

# The importance of being interactive

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My collaborator Dawn Stoppiello and I created our dance theatre company *Troika Ranch* in 1994, our purpose being to create dynamic, challenging artworks that fused traditional elements of dance, music and theatre with interactive digital media. We believed that by directly linking the actions of a performer to the sound and imagery that accompanied them, we would be led to new modes of creation and performance and, eventually, to a new form of live art work. While we cannot yet claim to have reached this latter, rather lofty, goal we have firmly established our views about interactive performance and its importance to the performer and audience. Presenting these views is the subject of this chapter, but before I go on, I think it is worth answering a simple question: why would one want to create such artworks in the first place?

## Live media / dead media

The answer begins with the a device I created in 1989 called *MidiDancer*, a sensory system that uses flexion sensors to wirelessly report the position of a dancer's joints to a computer. Software interprets the movement information, which can in turn manipulate digital media in a numerous ways: initiating the playback of musical notes or phrases, manipulating live or pre-recorded video imagery, and controlling theatrical lighting are just three of the possibilities. But *MidiDancer* was not so much an answer as the beginning of the question posed above. The personal computer technology of that time had made it possible for us to use dancer's movement to generate a musical accompaniment. In other words, we did it because it had become possible to do so. We had no true notion as to why it was essential to the aesthetic expression.

It was not until 1996 that a clear answer to the question of 'why' presented itself to me. Around that time, Dawn and I had a residency at STEIM (Studio for Electro Instrumental Music) in Amsterdam. During the first three days of that residency, four separate individuals asked in passing, "Has Jorgen taken you to his room yet?" Now Jorgen, whose specialty was electronic fabrication, was one of several talented engineers at STEIM who helped the artists in residence to realise



Figure 1. The author performing in *The Chemical Wedding of Christian Rosenkreutz*, June 2000.

their projects. With my curiosity piqued, I finally sought him out and asked rather sheepishly, “Jorgen, can I see your room?” After nodding in the affirmative, he led me up four very steep and narrow staircases to the attic of the building. There, we came to a single white door, which he opened with some ceremony. Inside was revealed the most elaborate and extensive collection of 1960s and 1970s era analogue synthesizers I had ever seen assembled in one location. After showing me around, he proceeded to play me several examples of his music using a single analogue sequencer to control every instrument in the room. Now, this being 1996, and at this point being completely ensconced in using digital technology myself, I was compelled to ask, “Is anything in this room digital?” He shot me a glance and replied, “Oh no!” When asked “Why not?” he replied quite seriously “Because it is always the same.”

In that moment I realised that what we love about digital media was precisely what made it inappropriate for use in a live performance—it is indeed always the same. Digital media is wonderful because it can be endlessly duplicated and/or presented without fear of the tiniest change or degradation. But, it is this very quality (the media’s ‘deadness’) that is antithetical to the fluid and ever changing nature of live performance. Each time a work is performed, any number of factors can significantly change how it is realised in that moment—perhaps most significant being the interplay between the skill and temperament of the performers and the attitude and engagement of the audience. The downfall of digitally recorded media is that it dampens this essential fluidity by preventing the performers from changing the character of the material from moment to moment.



Figure 2. The Company in *Reine Rien* for four *MidiDancers* and interactive media, September 2001.

## Organic -> electronic

I often witness the tension between recorded media and live performance when I attend performances in one of New York City's small, alternative modern dance venues. It is almost a given in these situations that the dancers will perform to music pre-recorded on a compact disc. On any given night, these performers have the potential to give the performance of a lifetime, given the right combination of skill, an understanding of their instrument (i.e. their body) in relation to the material that they are to perform, and an awareness of the nebulous (but, as any performer will acknowledge, real) feedback loop between performer and audience. But, when the performers attempt to nuance a gesture or phrase in response to the aforementioned relationships, an unrelenting and unaware companion—the digitally recorded music with which they perform—thwarts them. In this situation, they cannot hold a spectacular balance because if they did, the music would race on ahead of them and a subsequent phrase of the dance would suffer as they attempt to catch up.

