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Dancing Across the Pond: Telematic Pedagogy and Performance

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Dancing Across the Pond

Telematic Pedagogy and Performance

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ABSTRACT This article focuses on the telematic dance performance work *Woven Space Across the Pond* (2009) created by Pauline Brooks and Luke Kahlich, with Nathaniel “Beau” Hancock. It involved students from the dance departments of two universities, one in the United States and one in the United Kingdom. It was performed synchronously so that audiences shared time, but not space. Dancers created a new performance environment where they became one company united through the virtual “shared space” of the cone-of-capture. Contextualization will be made of the larger, four-year-long international collaborative research endeavor to explore choreographic Internet pedagogy through project-based research over the Internet. Analysis and evaluation will be made of the strategies employed to engage dance students and audiences in new areas of performance, as well the performers’ responses to the devising, rehearsing, and performance process and of the audience’s response to the work, the performers, and the viewing experience.

In 2003, the World Summit on the Information Society (WSIS) in Geneva produced a *Common Vision of the Information Society*, which included in its first phase a “desire and commitment to build a people-centered, inclusive and development-oriented Information society, where everyone can create, access, utilize and share information and knowledge, enabling individuals, communities and people to achieve their full potential” (WSIS 2003). There has been much researched and written in the area of information and communication technology (ICT), technology, and education. For example, Penley and Ross (1991), Thurston (2005), Travers and Decker (1999), and Zemsky and Massy (2004) all write about what does, could, and should occur between effective teaching and learning and the engagement with technology. In 2002, the U.K. Universities of Warwick (School of Theatre Studies) and the University of Kent at Canterbury (School of Drama, Film and Visual Arts), who formed the consortium Accessing and Networking with National and International Expertise (ANNIE), joined with partners in the universities of Exeter and Leicester De Montford (DMU) to explore how teaching by experts from distant locations might be most effectively organized, and how students might be encouraged to interact in an autonomous way with the learning resources made available. There were seven case studies set up that made use of videoconferencing (alongside other technologies including CD-ROM, websites, and movies). They included a physical theater workshop between Exeter and Kent, an onscreen tutorial between Kent and the United States, lectures and seminars delivered from London to students at Warwick, online presentations by students at Warwick to a lecturer in Germany, a physical theatre workshop between Kent and Exeter, and videoconference workshops in telematic performance to MA dance students at DMU by Susan Kozel. Results were mixed, ranging from negative responses (due to technical failures in the physical theatre workshop that served to confirm lecturers’ doubts about the suitability of the technology with its flat-screen two-dimensionality

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for three-dimensional physical body work), to positive responses from lecturers and students alike regarding the potential of the environment once issues of connectivity were readdressed with faster broadband connections, and better management of institutional firewall systems. The latter are designed to prevent intrusion from outside the university computer network, yet at times they worked against the use of video transmission for learning purposes. In conclusion, Band (2002) stated in the Evaluation Report that “overall cross-institutional collaboration worked well” (28) [and that in terms of videoconferencing] “ANNIE’s just opened the door and the door needs knocking down” (30). Similarly, from their case studies of videoconferencing, Abbott, Grosbois, and Klein (2005) concluded that “these projects can bring the world to the classroom . . . [and that] such activities are central to any enlightened educational system and need to be a part of all school curricula” (237). It was the potential of videoconferencing to enable person-to-person collaboration and international communication and cooperation between university students and researchers that inspired us to pursue the idea of choreographic Internet pedagogy through project-based research over the Internet, seeking low-cost resources that might be replicable by others. As two colleagues separated by 3,000 miles of the Atlantic Ocean, a five-hour time difference, and two large institutional bureaucracies, the authors sought to explore how videoconferencing could bring our students into a collaborative learning environment through the act of sharing choreographic and performance projects.

TELEMATIC PERFORMANCE

Choreographing dance using videoconferencing-networked links has been explored by a number of artists. This type of artistic collaboration was called *telematic art* in the early 1990s by Paul Sermon, *distributed choreography* by Lisa Naugle (1998), *networked performance* by Johannes Birringer et al. (2001), and *cyberformance* by Helen Varley Jamieson (2000). All interpretations involve a synchronous networked link between two (or more) distant sites that enables participants to communicate and collaborate. For example, in his work *Telematic Dreaming*, Paul Sermon (1992) brought together audience participants within a shared telepresent environment (video installation created by videoconferencing), where the audience could participate as both viewer and performer. Susan Kozel, who performed in that work, explains that it created a new environment where “virtual reality is a new materiality” (Kozel 1994, 12). In *Material Mapping*, a review of the 1997 Digital Dancing Festival in London, Kozel (1997) analyzes the project *Ghosts and Astronauts*, a performance happening in which she was a performer and used videoconferencing (CU-SeeMe) to link two performance sites in London. She comments how the dancers “do not confront a new territory, but dance through a transformation of existing material realities and relations.”

In 1998, Laura Knott carried out her experiments with online live connections using Internet videoconferencing with her *World Wide Simultaneous Dance Project*. It consisted of two components: live dance performances happening at the same time in 12 countries around the world, and a live Internet videoconference that linked participants and allowed audiences to interact with the event. In the same year, Andrew Colquhoun and Maria de Marias formed DOGONEff as an artists’ organization set up to incorporate live performance and video with the new technologies of the Internet. Their first Internet performance, *Livestream*, was part of the Contemporary Art Festival in London in June 2000. In 2001, *the [abc] experiment* led by Helen Varley Jamieson involved a distributed group who worked across various time zones, creating drama performances that could be viewed both online and offline in presentations projected onto a screen for a seated audience in a conventional theater setting or in a gallery installation setting. (www.interactiveimprov.com/onlinedr.html).

