

InterPlay: Hallucinations

A Telematic Performance Form
Case Study

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Abstract

InterPlay is a form of telematic performance that is achieved by the collaboration of two or more simultaneous performances at several sites across the globe. This case study examines the process undertaken by all involved to produce, rehearse and perform the work *Hallucinations*. We will discuss the concept, the technical needs and issues as well as the performance process.

1 Introduction

The word *interplay*, according to Webster's dictionary, is defined to mean "interaction". For Another Language it describes the interaction of the Internet and the process of playing, bringing into focus the act of playing on the Internet.

InterPlay is a multi-faceted telematic event that consists of two or more performances that occur simultaneously at multiple sites worldwide. The performances are concurrently captured, mixed, digitized, encoded and streamed onto the network. The director manipulates each video stream to appear in any of several video playback windows. This creates a work that takes individual events and weaves them into a multi layered distributed tapestry. Each artist has his/her thought process that leads to his/her artistic performance. The director moves that into another level by taking those performances and incorporating them into his own thought and creative process.

InterPlay should be viewed as a painting in motion. A myriad of colors, text, shapes and textures float about the framed video space to the resonance of sounds, music and words. Within these visual and audible constructions, stories hover and pass through the viewer's thoughts, while in the overall fabric there is no preconceived story. Each satellite venue shares a portion of a common idea but is experienced differently depending on each venue's environment and technology. Images of the performers add the human dimension to the visual fabric, teasing the viewer into the possibility of a narrative, but stopping just short of telling an identifiable tale.

InterPlay is similar to the process that the brain performs during the formulation of a dream sequence. Images that have been stored through recent experiences simultaneously emerge in pieces and the brain mixes them into a surreal sequence that loosely resembles a story. Video streams, similar to these emerging images, coming from several sites across the country and the world, are then combined into a richly woven audio-visual experience.

InterPlay: is Another Language's third collaborative telematic performance. *Hallucinations*, directed by Jimmy Miklavcic, incorporated nine artists and three remote network sites. Artistic participants included Beth Miklavcic, Aaron Henry, Tony Larimer, Marie Larimer, and Priscilla Steed of Another Language and the University of Utah's Center for High Performance Computing (CHPC); Brian H. Buck and Nadja Masura from the University of Maryland at College Park; and William Scott Deal and Miho Aoki from the University of Alaska at Fairbanks and the Artic Region Super Computing Center (ARSC). Engineering collaborators included Sam Liston and Eric Brown (CHPC) and Paul Mercer (ARSC).

2 Hallucinations as Artistic Concept

Hallucinations explored several aspects of hallucinations within social, political, visual and audible contexts. Video imagery emanating from each remote site, Alaska and Maryland, was combined with video imagery generated at the primary site, Utah. A multilayered visual experience was achieved with more than seven video streams display on a sixty square foot area.

Each of the primary artists chose their own context on which to base their expressions. Beth Miklavcic, Artistic Director of Another Language, conceived her work, *The Surface of Things*, around the concept of social hallucinations by exposing the misinformation we impose on ourselves through first impressions. Scott Deal, percussionist and composer, and Miho Aoki, visual artist/computer animator, worked loosely with notions of perceived communications and encounters. Brian Buck, dancer/choreographer, explored hallucinogenic properties of the Moebius Strip, regarded as the only two dimensional object in existence. Nadja Masura, video artist, investigated the hallucinations inside the political and commercial machine, focusing on how we are conditioned into believing what we are hearing and seeing. Jimmy Miklavcic applied these individual concepts and integrated them in a tapestry of hallucinogenic images.

3 Artistic Content

There are four major components that make up the artistic content of *Hallucinations*, the three simultaneous performances from each network site and the director's manipulation and processing of each site's video events.

3.1 Alaska

The participants at the University of Alaska, Fairbanks, William Scott Deal and Miho Aoki contributed a live percussion performance that, at times, manipulated Miho Aoki's computer animations. Scott performed five compositions throughout the performance with electronic controlled and processed percussion instruments. His compositions ranged from the ethereal to driving percussion. He started and ended each evening with an electronically processed solo snare. Scott's percussion was the sole music accompaniment for the entire performance at each site.

