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A somatic engagement of technology

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Abstract

The relationship between dance and technology is often framed as oppositional. Dance engages the body, while technology supersedes it, each being defined and positioned in relation to the human physical body. This paper proposes that the dichotomization obscures the social impact of new technologies. To test this proposition, a somatic framework is utilized to identify the similarities, rather than the differences between dance and technology. This framework serves as a lens to analyse the implications of specific technologies on human development, education and the self. This work contributes to a growing body of research that seeks to better understand the personal and larger social impact of new technology.

Keywords

modern technology
somatics
dance
embodied experience
identity
authority

Introduction

> Compare a rafting trip down the Colorado River to an adolescent girl using an interactive CD-ROM to explore the same territory. In the physical rafting trip, there is likely to be physical danger and with it, a sense of real consequences. One may need to strain one's resources to survive. There might be a rite of passage. What might await the girl who picks up an interactive CD-ROM called 'Adventures on the Colorado'? A touch-sensitive screen lets her explore the virtual Colorado and its shoreline. Clicking a mouse brings up pictures and descriptions of local flora and fauna. She can have all the maps and literary references she wants. All this might be fun, perhaps useful. But it is hard to imagine it marking a transition to adulthood.
>
> (Turkle 1995: 236)

This scenario is presented by Sherry Turkle, sociologist of science and technology, in her research on the social effects of the computer. It articulates our skepticism and fear concerning technology - that technology distances us from basic embodied human experience. By mediating our physical relationship to our world, technology threatens much more than our health. It potentially threatens our development into adulthood. In this scenario Turkle suggests that bodily strain and physical accountability are central to human development. For this reason, Turkle's research might be of particular interest to dancers, whose work is defined by physical activity.

The relationship between dance and technology is often framed as oppositional; dance engages the body, while technology supersedes it, each being defined and positioned in relation to the human physical body.

Dancers might chuckle at the CD-ROM scenario, knowing well that full-bodied engagement simply can't be simulated. Then why does technology seem to pose such a threat? Perhaps Turkle's scenario resonates at a deeper level for dancers. The CD-ROM, by design, privileges information that can be documented over less tangible information gained from a live interaction with the river. Using it as an educational tool suggests that physical engagement is optional, but not requisite to understanding the Colorado. The enthusiasm with which new technologies are being embraced for educational purposes can be interpreted to mean that there is little regard for what is lost in the process. Conversely, dancers ground their investigations in physical engagement, the premise from which every accomplishment and expressive act is measured. For anyone who has dedicated their life to an intense physical practice, the threat of technology might be very salient, striking at the core of a worldview and value system.

Converging on an obvious problem

The oppositional relationship between dance and technology I have just presented is straightforward. It converges on the concept of the body, the physical self. The problem seems obvious: technology devalues the importance of physical engagement. The consequences of this increasing reliance on technology are vague but disturbing, ultimately, as Turkle speculates, even affecting human development. Yet despite these serious concerns, the enthusiasm for technology in education is rising. Given this context, the perceived threat of technology begs a closer analysis.

Dichotomizing the physical world of dance from the artificial world of technology reifies the notion that a natural physical self, one that is more *authentic*, more human, is accessed through physical activities like free dancing. This issue is not unique to the sphere of dance and technology; it pervades modern Western thought. The notion of a natural self is complex, simultaneously empowering and limiting (hooks 1990). For instance, in the early twentieth century tradition of modern dance, it empowered dancers to discard the physically limiting costumes and repertoire of ballet, and explore more comfortable, seemingly more authentic, ways of moving (Selden 1930). While in this case the notion of a natural self ostensibly encouraged freedom, it in other ways resulted in the objectification of the physical body, delimiting and privileging that which is perceived as natural and correct. This claim holds cultural power in the arts and in education, marginalizing work that is read as deviant. This claim holds authority even in the court of law, exemplified in the current debate over the legality of same-sex marriage. The notion of a natural self underlies, albeit in different ways, the concepts of both *authenticity* and *authority*. It is through their inextricable connection to the natural self that these two concepts invoke their claims to Truth. The artificial world of technology, by its implicit irreverence toward the natural self, affects more than our physical activity, it potentially reconfigures our semblance of Truth.

In this paper I propose that the oppositional relationship between technology and physical engagement may be flawed. What if the dichotomiza-

tion itself obscures our ability to understand the potential implications of new technologies on human experience? In this paper I look to see how the concept of natural self might be understood if the focus is placed on the similarities, rather than on the differences, between dance and technology. To test this proposition I apply a somatic framework that focuses, not on the opposition, but on the commonality between the two. I use this framework to present and reinterpret the implications of specific technologies on human development, education and the self. This work contributes to a growing body of research that seeks to better understand the personal and larger social impact of new technology.

Bridging dance and technology

New technologies have changed the way we interact with our environment, with each other and even with ourselves. Clearly new technologies, like the computer and the digital video, effect new experiences - the task is to understand the shifting landscape of an advanced technological age. Although they are commonly placed in opposition to one another, both dance and technology explore the interaction between the body (the person) and the environment by challenging the parameters of what the body can do and experience (human potential). Moreover, both operate within constantly shifting contexts, which assume that embodied experience is itself constantly shifting and cannot be frozen. In this regard, their relationship can be conceived as a congruent exploration of human potential, privileging flux over staticity. It is from this similarity that I begin to develop an analytic framework.

The method I use stems from my own involvement in dance practice and from an epistemological approach prevalent in the field of dance - somatics - which itself privileges flux over staticity. Somatics, a post-positivist philosophic perspective that privileges the ongoing lived experience, can effectively attend to the shifting contexts of both dance and technology. My strategy is to loosely weave illustrative examples, historical context, and academic interventions. I use this approach to examine contemporary uses of technology that point to contradictions and disjunctures in our understanding of the natural, physical self. Through the analysis of these specific cases, I hope to show that this somatic framework offers an alternate way of understanding the effects of technology on the self, indeed, an alternate way of knowing and being.

Somatics: a framework of flux

> The stage. Walking out. 'They see me now. Let them see me, get used to the sight of me. Quiet down. Open.' I choose a place. I stand there. I glance at the audience. To see them, for them to see my face, my whole stance, just a look of recognition that I consider a hello. I begin. With what presents itself. A memory, a shape in the performance hall. I trust this first thing and I begin.
>
> (Forti 2003: 53)

In these words, seminal dance artist and improviser Simone Forti describes the process whereby she begins her performance. She takes time to see and to be seen. She attends to the context at hand. Given this context, she listens for an impulse and begins. In her description, Forti places value on the *act of awareness* in the present moment: her physical state, her environment, her thoughts. Her intellect and physical experience are not two separate processes, but an integrated whole. Forti's awareness determines her subsequent action. It is a process not unlike that which might occur in any social situation. The way we are aware of, and make meaning out of, our experiences grounds our ideas, our actions, even our concepts of self. The difference is that Forti turns what is usually a rote process into the central focus of her research.

Although Forti's work implicitly values embodied experience, it also presents the act of awareness as a complex process, which merits careful investigation on its own terms. By dedicating herself to this practice: the practice of awareness (alternately calling it presence, mindfulness, 'conscientization') Simone Forti demonstrates a specific approach to 'embodied experience'. Experience is treated not as a noun but as a verb that, without discounting its social constructedness, still includes a certain amount of agency and choice, and which, with attention, can be creatively honed. She uses this approach to challenge herself as an artist. Forti's approach to experience may sound familiar, and is indeed deep-seated, though not ubiquitous, within the discipline of American modern dance. This 'practice of awareness' has been called somatics.

