud wrote that 'acting is a delirium like the plague' (1974: 18), and his vision of the actor in delirium, the martyr burned alive and still 'signalling through the flames' (1974: 14), remains one of the most potent and imagistic articulations of acting theory. For western performers, moments that come close to this grand metaphor are rare. The Chameleons Group's use of the actor on stage and their double on screen, so that the performers act with and against themselves, presents a research method that at worst offers the actor 'two bites of the cherry' and at best opens the possibility of some synergetic alchemy which might approach this notion of flame-licked delirium. Some *Chameleons 4* images pay direct tongue-in-cheek reference to Artaud's metaphor: a light-hearted live stage scene where the two male characters, a cyborg and a devil, first meet is played in front of a projection of the cyborg character, a noose around his neck, screaming in agony in the midst of lapping, digital hell-fire; meanwhile the devil, in miniature, dances on his shoulder, and the ghosts of the two women characters wander, lost and blindfolded, in a darkened, background purgatory.

The acting and scenographic method in this scene was to play the live stage dialogue 'light' against the distinctly 'heavy' projection imagery, and this provides a key to understanding the Group's particular praxis. The simple

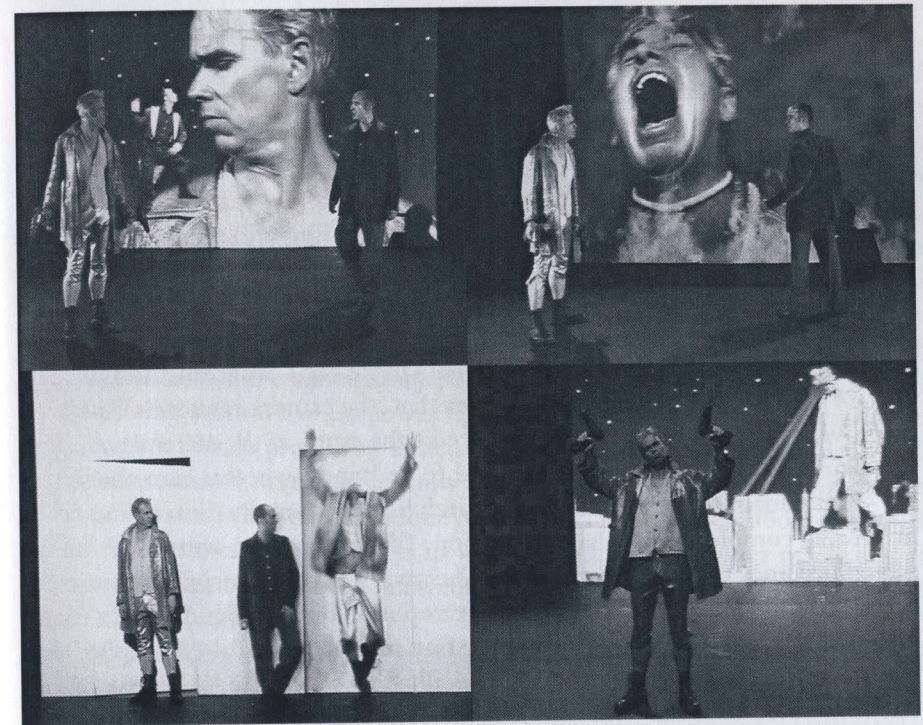


Figure 2.2 Images from the 'Hell's Mouth' scene between the cyborg and the demon in *Chameleons 4: The Doors of Serenity*.

counterpoint and contrast between stage and screen texts was inherently 'theatrical' as it helped to disorient the audience's senses, thus moving them toward Artaudian realms. But more fundamentally it created an effect that cannot be achieved by live theatre alone. The use of technology contributed to the dramaturgical point of horror in two ways: firstly, in the creation of a visually arresting computer-graphical representation of hell inhabited by four characters (the screaming cyborg, the dancing devil and the two ghosts lost in purgatory); secondly, by enabling each actor in the video recording to work separately through multiple takes (they were each digitally inserted into the composite image later in post-production) in order to reach a concentrated point of acting extremity that would be difficult to replicate reliably night-by-night on stage. Had this screen sequence been conceived for live performance on stage, its scenic ambition and acting demands might have rendered it as a climactic ending, but it is placed with ease within the expository first act and is juxtaposed against a prosaic, live prologue. The projection imagery presents a parallel spatial and psychic dimension, and the characters are revealed to inhabit and haunt both their own inner (screen) and outer (stage) spaces and psyches.

