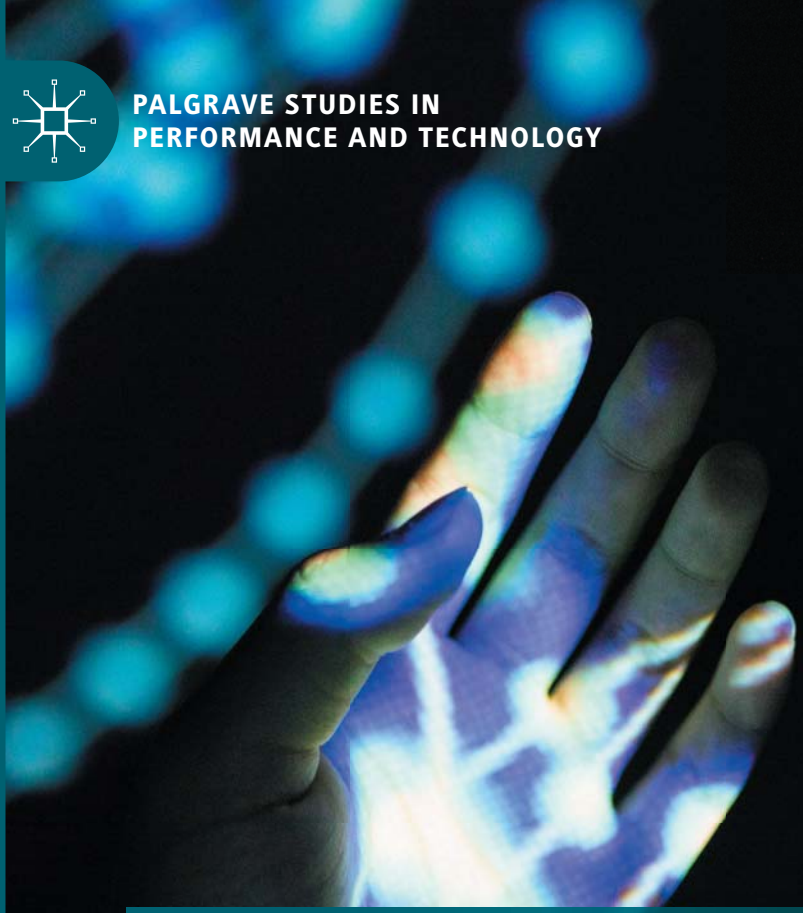

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Digital Theatre

The Making and Meaning of Live Mediated Performance, US & UK 1990–2020

Nadja Masura

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Nadja Masura
Santa Rosa, CA, USA

Palgrave Studies in Performance and Technology
ISBN 978-3-030-55627-3 ISBN 978-3-030-55628-0 (eBook)
https://doi.org/10.1007/978-3-030-55628-0

Cover credit: Qi Yang, Getty Images

This Palgrave Macmillan imprint is published by the registered company Springer Nature Switzerland AG
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

Preface

Dear Reader,

The world has changed fundamentally since this work was first conceived and its praxis implemented. Technology is always changing, always influencing us, but not to the point of loss of humanity. As I write to you, most of us are inside, sheltering in place from Covid-19. Clearly, whether we want to or not, we must acknowledge that the rules of society have changed. Theatre, and other performing arts which only exist in community and strive to sustain it, are now threatened and potentially erased by the disbanding of audiences and performers. The gathering of biological bodies together as audience is forbidden. Theatre itself is now a truly dangerous and outlawed art form.

Ironically, in this global rethink and universal moment of pause, it is the digital half of Digital Theatre, which remains. Technology, like videoconferencing which once seemed so cutting edge and optional, is now essential in not just creating but also sustaining family and community. The same tools used to create innovative digital multisite theater between Level 2 Research Institutions, is now being used by my slow tech-adapting 70-something mother and our community choir (OCC) to connect when real family gatherings and rehearsal or co-present performance are not allowed. Our desire to connect and share as humans and as artists is more potent and observable as a real human need than ever. Presently, we also made aware of the global nature of human society and our impact on the

environment, hopefully coming into a position to utilize our tools for the greater good.

As you read this book you will notice a shift in tone between the neutral voice of academic researcher and the more engaged personal voice of a practitioner. This occasional shift in tone is intentional, as a book focusing on the creation of recent and emerging history, it was created in the present through doing. This book is an artifact composited of both research and praxis. It is an attempt to identify the universal while engaging in the individual, the particular, the artistic. Readers will note that the chapters in which the author's praxis is featured (especially Chapter 7), show personal insight and character. The book is a hybrid between the academic and the personal/performative. (Think of the work of Brockett on one hand joined with Berringer on the other; the two polarities mixing to make something new, like marbled rye). Readers can choose to focus on the chapters and approaches which best suit their needs as scholars and artists. Because many of us practitioners were writing the history as we went, there *is* a bit of me in this book. I hope that causes a sense of liveliness that the birth of a living artform engenders. It was and is, a human experiment in writing what we are becoming and can be; just as making Theatre "of its time" in any time will contain the artifacts of the moment in which it was made.

Thank you for reading. I hope it inspires your thoughts and creative ideas. I can't wait to write about what you do next.

Santa Rosa, USA Nadja Masura

Acknowledgments and Gratitude

There are many people I would like to thank for this book finally seeing the light of day and giving me an excuse to do future research. Thanks are due to my former partner, Peter Rogers for his support on this project and in life until this devastating last year. It is my hope that we will find eachother in friendship again. Thanks are freely given to Lew Brown for caring and helping me to go on and complete the project, and for lending his expert pen to the final edits. Sit bonum vitae.

Next I'd like to thank Dr. Franklin Hildy, Susan Haedicke, Martha Nell Smith, Dr. John Fuegi, and the Maryland Institute for Technology in the Humanities for their support of my academic research; Steve Dixon for the DPA; and my editors Lew Brown and Laura Holiday; readers Jacquelyn Ellis, and Diane Masura; and my publisher for their interest.

I'd also like to thank my family and friends for their support of this long-term project. Special thanks to Gloria, Larry, Diane, John and Shirley. Thanks also to Lee & Tom, Rachel, Marshall, William, Lyn, Josh, and Corey Roberts.

Finally, I want to thank all of the wonderful practitioners and collaborators who have contributed time with me and have given and continue to give so much to the world through this evolving artform: David Saltz, Mark Reaney, Dawn Stoppiello and Mark Coniglio, Dan Zellner, Cheryl Faver & GSRT, George Popovich, Paul and Moira Jackson, Jimmy & Beth Micklavcic, David McNabb, ArtGrid members, The Flying Karamozov Brothers, Yacov Sharir, John Mitchell, Alex Oliszewski, Marianne Weems

& the Builders, Lance Gharavi, Apryl Renee, Brian Buck, Janet & rest of The Talking Birds, Karen Bradley, and Brandon Morse. And if your name isn't on this list, meaculpa. Contact me, and we can talk about your artistic innovation for the next edition. Thank you for all you do.

