Dancing between the Traditional and the Contemporary with Digital Media

Sarah Rubidge explores the potential of digital media in traditional performance practices. Although digital choreography is a new artistic medium, it can provide a means of expressing issues relevant to 21st century societies if integrated into both contemporary and traditional dance forms. This article[1] provides an overview of the forms of digital choreographic practice that have been developing since the mid-1990s. It introduces some of the thinking that lie behind the works that digital choreographers and artists have been creating in this new artistic field. In the latter part of the article, referring to a digital installation recently created by the author,[2] the article shows how a hybrid of digital and choreographic practices can embody the principles of both contemporary and traditional art forms to create new ways of expressing the interplay of traditional and contemporary values in Southeast Asian culture.

This article discusses the possibilities that digital media offers to choreographers in the 21st century. A brief overview of the rapid development of the use of digital media for choreography since the early 1990s will be followed by a discussion on the ways in which the processes and structures of digital media can open up a range of artistic themes that allow artists from all dance traditions to explore issues concerning the world they live in and their place within it.

[1] This is a slightly modified version of a keynote paper of the same name given at the World Symposium on Global Encounters in South East Asian Performing Arts, Bangkok University, February 1st - 3rd 2013.

[2] Sarah Rubidge is a digital choreographer and freelance artist. She was also Professor of Choreography and New Media at the University of Chichester, UK during 2010-2013.

Digital Dance

Digital dance is one of the more contemporary forms of choreographic practice in the 21st century. Although contemporary composers had been using computer technologies in their work since the mid-20th century, as is evidenced in the work of composers such as John Cage, David Tudor, and Peter Schaeffer, choreographers were slower to embrace the use of computer technology as a means of generating alternative choreographic forms. It was not until the 1990s that choreographer Merce Cunningham, who had already been extending the boundaries of traditional choreographic forms in radical ways for some forty years, began to explore the possibilities offered to choreography by computer technology. He initially began by using a computer animation programme, Lifeforms, as a choreographic tool. Lifeforms was the first computer animation programme to have been designed with dance-makers in mind.[3] Cunningham used it in several of his stage works in the 1990s, including *Trackers* (1991) *CRWDSPCR* (1993) and *Ocean* (1994).[4] However, more significantly, at the age of 70, Cunningham recognised that, just as video technologies had generated a new platform for choreographic endeavours in the 1980s, the radical increase in the capabilities of computer technology offered even more new directions for choreography.

He extended his experiments with the medium in the latter years of the 1990s with digital artists Paul Kaiser and Shelley Eshkar of *Riverbed*. Together they created early computer-based choreographic installations. Kaiser and Eshkar used new computer-based

[3] A sophisticated animation programme, Lifeforms allowed choreographers to manipulate an animated human figure to create and compose movement on the computer. Now known as Danceforms, it is easy to use and intuitive for the dancer, and facilitates experimentation with new ways of moving and choreographic ideas for hours at a time without tiring the dancers in a rehearsal context. (Information on Danceforms can be retrieved from on http://www.charactermotion.com/products/lifeforms/index.html).

[4] Details of Cunnngham's choreographic work can be found on http://www.merce-cunningham.org/choreography/

technologies such as Motion Capture[5] to generate the data for the digital imagery. Using a circle of up to eight video cameras and placing white markers on dancers from Cunningham's company, the dancers' movement was captured and recorded as numerical data to render details of the movement available for use in other softwares.[6] The data generated by the motion-capture system was fed into custom-built software, and then processed by *Riverbed* to create abstract animations that maintained the shaping, timing and quality of the dancers' movements as well as presented them visually in a more abstract form (Figure 1). These were presented initially in digital installations, rather than in stage works. *Hand Drawn Spaces* (1998),[7] a 3-screen digital installation by *Riverbed* and Cunningham, showed the 'virtual' dancers performing what was unmistakably Cunningham's movement material.

Fig 1. Hand Drawn Spaces 1998 (choreography: Merce Cunningham, digital imagery: Paul Kaiser and Shelley Eshkar, Riverbed)

[5] For technical details of the technical principles underlying motion-capture systems, refer to the paper Motion Capture by Maureen Furniss (MIT Labs USA) access on http://web.mit.edu/comm-forum/papers/furniss.html

[6] Motion Capture (Mocap) is used in disciplines as diverse as biomechanics, the Hollywood movie industry, art installations, and stage performances. Mocap systems have advanced rapidly, resulting in many less cumbersome systems now available, including wireless motion capture suits.