Somatics was defined by Thomas Hanna in the 1970s as a human being perceived from the literary first-person (Hanna 1986: 4). Somatics has primarily been applied to the many movement practices that rely on first-person perception including Alexander Technique, Body-Mind Centering, and Feldenkreis. More recently dance scholars have explored the larger social implications of a somatic perspective. Jill Green coined the phrase 'social somatic theory' to encompass these larger implications, and uses a somatic perspective for cultural analysis and as a paradigm for post-positivist research (Green 2002, Green & Stinson 1999). For Green, and most pertinent to this study, somatics offers a way of knowing that does not dichotomize the intellectual and physical realms, and thereby values praxis - the process by which theory and practice are integrated, and in which ideas are put into practice to create new possibilities. The creative process, whereby new possibilities are realized, is taken seriously in a somatic approach. Conventions can be transcended, awareness can shift, and new realities are not only conceptualized, they are actualized - created.

Dance: bodying forth

The somatic perspective is not synonymous with American modern dance, but its epistemological and pedagogical applications have been an integral component of university dance programmes during the twentieth century. From the start, modern dance education defended a pragmatic epistemology (H'Doubler 1925, Hagood 2000, Ross 2000). When Margaret

H'Doubler in the 1920s built the first dance programme in higher education, it was on the premise that embodied experience is fundamental to education, self-actualization and change. As a graduate member of the Education Philosophical Club at Columbia University under John Dewey, H'Doubler delved deeply into the systematic, albeit subjective, investigation of embodied experience. H'Doubler was committed to Dewey's notion that actualizing oneself in the world is the way we should go about 'knowing'. Her approach was both creative and political.

> Education proper does not begin until the individual has begun to try to realize his ideals in the world without. In other words, it recognizes the importance of creative activity in the development of the mind. Without the opportunity to body-forth the aspirations of the self, we may never realize with what powers we are endowed.
>
> (H'Doubler 1925: 4-5)

In these words H'Doubler asserts both the liberatory potential of dance and the necessity of embodied practice to the realization of both personal and social change. Through physical explorations that focus overtly on time, space and dynamics, and compositional explorations that play with these elements, we create new meanings and challenge ourselves. H'Doubler concludes:

> In the last analysis it is the development of human nature ... that is the important consideration, not the subject [of dance] itself. That is only a means. Our real purpose is to teach ... by means of the dance.
>
> (H'Doubler 1925: 8)

Modern dance class was an environment in which students acquired knowledge through a heightened focus on creative embodied experience as they tested ideas in the studio. The belief was that learning occurs in the interaction between theory and practice. There was an epistemological commitment to praxis, the realization (realization = to make real) of theory in the material life world. For instance, in order to understand space, students in a modern dance class might be assigned an improvisational structure based on dimension, shape, level or distance. In the course of exploring these structures in movement, the parameters, politics, and meaning of space unfold. It is the participation and concrete enactment that give meaning and accountability to the exploration of space.

Improvisational artists like Simone Forti focus their research practice on this moment of enactment and the complicated factors behind each act. The action taken at any given moment is not only the result of the infinite variations in context: audience expectations, performer expectations, physical sensations, mood, colour of costume. It is also the result of (a) *how* the actor chooses to attend to the moment and (b) *the conscious commitment* to a choice of action. For instance, in performance, a single movement might be enacted with attention to the muscular effort it requires, or to the

visible shape of the movement, or to the social implication of the movement, or to its timing, or to the skeletal structure, or to the emotional state of the movement, or to the relationship of the movement to the space, or to some combination of these. Somatic engagement acknowledges the importance of how we inhabit any given moment (physically, intellectually, spiritually...) and the meaning we attribute to it. Concurrent with this process, any choice in attention or in action precludes the possibility of other choices. When one is fully committed (physically, intellectually, spiritually) to any choice, they commit to the consequences of that choice; they become accountable to the new reality they have set forth. This process requires courage. Somatic engagement is a decided commitment to the life world as, first and foremost, creative. In his essay 'On Structural Improvisation', improvisational performer Richard Bull captures such an approach, in the context of describing this improvisational dance:

> All right now, let's do a brand new dance. In this dance we will pay attention to the dance that everyone is doing with us. This dance will be a dance in which we're supposed to do certain things but we're not certain what those things are. We will look about at each other, trying to understand what we're supposed to do, and everyone will do something based on what everyone else is doing.
>
> (Bull 1969: 26)

The instructions Bull gives are neither particularly specific nor innovative. But each action and each choice made by dancers following his simple directions create a wholly unique subsequent reality, the dance. Any choice gathers it's meaning within a sphere of activity and consequently reconfigures the parameters of meaningful activity in that environment. Bull accounts for both the influence of context and power of choice. This heightened awareness of the context, coupled with accountability in action, can be felt as a 'connection' to the world. Not everyone who dances does so with such an acute sense of accountability to their creation. Regardless, the impact of the creative act is an inextricable part of dance (If we don't do it, the dance simply does not exist. Conversely, once we do it, it cannot be undone). By bodying-forth our aspirations, putting our ideas into practice through dance, we do not only ask 'Who and what are we?' but also 'What can we become?'

Consider the Colorado River example. It is this very connection that Turkle alludes to. Exploring the CD-ROM might be fun, perhaps useful, but the embodied experience of the Colorado has been sacrificed. The CD-ROM has predetermined, prescribed all possibilities, thereby precluding uncertainty and accountability. Without the sentient awareness, we feel disconnected from ourselves. It is difficult to imagine the CD-ROM facilitating a personal transformation. But what of the student who can't otherwise get to the Colorado?

The (deceptive) threat of technology

Technology, most simply conceived, is a tool that helps extend our capabilities. A pencil is technology, as is a computer and a CD-ROM. It, like dance, is a means of realizing our ideas and imagination. Martin Heidegger, in his pivotal essay 'The Question Concerning Technology', describes technology as *bringing forth* or letting 'what is not yet present arrive into presence' (Heidegger 1977: 318). He equates the process of *bringing forth* with revealing truth. In this sense, technology is also a vehicle for praxis. A comparative glance might conclude that dance, in the tradition of Margaret H'Doubler, accomplishes praxis through investigation grounded in the body, while technology extends its focus beyond the body. Each has its respective benefits and drawbacks, but both are concerned with the relationship of the body to its environment.

As if part of a dance improvisation, any tool gathers it's meaning only within a sphere of activity and consequently reconfigures the parameters of meaningful activity in that environment. New technologies are transforming human engagement. Rapidly changing media and communications technologies alter the way we communicate, express and present ourselves. For instance, both the Internet and mobile phones have affected our ability to communicate across great distances. Imaging technologies allow us to view ourselves at microscopic cellular levels and also from the distance of outer space. These shifts influence our perception of self and potentially the meaning of humanness. Far from being a concern only for philosophers, this shift is being addressed in popular presses. Articles such as 'The Altered Human is Already Here' (Goreman 2004) and 'Cyborg Liberation Front: Launching a Movement for Posthuman Rights' (Baard 2003) are becoming frequent.

In reconfiguring basic parameters of perception, communication and expression, technology asks 'What can we become?' In doing so it asserts the potential for human transformation. Dance and technology share this implicit commitment to the possibility of human transformation. Both operate on the premise of putting theories and ideas into practice. Both ask 'What can we become?' through (embodied and disembodied) praxis. Indeed, despite perceived conflict, technology has often serviced dance. Special shoes, stage mechanisms and other innovations across history and around the world expand the capabilities of dancers, revealing what is possible, delighting and sometimes shocking audiences, as if to remind that the full potential of humanity is still beyond our comprehension.