Praise for *Digital Theatre*

"Digging into the Digital Performance Archives, Nadja Masura has emerged with a potent distillation of the last three decades of digital technology in the theatre. This book elucidates key concepts from the field through ample examples drawn from a wide variety of artists. This book is a treasure trove for anyone interested in the very consequential digital turn in theatre."

—Kevin Brown, *Digital Media and Performance Studies, University of Missouri, USA*

"Brilliantly conceived and executed, *Digital Theatre* documents and illuminates the myriad ways theatre artists are re-imagining the relationship between live theatre and digital technology, a process that is concurrently altering traditional relationships within production teams, artists and audiences, and, potentially, society writ large. The book's focus on praxis, featuring informed discussion of diverse digital theatre practices, including the author's own work, increases its appeal and importance as a resource for theatre artists, educators, and anyone interested in cultural and social transformation."

—Cheryl Black, *Curators' Distinguished Professor Emerita, University of Missouri, USA*

"When the pandemic hit, many theatre artists faltered at the losses of our usual practices and structures. Masura's book reassures practitioners and audience members alike that there is a rich history of digital technologies that have been used to great effect. This thoroughly researched and beautifully accessible book could not be more timely."

—Joan Lipkin, *Artistic Director, That Uppity Theatre Company*

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About the Author

Nadja Masura, Ph.D is a former MITH Fellow in Digital Humanities, and holds five degrees in Theater and Multimedia from: University of Maryland, University of Michigan, University of Puget Sound, and the College of Marin. Nadja is an artist, actor, director, and dramaturge working in high-tech and arts NPOs. She is a digital dramaturge to an AI. www.nadjaart.com.

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CHAPTER 1

Introduction

This book is for those of you who may have wondered, "why should I use digital technology in the production of live theatre?" It is not a *how to* manual with technical specifications. It is a *why to* use manual for digital technology in theatre. New technologies enhance and enliven perceptions of what is expressively possible. This book is also intended for the teachers, technology artists, and performance practitioners as a tool to begin discussions for the creation of new works and collaborations.

In this book you will find primary examples of Digital Theatre presented in a way that makes them accessible and identifies solid creative reasons for using technology to speak to audiences and expand the theatre experience in new ways. There are many more practitioners and examples that could be added to this expanding field. Consider this a record of an era of artistic exploration and a tie between theatrical currents past and present, and as an invocation for future creative innovation.

Above all, this work is a starting place for the contemplation of what type of new works we want to make and call Theatre. It asks, "Who do we want to be in the future?" Because the future, like Theatre, is continuously becoming.

Theatre must meet its new audience where they live, but we must never give up the core ideas which make the art form speak the truth of the human experience. With this in mind, this work provides both performance examples, historical grounding, and discussion prompts. The book

N. Masura, *Digital Theatre*, Palgrave Studies
in Performance and Technology,
https://doi.org/10.1007/978-3-030-55628-0_1

stems from five years of research into the Digital Performance Archive (DPA) and other resources, interviewing practitioners, viewing productions, and from my own experience as a practitioner. Because it is intended to be a teaching tool and production resource for creating theatre, the content is parsed into chapters based primarily on the effect that digital technology has had on existent theatrical roles.

In this book I have included a breadth of performance examples to demonstrate a range of performative possibilities. There is no one ideal example of Digital Theatre, instead the sum total of these works demonstrates the reach and potential value of this rising art form.

There are examples of media integration and satellite broadcasts dating back into the 1970s, however this study primarily examines works occurring from the 1990s forward. This is an era coinciding with the PC/Internet boom and the rise of public digital literacy. In the early 1980s, video, satellites, fax machines, and other communications equipment began to be used as methods of creating art and performance (Randall and Jordan 2001). John Cage and the group Fluxes were among the early leaders in expanding what was considered art, technology, and performance.

With the adoption of personal computers in the 1980s, new possibilities for creating performance communications were born. Artists like Sherrie Rabinowitz and Kit Galloway began to transition from earlier, more costly experiments with satellite transmission to experiments with the developing Internet. Online communities such as "The Well" and interactive writing offered new models for artistic creativity. With the "Dot Com" boom of the 1990s, telematic artists including Roy Ascott began to take on greater significance as theatre groups like George Coates Performance Works and Gertrude Stein Repertory Theatre established partnerships with software and hardware companies encouraged by the technology boom. Researchers such as Claudio Pinanhez at MIT, David Saltz of The Interactive Performance Laboratory at the University of Georgia, and Mark Reaney, head of the Virtual Reality Theatre Lab at the University of Kansas, as well as significant dance technology partnerships, including Riverbed's work with Merce Cunningham, led to an unprecedented expansion in the use of digital technology to create media-rich performances which included the use of motion capture, 3D animation, and virtual reality. These boom days were captured in the Digital Performance Archive, an online research database which provided information

on digital performances from multiple countries from 1990 to 2000, and became the starting place for many of my investigations.

This movement occurs within the context of Theatre's continuing tradition of utilizing new technologies to enhance stage spectacle and communicate ideas (Hilton 1991, pp. 55–57). Because the history of digital performance is recent, I will be looking toward the past to give context to our developing present. Through acknowledging aesthetic ties to theatrical precursors exploring similar theatrical effects through the technologies of their day, Digital Theatre becomes part of the tradition of theatrical innovation.

Early use of mechanical and projection devices for theatrical entertainments have a long history tracing back to the mechanicals of ancient Greece and medieval magic lanterns. But the most significant precursors of Digital Theatre can be seen in the works of the early twentieth century. In the ideas of artists including Edward Gordon Craig, Erwin Piscator, Josef Svoboda, and with the Bauhaus and Futurists movements in which we can see the strongest connections between today's use of digital media and live actors. In the words of Oskar Schlemmer, "The theater, which should be the image of our time and perhaps the one art form most peculiarly conditioned by it, must not ignore these signs" of technology (Schlemmer 1961, p. 18).

Part I addresses spectacle. Chapters 2 and 3 deal with the place of theatre, both imagined and real. Chapter 2 deals with how scenography is altered and made plastic by digital technology. It features the fluid scenography via the 3-D animated projectionist sets of Mark Reaney (*The Magic Flute* and *Wings*); *3-D Peter Pan*; and *Aladeen* by the Builder's Association.

Chapter 3 examines the effect of digital technology on the theatre building and how it begins to morph into set and character. Issues of scenic portability will be covered in the discussion of Studio Z. The idea of transformation will be explored in works by England's site-specific devisors the Talking Birds (*Undercurrents*), as well as George Coates' *Blind Messengers*, the 2006 staging of the *Coventry Mystery Plays*, and my own work *Outside/In* which experimented with opening up the theatrical space to dispersed outdoor environments. I also discuss other distance collaborations such as *Alice's Experiments in Wonderland* which featured three separate university theatre departments in one show. I will also be discussing Intelligent Theatre spaces as seen at ASU, in David

Saltz's *Kaspar*, and the Digital Performance Group's collaborative work *Elements*.