[7] Details of this work are available on http://openendedgroup.com/artworks/hds.html

Later, they began to experiment with coupling digital imagery and live movement in Cunningham's stage work. In *Biped* (1999), computer-generated virtual dancers and abstract kinetic graphics were integrated in the live choreography.[8] The virtual dancers were projected both onto the cyclorama and onto a scrim at the front of the stage to generate a sense of the avatars inhabiting the same space as the live performers. To the audience, the virtual dancers appeared to be dancing *with* the live dancers rather than merely dancing behind them. It was through high profile work such as this that a gradual adoption of digital choreography as part of the culture of contemporary dance in the West slowly began to take place.

Although renowned contemporary dance artists such as Merce Cunningham brought digital performance to public attention, a small New York-based dance company called *Troika Ranch,*[9] co-directed by Mark Coniglio and Dawn Stoppiello, has perhaps had the most significant impact on the development of the field in dance. In order to realise Troika Ranch's ambitious artistic ideas, Coniglio, a computer programmer as well as artist, developed a bespoke computer software with interactive capabilities in the early 1990s. He called it *Isadora* (after early 20th century modern dancer pioneer Isadora Duncan).[10] *Isadora* is now used extensively by choreographers, visual artists, composers, and VJs to create installations and performative events.

The form of choreography made possible by the application of computer software to dance is gradually spreading among dance communities in Asia. Taiwan, for example, has a nascent digital dance community, which includes Hsieh Chieh-hua of Anarchy Dance Theatre and Su Wen-Chi of YiLab. Korea has its own multimedia

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[8] Details of this work can be accessed on http://openendedgroup.com/artworks/biped.html
[9] For further information and images of the company's work, visit www.troikaranch.org
[10] Further details of Isadora can be found on http://troikatronix.com/isadora/about/

dance-theatre group in CcadoO, and Japan is becoming adept at developing computer software for dancers, for example, the RAM Dance Toolkit by the YCAM Lab.[11]

Digital choreography encompasses a multiplicity of forms. It includes live performances featuring digital imagery as part of the scenography[12]; interactive performances in which the audio-visual elements of a performance are activated by the interplay between live performers and new media technologies;[13] and telematic theatre performances, which see dancers perform in two or more venues or cities simultaneously, with video images of their performance transmitted over the internet instantaneously to enable the performers to dance together across time and space.[14] Digital choreography also includes interactive installation performances that are live performances in a large-scale installation environment;[15] and interactive installations that are designed to be shown without formal performances taking place within them.[16] In these works, the visitors generate the audiovisual environment in real time, becoming an installation and an informal live choreographic event simultaneously. In interactive works, the performative space is electronically sensitised by an intricate computer system that tracks and records the details of the movement of those who enter the performance or installation environment. It then sends the data gathered from their movement to an interactive performance

[11] The YCAM Lab is based in the Yamaguchi Center for Arts and Media in the Japanese city of Yamaguchi.
[12] Cunningham's Biped, 1999; Liz Lea and Sarah Rubidge's Eros~Eris, 2007.
[13] Kurt Obermaier and Desirée Kongerød's Apparitions, 2000; Troika Ranch's 16 [R]evolutions, 2006; Carol Brown and digital architect Mette Ramsgard-Thomsen's The Changing Room, 2004, and SeaUnSea, 2006; Anarchy Dance Theatre's Seventh Sense, 2011; and CCadoa's Traces, 2011.
[14] Company in Space's Escape Velocity, 2000.
[15] Gretchen Schiller and Susan Kozel's trajets, 1999-2007; Sarah Rubidge and Alistair MacDonald's Sensuous Geographies, 2003; and Rubidge's Thai Tracings, 2013 are examples of interactive installations.
[16] Susan Kozel and Kirk Woolford's Contours, 1999-2000; Igloo's Winterspace, 2001; Sarah Rubidge and Hellen Sky's global drifts, 2006.

system which initiates certain actions within the system in response to what amounts to the spatial and dynamic details of the movement. This data generates in real time the modulations of any audio-visual digital imagery that appears on a stage or in an installation, allowing performers and/or participants to actively manipulate, that is control, the sound or visual imagery in 'real time',[17] generating the very features of the installation environment to which they are responding. This is a form of improvisation. Indeed, it could be said that in such installations the visitors become both creators and performers as they improvise and create the choreographic world they are experiencing.[18]

Barely two decades after the first experiments in digital choreography, an increased availability and affordability of sophisticated software and powerful computers has opened up an extraordinary range of new artistic possibilities for the dance artist, many of whom are now programing the digital elements of their work using software such as Isadora or Quartz. The experimentations and those who continue to collaborate with digital artists and computer scientists are opening up the field of digital choreography wider as they adopt the nonlinear structures of computer programming and video processing capabilities to create complex digital choreographies and installations that have as much variety as the dance seen in the theatre.