These compositions, at times, controlled the progress of two of Miho Aoki's three computer animations, including *Klaatu*. A watercolor depiction of an architectural structure comprised of several rooms is an example of the animated content. In each room there were objects and figures whose movements were controlled by the audio score.

3.2 Maryland

The University of Maryland's two collaborators, Nadja Masura and Brian H. Buck provided video works and improvisational dance. Nadja presented several video works that looked at commercial and political imagery and how they are used to manipulate our reality of our world. Each video was processed using MAX/MSP and Jitter to create a heightened sense of surrealism with the colors of the videos taken to extreme polarities.

Brian based his movement on the Moebius Strip. He was costumed in bright green with a hole in the sternum revealing a bright red shirt underneath. Performing in a white cinderblock classroom gave the director the ability to composite Brian's movement into many different environments, masking at times Brian's original position in cyberspace.

3.3 Utah – *The Surface of Things*

The Surface of Things, written and directed by Beth Miklavcic, was a multimedia performance work in four parts. The work focused on the stereotypes we encounter when first impressions, based on the way we look, are in direct conflict with the sum total of our experiences that define our real selves. The old adage, "don't judge a book by its cover," came into play as a strong motivation for the creation of this work.

The work consisted of a younger man, played by Aaron Henry, and an older woman, played by Beth Miklavcic and in between the two, a judge, played by Tony Larimer. The man and woman make assumptions about each other based on outward appearances and as the exchange continued, the judge, as an outside observer, became aware of the stupidity of what was happening. The judge was the glue that allowed the two to drop their assumptions and see each other for the first time.

The work was complicated by the fact that the man and woman each hold video cameras and used the images projected by the cameras as ammunition for their assumptions. The images were projected on frosted plexiglass suspended from the ceiling, on the scrim, and streamed directly onto the Internet. Mirrors were incorporated into the work as a way for the man and woman to check their own *surface* about what was said. Three different Flash MX animations, created by Beth Miklavcic, were viewed during certain moments when the exchange had paused. The animations served as an abstract apparition of the inner voice.

Being judged by outward appearances is a universal experience that most of us have had in one form or another, creating missed opportunities of many kinds. *The Surface of*

Things served as an artistic statement that gives pause to our human tendency to make assumptions, before getting to know the real person underneath the surface.

3.4 Utah – Direction

The fourth component making up the content of *Hallucinations* consisted of directing the local and remote video streams and mixing the video imagery to create the overall experience of the performance. Jimmy Miklavcic monitored each video stream coming from Alaska and Maryland, as well as the three video streams from Utah. The director coordinated the visual presentation by combining any two of the seven video streams for each of three video mixers. As a result, images were combined. For example, through one video mixer, Scott, playing percussion, was woven into an image of Beth, holding her video camera while through the second mixer Miho's animation sequence was merged with Nadja's video work and again, the same process through the third mixer, fused Brian's movement and Aaron's shaved head.

In total, the performance included ten live video streams that were displayed on the screen for the audience to experience and streamed out onto Internet 2 to the other remote sites. Locally, Sam Liston controlled the main display and orchestrated the entrance, arrangement, and removal of all of the video windows during the performance. All the remote sites had control of their own display design.

4 The Technology

The most challenging portion of this project revolved around the integration of several technologies into a cohesive system. The foundation of the technology was the Access Grid™ Node, an integrated system developed by Argonne National Labs. This system was designed for large-scale distributed meetings, collaborative work sessions, seminars, lectures, tutorials, and training. The system usually consists of two or more computer systems, three projectors, three cameras, echo canceller, and an audio system. We have augmented this system with several more computer systems, video mixers, and up to seven video input devices (cameras, video players, and video enabled graphics cards).

Contending with their own unique problems, each site wrestled with the technology, focusing on different areas. Alaska's main focus was to transmit high quality audio and Maryland wrestled with limited tech support and space. Utah, on the other hand, created a very complex system and faced a challenge in controlling its configuration. We will discuss each site's configuration.

4.1 The Access Grid

The Access Grid™ is an ensemble of resources including interfaces to Grid middleware and to visualization environments, multimedia large-format displays, and presentation and interactive environments. These resources are used to support group-to-group interactions across the Grid. For example, the Access Grid (AG) is used for large-scale distributed meetings, collaborative work sessions, seminars, lectures, tutorials, and

training. The Access Grid thus differs from desktop-to-desktop tools that focus on individual communication.