In Chapter 4, we move on to costuming. The body of the actor is often dressed in costumes, but when the cloth becomes a surface for projection, the edges of character blur and shift between multiple bodies and screens. This chapter will cover the movable screens and limited mobility projectionist costuming as seen in Mark Reaney's *The Magic Flute*, which included a play between living actors and screen-characters who were both animated and live actors. It also included the projectionist costuming of the Gertrude Stein Repertory Theatre's *Making of Americans*, which utilized robotic projectors to project images onto the bodies of live performers. The performers' bodies became canvases for elements including set, props, and other characters. This chapter will also look at projectionist masks, and Gertrude Stein Repertory Theatre's layered actor's bodies in *UBU*.

Part II addresses the actor. In Chapter 5, we will examine the ways in which the digitally enabled performer's body is one of agency, blending the roles of actor and stage technician into one. We will be looking at works by Troika Ranch including *Chemical Wedding of Christian Rosenkreutz* and *Future of Memory* utilizing their MidiDancer, and *L'Universe* by the Flying Karamozov Brothers with wearable computers tracking movements, the University of Georgia's *The Tempest* where the body of the actor controls the animated scenery, and Mark Reaney's *The Magic Flute* which allows the actor's voice to create the visual scenery.

Chapter 6 deals with the question of what an actor is in the age of digital puppetry. What are the challenges and benefits of acting alongside projections of video others? Here we will discuss the way the "live" actor is "othered" by the use of nonhuman actors. Instead of highlighting the ways digital technology can give agency to the body of the human actor, we are substituting digital puppets, robots, and video projections to portray characters onstage. In a sense, agency is potentially being reassigned to the nonorganic actor.

There are three categories of digital actors that will be discussed: (1) projected video, (2) projected animation, and (3) mechanical. In this chapter we will review works by Yacov Sharir, Mark Reaney's *Dinasaurous*, which allowed actors able to portray nonhuman shapes, and *Blue Bloodshot Flowers* by Susan Broadhurst, which involved the use of artificial intelligence or A.I. as a character. In addition to projected characters we will discuss mechanical players in *The Ship's Detective*, and Lance

Gharavi's 2013 work *ϒOU n.0*. We will also look at a few examples of the more accessible video "other" in productions by Builder's Association.

Part III addresses the creative authority and authorship.

In Chapter 7, we will further explore the possibility of multiple authors, directors, and audiences through my work with the online collaborative community, the Art Grid, and four years of *InterPlay*, in which we shared authorship and created a multiplicity of audiences and audience experiences. Then we will examine the prospect of digital dramaturgy through my work coordinating the Digital Performance Group as a collaborative act of interdisciplinary exploration. This process included composing and collecting materials via digital technology, scripting *Compass Points*, conceptualizing, visual assets, and much more. This chapter includes my devised piece, *Re-Membering Harmony*.

The eighth chapter looks at the overlap and competition for messaging and direction from a new source, the digitally enabled audience as author. Audiences are becoming ever more accustomed to performativity, interactivity, and becoming a part of the show through their words and actions. No more is the director, author, or dramaturg a singular voice of authority; now the audience wants in on the act. We will investigate the multiplicities of authorship in George Coates' *Crazy Wisdom Sho* and the University of Georgia's *Living Newspaper*. Similar works discussed include the intensely participatory *Network Touch*, and *M@ggie's Love Bytes* which include audience-provided production elements.

Part IV addresses theory.

Chapter 9 is a more theoretical examination of Digital Theatre productions and performance in terms of the relationship between the actor's body and theatre place. Terms like neo-Bakhtinian, difference, and image-body are used to unpack the various levels the performing human body mixing with technology to the point where the two meet and agency is reversed. Examples include: motion capture in University of Georgia's *The Tempest*, Troika Ranch's MIDI Dancer in *The Future of Memory* and *The Chemical Wedding of Christian Rosenkreuzt*, Intelligent Stages, synesthesia in the University of Kansas' *The Magic Flute*, Paulo Henrique's *Minimally Invasive*, *Holoman: Digital Cadaver*, and *Ping Body* by Stelarc.

Chapter 10, examines the overlap between place and community in online collaborative performance. Concepts of place, community, and telepresence, cyber-place, and utopia are discussed and examined in Gertrude Stein Repertory Theatre's *UBU Project*, *World Wide Simultaneous Dance*, and a practitioner's view inside the process devising real-time

multi-site performance in *Interplay* and other artistic and performative works by the online community, ArtGrid (created through the Access Grid technology). These collaborative Networked Performances grew communitas from creating as equals which provided a sense of agency, tech frontier spirit, and "being-there" in the liminal shared space between distant geographies.

Chapter 11 takes a deeper look at an ideal form of Digital Theatre praxis in the collaborative dramaturgy of the Builder's Association. The chapter follows talking backstage at *Elements of Oz*. with director/dramaturg Marianne Weems, visual dramaturg/designer James Gibbs, assistant director Sarah Krohn, and actor/writer/dramaturg Moe Collins. It draws a picture of the group's understanding about their collective process, the art of dramaturgy and integrating technology in creating new works that speak to their time. New dramaturgy (a form of collaborative scripting) is examined, as is dramaturgy with technology (or mediaturgy), and an observational outline of their collaborative process is presented along with insights from the group discussion on past productions.

This chapter concludes the book with a brief overview of some of the core points made through examples within the work. After a nod to the unending nature of the subject, concluding thoughts discuss the relevant terms: Access, Participation, and Context. Each of these ideas are key components to understanding audience/social engagement in the current day and near future.

But before we can begin, we must define our terms. What is *Digital Theatre*?

Digital Theatre is live theatre which incorporates digital technology into the production in an essential way that fundamentally shifts our understanding of the principals of theatre, and potentially the world we inhabit. There are four necessary conditions to distinguish Digital Theatre from the broader worlds of digital performance and traditional theatre. They are:

1. A limited interactivity of message.
2. The presence of verbal communication.
3. A co-present audience and actor. And
4. The existence of digital technology in the central creation of the performance (not as an archival tool).