The Group's methods are informed by detailed research into the history of multimedia theatre, as well as through practical and theoretical explorations of ontological issues and debates arising from stage and screen performance. For example, in the scene just described, the company's belief in recorded media's relative empowerment of acting extremity and authenticity in comparison to live performance relates back to one of the earliest attempts to define and differentiate the separate ontologies of film and theatre, Allardyce Nicoll's *Film and Theatre* (1936). Nicoll maintains that audience orientations when experiencing the two forms are quite different since theatre has an inherent falsity acknowledged by all: 'dramatic illusion is never . . . the illusion of reality; it is always imaginative illusion' (1936: 166), whereas film purports to *truth* and, despite the fact that the idea that 'the camera cannot lie' has been disproved, 'in our heart of hearts we credit the truth of the statement' (167). He maintains that stage characters tend to be 'types' whereas film characters are 'individuals', and the search for individualisation in film acting leads to greater complexity in characterisation. 'What we have witnessed on the screen becomes the "real" for us' (171) he says, a perhaps surprising anticipation of postmodern media theories as exemplified by Jean Baudrillard (1994). Nicoll's ideas are interesting in contrasting film as 'truthful', 'complex' and 'real' against the falsity, simplicity and illusion of theatre. Whether or not one is inclined to agree with his analysis, The Chameleons Group's methods are an explicit attempt to demonstrate that his thesis still holds seventy years after he proposed it. The Group's performers consciously explore notions of reality and acting extremity and 'truth' much more directly when recording their video performances than they would ever attempt during scenes they perform live.

Case study 2: The Builders Association

Where the primary methodological aim of the Chameleons Group concerns theatrically updating Artaud's theories for the digital age, the meta-methodology for the Builders Association, a New York-based ensemble, is encapsulated in their objective to 'reanimate' theatre for a contemporary audience, 'using new tools to interpret old forms . . . to create a world onstage which reflects the contemporary culture which surrounds us' (Builders Association 1997). Using 'new tools to interpret old forms' is crucial to new media theory as exemplified in two books that have exerted a major influence on digital performance studies. Jay Bolter and Richard Grusin's *Remediation: Understanding New Media* (1999) is an incisive consideration of how digital technologies have repackaged and reinterpreted older media forms and paradigms, and Lev Manovich's *The Language of New Media* (2001) demonstrates

new media's close links to the past, including a tour de force analysis of Dziga Vertov's *Man With A Movie Camera* (1929) in which he couples the Constructivist film directly to computational notions of editing, cut-and-paste montage, superimposition, compositing, 'virtual' cameras, trick effects and dynamic database access systems. But while both texts highlight the extending lineage and reliance of digital computing technologies on older analogue media, they also make clear that they nonetheless offer new perceptual paradigms and creative phenomena. Manovich argues that digital processing extends older media to new levels of sophistication, positing, for example, that 'the computer fulfils the promise of cinema as visual Esperanto' (2001: xv). He also celebrates the emancipatory properties of computer interfaces, the Web and editing software in empowering lay users to become sophisticated creative artists. While proposing a theory of *remediation*, Bolter and Grusin also emphasise that the reconfigurations which computer technologies produce are not trivial since they herald unique new forms: 'What is new about new media comes from the particular ways in which they refashion older media and the ways in which older media refashion themselves to answer the challenges of new media' (1999: 15).