Creating Digital Traces in Performance

By digitally processing[19] video imagery of dancers in motion in real time, choreographers and dancers instantaneously create intricate

[17] 'real time' is a term used to indicate that there is no discernible delay between a users' input and the programed response of the software to that input.
[18] Interactive installations are sometimes known as performative installations (Rubidge 2009) as they are designed to be simultaneously activated and viewed by visitors who create a unique performance of the installation's visual and audio content.
[19] Electronic manipulation of visual or audial imagery through various softwares.

digital effects on stage and in installations, along with equally intricate virtual representations (avatars) of the dancers. Additionally, performers have been generating their own video double on stage or in installations using simple real time video-capture technology.[20] The captured image of the performer can be projected instantly onto a stage or installation environment to give the impression of a live dancer performing in unison with her digital self. In addition, more intricate effects can be created if the projection of the video image is delayed by a second or two. A choreographic structure can be established between the movement of the live and the digital performer (for example a canonic effect) or, if the delay is longer, an improvised duet can take place between the live and the digital performer.

In some performances and installations, the interactive software is programmed in such a way that, by moving in particular ways, the live dancer can manipulate the appearance of their digital double by making it change size, direction, tempo, and texture. For example, moving faster or slower might alter the speed of the movement performed by their double, moving to the left might make the digital double move to the left with the live dancer, or even move away from them to the right. The size of the digital double could be increased or decreased by moving towards and away from the 'capture' camera, which can give the impression of the digitally generated figure moving forwards and backwards in the performance or installation space. All these devices can be used to create new expressive content. Other techniques also allow for choreographic intricacy. For example, bringing each digital double to visibility, perhaps changing the facing of some of the images to set up

[20] This is achieved through the use of video camera that captures a video image of the dancer in real time; transfers it directly into a digital software programme; and in milliseconds transmits that image to a data projector to reveal a double of the live dancer on the stage. Although often created by choreographers, such works are often generated or initiated by digital artists, both with or without collaborating dance artists: Simon Biggs, Halo, 1998 and Klaus Obermaier, Apparitions, 2004 are examples.

different directional orientations between 'dancers', create structures that can give rise to an intricate danced conversation for a duet, trio or group of dancers who straddle the real and virtual worlds.

The Digital Other

This simple technique of doubling up the performer's visible image expands new possibilities for artistic content in dance performance. As Steve Dixon (2007) points out, there are implicit philosophical meanings in the very act of a performer dancing a duet with their digital double, especially if the appearance of the double is delayed to create a visible 'memory' of themselves as they were in the recent past. If supplementary pre-recorded imagery of other performers is used, live performers can also dance a duet with an inhabitant of past worlds (as in *Thai Tracings*). As such, the digital double is much more than a mere digital shadow, but it has a rich potential for deepening the artistic content of a work on its own right.

Through some of the techniques described above, the digital double can be taken as a form of a digital 'other' (to adopt terminology that emerged with mid-20th century European philosophers such as Emmanuel Levinas, Jacques Derrida and Michel Foucault), with all the philosophical implications embodied in that concept. Additionally, such techniques can make explicit Henri Bergson's concept of *durée,* the subjective perception of time, or *lived* time (Bergson, 1889). *Durée* allows us to explore the interplay between past, present, and future that colours our being in the present, as well as in our future and even our past. At its simplest level, memories recalled in the present are but traces of the past. Yet even as they seep into the present, our memories have been modified over time as we unwittingly imbue them with the traces of our past experiences. Even an anticipation of what might happen in the future can affect our experiential present as we look forward whilst being in the moment.

These observations give rise to a number of questions. Is it the past that is in control of the present, or does the present interrogate the past by bringing to bear its experience of the world of the 'now'?

Is the future affected by our present, and conversely can the potentialities inherent in the future colour our present? Issues such as these dominate questions concerning the site of our personal, social, and cultural identity, and can become the source of artistic work in any medium.

Identity or Identities?