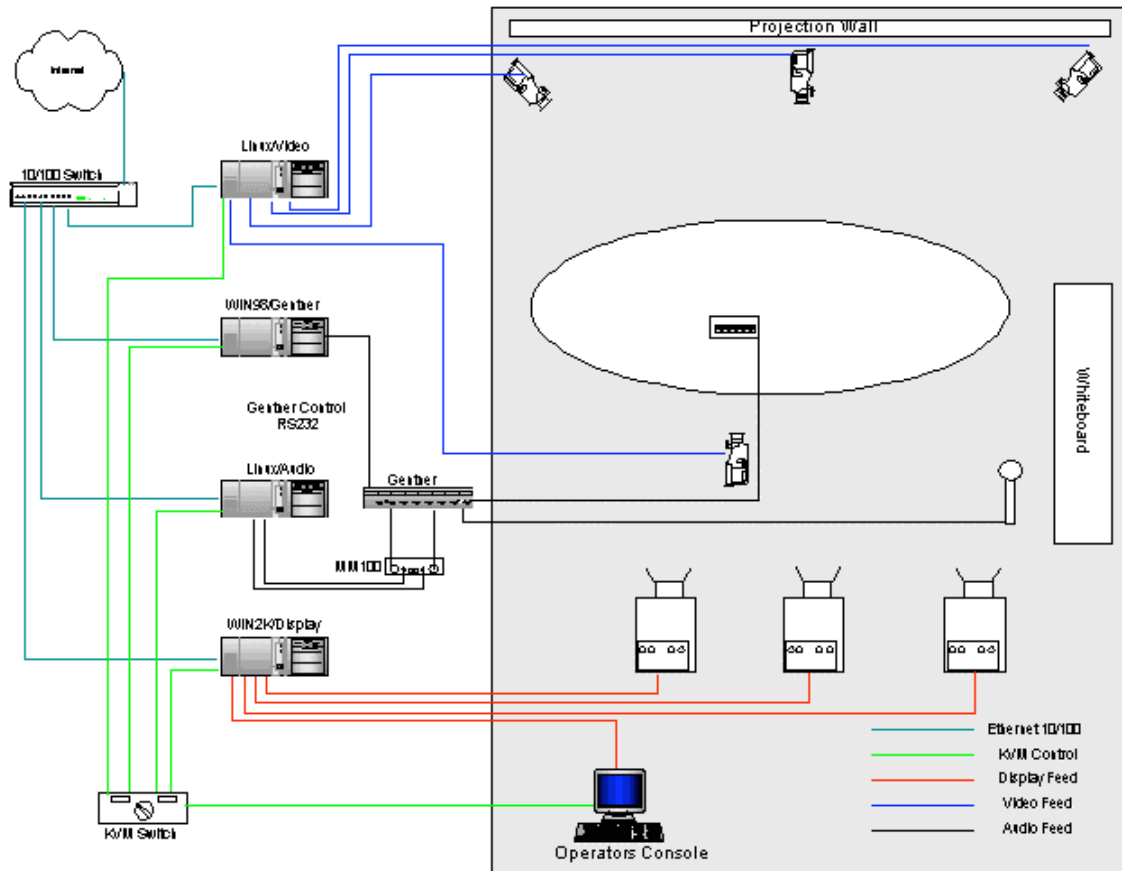


Figure 1 - Basic Access Grid Configuration

The Access Grid is now used at over 200 institutions worldwide. Each institution has one or more AG nodes, or "designed spaces," that contain the high-end audio and visual technology needed to provide a high-quality compelling user experience. The nodes are also used as a research environment for the development of distributed data and visualization corridors as well as for the study of issues relating to collaborative work in distributed environments.

The AG technology was developed by the Futures Laboratory at Argonne National Laboratory and is deployed by the NCSA PACI Alliance. The Futures Lab continues to conduct research into ways to improve the Access Grid, for example, to increase the scalability and to enhance the user interfaces.

4.2 Remote Site Configuration

Nadja Masura and Brian H. Buck of Maryland had little local technical assistance, but were still able to set up two *Personal Interface to the Grid* (PIG) systems, a laptop PC and a desktop PC each with a standard USB web camera. Finding a rehearsal and performance space was also a challenge. Many sites with performance facilities do not have adequate networking available so Nadja and Brian utilized a classroom with sufficient networking to perform and transmit their performance.