In praxis, we are creating a starting place from which to begin a larger conversation between digital and the human via the art form of Theatre. The limiting factors I used to distinguish Digital Theatre from the broader field of Digital Performance, and traditional theatre include:

1. **"Liveness" or Co-presence**: While TV studio audiences may feel that they are at a public "live" performance, these performances are often edited and remixed for the benefit of the home audiences which are viewing the mass broadcast in private. Theatrical events broadcasted into private homes, give the TV viewers the sense that they are secondary viewers of a primary "live" event. In addition, archival or real-time web-casts which do not generate feedback influencing the "live" performances are not within the range of Digital Theatre. In each case, a visible interface such as TV or monitor screen frames and interprets the original event for the viewers. It is a "live" performance placing at least some performers in the same shared physical space with an audience.[1]

   A brief clarification of these terms in relation to Digital Theatre is in order. The use of the once contested (Auslander 1999, pp. 1–4)[2] term "live" (or "liveness") is essential in creating Theatre, here it is set in opposition to the "digital" in order to indicate the presence of both types of communication, human, and digital. Rather than considering the temporality of events, I am interested in the interactions of audiences and actors sharing the same physical space, in at least one location, if multiple audiences exist. It is essential that a sharing of public space occurs at the site of the primary artistic event.
2. **Digitally Enabled**: The next necessary condition for creating Digital Theatre is obviously the presence of digital media in the performance. The performance must use digital technology as an essential part of the primary artistic event, not solely for archival or broadcast purposes. Digital technology may be used to create, manipulate, or influence content. Digital media is not defined through the presence of one type of technology hardware or software configuration, but by its characteristics of being flexible, mutable, easily adapted, and able to be processed in real-time. It is the ability to change sound, light, images, video, animation, and other content which can then be triggered, manipulated, reconstituted, and transmitted in relationship to other impulses. This defines

the essential nature of the digital format. Digital information has the quality of pure digital potential, which can be seen as parallel to the potential of human imagination.

3. **Limited (Participatory) Interactivity**: Interactivity is defined as "…existing in the relay of a message, in which the third or subsequent message refers back to the first."[3] In situations of heightened audience participation, the roles of message Sender and Receiver can dissolve to that of equal conversers, causing Theatre to dissipate into conversation. Ideally, the performance contains only limited levels of interactivity, in that its content is shaped primarily by artists for reception by audiences.[4] I am primarily concerned with levels of interactivity occurring between audiences and performers and facilitated through technology. Here, interactivity is not being used in terms of a computer's ability to react to a variety of input, but to indicate the level of participation of audience members in creating the total artistic project, where the messages flow primarily *from* performers *to* the audience.
4 **Spoken or Language Content**[5]: The performance's content should contain either spoken language or text constituting a narrative or story, differentiating it from other events which are distinctly dance, art, or music; not the synthesis we call theatre.

Thus *Digital Theatre* can be defined as demonstrating the synthesis of coexistence of "live" performers and audiences with digital media in a manner which contains spoken words or narrative elements and limited interactivity/participation. It thus retains a limited distinction of performer/audience roles. Digital Theatre utilizes both the strengths of human connection found between "live" performers and their co-present audience, and the flexibility and global reach of digitally processed data.

Ideally these limiting parameters are flexible and permeable enough to allow for a wide range of theatrical activities, while refining the scope of events to those which most resemble the hybrid form of "live" and mediated theatre, as a subset of digital performance.[6] Why is it so essential that "live" flesh be set against the digital? To demonstrate their *différance* (Derrida 2004). To better understand the difference between the body, the ultimate physical manifestation of analogue and tactile human experience, and digital, I will provide some descriptions of what it is to *be* digital. Digital has been described as both protean and indifferent. Digitization allows for the manipulation and interchangeability of data. Cinema

and media theorist Vivian Sobchack writes, "What is historically and technologically novel about digitization is precisely its unique capacity to translate all other media representation into a homogeneous algorithmic mode of expression…" (Sobchack 2000, p. xvi). The essential nature of digital media is this flexibility and mutability.

Digital Theatre as a term can relate to performances which utilize a large range of technologies and their multiple uses, including but not limited to: digital video, digital projection, animated sets and characters, virtual reality, digital robotics, online writing and real-time audience feedback, interactive content creation, motion capturing, motion-triggering, web and video-conferencing, and many other forms of digital media interplay. Examples might include using projected elements with live actors including animated sets, motion-triggering controlled by performers to cue video or sound media, or online performances occurring between performers at locations in different rooms, states, or even countries. They may even mix many of these elements together in one transformative wired event. Digital Theatre productions use various combinations of hardware and software to:

1. gather impulses (ideas, triggers, stimulus, expressions, artforms); then
2. translate, shape, and manipulate this data information; and
3. finally export (via projection, sound, etc.) media as an observable and essential part of the production's total theatrical experience.

Despite the wide range of technologies and tools available, what is abundantly clear is that "digital" implies changeability and flux. Digital is a state of potential; it is a mixing between mediums. One could say that the liminal state of being converted to digital data translates between observable forms and purely potential impulses. The protean nature of digitization mutates ideas into new forms, not purely art, music, or visual, but potentially mixes between them. Most every Digital Theatre production mentioned in this work contains multiple types and uses of digital media. The wider field of Digital Performance contains Digital Theatre.

Digital Theatre exists in relation to other terms. As a type of digital performance, it may accommodate many types of live/mediated theatre including *VR Theatre*[7] and *Computer Theatre*,[8] both of which involve specific types of computer media, "live" performers, story/words, and

limited levels of interactivity. However terms such as *Desktop Theatre*, using animated computer avatars in online chat-rooms without co-present audiences falls outside Digital Theatre into the larger category of digital performance.[9]

Likewise, *Digital Dance*, *Telematic Art*, or *Interactive Installations* may fall outside the parameters of Digital Theatre, if they do not contain elements of story or spoken words (or audiences, etc.). Additional relative terms include: *Cyber Theatre*,[10] *Digitally Mediated Performance*, *Intermediality*, and *Virtual Theatre*.[11] A relative of the term "Digital Theatre" is Jennifer Parker-Starbuck's term *Cyborg Theatre* (Parker-Starbuck 2003) which also requires a theatre event to contain "live" and mediated digital but allows for use of nondigital video elements. *Digitally Mediated Performance* refers to a wide range of performance modes involving digital media and may not have co-present audiences, "…if the DMP had no live audience to begin with other than the performers and producers on-site during its creation…" (Chvasta 2005, p. 164). *Intermediality* contains a broad mixing of media forms such as digital and analog (including puppetry), sound, photography, etc.[12] Other terms include *Techno Theatre* and the closest term to this conception of Digital Theatre is "*Enhanced Theatre*."[13]

Notes

1. I would suggest a minimal audience of two or more is needed to keep a performance from being a conversation between parties. If additional online or mediated audiences exist, only one site need have a co-present audience/performer situation (Zerihan 2006). "While Grotowski has stated that it takes one spectator to make a performance, theatre productions generally seek a much larger audience" (Bennett 1990, p. 140). Given Covid isolation policies restricting normal theatre practices, further examination of the need for co-presence may be necessary in future works, although inventive groups such as the Imaginists are beginning to do drive-up theatre, demonstrating new approaches to hosting live audiences.
2. And in response consider: "For nearly two decades, performers have been engaging in digitally mediated performance practices. Though performance theorists have been debating the ontological status of performance that relies on digital and information technologies, practitioners have carried on without waiting for a scholarly verdict" (Chvasta 2005, p. 156).
3. Interactivity is more than choices on a navigation menu, low levels of participation or getting a desired response to a request. Sheizaf Rafaeli

defines it as existing in the relay of a message, in which the third or subsequent message refers back to the first (Rafaeli 1988, p. 111).