The Builders Association's performances often deconstruct existing texts and narratives, as in their 1997 refashioning of the Faust legend, *Jump Cut (Faust)*. It used three large projection screens playing (among other things) footage from F. W. Murnau's 1926 silent movie of *Faust* and relaying live video close-ups of the actors, shot by onstage camera technicians who followed them on foot or used a traversing downstage dolly and track. For *Opera* (2000) the company's research methods centred on establishing particular correspondences between old and new media in a theatrical setting. It drew connections between early twentieth-century multimedia theatre and contemporary club culture by 'sampling' fragments of theatrical history through the language of DJ and VJ culture (Builders Association 2000). The methods included use of a system of MIDI triggers to prompt video and audio samples in real time and the production emphasised how digital performance practice remains at an embryonic stage of development in comparison to 1920s film-theatre experiments by directors such as Piscator, Claudel and Eisenstein.

The main research methods for *SUPER VISION* (in collaboration with dbx, 2005) were a departure from the company's previous work. In director Marianne Weems's words, this was an attempt to

enmesh the performers in the media . . . by collapsing the video space into the stage space. So there wasn't the feeling that you had in our other performances where the viewer is tracking back and forth between the real live performer and the mediated image. It was really about trying to combine these as intimately as possible. (Kaye 2005: 561)

Nick Kaye has documented this production rigorously, including interviewing twelve members of the company. His results make clear that many of *SUPER VISION*'s methods were constructivist, in common with much devised theatre internationally. For example, Weems describes how its creation began with the company brainstorming ideas from which a key theme emerged: 'the invisible world of dataveillance' (Kaye 2005: 561). They then researched contextual materials which prompted further ideas; for example, Weems read John E. McGrath's book *Loving Big Brother* and incorporated into the show his conceptual recycling of 'data body' – a term first coined by sociologist David Lyon in the 1970s – as a kind of electronic doppelgänger that shadows our movements. She saw 'data body' as a perfect theatrical metaphor and used a particular McGrath quote about the effects of the data body's continual surveillance as a conceptual and aesthetic inspiration for the production: 'a disjointed, hybrid, prostheticised, multiple body, appearing and disappearing in the irregular, contradictory landscape of surveillance space' (McGrath, cited in Kaye 2005: 561).

Research methods for design and technological aspects of the production involved collaboration with dbox, an innovative 3D design and media company. Its primary task was to design a virtual architecture for the production that would collapse the live into the virtual. Research into Renaissance paintings produced inspiration and formal models for the screen designs, as well as diptych- and triptych-style sequences in which two or three scenes are played in parallel. This reference to the effects of classical painting highlights how the family at the centre of one of the show's three narratives is attempting to live the classic fantasy of the American dream. The mother and father are live actors who seem to inhabit a film – the set of which is a projected AUTO-CAD graphic 3D design of the perfect, luxury modern home – where they interact with their child, represented by a video-projected virtual boy. Ironically the father steals the son's identity in order to run up half a million dollars in credit-card debt to pay for the family's lifestyle.

In diptych sequences, at one side of the stage the live mother plays with the videoed child in the virtual living room with windows overlooking a photographic back yard, while at the other side of the stage the live father sits at his computer in his virtual 'den'. dbox director James Gibbs conceived the visual design of the den space so that it would 'physicalise electronic activity' (in Kaye 2005: 563) by creating a projected cyberspace-effect which immersed the father in a 3D-mesh grid of lines (like graph paper squares in 3D perspective). As the actions of the father get out of control, the den space expands to invade and crush the on-screen living room set, an effect the company had achieved earlier with a physical set in their adaptation of Henrik Ibsen's *Master Builder* (1994), where a life-size house was gradually demolished to reveal both its skeletal structure and the skeletons of the characters' pasts.