As Popat (2006) so rightly states with regard to telematic performance, “this kind of communication is generally only used by collaborating professional performers, researchers or advanced students, or for public installations” (143–144). Published work that discusses telematic performance and education is limited. Much that exists in the public realm is referred to in this article. Its focus on distributed choreographic collaboration, choreography and performance pedagogy, and audience connections is a part of our five years of experimenting in the field of telematic performance in higher education with both undergraduate and postgraduate students. Future publications will further consider aspects of pedagogy, technology, performance, and aesthetics in relation to telematics and dance performance.

More connected to the world of higher education, at the 1999 International Dance and Technology Conference (IDAT) at Arizona State University, the Australian Company in Space performed *Escape Velocity* as “a duet between two dancers, two cameras, and two projectors linked by a direct online connection between the Web Cafe at Arizona State University and a performance space in Melbourne” (Birringer 2002, 89), a collaboration that involved artists “discovering new processes of composition that are cognizant of new coordinates of ‘placedness’” (92).

Popat (2001), as part of her PhD thesis on dance and Internet choreography, investigated interactive dance-making via the World Wide Web. Between 1999 and 2000, she conducted three *Hands-On Dance Projects* working with undergraduate dance students at the University of Leeds and participants from anywhere in the world on the Internet—for whom no previous dance experience was necessary. She used e-mail discussion, Internet videoconference rehearsals, and an interactive website. Participants were invited to submit images, text, movies, or sound files linked to a chosen theme for the dance as stimuli from which the dancers would create movement. The dancers’ phrases were put on the website, and participants were asked to provide feedback and suggestions. They could join the dancers in synchronous feedback

situations in videoconference rehearsals. The project led to the formation of a final dance product that was performed via videoconferencing as well as on the website. Popat writes how at the time “the small movie windows, low frame rates and poor quality image in videoconferencing meant that [the participants] felt isolated from the dancers and the choreographic process” (Popat 2001, 209). She developed the model in 2001, in the *Triad Project*, which linked three groups of young people from Portugal, the United Kingdom, and the United States. iVisit videoconferencing was used to discuss ideas. Each group directed a five-minute dance section for the other two groups so that the final performance involved each group having three, five-minute sections. The performance in each country consisted of a live dance by the host group, with video from the other two countries projected behind the live dancers. Communication systems with the group in the United States were largely asynchronous due to the time differences. Although not performing in a synchronous telematic performance environment, the *Triad Project* did use, among other technologies, videoconferencing to bring distributed groups together to collaborate and create dance. Popat (2001) concluded that “the creative process may be extended via Internet technology, with the potential for collaborative projects between artists all over the world” (212). Having opportunities to explore the creative process with and between students from our two distant universities in a new performance environment was one of the areas of interest for us in our project.

Between 2005 and 2007, Bradley University and the University of Central Florida in the United States, and the University of Waterloo in Canada collaborated to share the performance of Elmer Rice’s play *The Adding Machine*. Bradley University served as the primary performance venue, and three remote sites fed telematic performances into the primary performance venue (Brown and Hauck 2008). One lecturer at the University of Central Florida (1,100 miles away) performed in his office; a theater student performed in the studio theater at the University of Waterloo (800 miles away); and local actors also performed telematically in the production in a studio set up some 100 feet from the main stage at Bradley University. Creating the virtual space required significant bandwidths to stream video. They used Internet2 in the United States and the CANARIE network in Canada. Despite what Brown and Hauck (2008) say were “gargantuan technological efforts” to stage the production (111) and the shortcomings such as audio latency; the two-dimensionality of performance projected on a screen; that actors had to look into the camera to establish eye contact with a partner rather than to look at the partner; and the fact that actors and audience did not share the same space, they nevertheless concluded teleconferenced theater has the potential to be “interactive on a global scale” and that it “challenges old ways of performing; it deconstructs conventions, and leaves us with the joyous wonderment of how it all comes together as an affective experience” (116). We knew that we had only limited financial and technical support for the first project in 2007, but we did hope that

our combined commitment to the technological endeavor would be sufficient to enable us to explore new frontiers for international teaching and learning involving choreography and performance.

Popat (2006), in her book *Invisible Connections*, notes that Naugle also presented at the 1999 IDAT conference a performance as part of the *Janus Project* that linked two locations in the United States via CU-SeeMe Internet videoconferencing. She writes that “the result was less sophisticated than Company in Space’s *Escape Velocity* (due to the digital fragmentation), but much more in the reach of the average dance artist’s technical expertise and limited budget” (55). Naugle (2002) explains how the drawback of such systems is “that image and sound quality can be poor due to communication bandwidth limitations on the Internet” (56). Nevertheless, she did achieve one of her goals—to share a performance without loss of visual or audio information with a distant site—a result that was encouraging for us in our desire to use videoconferencing to bring together university dance students in two distant sites to explore a new “connectedness” in which to create, collaborate, and perform, and using technology that was realistically affordable.

In his exploration of the “pas de deux between dance and technology,” de Spain (2000) writes of how works such as *Hand-Drawn Spaces*, a 1998 collaboration between Merce Cunningham and Paul Kaiser, “is a beautifully executed example of the kind of melding of movement and technology that is changing the face of dance as we know it” (2). He concludes that “whether we are artists, critics, or scholars of dance, it is important to emphasize the perfection in the duet we have all begun with technology . . . [and] if our dance is to reflect our lives, we must learn to create new movements in new spaces, and dance with the technology within and around us” (15–16). We agree with him and Naugle (2001), adding that we have a responsibility as dance artists and educators to experiment with technology, emphasizing our teaching practices and the new territories for creativity that they can reveal.