4. Though some of the content may be formed or manipulated by both groups, the flow of information is primarily from message creator or sender to receiver, thus maintaining the roles of author/performer and audience, rather than dissolving into equal partners in conversation. This also excludes gaming or VR environments in which the often isolated participant is the director of the action.
5. The criteria of having narrative (no matter the context or content) through spoken language as part of the theatrical event is meant not to limit the range of what is already considered standard theatre (Beckett), but to differentiate between that which is Digital Theatre and the more developed fields of Digital Dance (such as the stunning visual media dance concerts like *Ghostcatching* by Merce Cunningham and Riverbed) (Riverbed, "Ghostcatching"), and Art Technology. (Such as telematic pieces: "Telematic Dreaming" by Paul Sermon.) This is necessary because of the mutability between art forms utilizing technology, and is meant to include a wide range of works, like dance-theatre involving technology and spoken words.
6. At the center of this definition is the idea of "liveness" or co-presence "onstage" with digital technology. This term remains at the core of digital performance praxis, as performers depend on the "live" and media distinction to describe the process of bringing the two forms together on stage.
7. Mark Reaney, head of the Virtual Reality Theatre Lab at the University of Kansas, investigates the use of virtual reality ("and related technologies") in theatre. "VR Theatre" is one form or subset of Digital Theatre focusing on utilizing virtual reality immersion in traditional theatre practices.
8. Another example of Digital Theatre is Computer Theatre, as defined by Claudio Pinhanez in his work *Computer Theatre* (in which he also gives the definition of "hyper-actor" as an actor whose expressive capabilities are extended through the use of technologies). "Computer Theatre, in my view, is about providing means to enhance the artistic possibilities and experiences…in a performance" (Pinhanez 1996, p. 2).
9. These are digital performances or media events which are created and presented on computers utilizing intelligent agents or synthetic characters, called avatars. Often these are interactive computer programs or online conversations. Without human actors, or group audiences, these works are computer multimedia interfaces allowing a user to play at the roles of theatre rather than being theatre (Hayes-Roth, Director, "The Virtual Theatre Project").
10. "Cyber theatre, not unlike film and television does not rely on the presence of a live actor or audience and an argument can be made that

many examples of cyber theatre might be better described as interactive film/TV, installation art, new media art, or electronic communications" (Kennedy 2003, p. 341).

11. "The Virtual Theatre. This theatre will consist of a single audience member putting on a headset and experiencing a virtual presentation" (Zellner 1999, p. 27).
12. Freda Chapple and Chiel Kattenbelt state: "intermediality includes…a blend of the art forms of theatre, film, television and digital media, which lead to an engagement with theoretical frameworks…intermediality is an effect performed in-between mediality" (Chapple and Kattenbelt 2006, p. 20).
13. Perhaps the most compelling related term is "Enhanced Theatre" which featured practitioner Dan Zellner defines, saying, "This theatre will consist of virtual sets, live actors, and virtual actors" (Zellner 1999, pp. 19–29).

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PART I

Spectacle

CHAPTER 2

Scenography

Theatre's history is populated by the underlying effort to transform the stage into another world. This occurs most notably in the extravagant spectacles of melodrama, court masques, and Wagnerian opera, among others. The set and lighting create the worlds in which the actor/character moves. Theatre is a place for seeing and hearing the performance of other places.[1] Onstage, real and imagined landscapes create spaces in which actions and interactions can take place. In a sense, Theatre is Place practiced.

In the words of head of the VR Theatre Lab at the University of Kansas, Mark Reaney:

> Theatre is the original virtual reality machine. Accessing it audiences can visit imaginary worlds which are interactive and immersive. Traditional theatre … offered experiences which were indeed immersive and interactive, and made possible by the technological means available at the time. The theatre as a "machine" … [is] composed of animate and inanimate parts that make it possible to transport audiences to other worlds. (Reaney in Allen, p. 242)

Theater is, in a sense, a prototype for creative forms of computer visualization. Theatre is an empty space left open to creative possibility, or serious play. Theatre itself can be seen as transporting our imaginations elsewhere.

N. Masura, *Digital Theatre*, Palgrave Studies in Performance and Technology,
https://doi.org/10.1007/978-3-030-55628-0_2

What makes Digital Theatre scenographic and lighting elements unique? Digital Theatre both *does* and *does not* deviate or step outside of the tradition of familiar theatre practices. Theatre has a long history of employing new technologies. Think of the naturalistic lighting and scenic spectacle of famed nineteenth-twentieth century American director David Balasco which coincides with the invention of electric lighting equipment. Digital technologies, like the projection of virtual reality or animated sets, are just the next logical progression in utilizing technology in theatre. At the same time, there is a significant difference in the nature and effect of these new theatrical tools, examples of which are addressed throughout this book.

In reading Reaney's idea of theatre as a virtual reality machine, the image of *Star Trek's* Captain Picard performing scenes from Shakespeare on the USS Enterprise's holodeck for recreation comes to mind (Murray 2001). In a very real sense Digital Theatre sets, most often achieved by projection, are a step in that direction. Digital scenic technology allows us to attempt motions in sets that were previously unimaginable. The blending of actor/character and place is made even more real or seamless when the set itself allows for movement and a sense of being alive like nature. As audiences, we are captivated by the spectacle of transformation of place. We delight when solid landscapes become liquid, spatial, and adjoining against their fundamental nature.

Through projecting scenic backgrounds created in 3D animation, movement becomes integrated into the visual spectacle, in fantastic and natural ways. Location changes can now occur between scene shifts and without the need for hydraulics or other heavy equipment. The stage landscape can alter seemingly effortlessly and subtle changes can occur throughout the action of the play. In addition to providing an illusion of depth, projected objects may take on a life of their own, seemingly shuttering, undulating, rotating, or zooming in toward or away from the stage action creating a "living" backdrop for live actors.

What is truly remarkable about this new form is its immediate responsiveness not only to cues, but to the actors, and occasionally the audience. Watching these seemingly independently moving elements, creates a sense of grace and wonder, a sense that something unexpected can happen. Digital technology is shaping the way that we see and interact with our world, altering the way we perceive place.[2]

The following Digital Theatre performance examples demonstrate instances of motion filled and movable locations, settings that seem to

breathe or come to life, creating a sense of sets as characters and new ways of perceiving our world. Because of the protean nature of digital media, many of the more traditional theatre productions utilizing digital technology use it for staging magic effects. This can be seen to correspond with the long theatrical tradition of spectacle representing the divine, super-natural, and magical through mechanical effects. Mozart's *The Magic Flute* occurs within a realm of magic influenced by masonic mysteries of initiation by trial. Shakespeare's *A Midsummer Night's Dream* takes place in enchanted fairy glen. *Wings* is not magical, but presents biological reasons for a dream-scape or head-trip. *Aladeen* draws on the imagery of genies and wish granting. *Peter Pan* is a children's story set in Neverland, full of magic and adventure. As part of Wagner's *Ring Cycle*, *Siegfried* exists in the realm of mythology and gods. Each of these productions utilize Digital Theatre techniques to bring the audience into an unreal shifting, magical place.