A further method used to create a sense of the characters' immersion within the virtual world visually was a small downstage mobile screen in front of the actors, on which the child's image was projected. This was used to great dramaturgical effect in the show's second narrative about the airport border-crossing experiences of a Ugandan-born Indian traveller, Mr Shah. As he is interrogated by passport control officers he becomes increasingly beleaguered and dehumanised upstage of the mobile screen, onto which many digital imaging data streams are projected. Their volume and density is increased progressively throughout the performance: thumbprints, signatures, retinal scans, credit card transactions, numbers, itineraries, facial recognition, names of his family members, his prescriptions and the regularity of his daily caffeine and tobacco use. The downstage-screen technique appears to place Mr Shah inside a bureaucratic data environment where his body is dissected and his identity becomes transparent, cleverly evoking the company's aim that the character 'should become less of a physical presence and more of a presence defined in the body of data that accumulates around him' (in Kaye 2005: 569).

Mr Shah is questioned by passport control officers sitting alongside console operators who, omnipresent throughout the performance, control the show. They are at the front of the stage with their backs to the audience, facing a line of computer screens and other kit, like mission control calling up and manipulating Shah's data while their faces are projected in close up on the upstage screens. These methods reflect analytical perspectives developed in Bolter and Grusin's *Remediation*, such as their notions of transparency and opacity, and immediacy and hypermediacy. The production's scenography highlighted the tensions and pleasure principles at play as between computer representations/experiences that seek to immerse the user by making the interface disappear (transparency and immediacy) and other techniques which positively foreground the medium and interface (opacity and hypermediacy). Such effects, according to Bolter and Grusin, create a spectator perception that 'the excess of media becomes an authentic experience' (1999: 54). They also note that new media encompasses the complementary and 'contradictory impulses for immediacy and hypermediacy . . . a double logic of remediation. Our culture wants both to multiply its media and erase all traces of mediation: ideally, it wants to erase its media in the very act of multiplying them' (1999: 5).

It is notable that the performers' acting methods in *SUPER VISION* were adapted to work effectively within the *mise en scène*, or – to use Aleksandar Dundjerovic's apt coinage for Robert Lepage's work – the 'techno-en-scene' (2006: 69). Actor David Pence (playing the father) notes that he moderated his acting style to the controlled, 'doing less' paradigm of film acting, because for much of the performance his face is simultaneously

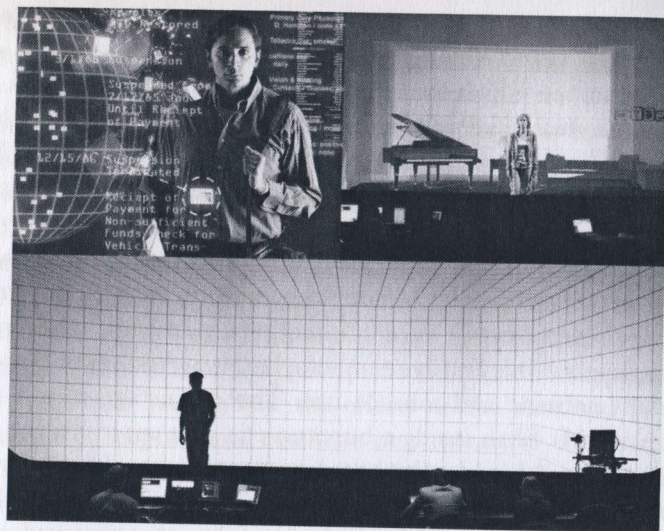


Figure 2.3 (Clockwise from top left) Mr Shah, the mother and the father in *SUPER VISION*. Photos: Courtesy of The Builders Association.

projected in close up. This informs Kaye's view of the show that 'it's not only film, it's not only theatre. It's a hybrid' (Kaye 2005: 562). Kyle deCamp (the mother) notes that she consciously intensified her focused connection and empathy with her fictional son since the character is a flat video projection: 'it's the warmth of my performance that effectively animates him' (in Kaye 2005: 565), and Rizwan Mirza (Mr Shah) discusses a stylised method of 'acting within the character and without . . . [to create] a certain haunting loneliness' (in Kaye 2005: 571). Weems also reflects on how the sense of physical isolation between the performers was part of a conscious research method in the group's work, which of course closely mirrored the theme of *SUPER VISION*:

In every performance, in all of our shows, for me it is about the performers being really isolated physically, but we are mediating them electronically and so what the audience sees is the network that is joining them all. None of the performers ever really look at each other . . . What is being staged is the network. They are in very isolated worlds, coming together in that bigger state picture – that is really the key. (in Kaye 2005: 569)

It is interesting that Weems has stated that 'in my work, technology is a performer' (Zinoman 2005: 15) – and it is clearly a high-profile one – yet she nonetheless sees the production as ultimately critical of technology and

globalisation: 'what you see are people isolated, melancholy, in various states of fragmentation. Technology is not creating communities that anyone would hope for. And this is a political message' (Zinoman 2005: 15). So while embracing new media technologies aesthetically, the Builders Association continually question, critique and challenge their socio-political impacts and implications. They share this with a number of other multimedia theatre practitioners, including George Coates, who has argued that: 'Using technology to critique technology is no more a contradiction than it is to call the phone company to complain about the service or to use a calculator to challenge the bill. The use of a particular tool implies no endorsement of values beyond itself' (Coates 2000).

Case study 3: Sarah Atkinson

Whereas the previous case studies have focused on the use of digital media to create innovative performances, the research methods of Sarah Atkinson's PhD study *Crossed Lines* (completed in 2009 at Brunel University) involved using computer technologies both to create a multi-perspective, interactive dramatic narrative and to analyse its audience's reception.

Atkinson had two primary methodological aims: to create an original and distinctive interactive drama installation with an intuitive interface; and to provide new models for audience-response analysis suited to digital media interactive narratives. Her methods for addressing both these objectives encompassed conventional and experimental approaches. But, as noted earlier, in emergent practices – such as digital interactive drama – the researcher always faces new challenges and demands, even when adopting the traditional format of the literature review. In Atkinson's project this involved study of the history of interactive storytelling practices and their emerging technical platforms, environments and forms, as well as a wide range of theoretical paradigms and perspectives, both 'old' and 'new'. The written element of her thesis examined pertinent 'traditional' theoretical perspectives (film and narrative theory, critical theory), but also several research fields that have evolved since the 1990s through a burgeoning and dynamic body of literature. Five sections of the written thesis were devoted to a literature review covering: hypertext and hyperfiction, cybertheory, new media/multimedia theory, interactive theory and (video) game theory.

In creating the *Crossed Lines* installation Atkinson devised practice-based research methods to counteract some of the structural and navigational limitations of existing interactive narrative models, as well as to enhance the spectators' sense of freedom and agency. This involved discounting traditional navigational routes in interactive narrative, such as branching tree structures

– where the story halts, then progresses via ‘forks’ providing user choice of direction – and menu-centred models – where menu screens provide different options for exploration. Instead, the installation features an interface structure of nine sub-screens all showing continuous video streams, each screen presenting a different character in a specific location, framed by a ‘locked off’ camera shot. The user has complete freedom to select any of the nine screens/characters at any time, which prompts the character to either telephone one of the others or receive a call from one of them. As their conversations develop a multi-plot drama unfolds, centred on themes of friendship, trust, surveillance, deception, crime and despair. Some characters leave their sub-screen spaces to follow or find the other characters, metaphorically ‘crossing the lines’ between the sub-screen spaces to appear in one of the other locations. The nine video streams are ordered within a database system programmed to progress each character’s narrative strands chronologically and coherently (in a structure akin to dramatic ‘acts’), but without the necessity to view all scenes related to that particular storyline. The software monitors the user’s choices and deploys a system of narrative rules and prerequisites to call up a logical ‘next scene’ that will progress the action for the character selected. Users can shift the narrative to another character and scene at any point while still maintaining ‘narrative arcs’ and dramatic progression, thus enhancing their sense of freedom and agency. This contrasts markedly with most screen-based interactive narratives, which stop at predetermined points where users select route options from a limited number of ‘branches’.