Press and Warburton (2007), in their chapter on creativity and research in dance in the *International Handbook of Research in Arts Education*, identify that creativity in dance “encompasses all aspects of dancing and dance-making” (1273). Similarly, they note that “creativity research in dance is witness to invention, addressing important questions about the sources, contexts, processes, and outcomes of creative behaviour in an embodied art form” (1274). We felt that with the developments in the use and application of ICT, notably that of videoconferencing, it was the right time to explore choreographic Internet pedagogy through project-based research that engaged university students in new creative, collaborative, and performative dance practices.

CONTEXTUALIZATION

For the reader to better understand the background to the telematic dance performance work *Woven Space Across the Pond*, there is next a short overview of all of the telematic

projects we carried out from the fall of 2007 to the spring of 2011. Over the four years, four separate videoconferencing dance projects were undertaken by connecting Temple University (U.S.) and Liverpool John Moores University (U.K.; LJMU) via Adobe Acrobat Connect Pro (its current name), videoconferencing software that archives work from the perspective of a camera lens and can be accessed by anyone who is provided with the URL. In addition to accessing the “library” of all of the archived sessions, students and faculty also incorporated e-mail, exchange of QuickTime movies, and the use of Skype and Facebook for planning, discussing, analyzing, and reflecting on ongoing work. Each annual project sought to explore slightly different models of pedagogical and creative practice, moving from strongly student-led sessions, to more student and faculty collaborations, to a faculty-designed and mentored environment to create a work that was performed live via the Internet between the two institutions with audiences at each site. Performances were followed with discussion and analysis by participants as well as, in some instances, audience members.

Each project has had specific objectives (for more detailed information, see the authors’ reflections [Kahlich and Brooks 2009] at www.ljmu.ac.uk/ECL/ECL_docs/CETL_Journal_Dec_09_web.pdf). For Project 1, September 2007 to December 2008, these included the following:

- To develop basic knowledge and skills with Internet technology.
- To experiment with the use of Internet technology in choreographic pedagogy.
- To design creative and educational projects for dance utilizing Internet technology.
- To build a conceptual and practical foundation for further study and use of Internet technology in dance.

Initial faculty-led improvisation and ice-breaker workshops developed into student-led creative devising rehearsals as the faculty endeavored to deal with technical “hitches.” We experienced many of the technological issues spoken of by others such as audio lag, digital fragmentation, blockages by institutional firewalls, crashing, and freezing of frames, but the support of one or two dedicated technical staff and the enthusiasm of the students encouraged us to continue.

In Project 2, from September 2008 to April 2009, objectives included the following:

- To investigate how webcam and e-mail technology can serve dance pedagogy and the creative process, specifically if and how it might engage students in the making of dances within a new spatial “frontier.”
- To use technology on a shared international project, encouraging the development of international links and the practice of networking.
- To explore the potential for linking spaces and audiences via the Internet with webcam choreography, including performance experience and aesthetic pedagogy.

Three groups including students from each university were selected to devise three separate new dance works for telematic performance. Faculty provided choreographic tutorial support.

The goals of Project 3, from September to December 2009, were as follows:

- To use Adobe Connect Pro for three choreographers to collaborate to create a new work on and with undergraduate and postgraduate dance students.
- To explore use of center line created by the program and its potential of a new extended body (virtual dancer).
- To further explore use of perspective with the camera.
- To work with a more developed and planned structure to maximize use of the shortened time period.
- To identify aesthetic considerations of audience.
- To share authorship with performers and audience.

For Project 4, from October 2010 to March 2011, there were two sets of goals. The artistic objectives were as follows:

- To explore layering of perception incorporated from previous projects.
- To create with perspective of multiple audiences and performance sites: live and Internet.
- To present work in both a live telematic environment and online.

The pedagogic objective was the following:

- To work with Ensemble semantic project and MIT Simile project (student-led design for semantic web tools to enhance learning for performers in a creative process).

In each project students were guided to experiment with new materials, to find workable structures, and to employ strategies to enable them to get to know each other—often encountering misconceptions of our “common” culture and language. Objectives for each subsequent project were reshaped by what was learned in the previous project.

The four-year ongoing project has allowed both students and faculty at two institutions of higher education to work longitudinally in an international venue, across timelines, within different curricular structures. The common denominator of the directing faculty was a positive factor supporting both a continuing philosophical basis and an opportunity to develop methodology, process, and goals incorporating voices of faculty, students, and audience.

To some extent we have found ourselves to be very much “the innovators” that Zemsky and Massy (2004) describe in their model of stages of technology adoption, “the first few percent of the eventual user population, [who] seek out and experiment with new ideas—often driven by intrinsic interest.” Certainly, we have experienced and endured, as Zemsky and Massy state, “like other pioneers . . . many trials and tribulations” (9). However, encouraged by

the positive, yet critically constructive evaluations of the students involved in Projects 1 to 4, and despite the institutional and technological challenges we have faced in the ongoing study, we continue to be convinced that as learners and artists of the twenty-first century, students need to be taught within an environment that embraces technological advances. As Birringer (2002) writes on the effect of technology:

Technology has decisively challenged bodily boundaries and spatial realities, profoundly affecting the relations between humans and machines. . . . But dance has taken the lead, among the theatrical arts, in absorbing technology as a creative tool, affording dancers and technologists the opportunity to explore interactive environments, virtual places, and integrated methods that have shifted artistic process. (85)

At the outset, the challenges were considerable and often frustrating, and many times they were focused on the technology itself. From the first project, we learned much from the ongoing issues identified by others (e.g., Band 2002; Brown and Hauck 2008; Naugle 2002; Popat 2001). These included the following:

- Audio lag—Avoid tempo-based sound/music.
- Reliability of connections—Be prepared for regular crashes; digital fragmentation.
- Frustration with software, hardware, and connections—Learn to accept that the technology will fail; plan for activities to engage the students when this happens.
- Institutional bureaucracy and procedures—Be persistent in seeking to find the right people in the right places of management who will be prepared to assist in the development of new ideas for teaching and learning.
- Learning and teaching—Both learners and teachers must embed flexibility into the evolving process of technological pedagogy.