Production Example: Kansas' *The Magic Flute*

One of the primary practitioners exploring projecting animated scenic elements is Mark Reaney (pictured in Fig. 2.1) of the Institute for the Exploration of Virtual Realities at the University of Kansas. Reaney has explored layering physical and animated elements (Watkins 2000; Londré 1995). Where digital technology facilitates the scenic designers' ability to give the illusion of depth and movement.

In the University of Kansas' production of Mozart's opera about Masonic trials *The Magic Flute* (2003, directed by Delbert Unruh), scenic place was created by the visual magic of digital technology (Moltenbrey 2003, p. 31). In this production, illusionary place is truly protean, as presentations of place are no longer static, but become liquid. In it, landscapes, costumes, and even characters appeared where before there was nothing, as if by magic one landscape melts into another. These projected places seem alive with movement. In designer/technologist Mark Reaney's words:

> The world of Mozart's *Magic Flute* is one of fantasy and mystery. It is almost its own universe, and our job is to stage Mozart's imaginative world in a fluid and seamless fashion. The VR technology will allow the stage pictures to move almost as fast as the music. (Reaney "*The Magic Flute*")

Fig. 2.1 Pamina appearing to Tamino (*Source* Image copyright Stephen Hudsen-Mairet, used with permission by M. Reaney)

The Magic Flute is a potent example of Digital Theatre because it allows "live" actors to traverse digital landscapes that alter in real-time, and respond to their movements, to the character's moods, and to the dramatic and musical content (Lombard 2004). The flexibility of the media landscape allows for a sense of interplay between human, media, and movement within the digital landscape allowing the illusionary place to take on a sense of character itself.

At the world premiere, the entire scenic spectacle representing the world of the play was created through the projected landscapes. The proscenium stage was bare to the black brick back walls of the theatre, with the exception of screens and computer/projection equipment. There were computer stations set up both in the orchestra pit as well as at the back of the stage in plain sight of the audience. The stage was minimally dressed with two long strips of cloth used as side projection panels for slide and lighting upstage right and left, occasionally a lowered circular projection screen, and two mismatched rectangular screens flanking it on either side of center stage. Additional rolling and carried screens were brought onstage by stage hands or extras in costume several times during the performance.

The bare original VR of the stage paid homage to the theatre itself as the place of imagination. The physical place of the theatre was present with the projected illusionary place. There was a sense of being inside a magic box, where the illusion of shifting imaginary places was conjured from thin air.

In the production several aspects of gaming environments informed the look and feel of the 3D animated scenery. This included experiences such as interactions between set and characters, questing and shifting locations, creating a flexibility of location, both in scale and motion, the sense of the user following along with the camera, and of course the highly saturated landscape of 3D modeled surfaces. The production's most memorable moments were those in which the animated sets gave the illusion of a sensitive, shifting place alive with movement.

Although the effects were beautiful and varied, they could be broken down to seven repeated types of animated movement: (1) independently moving details, (2) video inserts, (3) instantaneous scene shifts, (4) rotating multiple views of the set, (5) emotive scenery, (6) camera point of view (or traveling), and (7) interactive elements.

1. **Independently Moving Details**: Elements of the animated landscape moved independently. Animals, people, and weather made the place seem to come to life. In the first act, the illusion of the depth of the forest was achieved through detailed elements moving seemingly independent from the background.

   Once the screens aligned, projections created the setting of a lush forest; an emerald glade with ferns and the thick trunks of evergreens and tall shade trees. Red and orange computer-generated birds flew in through the scene and repeated their brilliant flight patterns between trees. It was as though the set itself were alive, or at least contained living elements. At this point there was an observable audience response of excitement.

   As Tamino and Pamina fled across a scaffold bridge, a chamber of Sorastro's castle was projected on a screen behind them. The scene showed an endless Escher staircase where a small animated monk walked up and down, defying gravity and logic. Atmospheric effects such as dawn and snowfall created a sense of a living landscape.

Through these effects, the perceptual line between real and imaginary was being blurred through the implied reality of independently moving details.

2. **Video Inserts**: Another way independently moving elements are inserted into the scenery is through the integration of real-time video. This technique blends the photo-realistic moving images of the actors with the animated scenery, much like Italianate scenery tried to integrate court actors with the fictional world of the set descending from the heavens in cloud machines (Campbell 1970, p. 228).

   Video inserts are featured in two duets or initial love scenes between the two couples. In one scene, while Papegeno catches birds, a woman's visage appears to him. Papagena's head smiles, dances, and floats back and forth across the screen. Her image swoops through the air, in sweeping flirtatious loops. Later Pamina appears to Tamino projected against the animated backdrop, her face framed by a gilded oval picture frame (see Fig. 2.1). As Prince Tamino looks lovingly at the portrait and sings, the young lady reacts to his overtures with gentle looks; she is clearly interacting with him. It becomes apparent to the audience that the video of the actress inserted into the frame is not pre-recorded video but a real-time video feed shot backstage. Through compositing, the world of real (the body of the actress) and the illusionary (projected set) share close visual proximity.

3. **Instantaneous Scene Shifts**: The most noticeable aspects of movement were the quick, almost instantaneous shifts made possible by the digital sets. The set elements dissipate into nothingness and shift seamlessly, effortlessly in the blink of an eye. This lends a definite air of magic to the world of the play. The location shifts almost instantaneously from the woods, to the castle, to a cave, to a bleak snowy mountaintop. The Messianic initiation trials of the Prince and Princess utilized the simple scaffolding as a bridge, and it is through the projections behind them that they walk through animated fire, water, and other elements.

   Occasionally for added effect, the screens themselves were flown in and out to emphasize a gesture or draw attention to the mercurial nature of the projected imagery. With a gesture, they fly in or out for the powerful Queen of the Night and Sorastro. One noted the contrast between the set's minimal use of physical objects, like

benches, scaffolds, and screens, and the lush beauty and extravagant colors of the scenic projections.

The indispensable nature of digital media was made clear when removed. When the Prince's quest led him through a tunnel to a digital landscape of blackness with flowing green code cycling through and around pillars, the hero's actions resolve the situation and dissolve the scene. The setting became nothing, simplicity, the riddle solved. The actor was alone with the white screens. The void was very effective, the place has become nothingness. The absence of projection creates a sense of loneliness, the emptiness of a blank mindscape, illustrating a vague reality of being neither here nor there. In that supremely theatrical moment of stillness, it is made abundantly clear that the digital media defined the limits of the imaginary place. By drawing attention to its absence, the media's presence, and importance to the world of the play, seems intensified when it returns in the next scene.