Technology excites because it offers the possibility of superhuman potential and futuristic, as yet unrealized worlds. Technology frightens because, as demonstrated in the Colorado River example, it threatens to replace embodied human endeavour. Here technology diverges from dance. Popular movies like *The Matrix* convey the pervasiveness of this fear. In it, artificial intelligence creates a computer construct of the present day world (the Matrix). Through a hardwire it is fed directly through the brain to humans, who consequently think they are engaged in the world while they are in fact being stored in incubators. Unaware of the constructed nature of

their world, humans have no idea that their 'reality' exists only in their minds, and that everything they 'experience' is just a dream. They have lost the ability to differentiate between the virtual 'real' and the real 'real'. They have lost all control. In this scenario, technology has successfully and completely simulated real experience, thereby rendering 'real experience' altogether meaningless. The making of *The Matrix* conveys the fear of losing control over our physical experiences. It also conveys the greater underlying fear that we won't even notice when it happens. But if, as the film dares to suggest, the virtual 'real' might be as good or better than the 'real' real, then what is it that we actually fear? The obvious proposition is that we fear the possibility that someone or something else might acquire the power to control our minds through the complete simulation of physical engagement.

The simulation of experience is not only material for science fiction. It is presently being applied in healthcare. Sam Lubell in an article for the *New York Times* describes such an instance. He begins by describing a panic attack:

> The red curtain opens to reveal an intimidating auditorium. A bored audience stares back at you. One person in the crowd seems to be falling asleep; another coughs back loudly and stretches his neck. You notice that your palms are sweaty. Your stomach is fluttering. You wonder whether you will pass out.
>
> (Lubell 2004)

Lubell was reporting on the work of a Georgia-based company called Virtually Better. The experience he describes is not fictional. It happens regularly in a small office that holds only two people, a patient and a therapist, plus a variety of mechanical contraptions. The contraptions are designed to simulate experiences for the patient. The 'bored audience' is merely a fabrication. In this office, patients are given the opportunity to safely practice encountering their fears. Lubell writes, 'It's a therapist's dream' (Lubell 2004).

The patients wear a helmet with headphones and stereoscopic screens that adjust to movement in the patient's body. They stand on platforms that vibrate to simulate movement and smell chemically induced odours. The goal is to recreate experience as realistically as possible. The programme Lubell describes simulates public speaking. Another of the programmes simulates a scene from the Vietnam War. Yet another re-enacts the terrorist attack on the World Trade Center. These fabrications are far more sophisticated than video projections. The effectiveness of virtual therapy has not yet been determined, but the goal is clear. Virtually Better wants to make it possible for people to *practice* life without risk. This elicits skepticism in the people Lubell interviews. In one such interview, Manhattan psychologist Dr. Reiner explains, 'People are weirded out by this' (Lubell 2004). Though the potential benefits of virtual therapy are exciting, part of us hopes that it is not possible to fully simulate reality, or that it is ethically wrong to even try.

It appears that personal, bodily experience is something we hold sacred, and which we don't want to believe could be so easily simulated.

The myth of control

Both dance and technology are, by the definition set forth in this essay, committed to expanding human potential. By this definition, the threat to human potential does not lie inherently in technology, but elsewhere. The threat, I propose, has to do with the issue of bodily integrity, broached in Lubell's article on virtual therapy. The following example elucidates this matter. The issue of bodily integrity was confronted at the inaugural Dance For The Camera Symposium, held at University of Wisconsin in 2000. The meeting was intended to address new possibilities available through moving image technologies, and to that end stimulated a discussion about the implications of screen dance (alternately called moving picture dance, dance for the camera, videodance). A prejudice against the lack of immediacy and imminence of screen dance was salient. Choreographer Daniel Nagrin at one point called video a 'pathetic medium ... constantly challenged by the exquisite potency and richness of the human eye' (Berson 2000: 167). In his statement Nagrin is defending the integrity of bodily experience with the reminder that dance mediated by technology, and live dance, are incomparable. Nagrin advocates using the 'camera for the dance' rather than dance for the camera (Berson 2000: 167). As if to assuage the threat of technology, we remind ourselves to keep technology in check; it is there for our use, and to serve our needs. By maintaining our control over technology we preserve the integrity and imminence of human engagement. But the underlying fear goes unresolved: we may not be aware of the moment at which we cede control.

At first glance the discussion appears to pit dance against technology. Recalling that this conference was a meeting of scholars and artists most interested in combining media technologies with dance, this seems unlikely. Read closely Nagrin is not against using technological media, but against the idea that media might be deemed comparable to the potency of live human engagement. This idea oversimplifies human experience altogether, and results in bad art. If this is correct, then the Dance For the Camera Symposium might be better characterized by the desire to reconfigure the relationship between dance and technology in order to fully acknowledge human potential in art.

Nagrin's assertion – to use the camera for the dance rather than dance for the camera – expresses his belief that what we need is more careful and conscious control of technology. Accordingly, developments in new technology have offered more control, often through interactivity. Returning again to the Colorado CD-ROM. Its benefit is that the user can decide what and how to explore the Colorado through a touch sensitive screen. It is useful to compare the CD-ROM to a realistic movie depicting the same environment. A movie can offer a viewer an exhilarating visual and aural experience and, like the CD-ROM, can yield a wealth of useful information. However, a movie does not allow its audience to determine the course of events. The

interactive CD-ROM does, offering greater control over the media through its variety of choices. Under this guise of interactivity, the educational CD-ROM gains greater legitimacy as a tool of knowledge than the movie. Interfaces like the CD-ROM are often construed as not having an overt politics. They are neutral and freely manipulated by their users (Lovink 2004). The higher level of interactivity implies a higher level of engagement, greater individual control, and subsequently a higher level of legitimacy as an authentic experience. Thus, the more comprehensively simulated interactive Virtually Better environment carries even greater legitimacy as a tool. And yet in all three examples any course of action is ultimately limited to a predetermined prescribed outcome. What might be conceived as interaction is in fact only a sophisticated computer reaction (Troika Ranch, personal conversation, June 2004 Live I Workshop). The myth is that this reactivity yields control to the user.

The most extreme examples of this are technologies that might not typically be considered interactive because they rely so deeply on interaction. Consider medical imaging and diagnostic technologies, which yield information based on a variety of physical engagements (we give them our blood, we sit still to offer them a static image, we spit, tense our muscles, and breath for them). These technologies carry even more authority as tools of knowledge, prescribing the possibilities of biological gender, genetic composition, disease, and disability. In a world where knowledge is power, and the interactive web of knowledge is becoming increasingly technologically complex, the question becomes this: to what extent are our experiences, and consequently the very knowledge by which we live, predetermined or prescribed by the technology itself?

Enframing

Heidegger similarly warns against an overly optimistic view of technology and explains why our fear of losing control is not imagined. He suggests that modern technology is not simply a tool or instrument, but a pervasive cultural epistemological paradigm. Heidegger's account encompasses more than the machines and systems we define as new technology, but a system of thought that concerns both physical experience and human potential. He describes the process whereby modern technology *challenges* the energies of human potential as one that simultaneously precludes new or liberating possibilities. This process, which he calls *enframing*, sets up in advance the possibilities available (Heidegger 1977: 324). It is a uniquely modern phenomenon. 'It is said that modern technology is something incomparably different from all earlier technologies because it is based on modern physics as an exact science' (Heidegger 1977: 319).