We also made discoveries about the creative spaces that the webcam projection provided, especially the center line (software design) that created a new virtual connection between the dancers and the importance of defining and interweaving the camera's cone-of-capture and the "live space" for performers and creators (see Figures 1, 2, and 3 for illustrative examples). Students were excited by how the "virtual world" could give the impression that the two worlds connected at the center line. Additionally, we discovered how the audience started to make associations between the live and projected dancers; the clearest associations noted by audience members were those that involved center line connections.

Educationally, we felt that although students live in a technological age, to be completely "techno-literate" (Penley and Ross 1991) they needed to learn within an environment that embraces technological advances. We wanted them to be engaged with and through what Postman (1993) calls a new arena for learning. Pedagogically, we were aware of the

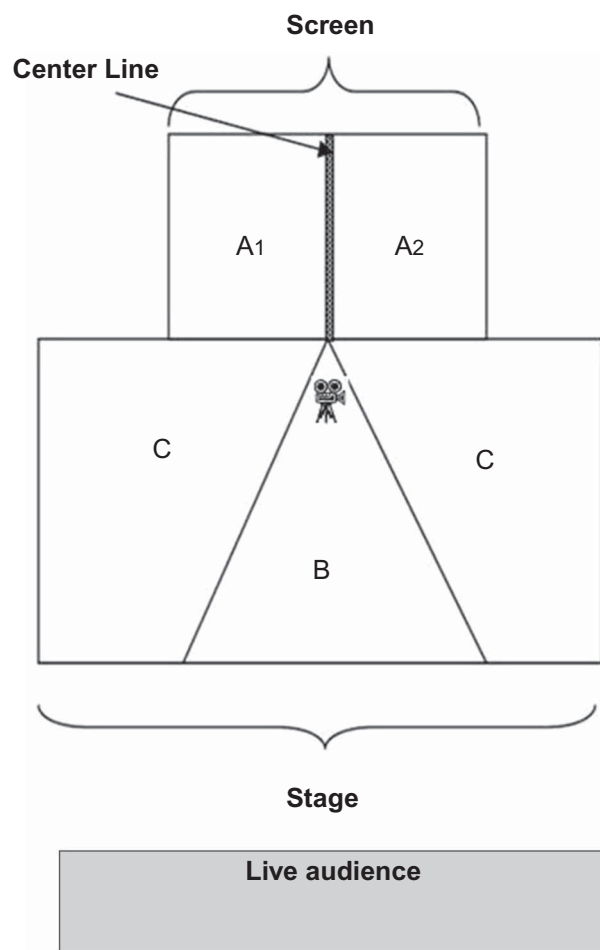


FIGURE 1 Spatial zones.



FIGURE 2 Liverpool perspective.

need for the learning environment to be a democratic, collaborative one—partly because the technology we were using demanded that; otherwise, it would become an autocratic system with one person dominating the microphone, thus limiting shared learning. Artistically, we wanted the students to engage with technology as creative performing artists to learn about technology, choreography, and performance.



FIGURE 3 Temple perspective.

In creating new spaces within which students can learn, we have combined the real and the virtual to create “new territories of performance space” for the creator, the performer, and the spectator (Brooks 2010). As educators we have sought to be “active users of technology” as a means of enabling our students to have “greater expressive potential and opportunities” (Naugle 2001, 459).

PROJECT 3: *WOVEN SPACE ACROSS THE POND*

This article now focuses on Project 3 (September–December 2009) and the work *Woven Space Across the Pond* (2009) created by Pauline Brooks and Luke Kahlich with Nathaniel Hancock. It was an intermedial telematic performance with live dancers and projected live feed from the videoconferencing software that enabled dancers from 3,000 miles away in separate theaters to share a performance synchronously. Audiences shared time, but not space. Dancers shared time and, together with the technology, created a new performance environment where they became one company united through the virtual “shared space” of the cone of capture, even while remaining aware of and incorporating the live space. Analysis and evaluation will be made of the strategies we employed in the project to engage dance students and audiences in new areas of performance and of the responses of the audiences to the work, the performers, and the viewing experience.

Drawing from aesthetic considerations explored in Project 2 (September 2008–April 2009), two similar black box theaters were used to give the sense of one large and matching site—specifically for the audience. A video camera connected to a CPU at each site captured the live performers, and both images were shared on a split screen via the Internet. The shared screen projection was shown on a large cyclorama behind the live performers in a studio theater setting. Each live audience was able to see the live dancers connecting with one another in the theater space and with the projected virtual dancers via the screen projection. The

performance space can be divided into different spatial zones. The boundaries of the performance space are defined by the actual space of the studio theater and stage, and the virtual space is defined by what can be captured by the fixed video camera and as created by the images projected on the screen via the webcam. The performance place can be diagrammatically represented as shown in Figure 1.