This had its benefits. The walls of the classroom were white and it allowed the director to use a luminance key on Brian's video stream, isolating him from the background. His kinetic image could then be placed into any other video stream.

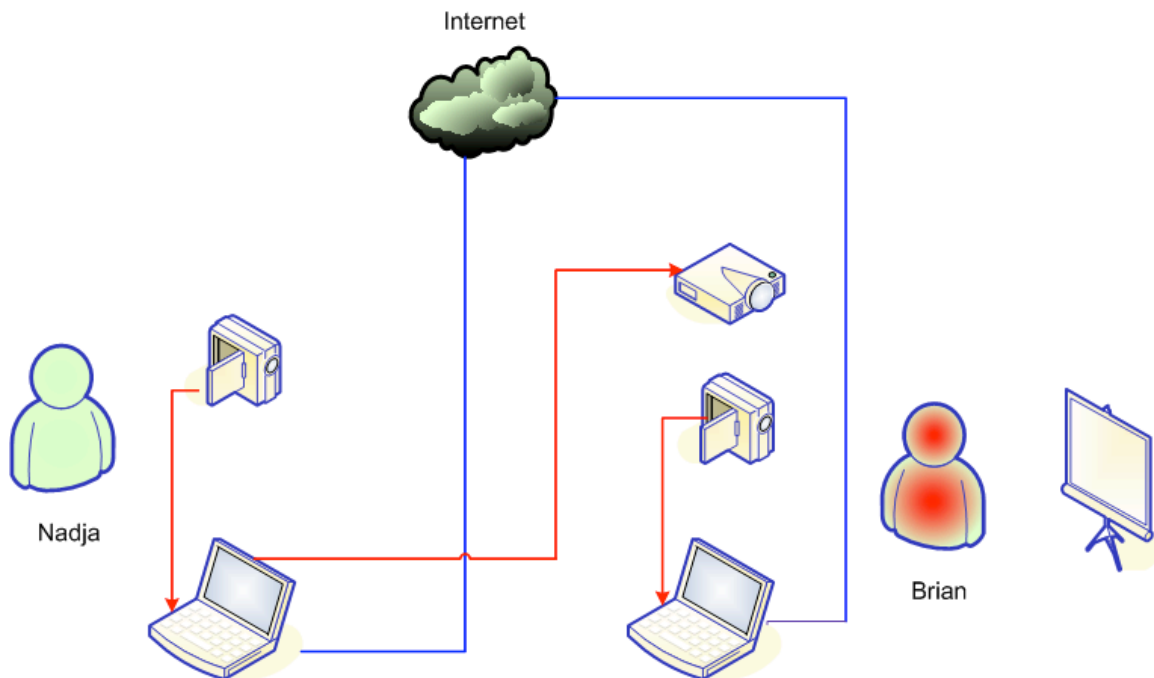


Figure 2 – Maryland's Performance Configuration

Paul Mercer at ARSC utilized his AG node with little modification. It consisted of two cameras on Scott Deal and his electronic percussion systems, a video feed from Miho Aoki's laptop, and a camera on the audience. There were direct audio feeds from Scott's electronic percussion system and Miho's laptop as well as one or two microphones.

