Actors of the Third Kind: Virtual Reality and Theater

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"Can theater exist without costumes and sets? Yes it can.
Can it exist without music to accompany the plot? Yes.
Can it exist without lighting effects? Of course.
Can it exist without text? Yes [. . .]
But can the theater exist without actors? I know of no example of this. One could mention the puppet-show. Even here, however, an actor is to be found behind the scenes, although of another kind."
Jerzy Grotowski

Think ... and be honest, what do you think of when you hear the phrase: 'virtual reality'? If you are like most people, the phrase evokes images of a bizarre techno-fantasy realm out of a William Gibson novel -- where floating electronic consciousnesses interact in 'cyberspace' while their bodies stay at home, wearing complicated-looking goggles and gloves, and wired to very expensive equipment. In this context, you may also have heard the term 'virtual theater' or 'virtual actors' before and wondered why your local avant-garde theater has not been magically transformed into this cyberspace fantasy.

The truth is that great strides have been made both practically and theoretically in defining 'virtual theater,' and that we are getting dangerously close to finding out about this strange creature called a 'virtual actor.' This new actor is related both to the flesh and blood actors on the traditional stage and to the puppets in the quote by the Polish director Grotowski with which I opened this essay, but this new breed is something else entirely -- a digital form that can be created in almost any shape and size and that can operate with tremendous freedom within a virtual world. Sometimes these actors are connected to real people by wires, but they are always just a little bit more than a puppet and a little bit less 'real' than a human actor.

Stanislavski, Meyerhold and the Bourgeois Stage

This new creature was not born recently. In fact the concept of 'virtual actors' actually predates the invention of virtual reality technology, or even the invention of computers. It started at the beginning of the twentieth century in Russia with a difference of opinion between a famous acting teacher and one of his most creative pupils -- a disagreement that had a tremendous impact on the way that virtual reality performance is proceeding now, at the beginning of the twentyfirst century. The two players in the argument are Konstantin Stanislavski and his student Vsevolod Meyerhold. They were both innovators, and both were dissatisfied with theater as it was practiced in the nineteenth century, but each took radically different paths to rectify the situation. Although I am focusing on these two artists, the theoretical 'war' that they began was repeated many times in the twentieth century, in both European and American Theater.

In "Theater and the Civilizing Process: An Approach to the History of Acting," Erika Fischer-Lichte identifies the division between the two men:

"At the beginning of the [twentieth] century, the representatives of avant-garde theater all over Europe unanimously negated the principles underlying the bourgeois illusionistic stage, as formulated in the eighteenth century and then realized in the nineteenth century, culminating in the realist and naturalist movements. Although one line of modernist theater, from Chekhov to Stanislavski to Pinter to Peter Hall, continued to carry forward this realist tradition (usually treated ironically), much of the modern theater turned away from it."

Both Stanislavski and Meyerhold were reacting to the "bourgeois illusionistic stage" because it seemed to be a leftover relic of the Romantic period. In Russia at the turn of the century, they saw no noble heroes in bright capes saving damsels in distress and making bold sacrifices for god, country, and love. They saw a Russia in decline, with an increasingly distant and irrelevant aristocracy and a great deal of suffering and anguish. The pleasant fantasies of melodrama were inadequate to express these 'truths' about Russia, and both Meyerhold and Stanislavski decided to turn to a more scientific approach to the theater. In short, they both agreed that everything on stage should reflect the 'truth' of life. They did not agree, however, on the techniques that an actor might use to achieve this 'truth.'

Stanislavski's path was to make theater that was as realistic as possible. The basic tenet of his acting system is the magic 'if' or 'as if.' Essentially, the actor tries to imagine that he or she were actually experiencing the events that the character goes through in the world of the play. The actor attempts to 'feel' the actual emotions of the character and becomes immersed in the role. The actor's goal is to recreate reality by starting with his or her own internal store of memories and emotions, and behaving 'as if' the actor was really the character, living the events that are happening in the world of the play. Acting theory in the United States is currently dominated by a version of Stanislavski's realistic theater model, which was passed to American actors through the famous *Actor's Studio* by teachers such as Lee Strassberg, Sanford Meisner, and Stella Adler. In the vast majority of actor training institutions in this country, you will find some version of this technique, and it has infused the critical apparatus in the United States as well, creating a realist's prejudice about what makes 'good' American art.