The spatial zones represented in Figure 1 are identified as follows: A1 and A2 together are the projector screen, which is divided into two halves by the middle (center line)—a split screen we have termed the *zone of virtual interplay*. The digitally projected images of the U.S. dancers appear on the A1 side of the screen, and the digitally projected images of the U.K. performers appear on A2. The triangle B represents the “cone of capture,” the spatial zone captured by the video camera and streamed via the Internet onto A1 and A2. X marks the position of the (fixed) video camera on the stage space. Zones C (either side of B) are the areas of the stage space that are visible only to the live theater audience. They see the live dancers in real space, but it is dead or invisible space to the distant, virtual audience; it is the “live zone.” Thus, each audience shares a synchronous streamed digital, or virtual performance shared on the screen, but each sees a different live performance at the same time (Brooks 2010). Pictorially, this can be viewed from the audience perspective in Figures 2 and 3 of the “Push” section of *Woven Space Across the Pond*, where it can be seen how each audience shares the same projected image, but each sees a different live view of the performers. This created a layered experience for both the performer and audience, and provided multiple ways to view the work as it unfolded from two perceptual points (Philadelphia and Liverpool).

We chose the model of a faculty-directed work, but where the performers would participate as co-collaborators, and the audience would be engaged in sharing their perspectives at three key points during the process, during Weeks 4, 8, and 10. There were 11 dancers (six in the United Kingdom and five in the United States), a mixture of undergraduate and postgraduate students who met for two hours per week for the duration of the project devising a rehearsal process (ten weeks).

It had become quite clear in Projects 1 and 2 that the student performers were, in the first instance, somewhat mesmerized by the screen and the technology. This was not surprising, as almost all of them were new to working with technology, let alone having any experience of working in a telematic performance environment. As Povall (2001) more bluntly describes these types of performers, they were “techno-virgins” (456). But that was part of our goal, to improve their “techno-literacy” by introducing the performers to new media and—via a structured, developmental syllabus—providing them with the opportunity to meet the challenge of becoming familiar with the technology and perform with confidence within the short space of one semester and a 10-week project.

We were aware from the outset of the importance of finding new ways of working and were in agreement with Birringer (2002), who writes that “classical attributes of choreography, composition, and execution traditionally associated with the stage cannot be applied to digital works. Clearly, computer-assisted dance must engage principles intrinsic to the new media: non-linear process, transformation, interaction, and emergence” (91). Therefore, we saw the need to ensure that the creative process was a collaborative one between tutor-directors and student-performers. We also wondered what would happen if we added some members of the audience into that collaboration. From previous projects we had learned that some audiences find the blending of intermedial work “engaging;” whereas, others find it visually challenging because it is “too busy” to have both forms (virtual and live) and they “did not like to choose between which one to watch” (Brooks 2008, 94). We both felt that if we could help to familiarize audiences with our new media aesthetics, then they would be better able to respond to, or more able to “read” the work. Such awareness of audience perception is an important consideration suggests Wechsler (2006), who writes that while dancers have a kinesthetic awareness of the “particular qualities of human movement [. . .] which guide [the audience in] their appreciation of the body in motion [where human movement is concerned] there is considerable difference between what the eye *sees* and the viewer *perceives*” (63). Meetings between the audience and choreographers/performers were recorded, and the final performance also included a written response by the U.K. audience. In addition to meeting with the live and virtual audience to listen to their perspectives, we made a deliberate plan, informed by our previous work, to do the following:

- Work gradually to introduce the visual principles of the camera and split screen to the performers and to the two live audiences.
- Work progressively to develop the use of the screen and live dance as part of the choreography throughout the work.
- Explore the use of the screen and live dance with:
 - Entrances and exits to and from the screen.
 - Exploration of live dancers with virtual dancers.
 - Use of perspective (near and far from the camera/live audience).
- Share authorship of the work: involving a collaborative community of choreographers, performers, and audience.

Practically, we had also learned from the previous projects about the issues with audio delay. Consequently, we deliberately chose not to work with sound that had any tempo or rhythmic qualities because of the problems with audio delay between the two sites of performance. A nonmetric environmental sound score helped create an atmosphere to add to the themes of weather and the Atlantic sea that underpinned aspects of the choreography, inspired by the fact that in reality we were each situated on a side of “the pond.” Initial planning for the project began in the summer of 2008, and a

theme and structural outline was formed. During the project, the two choreography professors “met” weekly via Skype to review the previous week’s session, plan the subsequent week, and discuss any changes to the outline structure for the work. The two U.S. choreographers met in person. One of them was a professional artist and an MFA student who had taken part in Project 2 and was also a performer in this project. All three held regular discussions during the devising period and via Skype toward the end of the project. The dance can be divided into three sections—each choreographer had responsibility for a section, and to a greater or lesser extent, all used improvisation, but all provided suggestions and feedback for each section and shared responsibility for the finale where the camera was moved:

- Section 1: Live dances only with gradual introduction to the split screen. Development of work with the split screen.
- Section 2: Use of the central cone of capture by the video camera and introducing moving in-out of the screen.
- Section 3: Use of screen and stage (parts invisible to screen audience). Use of perspective to and from camera and interaction between live and screen dancers.

Props (10 m length of fabric in each site) were introduced part of the way through the project to give the effect of waves and wind. The lateness of their inclusion did challenge the dancers, and additional time was needed to more effectively develop the performance qualities with the props and to fully integrate them into the work. As with many performance (and education) situations, we did not have the luxury of time to allow the performers to immerse themselves in the project, the movement, or the technology. *Woven Space Across the Pond* had to be completed in one semester, the time frame for a module, and using one session per week to meet each institution’s scheduling matrix.