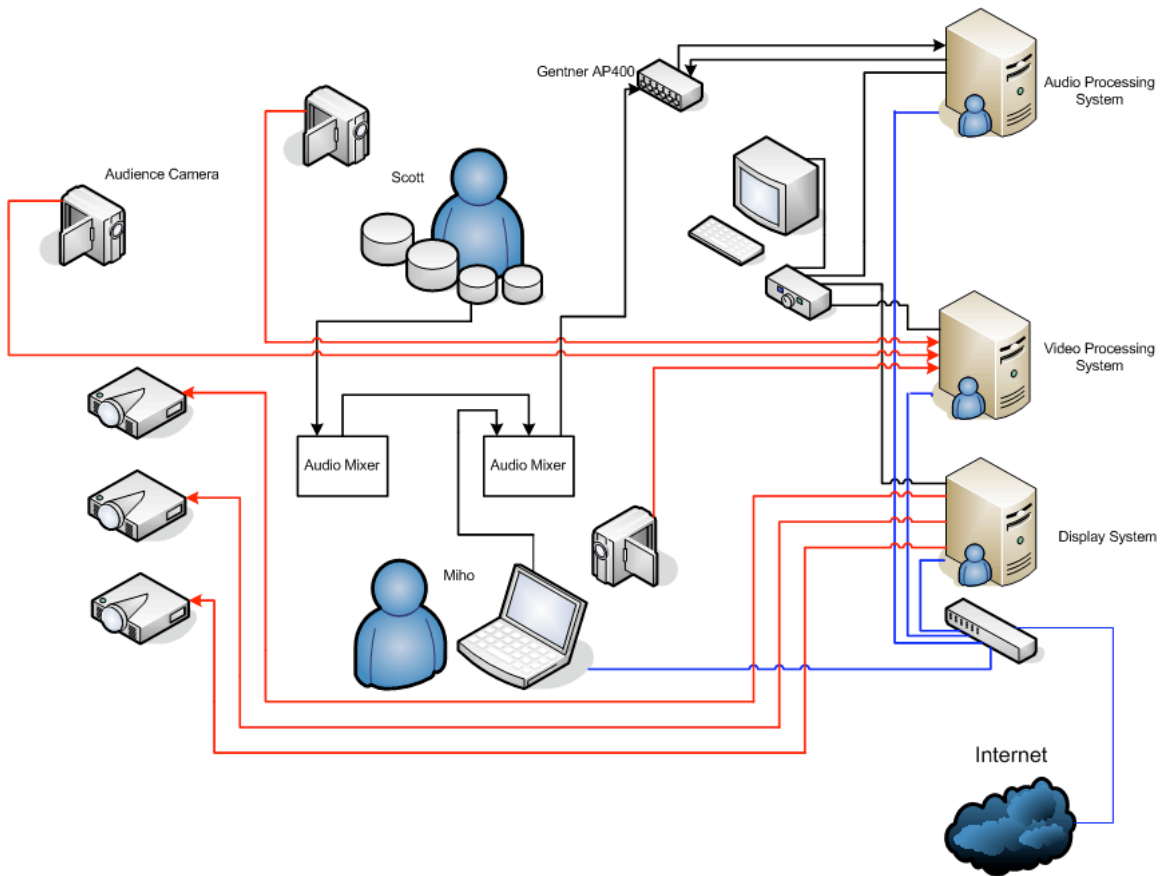


Figure 3 - Arctic Region Supercomputing Center's Performance Configuration

4.3 Utah's Enhanced Performance Configuration

Utah's Enhanced Performance Grid (EPG) system was comprised of a three-computer AG node. We added two more systems to collect the incoming AG streams and place them onto an NTSC circuit. Each of the two collector machines was outfitted with ATI Radeon All-in-Wonder 9600 graphics cards. These cards, with S-video output, allowed us to take any AG stream and place it on the NTSC circuit for mixing and processing with other local and remote video streams.

To mix the streams we used two SIMA SFX-9 mixers and a Panasonic WJ-MX50A mixer. The output from the Panasonic mixer also provided a video feed to our Windows Media 9 server and in turn provided a live stream to the commodity Internet through our website, www.anotherlanguage.org.

4.3.1 Video and Audio Configuration

The S-video output from each of the two collector systems connected to a four-port video distribution box (d-box). Each of the outputs on a d-box connected to an input of the

three mixers. Two handheld cameras used in the local performance of *The Surface of Things* connected in the same manner.

This provided each mixer with inputs from the two cameras and the two collector boxes. The outputs from these mixers connected to the three Osprey 230 video capture cards in one of the AG node systems. In addition, a second output from the Panasonic mixer went to one of the center projectors in the auditorium and to the Osprey 230 capture card in the Windows Media 9 Streaming Server.