And now, in the other corner, we have Meyerhold. He was a student of Stanislavski's from 1898-1902, but later began to look at Stanislavski's realistic approach to theater as limiting. He began to play with the conventions of realistic acting, focusing more on the movements of objects in space than on conveying an actor's emotional state to an audience. Meyerhold's acting system, called biomechanics, serves as the ultimate expression of this more abstract, holistic view of the theatrical production. Meyerhold created a system of acting in which the actor's body was viewed as a mechanical instrument: an integrated piece of a production, a sort of living scenic element. Meyerhold's system, though never codified in a 'manual' or 'textbook' as Stanislavski's was, can be characterized by three main objectives (listed in a 1991 collection of his writings called *Meyerhold on Theater*):

1. To enable the actor to feel the balance and center of gravity within himself, that is, to develop complete control over his body.
2. To enable the actor to position and coordinate himself three-dimensionally in relation to the stage space, his partners, and the stage properties. In other words, to facilitate the development of a 'good eye' so that the actor becomes part of a harmonious whole.
3. To develop the actor's physical or reflexive arousal for instantaneous and non-conscious action.

Meyerhold's theater is focused on the spectator. Where Stanislavski's system relies on an actor's internal feeling and motivations, Meyerhold's is only concerned with the actor's ability to manipulate the spectator's perception, illustrated by a famous comment he once made to an actor in rehearsal. He told the actor to 'Stop, change your position, sit more comfortably.' The actor objected that he was perfectly comfortable, to which Meyerhold replied, 'I don't care so much if you're comfortable. I care much more that the spectator doesn't fear for you, that he doesn't worry about you being uncomfortable. This pointless worry distracts him from the scene we are playing.'

Meyerhold in 3-D Graphics: Robert Wilson's Monsters of Grace

Many artists who came after Meyerhold have affinities with this spectator-centered theory of acting: Antonin Artaud and Sergi Eisenstein (who was Meyerhold's student), in addition to most of the Italian and Russian futurists and fomalists. There are also numerous artists at work today who owe a great debt to Meyerhold. One such artist is the American director Robert Wilson. Wilson's work also turns actors into living set pieces who are manipulated to create abstract patterns on the stage. In some respects, Wilson has taken Meyerhold's ideas to the extreme, often avoiding a clear narrative of any kind in favor of a stream of images. Wilson's work has been described by American performer and scholar Johannes Birringer as "a radical repositioning of the human body; within the multiple transparent superimpositions of images, the body is not privileged but treated as one material, one cipher, among others." (Quoted in Phillip Zarrilli's *Acting (re)considered: Theories and Practices*).

I highlight Wilson because, in one of his more recent pieces, he crossed the line from treating the actor's body as a machine to generating an actor's body with a machine. In his 1999 *Monsters of Grace*, Wilson used a twenty-feet-high 3-D projection screen to project a number of computer-generated images and scenes, all set to the music of Phillip Glass. Virtual characters interact with disturbing and provocative images: a young boy falling from his bike, a hand being sliced open, or a flood that washes a family away. Wilson has always treated actors as a sort of very powerful marionette, and in this piece, he decided to do away with the human actor alltogether. Interestingly, this radical departure from theatrical practice brings him into alignment with some of the 'mainstream' theater work that virtual reality researchers have been doing for the past few years.

Theater without Emotions?

Wilson's use of the machine to generate his actors is almost unheard of in performance circles. The idea that a computer-generated body could be as emotionally moving as the 'real' body -- which has at its disposal all of the feelings, internal emotions, and memories of an actor -- seems absurd to most dramatic critics who have been trained almost exclusively in a derivative of Stanislaviski's realistic actor training. The realistic acting theories of Stanislavski resist the possibility of a virtual actor, because if such an actor were to be successful, without the ability to access emotions and memories, and without using human intuitions to actually experience the events that the character experiences in the world of the play, its success would call into question the great Russian master's teachings, and discredit a hundred years of established actor training. Many critics of virtual reality are entrenched in this realist critical mode.

For instance, in their article, "A Funny Thing Happened on the Way to The Theater: Negotiating Meaning and Technology in Performance," R. John Rice and Paul Malone, two of the small group of scholars who have undertaken to study VR as a practical tool for theater, conclude that

> "It is difficult, however, to imagine that even the most technologically advanced system might recreate the qualities of intellectual and emotional exchange that characterize the theatrical interface. For if the virtual theater can be developed to the stage that the user feels that he/she is actually at a theatrical event (a possibility that should not be altogether discounted), it nonetheless remains difficult to foresee a virtual actor (however clever *its* software) who might be reciprocally affected by the live user."

In other words, the success of the VR performance is judged on its ability to recreate 'reality' in detail and allow the spectator to 'feel' the emotions of the artificially intelligent actor. If the actor cannot participate in this emotional exchange, the production is not 'theater.'