For the first three weeks, the students were led in explorations of the space(s), of the screen, with the camera, with each other, and in the dichotomy of being both live and virtual dancers. They needed to become familiar with the camera’s cone of capture, with the reversal of movement direction that the screen presents (i.e., when facing the screen, if the screen performer is required to move right toward the center line, in reality the live performer must move to his or her left), so, in fact, the performers were faced with a completely new performance environment. For example, students reflected that “I felt I had to relearn to perform [in this environment].” Reinforcement and repetition of these basic familiarizations of the aspects of the “art and craft of performance” (Koner 1993, 2) with the technology each week was gradually supplemented by improvisational tasks and or choreographic directions to create the phrases, sections, and the complete dance. Each weekly rehearsal was recorded, and students were sent the Internet links to access to the Adobe Screen version—which although a useful tool, did not provide any documentary evidence of the view of live performance of the work as would be

seen by the live audience in the theater space. The Liverpool dancers did see video footage from the audience perspective around Week 7. One of the dancers said that this helped to “awaken” the dancer to the fact that, until that point of recognition, he/she was performing only to the screen, had forgotten about the need to be “three dimensional” and to appreciate that “my movement lacked intention, focus and extension.” This is a small but important detail in the learning process: that one more resource was required to support learning in the performance environment we had created—a video camera recording the process from the audience perspective. To do so would have better aided student-performer reflections on their own performance in the full dimensions of the performance site. This was included in subsequent projects.

All students were positive in response to the regular, shared critical reflection and evaluation sessions following the rehearsals each week, and of how helpful they found these to developing their own understanding of the process and the performance requirements demanded by the technology. Being able to share comments enabled them to realize that they shared the experience of feeling challenged as performers in a new performance-technology site. Their feedback positively reinforced our strategy of beginning the project with workshops to familiarize the students with aspects of the technology, the telematic performance site, and the need to connect with their virtual performers on the screen as well as the live ones in their shared physical space.

The group reflection and evaluation discussions provided insights and solutions as to what they might do as performers to find new ways of working, for example:

Placing my focus on our intention in terms of audience perspective led me to discover an escape from being “bound to the technology,” [thus] entering a new realm of performance experience.

For some it took the whole of the project to be able to be free from being “mesmerized” by the screen to the detriment of connecting to the audiences or to the live performers. Having the library of archived footage of the process meant that they could work independently, too. We were able to have them view the archived footage to reflect on their performance or to review feedback provided by one of the choreographers as they watched that particular section. One student commented, “With the use of the [resources] it meant that we could watch rehearsals back on the screen. I found this extremely helpful . . . to see ourselves from different perspectives.”

AUDIENCE PERSPECTIVES

As mentioned earlier, invited audience members became part of the creative process by engaging in the fine-tuning and reshaping of material at two points of the process, and then again following the final performance. We asked of

them such questions as these: What did you see that was effective? Where was your eye drawn in this section? Was it visually too challenging for you when . . . ? Did you see . . . ? In response to questions and comments from the audience, performers reviewed their performance and the lead creators reshaped the movement or structure. For example, some of the dancers said this critical interaction helped them to review their connection (or lack of it) with the audience when performing or their overattention on watching the screen. Audience feedback at the first sharing of movement material involved a split-screen section. The reflections regarding their fixation on the screen by audience members served to strengthen our resolve to introduce the screen work gradually, especially any involving the center line and mixing realities (between live and virtual dancers) in the zone of virtual interplay.

Although we had a working hypothesis, that of introducing the audience gradually to the layers of complexity of viewing dance in our telematic work by mixing live and virtual bodies synchronously in a studio theater space, and that we would “test” in our focus group discussions and in the final performance, we had not considered what the effect on the performers would be to include an audience focus group in the collaborative process. The students listened carefully to the comments from the audience. At times they more clearly applied the audience comments than those of the faculty directors on effective use of the screen by performers, or the importance of clarity and intention of movement and of the importance of the center line for the viewer. The collaboration with the audience seemed to enable the student-performers to more readily engage with the concept of where their audience(s) were and what they as performers needed to do to better connect with them. (The concept of having both a live and a virtual audience had been a hard one for many of the students to grasp.) The notion of a viewing audience became a reality early in the project once the students were engaged in discussion with viewers, both via videoconferencing and by being in the theater together. Within the process of devising and rehearsing, the performer–audience connection (Hanna 1983) was made stronger for the students because it was not left to the moment of the sharing of the product in performance. As an effective strategy for aiding students in developing their performance skills, this process would be one to investigate further.

At the final performance, the U.K. audience had the opportunity to participate in a written response about the structure of the dance in terms of introducing them to an intermedial telematic dance performance and in terms of their response to the live and virtual performers. Encouragingly, 97 percent supported our hypothesis regarding the gradual development of the visual complexity provided by the technology and performance environment through our planned structure of the dance. They said it had helped them to watch the dance and become familiar with the medium, and as some of them wrote:

It slowly became more integrated, as though beginning as two separate platforms that became one.

Yes the structure helped me to become familiar with the medium, especially when the(y) interacted with each other between the split of the screen.

It was challenging at first to relate the space in this theatre to that on screen and finally ending up appreciating the effect as a whole—the gradual process was extremely helpful.

Nevertheless, 33 percent of the audience wrote that at times they found the performance challenging for reasons such as these:

Where there was lots going on both on the screen and within different spaces of the room/stage—it was difficult to choose where to look when dancers were moving at the same time within and outside of the screen at a fast pace. It did not hinder the enjoyment and appreciation of the section as it gave a variety of things to look at but it was harder visually.

However, in terms of “critical responses” to and of the performers, one noted that:

The dancers performed to the camera as well as the audience watching, and this was very effective—in which I found myself very emotionally involved.