4. **Rotating Multiple Views of the Set**: By using rotating digital objects rather than physical sets, multiple views were created for scenes without the use of hydraulics or other mechanical machinery. The projected, nonmaterial architectural shapes of the castle and other scenic elements spun and rotated more smoothly and quickly than would be possible with sets constructed out of physical materials.

   By shooting one rotating virtual object, like the castle, from an animation camera view, the castle had the appearance of multiple gracefully shifting views. The castle was first revealed as having a bleak landscape of barren flooded trees which appear behind its arches. In the background, the trees and water landscape panned to the right, and the building was shifting horizontally with a slight spin to reveal other sections. The scene composition changed as the Escher-cube castle object continued to rotate, like a dice on its axis. This allowed the audience a subtle, ever-shifting view of the same-modeled object, and to see different layouts of the architectural details. This scene created a movement, an interesting sense of time, and a suspension of the laws of gravity.

   The difference in movement between animated objects within an animated setting, such as the monk moving on the shifting staircases, is best exemplified in the relationship between the castle and the moon. After Tamina reveals to her father Sorastro that the Queen

of the Night has ordered her to stab him, father and daughter reconcile. Their reconciliation takes place in a courtyard of the spinning castle. As he sings her a lullaby, she nods off to sleep and a large moon revolves slowly around the castle. The moon is full and hypnotic. And it is almost as if the father has pulled down the moon for his daughter, he loves her so dearly. Thus the production is visually realizing a strong metaphorical impossibility through digital means.

It was a scene of such poetic visual beauty that one was struck by a feeling of pleasure and a heightened awareness that this "live" and Digital Theatre moment was fleeting, coupled with an acute awareness of the intense labor that went into making a show that would too soon be over. Because this was a live piece of theatre, a show that would play some dozen times as opposed to a game or DVD which could be replayed at will, it seemed a much more valuable experience. This was an epitome of what Digital Theatre can invoke; the powerful realization of both the living presence of the actors and the extraordinary beauty and imagination realized by digital animation joined to create something stirring and unique.

5. **Emotive Scenery**: In the production, the digital setting seems to exhibit an intense sense of emotion. Emotive scenery is where illusionary place begins to have a reflective presence, or a connection with the emotional relationship between the characters and the landscape. When Pamino attempts suicide over the loss of Pamina, she stops him. In his joy, he sings and the landscape blooms into summer as the barren tree and climate transform before our eyes into a sunny orchard heavy with fruit. Lush colors of gold sun and green trees and grass and orange fruit, make it a moving vernal paradise, an animated externalization of their domestic bliss.

   Earlier when Papageno and Pamina sing, the flood water around the castle dissolves and the landscape becomes green and blue. There is a hypnotic movement of the landscape as they sing. This interplay gives a sense of the connection between the emotional states, the characters, and the landscape. The landscape seems to shake off the evil spell in rolling waves as they exhale their melodious song; as if the landscape is alive, as if it is also a character.
6. **Camera POV (or traveling)**: In addition to animating the set via the spin of set objects, a compelling sense of movement can be created using the relative position of the animation camera's virtual

point of view within the 3D world. This gives the viewer a sense of moving or traveling through the illusionary place. The cinematic equivalent is the use of cranes or dollies to move the movie camera to create fly-ins and tracking shots.

In this production, the camera flew over the Escher castle and its guards. By moving a virtual camera through a pipe-like object, the rendered scene allowed the viewer to see inside the tunnel of the cave. The actor mimes his gait and the audience has a sense of traveling along with Pamina, much like Piscator's actor on the treadmill (see Box 2.1). Through implied motion, the audience is along on the journey, somewhat like a questing video game. We then entered a hall of beautiful Renaissance and Medieval religious paintings with text on what appears to be a glass wall in front of the images creating a display. When the riddle is solved by our protagonist, the scenery dissolves.

Box 2.1: Historical Precursors: Erwin Piscator

Erwin Piscator was among the first theatre directors to utilize film to create scenic verity of place. Though originally implemented as a cost-effective and time saving device, Piscator's clever use of film onstage created a new type of visual setting and stage action. The German Communist Party commissioned a "Red Review" in which Piscator first used film to impart information, partially as a shortcut to produce the stage work without a lengthy script-writing process. "The screen showed floods, the sea, a naval battle and crowd scenes: 'a living wall,' Piscator called it, 'the theatre's fourth dimension. In this way the photographic image conducts the story, becomes its motive force, a piece of living scenery'" (Willett 1979, p. 60).

In addition to projecting film footage, Piscator was interested in integrating motion on a grand scale through the use of mechanical set devices. His use of technology also extended to three-dimensional mobile settings including a treadmill, a giant mobile turntable, and skeletal settings (Gassner 1954, p. 337). In *Good Soldier Schweik*, Piscator implemented a treadmill, in combination with the moving background of projected maps and cartoon characters by George Grosz. Schweik was the only constant live actor among the changing projected set.

7. **Interactive Elements**: The final example of the use of digital scenery to create illusionary places that mimic life-like settings through individuated movements is generally beyond traditional scenic design, with the exception of puppetry, which is magical in its own way. The use of interactive media settings which respond to the actor like an instrument is for the most part beyond our current expectations of place.[3] One scene featured glowing fireflies (in pink, blue, and yellow) lighting up a tree in the pre-dawn light. They light up a bush, illuminating leaves one by one when they land on it. As Papageno played a glockenspiel, more fireflies appeared. Papageno appears at the side of the stage and more fireflies join the dance as purple, yellow, and blue bursts of light respond to his music. The scenic elements are now a character as they interact directly with the actor.

   Through movement the set began to take on the mood of its characters and gain a sense of personality. The set's ability to pull down the moon, rotate the scenery to any vantage point, to give the audience multiple shifting perspectives and the sense of travel and motion, to shift instantaneously from one place to another, and affect the weather from floods to snow to luminous sunshine in relation to moods, cumulatively gave the animated scenery a sense of presence. In Reaney's words, the expressionistic scenery,

> Was active and reflected the mental-inner workings of the play's characters. Virtual scenic elements have the unique ability to move and transform as the dramatic action of the play progresses. If the scenery has the ability to move interactively during the play, and if it is used to convey the same emotions and thoughts as the actor driven characters, then it could be said to be a character itself. (Reaney 2001)

The magnetic pull of the set *did* create a sense of a living, evolving character. The reactive digitally animated landscape begins to have a sense of personality, of life. In a sense, the scenic place begins to take on a character. It becomes an actor.

In another production, Reaney illustrated new evolving concepts of place. In *A Midsummer Night's Dream* (2000, directed by Josephine Le Grice), they used digital technology as a metaphor for the world of the play created in the production. Placing the world within the modern

fantasy realm of computer games, cyberspace, and science fiction (Reaney, "*A Midsummer Night's Dream*"), they made the idea of cyberspace into a place visible to the audience.