So, the answer to my own question is, I provide interactive control to the performers as a way of imposing the chaos of the organic on to the fixed nature of the electronic, ensuring that the digital materials remain as fluid and alive as the performers themselves. There are two important implications that arise from this approach, namely:

1. we must give the performers latitude to improvise if they are to take advantage of such interactivity; and
2. the audience must have some understanding of the interaction to complete the loop between audience and performer.

I want to examine these points in some detail, using musical models of performance that are rendered more expressive because of their real-time interaction.

In terms of providing interactive control, and the importance of improvisational decision making, let us consider the classical orchestra. The music played by the orchestra (the 'media') has been precisely notated well in advance of the performance. Yet, relying on the same skill, awareness and feedback from the audience cited above, it is the conductor who will determine the music's timing and dynamics from moment to moment, and thus its final realisation. (This model seems particularly appropriate when applied to interactive dance performance, as both rely on gesture as the means of interactive control.) The conductor of the classical orchestra does not traditionally reformulate the music in a manner so radical as to change the nature of the piece, but it is certainly possible. And, because the conductor is at some level improvising, it is possible that such a reformulation could happen at any time.

It could be argued that by changing only two parameters (again, timing and dynamics) the conductor cannot fundamentally change a musical work. The converse was proved to me by an exercise I witnessed as a student. My teacher Morton Subotnick gave the dozen or so composers in my class the first two pages of Pierre Boulez's *Piano Sonata No. 1* with the following instructions: we were to change the dynamics and octave transposition<sup>1</sup> of the notes freely, but no other parameter was to be changed. The following week each of our manipulated versions was performed for us, but without identifying who had done the work. To my amazement, I found that I could detect who had 'composed' each and every version because I was intimately familiar with the style of my colleagues. Even with only two parameters open to change, the results were absolutely personal. It follows then that a skilled interactive performer would be equally able to impose their own, quite personal, interpretation on the pre-composed media materials under their control—even if the number of parameters they can manipulate are limited. This belief has become a core strategy in my approach to creating live interactive art works.

It is worth noting that, while we could manipulate only two parameters in the exercise, we were allowed to do so 'freely'—without limitation. As applied to live interaction this tells us that, while the number of parameters that a performer can manipulate might be limited, the range of those manipulations must be profound enough to allow the performer to place his or her personal interpretive stamp on the material.

## Essential improvisation

Another musical model to consider is jazz, as it speaks clearly to the importance of improvisation and to the audience's understanding of that process. Take the specific example of a jazz pianist. It may seem obvious, but because of historical or personal experience we know that when a finger is placed against a key on the piano, and the key is pressed down, a musical note is produced. This taken-for-granted understanding allows us to 'know' that the pianist is playing his instrument as we



Figure 3. Danielle Goldman and Sandra Tillett in *Future of Memory*, February 2003.

watch him perform. (Indeed, quite a scandal ensues if the audience discovers this relationship has been faked—see Milli Vanilli, circa 1990.) If we know the jazz form, we come with the understanding and expectation that the music will be invented in the moment of performance. So, we experience a certain kind of thrill as we watch a performer instantaneously organise and artfully play musical materials before our eyes. The real-time nature of the music's creation is so integral that it is part and parcel of its meaning. To not understand this is to not be able to fully appreciate the art form.

It would seem that quite a similar appreciation should be possible for interactive performances, but in fact there are several obstacles to overcome. When presenting such works, we cannot *a priori* rely on the expectations and understanding the jazz audience brings to a performance. This is because:

1. the audience may not be aware that there is some level of improvisation occurring, and
2. because the audience has no prior understanding of the 'instrument' with which the performer controls that manipulation.