And another wrote:

I think that the performers and the performance worked very well in engaging the audience not only within the technology and looking at the screen but also in the stage and the space inside and outside of the screen. The interaction between dancers was very interesting and worked very well, as well as the performance to the audiences that each company not only performed to their audience but to the camera and to the other audience.

In summary, there was in general a most positive response to the use of the technology as part of the performance. It was felt that the work was “challenging new perspectives and a new creative level” and that “Dance and movement is a wonderful way to challenge technology that already exists and show its creative potential.”

CONCLUSION

It is clear from the written responses of the audience that the success of the project plan depended on the artist and researchers structuring and developing the work so that the performer engagement with the center line (split screen) was gradual, and that the mix of live and virtual dancers was progressively built. It certainly created the desired effect with the audience—that of not alienating them from the media, but rather, as one audience member wrote, “Introducing the dancers gradually and slowly

bringing in dancers/camera/props helped me to focus and become familiar with all the mediums.” It would seem that we have a successful model (regarding development of complexity and structuring a work) that is worthy of further repetition and might help to shape the answers to questions of media aesthetics and audience appreciation of work in this emerging genre. This supports the work of Brooks (2008) and Wechsler (2006). Yet we find there is still more to explore both in terms of educating audiences in the new media aesthetics that involve the viewing of live and virtual dancers simultaneously. We found in the final performance that one third of the audience was still challenged at times in selecting what to view. More needs to be done to help them feel comfortable in making those decisions, just as some audiences have learned to do over time in a Pina Bausch work, for example. This will require more opportunities for discussion, viewing, and reading about telematic performance so that they more become familiar with the genre and are able to recognize that telematic dance is, as one of the audience members wrote, “A means of challenging new perspectives and creating a new language through dance.” Equally, as artists in the new media, there is still more to clarify regarding the layering and balance of multiple perspectives—such as near to—far from the camera, split screen—center line and live work—so there do still need to be moments of “thinning out” those layers so that the visual senses are not overloaded. A number of the audience wrote about the challenge of viewing the live dancers against the dancers on the screen: “The fact that it was both live performance and technology was visually challenging as I caught myself watching dance on the screen more than the live performers.” Some did go on to write, however, that it did not decrease their enjoyment, but merely made it “more mentally stimulating and challenging” for them. In future projects, we need to continue to explore how at times to make the blending of the live dancers in the “cone” and the digital dancers on the screen more integrated. Of course they need to contrast and complement, but we might have to further consider where the live dancers are placed in the cone in relation to the size of the digital dancers on the screen, and, of course, it is often easy to forget the simplicity of stillness, a concept that we returned to in Project 5 (2011).

We have learned, too, from our work with the performers (almost all of whom were new to such a use of technology and a telematic performance environment), that introducing them to working with the camera and the interface of live and projected dancing bodies needs to be carefully designed. They need time to understand the principles of the technology and performance space, still need opportunities to know one another personally, and they need time to realize that they are performing to multiple audiences. For example, this process includes helping them to comprehend the significance of size and speed for live and projected movement, their position in relation to proximity to the camera, and their use of entrances and exits to and from the screen. Guided exploration and regular opportunities for creative improvisation are important so that dancers can become

familiar with how to move in the live space and in the cone of capture in relation to the screen. Such “imaginative play” (Popat and Palmer 2005, 50), is invaluable to facilitate their ability to embody the movement and to be able to respond and relate to both live and virtual performers, as well as to be able to connect to multiple audiences. Greater clarity of intent and purpose in movement and connection with the audience helps to increase the appreciation and interpretation of the action.

In addition, the strategy of sharing the authorship of the work by involving a collaborative community of choreographers, performers, and audience was useful in helping to provide an effective arena for learning both with and about technology and performance. This shared construction of knowledge, of learning by doing, for the students and the directors was an essential one, and involving the audience in stages of the process proved to be an important tool in guiding learning. Student performers were led by audience feedback to consider their relationship to each other and to the technology. Directors were able to consider discussions with the audience regarding viewing perspectives of spacing and groupings although the initial discussion session mostly served to reinforce what had been learned from previous projects—that the focus is more easily drawn to the screen.

The ongoing four-year project has allowed both students and dance faculty at two institutions of higher education to work in an international venue, across timelines, within different curricular structures to explore choreography, performance, techno-pedagogy, and audience participation. In addition, as one audience member commented, such a process that linked audiences in different spaces also “helps performers and choreographers to share work internationally to gain views from different audiences.” In particular, Project 3, *Woven Space Across the Pond*, has enabled us to develop a shared authorship of the work by involving a collaborative community of choreographers, performers, and audience. These projects seek to build what Penley and Ross (1991) speak of as techno-literacy, an understanding of how technology works to make intelligent decisions regarding its use in specific situations and environments. The researchers agree with Travers and Decker (1999), who state that engagement with emerging technologies is the work of the teacher in the classroom or, in the case of dance, in the studio laboratory and theater. Those “intelligent decisions” undoubtedly challenge us to consider future planning and design of not only curricula, but the education of the artist and educators who will teach it, as well as the design of the facilities in which the teaching and learning will take place. As Band (2002) also noted in her evaluative report, we spent too much teaching and creative time setting up and dismantling equipment each session. Equally, this meant that it was not a resource that was available for students to use in their own time. As technology advances, and when such videoconferencing technological resources are available for student exploration as part of their independent learning, then there will be the potential for the development of

the field of telematic performance by new artists collaborating nationally and internationally, as well as for distributed collaborative teaching and learning to become a familiar part of higher education as virtual learning environments are.