The interface includes a specially customised telephone placed on a desk in front of the nine-screen installation. It was conceived to replicate the central narrative device of the drama itself as the characters all converse by phone and, as a ubiquitous piece of hardware, for users it is familiar and engaging: as Marshall McLuhan noted in 1964, ‘the telephone demands complete participation . . . [and is] an irresistible intruder in time or place’ (1964: 267, 271). But most importantly, it is a simple and intuitive interface device. No instructions are given to users but, on lifting the handset, they quickly realise that it provides the installation’s audio source, while the numbered buttons (1 to 9 set in three rows) of the telephone keypad on the desk mirror the layout of the nine video screens: pressing a button activates a scene on the equivalent screen. A firm visual relationship is therefore established between the interface and installation structure, because the user’s interaction via the telephone provides a sense of complicity with the characters, as they are involved in eavesdropping and surveillance within the narratives, and generates thematic coherence.

Multiple research methods were required to meet the considerable technical and dramaturgical challenges of creating the installation, e.g. using sophisticated editing methods to ensure fluid transitions and synchronisations

between the screens; conceiving, scripting and interweaving the multiple plots within interrelational ‘acts’. It followed that in order to document and analyse audience reception of its interactive possibilities Atkinson should adopt multiple quantitative and qualitative research methods. Hence to track, measure and evaluate user engagement and experience of *Crossed Lines*, Atkinson undertook detailed research with fifty users from a broad age range (18–67) and with an equitable gender split. The primary qualitative research method adopted was a face-to-face interview with each of the sample users, which was videotaped, transcribed and analysed. The interview findings were cross-referenced with extensive quantitative data derived from two sources: a user questionnaire and a dataset generated through a secondary level of scripting embedded within the software programming of the installation (primarily using *Macromedia Director*). This mapped users’ precise routes through the narratives and exact time spans spent in each scene and with each character. A raw data text log indicated the timings of each of the user’s interactions, for example:

- ‘Viewer started watching movie at: 15:15:36’
- ‘Viewer entered scene24 at 15:15:58’
- ‘Viewer left scene24 at 15:16:44’
- ‘Viewer entered scene19 at 15:16:44’
- ‘Viewer left scene19 at 15:16:56’ . . . etc.

(Atkinson 2009: 139)

From these logs, Atkinson produced statistical datasets which she presented in graph and pie-chart form in order to analyse user behaviour in detail. These included separate graphs identifying each user (by number) and showing each of their overall viewing times and which scenes they accessed; graphs with scene numbers showing the number of viewers accessing each scene; and individual graphs for each scene illustrating the time viewed (as a percentage of total) by each user. Pie-charts and further graphs provided visual data on the most and least popular characters (in terms of time viewed/scenes accessed), and a gender comparison of scenes visited between male and female users. The data showed that certain characters and storylines had particular appeal to male subjects – for example, one involving an increasingly desperate alcoholic – and to female subjects – for example, one in which a call to the emergency services from a woman in a broken down car is intercepted by a phone hacker who stalks and terrorises her.

Questionnaires generated further quantitative data through fifty-two questions that probed many issues, including: the users’ views on the installation’s interactive elements and whether they helped or hindered the narratives; their evaluation of the degrees of freedom, agency, empowerment and immersion they felt; their responses to different storylines and characters. This data



Figure 2.4 Eye tracking technologies are used to monitor and track the user's precise visual engagements with Sarah Atkinson's *Crossed Lines* installation.

was processed using a standard social sciences software application, SPSS (Statistical Package for the Social Sciences), and then analysed to identify commonalities and divergences in the users' opinions and viewing behaviours and to discuss their implications. Findings rated as having 'statistical significance' included indications that younger respondents enjoyed the paradigm and experience of eavesdropping on characters' conversations more than older users, and that most users considered that the interactive elements enhanced their engagement and sense of 'immersion' in the narratives.