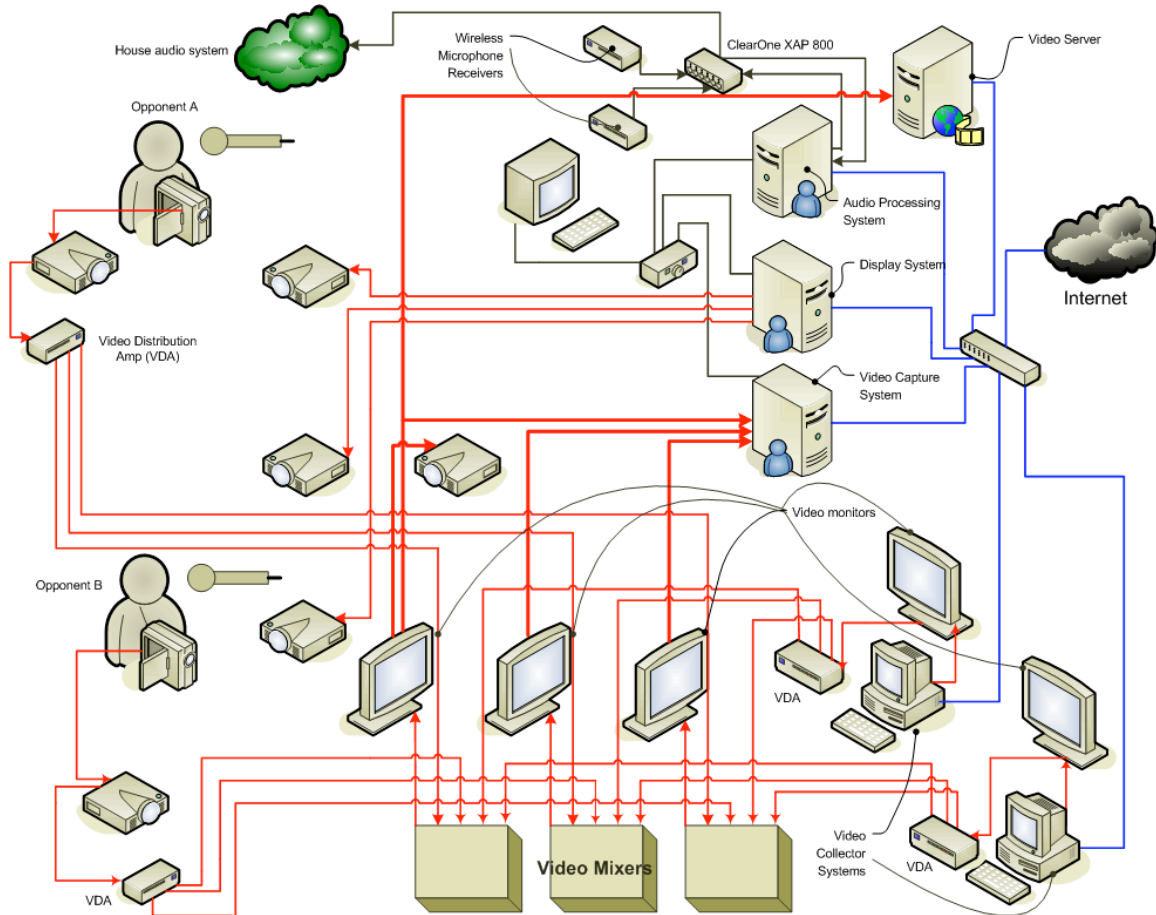


Figure 4 - Utah's Enhanced Performance Grid Node

An essential part of the EPG is the ClearOne XAP800, an eight input mixer and echo cancellation unit with advanced audio processing and filters. It manages microphones, and instruments as well as local and auxiliary audio. The three local performers used wireless headsets connected directly to the XAP800. Incoming audio from the remote sites came out of the audio capture system and fed into the XAP800. The outputs of the XAP800 connected to the auditorium audio system, the control room monitoring system and the input of the AG audio system.

4.3.2 Projection

The projection system consisted of six data projectors. Three were part of the AG node used to create a single projected surface roughly four feet by fifteen feet. For the local audience the additional projectors were used to project Flash MX animations created by Beth Miklavcic onto the main display wall. Each of the two performer's video cameras was projected onto suspended sheets of frosted plexi-glass. Beth's camera view of Aaron was projected onto plexi-glass near her and Aaron's view of Beth was projected onto plexi-glass near him.

5 The Performance

5.1 The Rehearsal Process

In December 2003, Beth Miklavcic began work on three Flash MX animations and finished the last one in March 2004. She experimented with several playback technologies and found that QuickTime Pro played the Flash MX movies back in high quality without the corporate video player frame and toolbars. These three animations were dispersed throughout the performance, appearing before three of the four *The Surface of Things* scenes.