Regarding these two points, consider my company *Troika Ranch*. We create dance theatre works that are most often presented on a proscenium stage, a setting that historically features work that is composed in advance. So, while we do give our performers a fairly broad range of improvisational latitude when performing, the audience will generally assume that what they are seeing is not improvised at all if only because of the setting in which the work takes place. This problem of perception is exacerbated by the audience's lack of experience with the instruments



Figure 4. Real-time video capture and manipulation in *Future of Memory*, February 2003.

being used to manipulate the media. Our dancers wear wireless sensors on their bodies (*MidiDancer*) that allow them to manipulate digital media in real time. These interactive instruments are quite similar to their musical counterparts in that they translate gesture into another form, so one might assume that the audience could easily understand their function. In fact, because these instruments are new, unique, and unfamiliar, the audience has no historical or personal experience with them. So, in practice, it is quite difficult for the audience to perceive that a *Troika Ranch* performance is in fact quite similar to the jazz performance described above.

This is not to say that an interactive work cannot be appreciated at face value. In our example of the jazz pianist, even those who do not understand the inner workings of a piano or that the performer is improvising can appreciate the musical result. So too it should be with interactive performance. But, an audience's understanding that the performer has a virtuosic command of his or her instrument and that he or she is creating something new in the moment of performance adds yet another layer of 'liveness' to the experience, which I would argue is a core rationale for adding interaction to the mix in the first place.

## Fundamental increments

I want to entertain a worthwhile assertion by one colleague of mine. Namely, that my use of the musical models described above is reactionary because it imposes a kind of tunnel vision, inhibiting the development of truly new grammars/strategies for the creation and realisation of new performance. In my view, this argument is flawed because it presupposes that the use of sensory technologies and digital media offers some kind of radical shift in the nature of live performance itself.

Countering this argument fully is beyond the scope of this essay, but let me address it briefly by considering what I think we can agree was a revolutionary technological innovation: photography. The ability to immediately capture and reproduce an image changed the public's experience of the world almost overnight. Take as an example the early horrific images of soldiers strewn over the battlefield during the U.S. Civil War. These widely published photographs brought an immediacy of experience to the viewer that was inconceivable previously and shaped public opinion of that war. If the integration of cutting edge technology in performance was similarly radical in nature, would not its impact be as immediate and unstoppable as that of photography?

There is a vague feeling in our time that any new and sufficiently unfamiliar technology holds the promise of radically altering the fabric of our society. This belief is in part factual, based on the transformational technological innovations of the late 19<sup>th</sup> and early 20<sup>th</sup> centuries. It is also based on highly suspect marketing claims that reached their saturation apex at the height of the Internet boom. And, in the field of live technology and performance, artists have often enough made public claim to the potential for revolutionary new forms. (I must plead guilty to doing just that during the early days of the *MidiDancer*—not that I didn't believe it to be true at the time.) I would argue, however, that the ramifications of new media and sensory technology in performance are much more likely to be incremental than fundamental.

The software program *Photoshop* provides a useful example. Its central metaphor of painting on a canvas is rooted in a tradition that everyone understands. The ability to save multiple versions, the notion of 'undo', and the introduction of algorithmic processes that can be applied to the image (i.e. filters) do change the working process in important ways. But, while we can agree that skilled artists have used this tool to make images that are arresting, stunning or beautiful, the nature of the image itself has not been changed. This lies in contrast to photography, which depicted the world with a sense of reality (implying both truth and objectivity) that had never been experienced before—it redefined image.

Now, my colleague might reasonably argue that the reason that *Photoshop* did not redefine the image was because its metaphor was based on existing models of creating imagery. I would counter that it was not possible to go beyond the existing models because *Photoshop* simply did not alter the essential notion of image. The impact of new technology and interactivity on live performance is far more akin to that of *Photoshop* than it is to photography, and so it seems to me that applying existing models to technologically enhanced performance is valid and useful.

Regardless, I do think that the use of interactivity in live performance is

essential. Live performance is perhaps the most inefficient of contemporary art forms, because you cannot do with it what you can with digitally stored artworks: duplicate and inexpensively deliver it to a large audience. But, it is specifically the ineffable quality of liveness that draws me to create and attend performance. By using new technology to allow our performers to become real-time creators, and by asking our audience to be present to their on-the-fly artistry, we ensure that each performance of a work is absolutely unrepeatable, which may be the boldest move of all.

## Note

- <sup>1</sup> An 'A' could not become a 'B-flat', but instead the note could be transposed up or down by one or more octaves.