Moreover, 'physics, indeed already as a pure [mathematical] theory, sets nature up to exhibit itself as a coherence of forces calculable in advance' (Heidegger 1977: 326). Within this paradigm, any action or event acquires meaning through a prescribed and calculable system of understanding.

Heidegger's account predicates modern technology on theory. It establishes modern theory as a mathematically logical representation of the

natural world, which works by systematically stabilizing, naming, and defining the objects within it. Because this system is calculable in advance, Andrew Feenberg, philosopher of technology, elaborates that for Heidegger, the 'modern technologist obliterates the inner potential of his material, "deworlds" them, and "summons" nature to fit into his plan. Ultimately, it is not man, but pure instrumentality that holds sway in this "enframing"' (Feenberg 2003: 3).

Most important, Heidegger's account implicates the entire social-political context. Humanity itself is stabilized, defined and named. This process of identification becomes paramount. Within this account, objectively recognizable external criteria prevail over self-identification in determining the authenticity of a person's identity. Even the self-expressive and personal experience of dancing is encompassed in this system. This is evidenced in the ease with which choreography can be systematically categorized by race, gender, class and sexuality.

Heidegger emphasizes that, 'In truth ... precisely nowhere does man today any longer encounter himself, i.e. his essence' (Heidegger 1977: 332). The direct encounter is prevented, paradigmatically skewed by an episteme that subsumes the very element that might be considered authentic - our personal experiences. Jill Green, social somatic theorist and dance educator, explains the problem this presents:

> This split does not simply separate our bodies from our minds and favor mind over body ... [it] removes us from the experience of our bodies and disconnects us from our own inner proprioceptive signals as well as from our somas and living processes ... there is an active obsession with the body as an objective mechanical entity. As a result we are often numbed to the awareness of internal body messages and the power of our connected selves.
>
> (Green 1996: 80)

Returning to the original example, the value and meaning of the Colorado River has been partly prescribed by the creators of the CD-ROM, but more so by the parameters of the technology itself. It is clear that the Colorado River CD-ROM has taken the body out of the experience, removing any possibility of accountability to the reality of the situation. But even those who venture to the river in person are already conditioned to privilege those aspects of their experience that are readily transcribed, and thus culturally verifiable, by a computer. This prescription is less obvious and more pervasive. The participants no longer 'encounter themselves' and therefore lose the power of their 'connected selves'. In Turkle's words 'It is hard to imagine [the experience] marking a transition to adulthood'. Their experience has been mediated by a technological episteme and therefore enframed. Here it is most important to recall that modern technology consists not of a kind of instrument but of a pervasive epistemological paradigm and implicates the entire social-political context. The CD-ROM serves only as a convenient exemplar. The same problem holds for a dance class or any social experience.

The problem is cyclic. Technology that mediates our communications, actions and productivity has already been enframed through calculated theoretical formulations. Conversely, our theories are based on activity that has been increasingly mediated in meaning and material by the scientific technological paradigm (Heidegger 1977: 320).

Theory is no longer creative, but prescriptive. Enframing not only objectifies the human, it prescribes human energies and awareness. Heidegger's account suggests that our fears have been realized - that modern technology controls us.

Heidegger's description not only concerns technology, but refers to the pervasive modern scientific paradigm we inhabit. His description of modern technology as a system of thought influences how we make sense of bodily experience. Every aspect of life is entwined in technologically mediated understandings. Science, medicine, communication, even education are configured within and depend upon technological mediation. We are entrenched in an increasingly opaque paradigm. As we continue to develop new technologies to understand the human condition, is the guiding question shifting from 'What can we become?' to the more definitive and self-perpetuating 'What are we already?'

The accuracy of Heidegger's account holds vast implications for dance. Is expressive innovation possible? To what extent have our most private danced experiences been mediated, defined and prescribed by the modern circumstances Heidegger describes? Modern dance is often considered to be an eclectic dance form, possibly the purest expression of our unique selves in movement. Nevertheless, even modern dance easily falls into genres defined by specific racialized, ethnicized, gendered and classed factors. Bodily integrity, the very premise of dance as liberal art and education, is destabilized. Should we embrace our socially constructed natures with a postmodern optimism, or have we been en*framed*?

The significance of these questions extends beyond the studio and past our practical applications of technology. Their implications are interdisciplinary and affect us as we move between the computer, the dance studio and the science laboratory, and from the workplace to the leisure activity. Our embodied selves travel with us, and this demands a more comprehensive theoretical consideration of the relationship between dance and technology. Yet the goal of this project is to understand the relationship on a somatic level, one that privileges the 'practice of awareness' even while acknowledging the enframement of somatic awareness itself, in order to understand the implications of specific modern technologies on human development. Beginning with a specific example below I hope to address the epistemic depth and the everyday lived experience of the following question: In practice, how has technology affected our experience of the world and our agency within it?

> In 1982 a psychologist named Alex went online. In the process of interacting on the web under the gender-neutral pseudonym, Shrink, Inc. he was mistaken for a woman. He found that he enjoyed his conversations as a woman.

> They also afforded him previously inaccessible insights into the life, thoughts and conversations of women among women. Alex eventually took on a female Internet persona named Joan and proceeded to behave and interact as a woman. 'Joan' was a neuropsychologist and a victim of a drunk-driving accident. The accident severely disabled and disfigured Joan and for this reason she was limited to interacting via computer. She avoided personal phone calls and visits under pretense of embarrassment. Gradually Joan began to offer psychological advice to his Internet acquaintances, as a woman. Joan's patients took her advice while she helped them save their marriages, overcome suicidal tendencies, battle alcoholism. Joan acquired power as a legitimate and authoritative female psychologist. Eventually, however, Joan's Internet acquaintances became suspicious. Alex grew nervous. He considered 'killing' Joan, but the socially interconnected web of her existence in the world was too intricately woven. Alex was found-out. Interestingly, he was discovered, not because of inconsistencies in his gender portrayal, but because of inconsistencies in his portrayal of Joan's physical disabilities. His Internet acquaintances were horrified, angry, traumatized. Whether or not Alex's Internet advice helped, was not at issue. His Internet patients' fundamental beliefs about human nature had been transgressed.[1]
>
> (Van Gelder, 1996, pp. 533–546)

1. This scenario, based on an actual event, was documented by Lindsay Van Gelder (1996) and has gained attention through the writing of artist/scholar Roseanne Alucquerre Stone (1992a).

In contrast to the Colorado River and the Virtually Better examples, the relationship between technology and engagement becomes less clear. Alex's extended and sustained social engagement with others, as a woman, is both mediated and accountable. The scenario did not take place in his head or on a CD-ROM; it happened in relationship with other *real* people, albeit not face-to-face. Joan's choices and responses all entered a web of socially interactive accountability. Her patients took her advice, and Joan followed-up on their progress, maintaining contact with the patients. Alex literally practiced being a woman. Certainly, Alex gained an understanding of being a woman beyond what he would have, had he never practiced a female persona. Was the experience real or virtual? Though clearly mediated, it is difficult to imagine that Alex's experience was prescriptively enframed. It seems rather aberrant and outside the bounds of what might be expected. If Alex's experience is somehow less prescribed, is it therefore more authentic?