This premise is ludicrious. Although the possibility exists to create photorealistic reproductions of real environments, or virtual actors who are indistinguishable from real ones (look at Sony's recent mega-flop *Final Fantasy* Movie), this realistic work constitutes only a small segment of the current research in virtual reality. Virtual reality is where Stanislavski's theories end, and where applying Meyerhold's theories of acting to virtual performance is much more fruitful. Instead of worrying about whether our virtual Lawrence Olivier is 'really crying' or has 'stage fright,' we can look to VR as a medium of the spectator -- as Meyerhold does with theater -- and focus on the impressions that actors, virtual or not, can make on a real, flesh and blood audience.

Acting Machines -- The Oz Project

Virtual reality researchers are already big fans of Meyerhold, (although they don't know it), and are conducting research, and mounting theatrical productions that follow his theories. The primary goal of such projects is to create computer-generated characters who are not as intelligent or emotionally deep as our virtual Lawrence Olivier, but are complex enough to allow users to suspend their disbelief. If successful, these 'intelligent agents' will add to the story and try not to ruin the illusion for the user. This approach is called 'behavioral artificial intelligence,' and it endeavors to create characters that appear to be sentient, and which react to a variety of user inputs.

The Oz project at Carnegie Mellon University is perhaps the longest running and most ambitious of these inquiries. Those involved in the project are attempting to create a genre called 'Interactive Drama,' using intelligent agents controlled by a governing program called a 'Drama Master.' The goal of the project is, according to project member Michael Mateas, to create a fictional world for users.

> "Interactive dramas take place in virtual worlds inhabited by characters (believable agents) with whom an audience interacts. In the course of this interaction, the audience experiences a story (lives a plot arc)." (Oz website: *An Oz-Centric Review of Interactive Drama and Believable Agents*)

The Oz project creates an environment where human users can affect the computer generated agents, and vice versa. Agents do not participate in a real emotional exchange, but the Oz programmers are constructing their behaviors and determine how the intelligent agents will act in certain situations. Although the agents never feel emotions, the humans interacting with them might still believe that they do. Project member Joseph Bates, a professor both the School of Computer Science and the College of Fine Arts at Carnegie Mellon University, writes in *The Virtual Reality Casebook.*

> "Instead of demanding that our agents be especially active and smart, we require only that they not be clearly stupid and unreal. An agent that keeps quiet may appear wise, while an agent that oversteps his abilities will probably destroy the suspension of disbelief."

Likewise, Marie-Laure Ryan an independent scholar who works about the Oz project, builds on Bates's work, writes in *Possible Worlds, Artificial Intelligence, And Narrative Theory* that to maintain the illusion, intelligent agents should be 'eccentric' and 'non-realistic.'

> "In an interactive environment, eccentric personalities thus cover up the limitations of the AI system that animates agents. Another advantage of eccentricity is that it makes the characters more memorable and lovable."

In fact, Oz project researchers have concluded that it is much better to try and model characters based on cartoon characters and other non-human forms because, as Mateas puts it,

"A believable character is one who seems lifelike, whose actions make sense, who allows you to suspend disbelief. This is not the same thing as realism. For example, Bugs Bunny is a believable character, but not a realistic character." (Oz website)

The Oz project is not principally concerned with what Mateas calls "humanoid work" -- constructing a realistic human body for use in VR. Almost as if providing a counter argument to Malone and Rice, Mateas says that humanoid work's focus tends to be on realism of form and not on creating an interactive environment.

Interestingly, even though the Oz project might intend to erase the human actor from the virtual stage, the group is currently using human actors and a director in place of intelligent agents and the computer Drama Master. Since real actors and directors are already sentient, they can manipulate virtual bodies in convincing and interesting ways, and can engage in complex scenarios with the user. The audience members of the Oz project's 'interactive dramas' sit at separate computers and have textual conversations with the various characters they meet, who are at the moment still controlled by other humans. It is hoped by those in the Oz project that these human interactions will help lead the way to an exclusively computer-controlled experiment. By watching humans play the agents, the project members are trying to ascertain which behaviors seem the most 'real' to audiences. At a later time, using this information, they will then program agents with similar behaviors, who should be able to 'fool' audiences into thinking that the agents are intelligent. In the final analysis, though, this step may not need to be taken. Virtual worlds are not generally created to exclude or replace humans. In fact, most forms of VR drama do not rely on artificially intelligent characters.

Virtual Puppetry? -- VRML Dream

Bernie Roehl and Stephen N. Matsuba's *VRML Dream* is a good example of a VR production that utilizes no intelligent agents, but relies heavily on 'real' actors to manipulate virtual characters in real time. Roehl and Matsuba produced an abbreviated version of Shakespeare's *A Midsummer Night's Dream* on the World Wide Web on April 26, 1998 (the bard's birthday), using Virtual Reality Markup Language (VRML) to render actors and three-dimensional sets in real time. Users 'enter' the playing space by going to the project's website before the start of the show, and they find a situation analogous to attending a 'real' theater. As Roehl describes it,

"Some time before the performance, they go to a specific web page. There they find a program for the show, in which there's a synopsis of the story, a list of characters, background information and so on. They also hear appropriate background music to set the mood for the play. In addition to all this, they see a blank screen which forms the 'stage' for the performance they are about to watch." (vrmldream.com. The site has since been removed from the Web.)