The author suggests that contemporary understandings of personal and cultural identity can be articulated, and even questioned, choreographically through the use of digital media. For some years now it has been argued that we do not have just one core identity, personal or cultural, but embody multiple identities in both spheres (Sarup 1996; Bhabha, 2004). It is suggested that the multiple facets of an individual's identity are in a state of co-existence, sometimes at ease with one another, sometimes in conflict. Were we to find ourselves exploring ideas such as this in dance, there is more than one technique available to the digital choreographer. For example, different facets of a person's identity can be presented by using different video processing techniques to modify the texture or colour of a video image. These will produce a range of modified images, each of which conveys a quite different sensibility or character; or digital processing might produce imagery that is transformed to such an extent that an abstract digital image is created to offer the impression of being an ephemeral trace of a live dancer's movement rather than representing its source, as two of the authors' recent collaborative works, *global drifts* (2006)[21] and *Eros~Eris* (2007), have shown. In Figure 2, for example, which shows a section of *global drifts,* the two performers dancing in the lower right-hand section of the image are generating in real time the digital image displayed on the screen above them, whilst Figure 3 reveals a digital avatar behind the female performer in *Eros~Eris.*

[21] *global drifts* was a work conceived and developed by Sarah Rubidge and Hellen Sky in collaboration with digital artist Seo Hyojung and digital composer Kim Seunghye from Korea. Their work featured in the interactive performance section of the work shown in Figure 2.

Techniques such as these can be used to generate a multiplicity of original video images derived from a single source.

Fig 2. global drift (Directors/choreographers: Hellen Sky and Sarah Rubidge, digital imagery: Sarah Rubidge)

We can go further, however. Through the use of the simultaneous projection of several images of a performer (or visitor to an installation), the impression of there being many different manifestations of a single individual in the space can be produced. This technique is important for exploring the notion of personal or cultural identity, i.e. by using examples of differently processed imagery of a single individual, issues of diversity within an individual's identity can be articulated. Different 'selves' can be presented in digital form by processing individual images in real time in such a way that each digital double exhibits a different density of image, or size, or colour, or texture. In this way, by accessing different processing techniques at different times a temporary prominence or reduced significance of one facet of a performer's identity can be articulated, as can the different sensibilities embodied by the original dancer. More radical techniques can also be used to give more complex variations to movement forms. If the images are processed in such ways as to create abstract traces, or new versions of the original image, new 'dancers' with different sensibilities seem to appear. Furthermore, issues concerning the impact of the present on the past, and the past on the present can be addressed by using time-based techniques. For instance, by delaying the projection of a real

time video image by, say, 45 seconds, a dancer can respond to themselves, and thus dance a duet with themselves as they were in the 'past', albeit a very recent past. Here the past would impact on the present, and also on the dancer's future movements.

Any number of artistic themes can be pursued using these techniques, and manifold interpretations of performance works made possible. This is achieved by video processing techniques that render a different texture to a video image, and with it a different emotional weight or nuance in terms of its significance. As an example, vigorous full colour 'real world' video could be displayed as a subtly faded blue video image, as a dark shadow, as an almost invisible blur of movement, or as a shimmering trace of a body in motion. If projected onto a series of surfaces placed in the performance space itself, even a small stage or installation can be populated with multiple versions of a single performer, bringing with it a raft of potential meanings that go far beyond the mere fact of the presence of the technological.

The author argues that by exploiting possibilities of the technologies, we now have available to us performers who can have a performance 'conversation' with digital manifestations of different 'versions' of themselves, and in doing so (perhaps) re-present the internal dialogue that takes place between the multiplicity of 'beings' from which they are constituted as individuals. This notion could be extended by artists to present and/or interrogate both the diversity and commonalities that are inherent not only within themselves, but also within their culture.

Digital Media and Traditional Dance

At first sight, it might seem that the use of digital media in performance and the interrogation of intricate philosophical concepts are incompatible with traditional performance practices. However, the possibilities digital media holds for engaging in an interrogation of some of the deeper implications that lie in dialogues between traditional and contemporary performance styles are worthy of serious consideration by both contemporary and traditional artists.