What right did Alex have in prescribing advice? Authority and authenticity are complex concepts that underlie our moral and legal practices. We invoke power through authority and even more so through authenticity. It is simple to discredit Alex on biological factors. We can conclusively prove that he is not a woman and merits no authority as a female psychologist. It is easy enough to dismiss this case as one of Internet 'passing' in which Alex manipulated cultural definitions to his benefit (Nakamura 2000). In fabricating his circumstances he betrayed the trust of his newfound friends. But probing deeper into the implications of these interactions reveals the questionable assumptions that are made about power and knowledge in relation to the physical self.

It is useful to compare Alex's situation with what happens in dance education. We practice other forms of dance precisely to gain insight into 'other' cultures. The idea that dance and movement are manifestations of culture is the premise for anthropological scholarship (Novack 1990). Dance educator and scholar, Janice LaPointe-Crump describes dance forms as communicating 'precise world views, cultural contexts and ... information *symbolically and metaphorically*' [my emphasis] (LaPointe-Crump 1990: 53). More specifically, we learn about 'other' cultures by physicalizing 'their' specific relationship to time, space and dynamics in movement. We learn through our proprioceptive and sentient practicing of the dance.

What insight do we gain into the world-views, cultural symbols or aesthetics of another culture, what authority do we derive through extended practice? This question is central to a discussion of authority and authenticity. Not only does our experience establish our authority, it also shapes us and shapes our identity. It is tempting, but too simple to distinguish a learned set of skills from an identity. Simone de Beauvoir made this point asserting that one is not born, but, rather, becomes a woman. Judith Butler details the way that gender is a stylized repetition of acts (Butler 1997: 402). But what defines the parameters of experience and in what way must the body be involved for an experience to count? Is the body engaging in dance more real than the body engaging in Internet communication? To what extent are we bound to the genetic make-up of our 'real' physical body?

Li Chiao-Ping, a Chinese-American choreographer/performer, grapples with the distinction between essence and practice in her research on ethnic identity and performance. Commenting on the process of borrowing parts of a culture Chiao-Ping asserts that by 'appropriating the form without its attendant particularities, there is an evisceration of the original, leaving a hollow outline behind' (Chiao-Ping 2001: 91). Chiao-Ping suggests that the dichotomization of essence and practice is inaccurate and incomplete. While this is an important and largely acknowledged point, it does not adequately address the ways that power continues to be distributed on the basis of authenticity, nor does it address the social and political repercussions suffered as people negotiate their identities.

Chiao-Ping describes the disconnect she feels between practice and identity as she is stripped of authority in the dance world, 'It is upsetting not to be included or invited to be in Asian-American events. I am Asian after all, and an artist ... I sometime feel ... that my work is not seen as Chinese enough' (Chiao-Ping 2001: 92).

Cultural critic, Trinh Minh-Ha explains that 'presumably, the Real Chinese artist should abide by Chinese aesthetics, the authenticity of which is naturally defined on *their* (Euro-American) terms' (Trinh 1991: 157). In this statement, Trinh describes not only the pervasive impact of cultural symbols in defining identity, but also the power and politics of who gets to do the defining. Does this suggest that genetic makeup is the only 'real' determinant, because science has yet to be fundamentally challenged? How do we define real?

These examples suggest that the relationships we draw between identity and essence and practice are tenuous, and that 'authenticity' is politically determined. As evidenced by Alex's gender switching example and Chiao-Ping's struggle with her performance of ethnic identity, both dance and technology create contexts that magnify the problematic relationship between identity, essence and practice. Both dance and technology challenge our notions of authenticity. Despite this fact, the problems of identity, namely discrimination on the basis of race, sex, age among other factors clearly persist in those arenas. It is significant to note that the problems of identity are defined in terms of the body, and that there is also a tendency to define dance and technology through their respective relationships to the body.

An alternate analytic approach

What if our contemporary Western cultural focus on the body, embodiment and disembodiment obscures the fundamental nature of our problems? With this possibility in mind, and with the intuitive sense that a comparative analysis of dance and technology is important, I propose an analysis of dance and technology that avoids grounding itself on the physical body altogether, in order to offer a more physically engaged analysis, one that reconfigures physical engagement. Thus I shift my focus to time and space. Both dance and technology play with our perceptions of time and space. I direct my focus on the specific relationship between time, space and human nature. This abrupt shift in focus may seem arbitrary; but our conceptions of time and space are integral to our understanding of body, identity and selfhood.

Take again the gender-switching case. The problem is easily described in terms of time and space. Alex used to be only a man. He lived and experienced most of his life as a man. His gender jump represents a discontinuity in the joint cumulative progression of time and experience, an abrupt change within the otherwise steady development of the self. All of a sudden, Alex becomes a woman.

Second, Alex shifts genders relatively effortlessly within the same space, the same body. A single spatial coordinate, his individual physical structure, should not according to conventional logic be able to sustain more than one self, more than one gender. Alex has transgressed time and space. This is the problem.

The situation I describe is one in which self and identities, as well as control, are derived through consistency of and between time and space. In fact, modern Western culture can be characterized by the naturalization of a spacio-temporality basic not only to modern science, but to our very understanding of human experience. Vivian Sobchack, even while challenging subjective/objective embodiment in her analysis of moving image culture depends on spatial and temporal stability, asserting that 'every human experience has a phenomenological structure that emerges as a meaningful spatial and temporal form' (Sobchack 2004: 21). This has been concretized in modern political social systems. Alucquerre Rosanne Stone, an artist and technology theorist, describes this in detail:

> In this sense of the term, social order implie[s] spatial accountability - that is, knowing where the subject under the law [is]. Traditionally accountability refer[s] to the physical body, and most visibly [takes] the form of laws that [fix] the physical body within a juridical field whose ... characteristics were precisely determined [through] the census ... passports, telephone numbers - the invention and deployment of documentations of citizenship in all their form ... in the interests of producing a more 'stable', manageable citizen.
>
> (Stone 1992b: 19)

> The origin of this 'correct' relationship between body and persona seems to have been contemporaneous with the same cultural moment that gave birth to what we sometimes call the sovereign subject.
>
> (Stone 1992b: 15)

In short, we are afraid of losing control. We refuse to even acknowledge that which we can't stabilize in time and space and for this reason we marginalize deviance by positioning it within a techno-scientific enframement. We are afraid of losing control, but in this context, control gains a more specific meaning.

The sovereign individual that Stone describes, and that forms the basis of Western humanism, is a contradiction. It is the stability of the sovereign individual that prevents its freedom. The relationship between time/space and domination has been elaborated by N. Katherine Hayles:

> This conception of the human may have applied, at best, to that fraction of humanity who had the wealth, power and leisure to conceptualize themselves as autonomous beings exercising their will through individual agency and choice.
>
> (Hayles 1999: 286)

Humanism, which began with a democratic impulse is at most the luxury of the privileged, a medium for domination without accountability. The techno-scientific paradigm Heidegger describes thereby elicits a felt sense of sovereignty to those privileged within its framework. The 'others', as Chiao-Ping demonstrates, are more limited by socially defined constructions of identity.

This spatial-temporal relationship also accompanied the development of modern experimental science, which determines truth through consistency and repeatability. It drives objectivity and its resultant binaries: body/mind, form/content, process/product. A consistent relationship makes it possible to fix and name a particular kind of self to a particular kind of body. It thereby facilitates the 'control over' that we at once desire and suffer from.

The discourse of injustice almost inevitably leads to the debate over whether (and to what extent) the human self is essential or socially constructed. Because we have no other language, and because science has, for practical purposes (as in the practice of medicine), grounded itself on the

study of the objective body, we have no other way to approach the injustices that occur, even as we realize that the 'way' we have chosen to address our problems only perpetuates the body-based discrimination we purportedly oppose.