Eye-tracking technology (Visiontrak Global System ETL-600) was utilised with ten users. They wore a head-mounted device incorporating a transmitter and four sensors, and a 'point of regard' software system tracked the path of the users' pupils, providing thirty lines of data every second (around 80,000 lines per user). Atkinson presented this data in visual form using a separate 'gaze plot' for all the scenes viewed by each individual user. A black-and-white image of the nine-screen display was overlaid with blue dots representing the direction and track of the user's eye. These visualisations provided clear indications of when there was a high degree of concentrated attention on one screen – an inkblot-style accumulation of dots appears – as against less concentrated or erratic attention – the dots are scattered in diffuse patterns and streaks across a number of the screens.

This combination of quantitative evidence led to significant insights into different users' attentional processes, as the clocks of both analysis systems

were synchronised to provide accurate data time-stamps. Thus the eye-tracking data was cross-referenced with the user-choices data files generated by the installation's *Director* software to reveal correlations between user points of interest and decisions made to press keys at particular times. The findings from this proved a number of points that otherwise would have been difficult, if not impossible, to verify. These included the fact that eye activity always correlated directly with the viewer's next choice of scene: the user always observed a particular screen character before selecting them, and also that viewers never simply pushed buttons to access material randomly; rather, they were always trying to anticipate or stay one step ahead of the narrative, or, as Atkinson explains, 'attempting to pre-empt action throughout the experience' (2009: 176).

CONCLUSION

The three case studies provide a clear sense of how practice-based digital performance combines elements of old and new research methods in the quest to forge original theses and performance events. A growing number of academic researchers, such as the Chameleons Group, also are conceiving methodologies to interrogate the practical implications of recent theories of performance and technology (such as Auslander's arguments regarding 'liveness'), as well as devising methods in ways that test, challenge or even disprove the robustness and validity of such theories. Here, the framing of the methodologies and the choice and operation of particular methods in order to assess, and prove or disprove, specific hypotheses have much in common with laboratory models from the science disciplines.

The Builders Association similarly meld the old with the new, and their practice explicitly engages with ideas of 'remediation', creating a pleasurable satiation of media and 'hypermediacy'. Their inventive use of technology in *SUPER VISION* included complex layering of computer graphics and front- and back-projecting screens to place live actors within virtual settings and to visually immerse them in data streams. Their particular aesthetic vision has led to critical acclaim, including that from Wooster Group director Elizabeth LeCompte, who suggested that it created 'a new genre entirely' (in Zinoman 2005: 15). Their methods also engage with and challenge prevalent theories on liveness and the comparative presence(s) of the live and the mediated, as noted by Nick Kaye:

SUPER VISION exemplifies The Builders Association's emphasis on the recovery and complexity of 'human presence' in the transition and flow between the live, mediated and recorded channels of

address . . . The Builders Association's consistent emphasis on the articulation and recovery of performer presence through mediation and projection departs from significant aspects of performance theory, in which the technological mediation of live performance has been powerfully constructed as eliding presence . . . in its circulation of the signs of 'liveness' and 'presence' SUPER VISION explores a *return* of that which technologies of reproduction would seem to defeat: the performance of 'the live' in 'the mediated', the performance of presence across the absences of the screen. (2007: 558–9)

Sarah Atkinson's project provides an apt conclusion to our consideration of research methods in practice-based digital performance, and draws together a number of the key issues and themes I have sought to highlight. It demonstrates that although practical investigations in the field involve significant research challenges they also provide opportunities to create genuinely original artistic expressions and paradigms. Equally, Atkinson's audience analysis research, drawing on both traditional methods and the latest cutting-edge digital techniques, is indicative of the great sense of invention and dynamism within digital performance. It seems especially fitting that a doctoral project should encapsulate a much wider alchemical quest for such efficacious marriages of theory and practice, and the old with the new.

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