Leading up to the performances on April 23 – 25, 2004, were rehearsals that occurred on two levels. There were the local rehearsals of *The Surface of Things* and the collaborative rehearsals with the remote sites. The local rehearsals were directed by Beth and began with her self (Opponent A) and Aaron Henry (Opponent B) in late February. Beth wanted to investigate how to incorporate the video camera directly into the performance as an integral part of the work and this is where Beth and Aaron worked out the details. Together they choreographed not only their own movement, but that of the camera as well. These rehearsals also gave Beth the opportunity to hone the script, through seven drafts, to its final state. Tony Larimer (The Judge) joined the rehearsals at the beginning of April.

The challenge at this point was to rehearse Beth's *The Surface of Things* with the remote sites and combine these performances to create *Hallucinations*. It was difficult to schedule meetings and rehearsals with ARSC and University of Maryland due to their opposite time zones. ARSC was two hours earlier and Maryland was two hours later. It was more important to meet and work with Alaska in order to synchronize Beth's scenes with Scott Deal's music. We incorporated Miho's animations, Nadja's video and Brian's dancing later.

Beth's work required several cues to occur at particular points within the *Hallucinations* structure. An important feature was the sound of snare drums to start the performance. It was followed by the first Flash animation and then followed by the first scene of *The Surface of Things*. Back stage communications was impossible due to the fact that the "crew" shared the same audio stream as the performance. The audience at each site

would hear all verbal communications. Hand signals were used to cue Paul Mercer at Alaska and then he relayed the cue to Scott.

We coalesced as a full cast during the week of technical rehearsals. We finalized the program order, the order of Scott's compositions, and locked down the cues for the start of each scene of *The Surface of Things*. Due to the fragile nature of this technology, we had a copy of Nadja's video in case we encountered network or streaming problems. Nearing the week of performances, we were able to set up a Windows Media 9 Server to provide one of the streams through our website, www.anotherlanguage.org, to viewers on the commodity network.

The time zone issue was felt most by Nadja and Brian in Maryland. We would finish rehearsing around 9:30 P.M. MDT but on the east coast, it was 11:30 P.M. EDT. Sometimes, because Alaska preceded Utah by two hours, we had to suspend rehearsals until classes at Alaska were finished for the day.

5.2 The Performance

There were three evening performances. Friday, April 23 and Saturday, April 24 were held at 7:30 P.M. MDT, keeping in mind that Maryland's start time was 9:30 P.M. EDT and Alaska's start time was 5:30 P.M. AKDT. Sunday, April 25 a matinee beginning 4:00 P.M. MDT (2:00 P.M. AKDT and 6:00 P.M. EDT) was held. The overall consensus was that the project was a success but each evening had its own unique characteristics.

Our local attendance was an average of a dozen people at each performance. The remote sites tallied an average of six at ARSC and an average of two at Maryland. Saturday night's performance included EVL as the only Access Grid participant. We know that there were a few people watching the Windows Media 9 live stream but we were unable to determine the exact count.

5.2.1 Friday, April 23

The Access Grid was up and running around noon. Everything was working fine, including the audio, until around 6:00 P.M. MDT when the audio started giving out. The audio developed noise that began slowly and grew into total distortion of all local and incoming audio. Sam Liston, Utah's node operator, and I tried everything to rectify the situation but to no avail. It was show time and the audience was waiting. Beth and I discussed the alternatives and we chose not to cancel the performance and give the audience a choice. They could leave and come back for Saturday's performance or stick it out and be part of this new experiment. All chose to stay. They suffered through an evening of horrendous static, although oddly enough, the remote sites stated that their audio was clear as a bell. Knowing this narrowed our suspicions to a local problem.

It was very frustrating to have the audio problem. Nevertheless, given the situation, the cast of *The Surface of Things* presented the work to the best of their ability. We were very fortunate to have such professional actors. An audio problem as pronounced as the

situation that we were in can be very distracting to the actors, causing them to potentially forget their lines. The cast stayed concentrated and got through the scenes without incident. The remote sites could hear *The Surface of Things* clearly, but the local audience, during the performance of each scene, found it difficult to understand what the actors were saying.