Significantly, both dance and technology suggest that the relation to time and space that underlies this paradigm is not definitive or universal. The Alex gender-switching case provides a clear example of how technology can subvert current conventions of time and space, but simply logging onto the Internet challenges relative distance, and websites distort progressive linear perceptions of knowledge acquisition. Dance scholarship has also delved into the political implications realized in the *experience* of time and space, for instance through the investigation of repetition and multiplicity.

Repetition/mimicry

Ann Cooper Albright identifies ways in which dance can subvert current conventions of time/space. In *Choreographing Difference*, Albright presents the work of Zab Maboungou, a contemporary Congolese-Canadian dancer, as an example. Through repetition, Maboungou 'emphasizes a ... process of "becoming" that fractures any static notion of her identity as an African woman dancer and choreographer' (Albright 1997a: 26).

Albright elaborates:

> Repeated acts undermine the stability ... they are said to express. Performances ... are physicalized within a specific time and space ... and therefore can never be exactly repeated. This ephemeral nature of performance makes for very intriguing slippage.
>
> (Albright 1997a: 8)

Albright describes the way in which Maboungou preserves her own connection to culturally significant practice yet resists the colonial gaze through heightened repetition, ongoingness and self-awareness. She constantly reenacts her identity, thereby refusing its stability (Albright 1997a: 21-26).

As we actively engage with our prescribed frames, discrepancies emerge. Cultural critic, Homi Bhaba also describes the significance of repetition, mimicry in relation to colonization. Bhaba examines the space between the authoritative discourse of static identity, and the counterpressure of historical flux, in his essay, 'Of Mimicry and Man' (1997). The practical world is, borrowing from Homi Bhaba's writing on cultural authenticity and mimicry, 'almost the same but not quite' (Bhaba 1997: 153). In this essay he recognizes that the colonial subject, despite all attempts to civilize, will never be considered wholly human and will remain 'incomplete, virtual', not the real thing. Bhaba then credits the very existence of this incomplete, virtual subject with 'disrupting the authority of the dominant discourse' (Bhaba 1997: 154).

> It is as if the very emergence of the 'colonial' is dependent for its representation upon some strategic limitation or prohibition within the authoritative dis-

> course itself. The success of colonial appropriation depends on a proliferation of inappropriate subjects that ensure its strategic failure, so that mimicry is at once resemblance and menace.
>
> (Bhaba 1997: 154)

Performers overtly embrace the disruptive force of mimicry and repetition in rehearsal and performance. Ann Bogart, in *A Director Prepares* (2001), describes the violence of repetition in creative practice.

> Paradoxically, it is the restrictions, the precision, the exactitude, that allows for the possibility of freedom. The form becomes a container in which the actor can find endless variations and interpretive freedom ... This act of necessary violence, which at first seems to limit freedom and close down options, in turn opens up many more options and asks for a deeper sense of freedom from the artist.
>
> (Bogart 2001: 46)

Alex's gender-switching case is one example of how modern technology realizes, 'makes real' questions of gender and thereby challenges the authoritative discourse of identity through, albeit disembodied, praxis. Through mimicry we attempt to commune with the thing that we mimic. It is the very attempt at mimicry that also disrupts it. Thus, through the practical realization of our enframed imaginations we begin to envision and body-forth future possibilities.

Multiplicity

> Find a comfortable beginning position, either standing, sitting, or lying down. Take a moment to settle into that position and to bring your attention to this moment in time and space. Listen to yourself and notice any tension, sensations, thoughts; without judging, just notice. Listen to your desire. Listen for an impulse to move and follow that impulse. The impulse could be anything: a twitch, a sweep, a shift, whatever you like. Continue to listen and continue to follow each impulse. Stay true to your impulse. This is your task. Move however you want or need to move.
>
> (Lisa Gonzales, warm-up for dance improvisation at Wesleyan University)

What complicated considerations are played out in this seemingly straightforward task of bodying-forth desire? This movement warm-up is not uncommon to artists working in improvisation. It is in part an attempt to sensitize oneself and acknowledge the present moment. It is also a practice that can hone an appreciation for the depth and multiplicity of experience, need and desire.

Human nature shifts, 'becomes' over time. But even within one moment in space it is complicated, manifold. Improvisational artists, Lynne Blom and Tarin Chaplain articulate this process for students of improvisation in their book, *The Moment of Movement*:

> As we move, one awareness leads to another. Memories arise and fresh associations trigger new material. How this works varies ... An image does not have to be about one thing; it can jump through time and space and be peopled with characters of changing identities. The layering may bring an influx of details, or a rich array of distinct but separate images ... Movements, sensations, and images slip and slide against each other, gaining richness and value in the process.
>
> (Blom and Chaplain 1988: 12-13)

The experience of multiplicity is encouraged in the practice and education of modern dance. It is communicated by choreographers in performance and cultural critics in their writing about dance. Ann Cooper Albright thus describes Blondell Cummings' struggle to challenge the notion of singular identity in her solo dance performance, 'Blues II'.

> ... it is impossible for her to find a useful identity or a comfortable way of moving. Physically dwarfed by the mirrors and the slides, the woman drifts through this *mélange* of cultural representations like a ghost through a maze. The mirrors amplify her spatial (and psychological) disorientation, reflecting and fragmenting the visual definition of her self. As a result, her internal physical equilibrium is disrupted and she either floats aimlessly about the stage or rushes frantically from one reflected image to another in a bewildered attempt to find one that looks right. Whether she is physically inert or psychically distraught, the dancing seems to be compelled by a restless searching for a visually and physically satisfying self. Even when she rejects the 'lie' of the dress, even when she takes off the costume of 'high' culture, there is no reassuring 'natural' self underneath it all. The dance ends without closure, continuing its ambivalence about the intertwining issues of race, culture, and gender and identity.
>
> (Albright 1997b: 201)

Dance is often recognized and valued specifically for its ephemerality and its resistance of stability. To align somatic experience with the constant space/time body of the egocentric liberal humanist subject would be an inaccurate representation of this discipline.

The same can be said about the use of technology. The 'mis'representation of identity on the Internet is well documented. The Internet offers the opportunity to interact with others on our own terms. Again, as evidenced in these examples, dance and technology challenge spatial-temporal stability.

Given the cultural requisite of identification, we seem more likely to 'identify' with multiplicity than with a fixed self. And yet this is socially and politically unacceptable. Taken to the extreme, we hospitalize or institutionalize individuals who exhibit multiple selves, multiple personalities. Why is it that multiplicity is at once recognized and adamantly refused?

Consider Alex's patients. That Joan's advise was helpful is not in question. The problem was that her patients lost control of the spatial stability

of gender. The trauma was heightened because the interaction was psychological in nature, and the purpose of psychological therapy is often precisely to gain control.

A life of its own: control verses accountability

Dance and technology can destabilize our experiences of time and space. They can heighten our sense of ephemerality through mimicry, repetition, multiplicity. By shifting the focus from the body, to time and space, the meaning of the word *experience* shifts as well. The equivocal relationship between experience and individual is loosened. The identity of the sovereign *I* is not limited by individual experiences. It becomes possible to feel *we*, whether it be a cross-temporal experience of ancestry or a cross-spatial experience of community. This does not erase the viability of community-based solidarity. Rather, it strengthens it while simultaneously acknowledging the complexity of multiple associations more effectively. New ways of communicating and communing with others are realized and enacted.