The use of digital media can be a powerful way of revealing a number of resonances between traditional and contemporary forms of expression, and concepts of cultural identity. One way of doing this does not, of course, entail the use of digital media. A culture's traditional ways of being, thinking, feeling, and behaving are preserved in traditional dance forms corporeally and in their narratives. These serve as visible evidence of a culture's history within contemporary society, a reminder of their social and cultural roots, and, for many, a means of countering the effects of colonisation[22]. However, traditional dance forms articulate an identity that reflects embedded social mores and belief systems which evolved in a world that no longer exists. In the 21st century, the exchanges between cultures are generating new forms of culture in which old and new become intertwined. The mores, values, and concepts embedded in the alternative lifestyles and ways of living that are accessed through television, digital media, social networks, tourism, travel, and education are infiltrating older values, creating new identities, and new questions as to the relationship between past and present. As a result, contemporary cultural identities have become increasingly hybrid. Artists such as Thai choreographer Pichet Klunchun and Sri Lankan-born UK choreographer Shobana Jeyasingh have long been experimenting with ways of articulating choreographically the impact of the new cultures on their identity as individuals, whilst acknowledging the place of the traditional in the formation of their contemporary identities in the 21st century. Their modulations of traditional movement embody corporeal resonances of the traditional ways of being that contribute to a culture's identity yet embrace new forms of movement expression, making explicit the ever present interplay between then and now.

[22] It is perhaps of significance that the play between cultures has also been running in the opposite direction, with the mores, beliefs, and values of the East infiltrating those of the West, particularly in the 20th century when there was a rise of interest in Buddhism and its accompanying meditation practices. This has resulted in many of the Western contemporary dance forms that were developed in the latter part of the 20th century being influenced by Eastern movement forms such as Tai Chi, Aikido, and Yoga. As such, Western contemporary dance forms are themselves already hybrid movement forms.

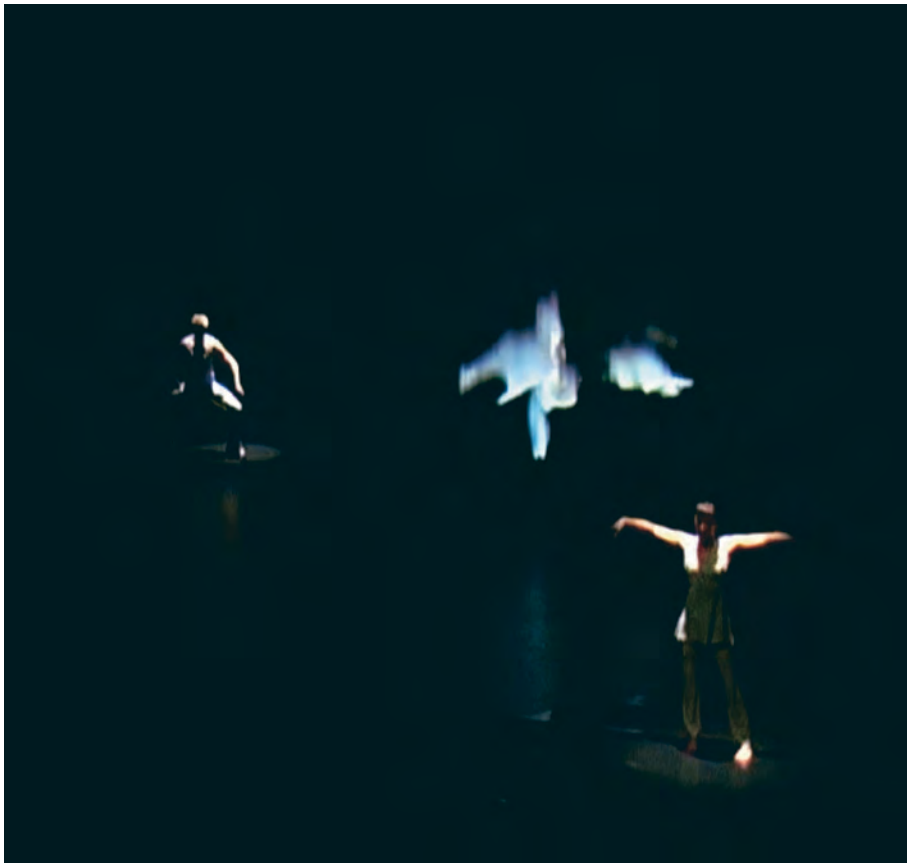

Fig 3. Eros~Eris, 2006 (choreography: Liz Lea, digital imagery: Sarah Rubidge)

Embarking on a conversation between the traditional and the contemporary today requires accommodating the multiple forms of movement expression that are being made available through cultural exchange across countries and societies. Initially, this has come through interrogating the impact such forms of expression might be having on traditional movement forms at a corporeal level, and exploring the impact of traditional movement forms on a culture's contemporary corporeality. However, digital media is an equally viable means of interrogating the relationship between the past and the present, in both individuals and cultures. It has also become clear to me that my works exhibit manifestations of the ways in which my artistic past have impacted on my artistic present.