REFERENCES

- Abbott, C., M. Grosbois, and M. Klein. 2005. A beautiful house built on sand: What makes E-communication projects succeed—and why are they still so rare? *Technology, Pedagogy and Education* 14(2):225–239.
- Band, S. 2002. *An external evaluation report prepared for the ANNIE Project Steering Group*. Warwick, UK: Accessing and Networking with National and International Expertise (ANNIE), Centre for Educational Development, Appraisal and Research (CEDAR), University of Warwick. http://www.warwick.ac.uk/ETS/ANNIE/resources/evaluation/external_evaluation.doc (accessed December 21, 2011).
- Birringer, J. 2002. Intelligent stages: Digital art and performance. *PAJ: A Journal of Performance and Art* 24(1):84–93.
- Birringer, J., E. Bromberg, N. Jackson, J. Mitchell, L. Naugle, and D. Rosenberg. 2001. Connected dance: Distributed performance across time zones. In *Transmigratory moves/dance in global circulation*, ed. J. Birringer, 51–77. New York: Congress on Research in Dance, New York University.
- Brooks, P. 2008. Remediation of moving bodies: Aesthetic perceptions of a live, digitised and animated dance performance. *Culture Language and Representation Cultural Studies Journal of Universitat Jaume* 6:85–100.
- _____. 2010. Creating new spaces: Dancing in a telematic world. *International Journal of Performance Art and Digital Media* 6(1): 49–60.
- Brown, G. H., and G. Hauck. 2008. Convergence and creativity in telematic performance: The adding machine. *Culture Language and Representation Cultural Studies Journal of Universitat Jaume* 6:101–119.
- De Spain, K. 2000. Dance and technology: A pas de deux for post-humans. *Dance Research Journal* 32(1):2–17.
- Hanna, J. L. 1983. *The performer-audience connection*. Austin: University of Texas Press.
- Jamieson, H. V. 2001. *Cyberperformance*. <http://creative-catalyst.com/cyberperformance/> (accessed December 27, 2011).
- Kählich, L., and P. Brooks. 2009. Reflections on a two-year joint international project using web-cam technology to create new opportunities for student, choreographic collaborations. *Innovations in Practice* 2(1):41–48. http://www.ljmu.ac.uk/ECL/ECL_docs/CETL_Journal_Dec_09_web.pdf (accessed December 21, 2011).
- Knott, L. 2001. World wide simultaneous dance: Dancing the connection between cyberspace and the global landscape. *Leonardo* 34(1):11–16. <http://muse.jhu.edu/journals/leonardo/v034/34.1knott.html> (accessed December 21, 2011).
- Koner, P. 1993. *Elements of performance: A guide for performers in dance, theatre and opera*. Amsterdam: Harwood.
- Kozel, S. 1994. Spacemaking: Experience of a virtual body. *Dance Theatre Journal* 11(3):12–13, 31, 46–47.
- _____. 1997. Material mapping: Review of *Digital Dancing 1997*. <http://art.net/~dtz/koze12.html> (accessed August 22, 2011).
- Naugle, L. M. 1998. Digital dancing. *IEEE Multimedia* 5(4):8–12.
- Naugle, L. 2001. Technique/technology/technique. In *Moving history/dancing cultures: A dance history reader*, ed. A. Dils and A. Cooper Albright, 459–461. Middletown, CT: Wesleyan University Press.
- _____. 2002. Distributed choreography: A video-conferencing environment. *PAJ: Journal of Performance and Art* 24(2):56–62.

- Penley, C., and A. Ross, eds. 1991. *Technoculture*. Minneapolis: University of Minnesota Press.
- Popat, S. 2001. Interactive dance-making: Online creative collaborations. *Digital Creativity* 12(4):205–214.
- _____. 2006. *Invisible connections*. New York: Routledge.
- Popat, S., and S. Palmer. 2005. Creating common ground: Dialogues between performance and digital technologies. *International Journal of Performance Arts and Digital Media* 1(1):47–65.
- Postman, N. 1993. *Technopoly: The surrender of culture to technology*. New York: Vintage Books.
- Povall, R. 2001. A little technology is a dangerous thing. In *Moving history/dancing cultures: A dance history reader*, ed. A. Dils and A. Cooper Albright, 455–458. Middletown, CT: Wesleyan University Press.
- Press, C., and E. C. Warburton. 2007. Creativity research in dance. In *International handbook of research in arts education, Part 2*, ed. L. Bresler, 1273–1288. Dordrecht, The Netherlands: Springer.
- Sermon, P. 1992. *Telematic dreaming*. <http://creativetechnology.salford.ac.uk/paulsermon/dream/> (accessed December 27, 2011).
- Thurston, A. 2005. Building online communities. *Technology, Pedagogy and Education* 14(3):353–369.
- Travers, A., and E. Decker. 1999. *New technology and critical pedagogy*. http://radicalpedagogy.icaap.org/content/issue1_2/01travers1_2.html (accessed October 12, 2011).
- Wechsler, R. 2006. Artistic considerations in the use of motion tracking with live performers. In *Performance and technology: Practices of virtual embodiment and interactivity*, ed. S. Broadhurst and J. Machon, 60–77. Hampshire, UK: Palgrave MacMillan.
- World Summit on the Information Society. 2003. *Declaration of principles*. <http://www.itu.int/wise/docs/geneva/official/dop> (accessed October 12, 2011).
- Zemsky, R., and W. F. Massy. 2004. *Thwarted innovations: What happened to e-learning and why. A Final Report for the Weatherstation Project of the Learning Alliance at the University of Pennsylvania in cooperation with the Thomson Corporation*. Philadelphia: The Learning Alliance at the University of Pennsylvania.