This is not to say that dance and technology are therefore inherently liberating practices. Both are structured through the political contexts within which they emerge. In their transgression of safer conventions of time and space, dance and technology confuse, shock, even paralyze. The common reaction to this state is to strive for greater control and more stability. The effort to objectify and define mounts, and the consequences are rarely liberating.

An alternative is to strive, not for more control, but for the confidence to operate with less. An embodied approach will engender greater, not less accountability. It is derived from a heightened somatic awareness that connects us to our living processes in their full often inconsistent, unstable complexity. It requires a disassociation of agency from control. bell hooks names the desire to let go of boundaries of race, class, gender and sexual practice a postmodern 'yearning' and suggests that it could be 'fertile ground for the construction of empathy' (hooks 1990: 27). Dance practice can encourage this through its practice of awareness and its heightened engagement of repetition, mimicry, multiplicity. Technology, by complicating our experience of self might also encourage a similarly heightened, even somatic, awareness. Technologist Sherry Turkle calls for personal transformation:

> If we cultivate our awareness of what stands behind our screen personae, we are more likely to succeed in using virtual experience for personal transformation ... Our need for a practical philosophy of self-knowledge has never been greater as we struggle to make meaning from our lives on the screen.
>
> (Turkle 1995: 269)

In this statement, Turkle voices the possibility that technology and physical engagement are not definitively opposed.

The relationship between dance and technology is not best framed as oppositional - embodiment versus disembodiment. This obscures the underlying fear of technology, better described as the fear of the unknown. It belies the courage and faith required to engage in the unknown. The rela-

tionship between dance and technology is better conceived as a collaboration in the investigation of time and space, and of alternate engagements of time/space that might lead to as-yet unrealized, potentially liberating realities. Technology and dance share this potential because they enact, realize and body-forth new ontologies. I am not proposing a new theoretical framework. I am proposing that we acknowledge, with greater awareness and responsibility, that which is already occurring.

In choreography there is a point at which the choreographer steps back in order for the dance take on a life of its own. This is a critical part of the choreographic process, letting go of control in an attempt to recognize and honour the life-world of the dance. It is described as 'humbly serving the creative process' by Lynne Anne Blom and L. Tarin Chaplin (Blom and Chaplin 1998: 11), and equated with a grammatical 'middle voice,' neither active nor passive, by Susan Foster (Foster 2003: 7-8). It was named 'The Dance That Describes Itself' by Richard Bull (Foster 2002). The goal is not to control the dance, but to notice its details, dance along, and realize that our participation influences but does not determine the direction it takes.

This strategy can be transposed onto the practice and analysis of technology. Letting go of the need to control technology, it becomes less frightening to venture that technology has taken on a life of its own. Regardless of Heidegger's pessimism, technology, like dance, creates the space to explore human nature. This parallel is important. Penny Campbell describes the dance space:

> The dance space, like a ritual space, is both ordinary and extraordinary. It is just a room, but it is also the place where the reality of most daily activities is suspended, transcended, allowed to separate into many precious fragments to be woven into other patterns of reality ... other ways of knowing and being.
>
> (Penny Campbell in an unpublished excerpt from an improvisational journal)

Both the fascination and frustration of human nature is precisely that we haven't been able to control or stabilize it, not even within the most objective positivist paradigms. In dance, as Penny Campell's quote demonstrates, we sometimes practice not fixing it, on purpose.

Susan Foster describes human nature:

> The body is never only what we think they are ... Illusive, always on the move, the body is at best *like* something, but it never is that something. Thus, the metaphors, enunciated in speech or in movement ... are what give the body the most tangible substance it has ... But then it suddenly does something marvelously aberrant: it gives out, comes through, or somehow turn up outside the bounds of what was conceivable.
>
> (Foster 1995: 4)

Even the objectified person refuses to stay constant and, rather, continues to move with an internal momentum. We move through and with communities, but are never able to own any one.

Technology, like dance, takes on a life of its own and in doing so gradually opens a path for us to extend beyond our enframed, calculable Heideggerian potential. Technology threatens our very understanding of humanity. As in the actual Colorado trip, there is a sense of real consequences. Alex, in Foster's words, has done "something marvelously aberrant: outside the bounds of what was conceivable (Foster 1995: 4)". The objectified human continues to move with an internal momentum, transgressing what we thought he was.

The fear of the unknown, the fear of letting go of control *and the conscious attempt to do so as a life practice* are what dance and technology hold in common. It is a fallacy that dance is about control of the body and also a fallacy that technology is about controlling nature. This relinquishing of control is a critical part of the learning process in the arts. Maxine Greene counters what she describes as the need to reach beyond conventional frameworks, into the unexpected.

> In contradicting the established, or the given, art reaches beyond what is established and leads those who are willing to risk transformations to the shaping of a social vision. ...it is never enough simply to label, categorize, or recognize certain phenomena or events. There has to be a live, aware, reflective transaction if what presents itself to consciousness is to be realized.
>
> (Greene 1995: 30)

The goal of technology is to envision and bring forth new possibilities. This requires relinquishing control to reach beyond what is established. In Greene's statements it is clear that this is not an attempt to avoid accountability. The practical effects of power are imparted through our actions, not our intentions. Values are incorporated in the day-to-day choices we make. Dance and technology present us the opportunity to enact real social change if we practice heightened consciousness in the moment. Pursuing the need to control in both dance and technology, we risk losing touch with reality. Practicing awareness in the moment requires an ongoing accountability in which the ends never justify the means.

The practical implications of these conclusions are two-fold. First it calls for a specific kind of engagement in technology. Technology must be engaged in artistic means if it is to help us realize new social-political configurations. Imagination and creativity are critical to social change. Second, our goal in developing new technology cannot be to bypass practical, effortfull engagement in living. It must encourage physical engagement and awareness in the same way that modern dance education does. Dance and technology, two seemingly disparate realms, share the commitment to praxis and to the practical realization of ideas. Both dance and technology hover between the desire for control and the desire to experience the unknown. By prioritizing the latter, pursuing the unknown with a heightened somatic awareness, dance and technology together might redefine social priorities and point to more comprehensive, thoroughly accountable configurations of justice, new understandings of human nature.

References

Albright, A. C. (1997a), *Choreographing Difference*, Middletown: Wesleyan University Press.

Albright, A. C. (1997b), 'Auto-Body Stories: Blondell Cummings', in J. Desmond (ed.), *Meaning in Motion*, Durham: Duke University Press.

Baard, E. (2003), 'Cyborg Liberation Front: Launching a Movement for Posthuman Rights', *The Village Voice*, Volume XLVIII, No. 31, pp. 38-41.

Berson, J. (2000), 'Dance for the Camera Symposium: A New Materiality of Light and Data', *Dance Research Journal*, 32: 1, p. 167.

Bhaba, H. (1997), 'Of Mimicry and Man', in F. Cooper & A. L. Stoler (eds.), *Tensions of Empire*, Berkeley: University of California Press.

Blom, L. A., & Chaplin, L. T. (1988), *The Moment of Movement: Dance Improvisation*, Pittsburgh: Pittsburgh University Press.

Bogart, A. (2001), *A Director Prepares: Seven Essays on Art and Theatre*, London: Routledge.

Bull, R. (1969), 'On Structural Improvisation', in M. Gray (ed.), *Focus on Dance V: Composition*, Washington DC Dance Division, American Association for Health, Physical Education and Recreation.