When the show began, the set for the palace at Athens appeared, and virtual characters entered and began the play. Seven actors or 'puppeteers' as Roehl calls them, controlled all of the characters from a computer network in Toronto, Canada. Roehl originally wanted to have the characters controlled from two other remote locations: Los Angeles and London, but technical problems forced him to abandon the idea. Actors controlled their characters with joysticks and mice with six-degrees of freedom movement. They also spoke their lines into microphones, which were then broadcast, using streaming technology, on the web. Spectators were 'invisible' to each other and to the actors, and they had the unique experience of being able to see the action from multiple perspectives, as Roehl describes it,

"They can choose to look through the eyes of any of the characters, or select any of a number of pre defined viewpoints. They may also choose to rely on the default 'director's view', or simply wander at will through the space." (vrmldream.com)

The performance was a qualified success. Due to a technical glitch, the sound was not broadcast for much of the production, and there were a few problems when users were unable to see the images. But the character's movements and the sets worked very well and provided a very impressive display of the technology.

VRML dream bears a great deal of similarity to the experience of traditional theater at least by analogy. Spectators were able to receive a program, assemble in a common space, and watch a play by Shakespeare. One difference, it should be noted, is that the spectators had no corporeal form, and could not see each other. There are two reasons for this: 1) If every spectator had a body, then the thousands of people who logged on to watch the performance would fill up the virtual world completely -- even obscuring the set and actors; 2) the computing power required to render thousands of individual avatars (virtual personas) is enormous and would have caused the system to lag or crash. Both of these are issues that are easily resolved, as they are in traditional theater, by limiting the number of 'tickets' sold for each production and by designating a space for the audience to 'sit,' but both options would have interfered with the project leader's goals of including as many audience members as possible and allowing the spectators to roam around the performance space. Interestingly enough, Roehl and Matsuba's audience may have had more freedom to interact than traditional theater audiences, because they were able to engage in real time chat over the internet, and talk about the performance as it was going on (they didn't even have to whisper).

VRML Dream provides a different type of interaction than the one offered by the Oz project. It is based more on a traditional theatrical model, and substitutes virtual sets, costumes, and actors for 'real' actors in the theater. It does not use artificial intelligence in any way, but relies on existing performance conventions, and elaborate digital puppetry to put on a show.

It is perilous to dismiss the dramatic potential of projects like Oz and *VRML Dream* simply because they do not ultimately seek to use physical actors to achieve dramatic effects. A character need not have a soul, or even a human voice to operate in a performance. Two other forms of performance media -- film and televison -- often use virtual characters for tremendous effect, like the goblins, orcs and the balrog in the recent Lord of the Rings movie. Computers have a place in the realm of the theater, just as they do in film. Introducing machines into the theater will not eliminate human actors, but broaden what acting and theater mean. Theater artists could add much to their real-time, three-dimensional medium if they could break free from the restriction of thinking that the actor is being somehow replaced or diminished. Instead they should think of the actor as evolving to fit the form, and functioning as a small piece in a larger production, the way that Meyerhold and Wilson envision it.

The strange actors of a third kind, neither person or puppet, which emerge in virtual reality can be a valuable addition to the theater -- whether we choose to project them in three dimensions onto our stages as Wilson has done or whether we enter their world and interact with them in a cyberspace. Filmmakers and virtual reality researchers are already beginning to discover the dramatic potential of this medium. If theater artists want some say in how it is created, they will have to step forward and have a few close encounters with the machine.

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Websites of interest:

- Oz Project
  (http://www-2.cs.cmu.edu/afs/cs.cmu.edu/project/oz/web/papers/CMU-CS-97-156.html) at Carnegie Mellon
- Review (http://web3d.about.com/library/weekly/aa042798.htm) of VRML Dream
- Press release (http://www.uiowa.edu/~ournews/1999/january/0129monsters.html) about Monsters of Grace
- Robert Wilson's Website (http://www.robertwilson.com/)

American Training Programs that combine Theater and VR:

- Carnegie Mellon's Entertainment Technology Center (http://www.etc.cmu.edu/)
- The Institute for the Exploration of Virtual Realities (http://www.ukans.edu/~mreaney/), U of Kansas

Leading Virtual Reality Labs:

- The Human Interface Technology Laboratory (http://www.hitl.washington.edu/), University of Washington
- MIT Media Lab (http://www.media.mit.edu/)
- ACT Lab (http://www.actlab.utexas.edu/) University of Texas