5.2.2 Saturday, April 24

It took most of the day Saturday to solve the problem. Friday night, after the performance, Sam Liston replaced the audio system with another PC. We were working under the suspicion that either the audio system had blown a sound card or the Gentner AP 400 was malfunctioning. We had just installed a new Access Grid node for the Eccles Health Sciences Library with a newer ClearOne XAP 800 echo canceller. We borrowed this system and installed into our EPG. These changes solved the noisy audio problems. Unfortunately we installed both the new audio system and the newer XAP 800 and didn't have the time to narrow down the cause.

Later that afternoon, we discovered that all outgoing multicast traffic stopped being routed off Utah's campus. We had to switch to unicast in order to continue with the evenings performance.

In comparison to Friday's performance, Saturday's performance was relatively smooth, except for a few new issues. The gain on Tony Larimer's (The Judge) wireless microphone was too high, distorted and we could hear him breathing. We didn't notice this problem the night before because of the static and distortion throughout the whole sound system. Nevertheless, the audio levels inside the auditorium for the incoming streams as well as the local text were much better for this performance.

5.2.3 Sunday, April 25

Sunday, April 25 was a matinee and our local performance time was 4:00 P.M. The audio and video systems were running smoothly. Multicast was still not functioning. One of the remote sites arrived under an hour before the performance, giving us little time to test thoroughly. As the performance started the audio in the performance space was at a much lower setting than the previous night. Sam Liston and I had no idea that there was a problem because we were in the control room and the audio levels in there were just fine. None of the sites had used a stage manager. Paul at ARSC and myself took on that responsibility and I found it most difficult. As director, the main objective was to monitor all video feeds from the two collector systems and the three local cameras and select three pairs and using the three video mixers, orchestrate them into an aesthetic form. Taking on the job of stage manager, calling and executing cues, as well as the artistic responsibilities of the director was an enormous challenge.

5.2.4 Audience Discussions

Following each performance there was a discussion with the audience. They could ask questions or give comments and feedback on what they had just seen. There were about eight people in the Fairbanks sight on Saturday, and Scott handed the microphone to an eight-year-old boy. With his hand in his mouth, he very shyly walked up to the camera and said, "That was cool!" Sunday was our liveliest discussion with several of the audience members contributing ideas about future possibilities. For example, what would happen if performers all over the world woke up and started performing over the grid? It would be like a cannon of continuous performances based on people's time zones.

6 Conclusion

InterPlay: Hallucinations was our third performance of this kind and the first using remote collaborators. For the most part, we were successful in creating a work that incorporated a fragile technology into an artistic process. We did this for three evenings and each evening we found more improvements. Following each performance, there were discussions filled with honest enthusiasm and interest in this new process. Among the three AG sites in Utah, Alaska and Maryland, a wonderful working relationship and friendship grew out of the process as well as a desire to continue building on the foundation that was just laid down.

For the audience, it was an opportunity to experience a emerging performance format that highlighted a collaboration of artists in three distinct geographical areas in three different times zones. This presents an intriguing sense of sharing and closeness with others around the globe.

To continue the emergence of this performance format, there is much to be corrected. Consistent daily testing of the technology is crucial in order to stabilize it. We have plans to coalesce the EPG into a fully integrated system, allowing close monitoring and maintenance of the components. There is much to understand about the artistic and performance process within this technological framework. Traditional performance processes must be reevaluated and modified to encompass the collaboration of artists several thousand miles apart. The interaction between performers is often delayed, hindering spontaneous influences. On the other extreme, a new control language must be developed in order to communicate with the participants at all sites, creating a more coordinated event.

7 Future Plans

The *Hallucinations* participants, including Beth Miklavcic, Jimmy Miklavcic, and Sam Liston at the University of Utah CHPC, Miho Aoki, William Scott Deal and Paul Mercer at University of Alaska and ARSC, and Nadja Masura and Brian Buck at the University of Maryland are committed to continuing this endeavor into the telematic performance process, the InterPlay. We want to establish the Access Grid technology and Internet 2 as a strong and viable venue for artistic expression and investigations, developing a system

designed for telematic and collaborative performance. Continued development of the Access Grid software by Argonne National Labs and others like the National Research Center in Ottawa, the Arctic Region Supercomputing Center in Fairbanks, Alaska, Boston University, and Keio University, Japan will give us higher quality tools. We hope to begin testing and using some of these new technologies such as positional stereo audio, DVTS and high definition video, some time next year.