Butler, J. (1997), 'Performative Acts and Gender Constitution: An Essay in Phenomenology and Feminist Theory', in K. Conroy, N. Medina & S. Standbury (eds.), *Writing on the Body: Female Embodiment and Feminist Theory*, New York: Columbia University Press.

Chiao-Ping, Li. (2001), 'Chop Suey Dances', in Congress On Research In Dance 2001 Conference Proceedings, *Transmigratory Moves: Dance In Global Circulation*, pp. 91-94.

Feenberg, A. (2003), 'From Essentialism to Constructivism: Philosophy of Technology at the Crossroads',
http://www.rohan.sdsu.edu/faculty/feenberg/talk4.html.
Accessed 11 June 2003.

Forti, S. (2003), 'Animate Dancing: A Practice in Dance Improvisation', in A. Cooper Albright & D. Gere (eds.), *Taken By Surprise: A Dance Improvisation Reader*, Middletown: Wesleyan University Press.

Foster, S. (1995), 'Choreographing History,' in S. Foster (ed.), *Choreographing History*, Bloomington: Indiana University Press.

Foster, S. (2002), *Dances That Describe Themselves: The Improvised Choreography of Richard Bull*, Middletown: Wesleyan University Press.

Foster, S. (2003), 'Taken by Surprise: Improvisation in Dance and Mind,' in A. Cooper Albright & D. Gere (eds.), *Taken By Surprise: A Dance Improvisation Reader*, Middletown: Wesleyan University Press.

Goreman, J. (2004), 'The Altered Human is Already Here', *New York Times*, Science Section (F1), 6 April.

Green, J. (2002), 'Somatic Knowledge: The Body as Content and Methodology in Dance Education', *Journal of Dance Education*, 2: 4, pp. 114-18.

Green, J. (1996), 'Moving Through and Against Multiple Paradigms: Post positivist Research, Somatics and Creativity-Part II', *Journal of Interdisciplinary Research in Physical Education*, 1, pp. 73-86.

Green, J. & Stinson, S. (1999), 'Post positivist Research in Dance', in S. Horton Fraleigh & P. Hanstein (eds.), *Researching Dance: Evolving Modes of Inquiry*, Pittsburgh: University of Pittsburgh Press.

Greene, M. (1995), *Releasing the Imagination: Essays on Education, the Arts and Social Change*, San Francisco: Jossey-Basse Publishers.

Hagood, T. (2000), *A History of Dance in American Higher Education*, London: Edwin Mellon Press.

Hanna, T. (1986), 'What is Somatics?' *SOMATICS, Magazine-Journal of the Bodily Arts and Sciences*, 5: 4, Spring-Summer, p. 4.

Hayles, K. (1999), *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature and Informatics*, Chicago: The University of Chicago Press.

H'Doubler, M. (1925), *The Dance and Its Place in Education*, New York: Harcourt, Brace and Company.

Heidegger, M. (1977), 'The Question Concerning Technology', in D. Krell (ed.), *Basic Writings*, San Francisco: HarperCollins.

hooks, bell (1990), *Yearning*, Boston: South End Press.

LaPointe-Crump, J. (May/June 1990), 'The Future is Now - An Imperative for Dance Education', *Journal of Physical Education, Recreation and Dance*, 5, pp. 51-53.

Lovink, G. (2004), 'Race and Cyberspace: Interview with Lisa Nakamura', http://www.nettime.org/Lists-Archives/nettime-l-0405/msg00057.html. Accessed 1 December 2004.

Lubell, S. (2004), 'On the Therapists Couch, a Jolt of Virtual Reality', *New York Times*, Science Section, 19 February.

Nakamura, L. (2000), 'Race In/For Cyberspace: Identity Tourism and Racial Passing on the Internet', in D. Bell & B. Kennedy (eds.), *The Cybercultures Reade*r, New York: Routledge.

Novack, C. (1990), *Sharing The Dance: Contact Improvisation and American Culture*, Madison: University of Wisconsin Press.

Rheingold, H. (1993), *The Virtual Community: Homesteading on the Electronic Frontier*, New York: Addison-Wesley Press.

Ross, J. (2000), *Moving Lessons: Margaret H'Doubler and the Beginning of Dance in American Education*, Madison: University of Wisconsin Press.

Selden, E. (1930), *Elements of the Free Dance: Interpretative, Expression, Barefoot, Natural and Modernistic Dancing as developed by Isadora Duncan, Mary Wigman, Dalcroze*, New York: A.S. Barnes and Company.

Shapiro, S. (1998), 'Toward Transformative Teachers: Critical and Feminist Perspectives in Dance Education', in S. Shapiro (ed.), *Dance, Power and Difference*, Champaign, IL: Human Kinetics.

Sobchack, V. (2004), *Carnal Thoughts: Embodiment and Moving Image Culture*, Berkeley: University of California Press.

Stone, A. R. (1992), 'Virtual Systems' in: Crary, J. and Sanford Kwinter (eds.). *Incorporations: Zone 6. Urzone*. Vol. 6 of: Fragments for a History of the Human Body. New York: Zone Books (pp. 609-621).

Stone, A. R. (1992b), 'Will the Real Body Please Stand Up?: Boundary Stories about Virtual Cultures', in M. Benedikt (ed.), *Cyberspace: First Steps*, Cambridge, MA.: MIT Press.

Trinh Minh-Ha (1991), *When The Moon Waxes Red: Representation, Gender, and Cultural Politics*, New York: Routledge.

Turkle, S. (1995), *Life on the Screen*, New York: Simon and Shuster.

Van Gelder, L. (1996), 'The Strange Case of the Electronic Lover', in R. Kling (ed.), *Computerization and Controversy* (2nd edn.), San Diego: Academic Press.

Further works

Birringer, J. (2000), *Performance on the Edge: Transformations of Culture*, New Brunswick, NJ: Athlone Press.

Birringer, J. (1998), *Media & Performance Along the Border*, Baltimore: Johns Hopkins University Press.

Dewey, J. (1938/1997), *Experience and Education*, New York: Simon and Schuster. Read pp.17-50.

deLahunta, S. (1996), 'New Media and Information Technologies and Dance Education', paper given at the international symposium 'Future Moves', Rotterdam, September 1996.

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IAMCR hosts annual conferences around the world * keeps members informed through a newsletter * offers prizes for outstanding papers * has a Taskforce on the World Summit on the Information Society (WSIS) * manages a book series with Hampton Press * offers member discounts on journals. Our academic work is organised into a number of sections and working groups shown at our website.

IAMCR aims to:

- provide a forum for the exchange of ideas among researchers and others involved in media and communication
- encourage the development of research in areas of media production, transmission and reception
- stimulate the development of media and communication research with international and interdisciplinary perspectives
- disseminate information about research and research needs to researchers, practitioners and policy makers
- improve the quality of media and communication policy and practice
- contribute to the education and training of journalists and other media professionals.

Information about individual and institutional membership rates and discounted subscriptions for low-income countries can be found on our website.

Join at www.iamcr.net

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Digital Cultures Lab in Dance /Technologies

Nottingham, UK. 28 November–4 December, 2005

An international dance and technology encounter, hosted by Nottingham Trent University's Live Art-Digital Research Unit and Future Factory.

UK partners include: Radiator Festival for New Technology Art, essexdance, University of Birmingham Visualization Research Unit, and Dance 4, among others.

http://art.ntu.ac.uk/performance_research/birringer/idat.htm

http://www.radiator-festival.org