In recent works I have begun to explore a number of ideas that, I now realise, have had an impact on my perception of digital media as a means of interrogating the dialogue between the traditional and the contemporary. This had its genesis in *Eros~Eris,* a work I co-created with choreographer Liz Lea. *Eros~Eris* featured live and digital choreography presented as equal partners on the stage. It also placed the projection surfaces *in* the performance space, rather than on the cyclorama or a scrim at the front of the stage. This allowed the imagery to become an integral part of the choreographic design, another dancer if you like.[23] In this piece, as the digital choreographer, I explored the potential of digital imagery to provide subtle supplementary meanings to the performance. The highly abstract digital imagery was generated by processing dance movement created by Lea, some of which came from the South Indian Dance form Bharata Natyam.[24] On the stage, this imagery seemed to dance in its own right, providing not merely a background to the more overtly corporeal activity taking place on the stage but also presenting to the audience an insight into an alternative sensibility, one that seemed to lie hidden within the live performer.[25]

In one section of *Eros~Eris*, a huge image of the face and upper body of the central female character, seemingly encased in fire, oversees the duets taking place between the live female performer and her male partner.[26] In such sections of the performance, the incorporation of this imagery could be subject

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[23] This was achieved by asking the scenographer Gabriella Csanyi-Wills to create as part of her design scenographic artefacts in the middle of the stage that could serve as projection surfaces for digital imagery. The result was a huge circular 'moon' and a pendulum placed within the performance space.

[24] Although of Caucasian origins, as well as being trained as a contemporary dancer, Lea is a professionally trained Bharata Natyam dancer. Like Shobana Jeyasingh and Pichet Klunchun, she too incorporates selected dance gestures and sequences from traditional dance forms in her contemporary dance work as a means of exploring the inter-relations between traditional dance and contemporary sensibilities. It is of interest that much of the movement used to create this transformation was traditional Bharata Natyam movement.

[25] Video footage of this section can be accessed on http://www.sensedigital.co.uk/EE1.htm (Excerpt 2).

[26] Video footage of this section can be accessed on http://www.sensedigital.co.uk/EE3.htm.

to any number of interpretations. It could be seen as creating a sense of the performers being observed by a virtual 'other' as they danced in the 'real' world of the stage; it could be interpreted merely as another presence entering the narrative journey that is taking place between the two dancers; as another performer sharing the stage with the live dancers, and subtly commenting on what is going on; or it could even be seen as the consciousness of a live dancer observing the activities of its fleshy 'host' who lives and breathes in the 'real' world.

Other possibilities are revealed in the final section of *Eros~Eris*, when a gentle drift of mist is seen to rise behind the live (female) dancer at the front of the stage, and the second (male) dancer, who is at the back of the stage. This constitutes the final image of the piece. In terms of content, this combination of images could be offering a re-presentation of the corporeal identity of the female performer that flows from the surface of her skin, an identity that is imbued by all her movement experiences; it could be hinting at the escaping life energies of the performer as the partnership between her and the male dancer comes to a close; or it could also be reminding its audiences of the ephemerality of expressions of human thoughts that escape even as they are performed.

Fig 4. Eros~Eris (choreography: Liz Lea, digital imagery: Sarah Rubidge)

At different levels, other sections of this piece offered a subtle way of articulating the interplay between the past and present. The highly processed and abstract digital imagery that is projected onto a pendulum on the middle of the stage in *Eros~Eris* (Figure 4) is derived from video of movement material that had been choreographed for Lea in a previous work we worked on together, *global drifts* (2006). Re-using but radically modifying

this material allowed our past as artists to be brought visibly into our art of the present. In my choreographic mind, the use of this device becomes yet another example of the way Bergson's notion of *durée* has infiltrated my work.

Thai Tracings: Interrogating the dialogue between the traditional and contemporary, between past and present

Ideas such as these have found their way into *Thai Tracings,* an installation work created specifically for the International Performing Arts Festival in Bangkok that ran alongside an international symposium Global Encounters in Southeast Asian Performing Arts.[27] In *Thai Tracings*, I revisited ideas that had underpinned two very early choreographic installations created with collaborators in 2001, *Hidden Histories* and *Time & Tide*.[28] These two works explicitly address the notion that the past and the present intertwine. In those works I used video footage of movement that referenced the inhabitants of the sites through history.[29] In *Thai Tracings,* however, I found my work aligning itself with current artistic explorations of the interplay between histories that seem to lie at the heart of so many Southeast Asian cultures. It later became clear that it was also aligned with the thinking of the increasing number of scholars who presented their work at the symposium, for examples Krailas Chitkul (2013), Sawita Diteeyont (2013), Parichat Jungwiwattanaporn (2013) and Neneng Yanti K. Lahpan (2013). In *Thai Tracings*, I utilised a variety of means to articulate ideas concerning the impact of the past on the present as different cultures engage with each others' ways of being (Figure 5).

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[27] Held by Bangkok University's Department of the Performing Arts, the symposium attracted performers, scholars and delegates from across the world.

[28] These can be accessed on http://www.sensedigital.co.uk/ hh1.htm and http://www.sensedigital.co.uk/t&t1.htm respectively.

[29] The sites are in Winchester and Bosham (near Chichester) in the UK, both of which have a recorded history of human occupation extending back several centuries. More details on these works can be found on www.sensedigital.co.uk/choreography.htm

Fig 5. Traces of traditional dancers in a shopping mall (digital imagery: Sarah Rubidge)

Fig 6. Traditional dancers penetrated by Bangkok street scenes (digital imagery: Sarah Rubidge)

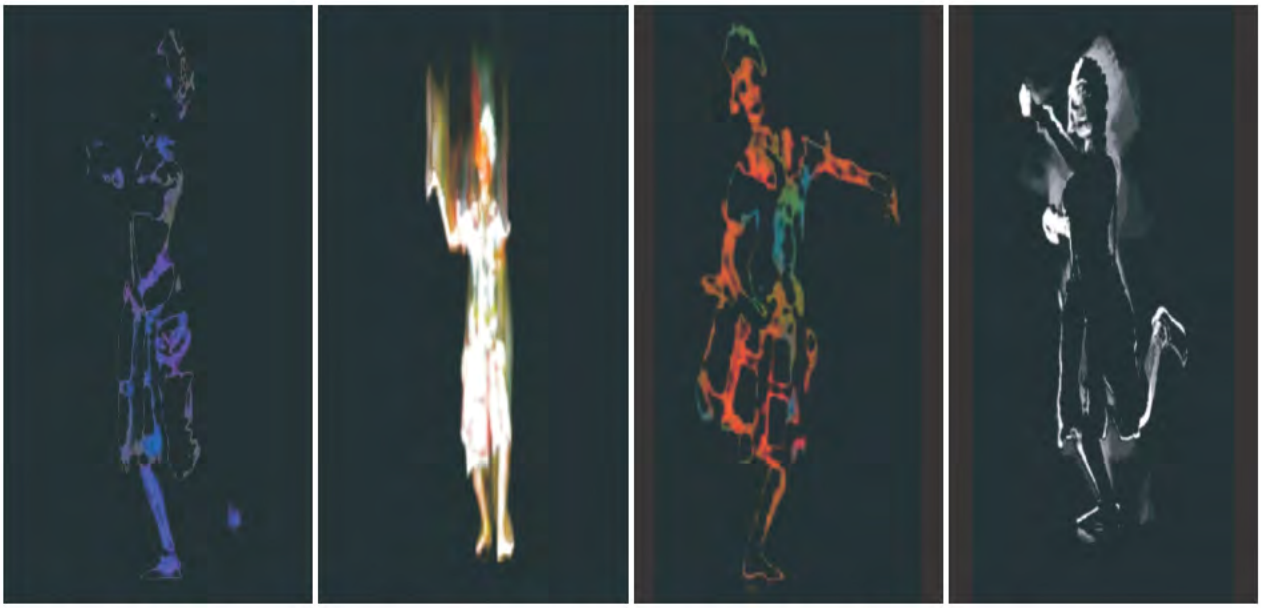

Fig 7. Thai Tracings: Examples of video processing on single source video (digital imagery: Sarah Rubidge)

Fig 8. Traces of a traditional dancer infiltrating modern Bangkok (digital imagery: Sarah Rubidge)

Using video footage of Thai traditional dancers as a basis for the movement content of the installation, I subjected the video to a variety of visual transformations by creating a number of bespoke video processing systems in *Isadora*.[30] Traces of traditional dance were superimposed on contemporary environments and the original video footage of traditional dancers (Figure 5, Figure 8), producing an effect that revealed the world of the present in the body of the past (Figure 6); or, as seen in Figure 7, transforming traditional dancers into live 'shadow puppets' (only a filigree of the form of the Thai dancers remaining when the video processing was complete) or into misty traces of their corporeal source. Such techniques allowed the dancers to become ghostly presences in the modern world (Figures 5, 8 and 9).

Fig 9. Traditional dancer leading the Bangkok Skytrain (digital imagery: Sarah Rubidge)

Fig 10. Traditional and modern dancers and street kids of Bangkok (digital imagery: Sarah Rubidge)

[30] In this software, any user can programme individualized video processing systems for their work.

Fig 11. Example of Live Video Capture in Thai Tracings
(digital imagery: Performing Arts Department, Bangkok University)

Through such visual transformations, the piece was able to address three issues. First, it allowed digital imagery to endow one dancer with any number of moods, or degrees of presence (or identities). Second, it explored the notion that a spiritual world accompanies us on life's journey (by no means a solely Asian concept). Third, by overlaying differently processed images of traditional dancers over the contemporary environment in which so many now live and work, the piece could hint at the continuing intervention of the past into the present that permeates contemporary Southeast Asian cultures. These interventions are presented as traces of traditional dancers floating above the flow of movement of customers in 21st century Bangkok (Figure 5, Figure 8); traces of a traditional dancer leading the mass transit 'Skytrain' vehicle that flows over and around Bangkok into a station (Figure 9); the spirits of the past dancing through the incessant flow of urban traffic; and vestiges of traditional performers with their contemporary counterparts in the grounds of Buddhist temples (Figure 10).[31]

[31] Video footage of many of the above images can be accessed on http://www.sense-digital.co.uk/ThaiT2.htm

Overlaying or pairing up images of contemporary and traditional dancers, street scenes and traditional dancers, and juxtaposing people and architecture of different eras create an overt image of the intertwining of past and present. Taking it further, the use of live video capture of visitors to *Thai Tracings* allow a direct interplay between the dancers in the present and the traces of dancers of the past (Figure 11).

It is through techniques such as these that works such as *Thai Tracings* are able to open up for contemplation the many different ways in which the past and present play against and with each other in contemporary society, and thus can impact on developing an approach to cultural identity that acknowledges and embraces the more subtle implications of the flows between cultures.

A new future in Traditional Dance Performances?

Approaching traditional dance using a digital lens can offer invaluable new ways of understanding the inherent potential for new expressive content within traditional forms, without compromising their underlying principles. The interrogations of the role of traditional dance in contemporary society that an increasing number of Asian dance artists have embarked on[32] could be enhanced and extended through the use of digital media. The presence of an active cast of digital dancers could, for example, be used as another way of giving a contemporary resonance to the narratives that underpin traditional dance forms. It could also provide another way of commenting on the relevance of those forms to artists who also live, work in, and breathe the culturally hybrid environments that are characteristic of the 21st century.

[32] Examples are the initiatives taking place in the Attakkalari Centre for Movement Arts in Bangalore; Pichet Klunchun's work in Thailand; Cloudgate Theatre's in Taiwan; and Sin Cha Hong's in South Korea.

Through exploring the ways, suggested in this article, and others that are available to the digital choreographer, digital media could make a valuable contribution to traditional dance forms as they begin to address the inevitable transformations of meaning that occur in the light of the contemporary sensibilities that permeate both performers and audiences. By bringing to attention the way in which the cultural and social mores articulated in traditional dance forms affect contemporary ways of being, dancing between traditional and contemporary choreographic sensibilities using digital media offers a means of creating in dance "an approach to cultural diversity which takes account of its dynamic nature and the challenges of identity associated with cultural change" (Kutukdjian and Corbett, UNESCO, 2009, p.5).

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Susan Kozel. www.meshperformance.org
Sarah Rubidge. www.sensedigital.co.uk
Gretchen Schiller. www.gretchen-schiller.org/trajets.html
Kirk Woolford. bhaptic.net

Sarah Rubidge is a freelance Digital Choreographer. Formerly Professor of Choreography and New Media at the University of Chichester (UK), she is a practitioner-scholar who specialises in creating choreographic digital installations. She has collaborated extensively with artists, scientists, geographers, and others on research projects that explored cross-disciplinary approaches, and has worked with artists from Europe, East and South Asia, and Uganda. Her artistic interests range from an interrogation of ideas concerning the ways in which the past and present overlap; the use of haptic interfaces to enhance sensuous responses in digital installations; cultural hybridity in contemporary society; and experimentation with participatory installations that facilitate informal choreographies between visitors and installations, and between visitors and digital performers. Prof. Rubidge's artistic works, including writings that address the interweaving of conceptual and artistic ideas embodied in her work, have been presented nationally and internationally.