Instead of leaving the civic world of Athens for an enchanted wood, the characters left the corporate world to explore a shifting, interactive digital landscape. The production used the imagery of a word processor bower, a visual depiction of searching the internet, and a painted forest with wandering brushes and paint buckets. Through his 3D scenic design, Reaney was giving visual solidity to concepts shared by computer-literate audiences, challenging Una Chauduri's idea that cyberspace is essentially the epitome of placelessness, that, "…there is no there there" (Fuchs and Chaudhuri 2002, pp. 1–7). Reaney was demonstrating the medium as message (see Marshal McLuhan) and creating cyber-place onstage, perhaps for the first time.

Production Example: *Alladeen*

Perhaps one of the best examples of a theatrical representation of placelessness was depicted in the digital sets and fictional world created in the production *Alladeen*[4] (2003, directed by Marianne Weems). The production was a cross-media performance created as a collaboration between the New York-based Builder's Association, and UK-based Motiroti. The title, a play on the Aladdin myth, evokes the idea of wish fulfillment, currently interpreted in the wishing/granting exchange between western consumers and eastern workers. *Alladeen* examined the cultural borrowing instigated by the outsourcing of telemarketing by First World global corporations to Americanized employees at call centers in Bangalore, India. In his review of the production, Mark J. Sussman said: "*Alladeen* is a three-part work that evokes a space beyond these outmoded borderlines, where telephone intimacy becomes a cultural masquerade performed over distances of real time and space" (Sussman 2003, p. 695).

The piece, part documentary which included video interviews of workers shot in actual Indian call centers and part fictional recreation of the global call centers onstage interwoven with American pop-culture fantasies and Westernized Eastern myths, created a sense of the place or cyber placeless-ness presented onstage. According to collaborator Ali Zaidi, "as a whole, the *Alladeen* project explores how we all function

as 'global souls' caught up in circuits of technology" (Zaidi, "Alladeen Website").

Although a truly intercultural or telematic third space, neither entirely the US, UK, nor India, did not materialize onstage through a meeting of the distanced workers in India and the Western actors, imaginary interstitial spectacle of space did occur. What was presented in *Alladeen* was primarily an imagined landscape representing an "other" location created through technology, a theatrical depiction of the "internet as a tool of infinite" (Heddon and Milling 2006, p. 211). *Alladeen* was the live enactment of the fictional place rather than an example of an actual multi-place experience (discussed in the next chapter).

The central idea of the production was that the once secure concept of place has become liminal, mobile, and tricky, now that people across the globe can claim the identity[5] and location of a distant culture and its landmarks and identify with other distant cultures as much as their own from living within its information and time zone.

The placeless-ness of the global call center, a space created through technology and populated by workers trained to deflect questions of geography, is emphasized by the visual depictions of the caller's state of mind. The top half of the stage is a screen that becomes a video thought-bubble shifting between the dark of Aladdin's cave, numerous maps, and empty deserts. As the call center workers masquerade as neighbors who know the directions to your corner store, or other facts that imprint them with a comforting sense of hospitality and familiarity, they too become spellbound by the cultural pull and illusion of their Western personas.

Onstage the screen above the call center characters sometimes displays interviews of actual Indian workers, sometimes real places and visual depictions of the mythologies of East and West are summoned by the process of calling and receiving. Not only people, but places are confused and made mutable, slippery, and chimerical. When a caller is lost in the California desert, images of road maps blend into a dreamy, endless Saharan desert landscape.

The whole work seems to de-center the idea of place as stable in the technologically mediated global world. The set itself seemed to slide effortlessly into place and thus from one location into another, destabilizing both. In addition to the tangible sets that make up the classroom call center desks and karaoke bar, there are purely digital settings. The video setting of a Virgin Megastore, complete with city buses and pedestrian traffic, slides into place in projected cubes, like data packets over the

internet.[6] This spectacle is made more effective by the nonchalance of the live actor who walks across the stage in front of the projection, as if this place built by data was a normal aspect of her, and by extension our, world.[7] Fluidity, speed, and transit are emphasized in the vacuous placeless life of this transnational character who leads the new privileged life of jet-travel, karaoke, and ever-present cellular phones; a lifestyle facilitated by the low-wage call center workers who are bodily bound to their office and travel with only their voices.

Watching the actors playing the workers be videotaped with computer equipment functioning in full view of the stage gives the audience a sense that the call center has been re-built onstage. In a decidedly Brechtian exposed manner (Brecht 1957, p. 141), the computers which capture video, play animation, and thus create and mediate the performance, create a sense of a similarly functioning technology hub. In his review, Mark J. Sussman describes this same sense of fluidity and the information-dense place observable in the production. Sussman writes:

> The classroom glides offstage as the projection screen rises and the soundbed changes to a rich collage of rhythmic telemarketing chatter, dial tones, modem noise, and the compressed audio of multiple conversations. We're eavesdropping through a satellite above Bangalore. The projection screen has become a giant computer desktop, jammed with multiple windows, some of which show live video of the stage action shot by onstage webcams. Animated graphics evoke a corporate pseudoenviromnent. Video and Sound technicians, mixing the various feeds, sit calmly at the stage peripheries. (Sussman 2003, p. 696)

The action and the soundtrack and audible whirring away of technology in process further gives the impression that the functioning computerized stage setup is in fact creating an actual working cyberplaceless call center for the audience to experience. It was truly an exciting performance moment to feel a sense of technologically mediated space created within the theatrical space. The hum of the machines recreated a sense of the placeless environment or fluxing place created through the multiplicity interactions between the fictional and actual places claimed by people on each side of the international phone calls. The sound of the machines created a generalized place–any office, anywhere, or nowhere, rather than a specific identifiable or easily placed set of sounds.

Alladeen's greatest accomplishment, beyond addressing growing issues of transnationality through fictional and real characters, was the creation of a theatrical metaphor or imaginary place to duplicate the experience of technologically created "placelessness," multiplicity of place, and shifting place. This is described by Deirdre Heddon and Jane Milling "…a location which is both/and, rather than either/or."[8] The production shows a fictional grappling with evolving conceptions of place in a globalizing world via scenic illusion. This production shows that through the deep adoption of technology in production, Digital Theatre can create theatrical stagings of place which help audiences explore the evolving nature of our world which is permeated with and dependent on technology. It materializes digital concepts onstage, and actualizes a concept only realized in and through its production via technology.

Production Example: *Wings*

Innovators like Mark Reaney experiment with virtual reality scenography and staging productions which use 3D or stereoscopic scenic projections requiring the audience members to wear head-sets, goggles, or other wearables to make the projected set elements seem to join the actors in the third dimension. Virtual reality (VR) headsets often cause nausea and disorientation in the audience members, which can become a distraction from feeling a part of a theatrical experience surrounded by fellow audience members.

Many of Reaney's sets, including *Wings* and *A Midsummer Night's Dream*, used VR goggles to visually meld the virtual place, a computer-generated data-scape, and the real performance space of actors onstage. By equipping an audience with VR goggles and using stereographic projection, theatre artists like Reaney have attempted to span the visual gap between live performer and the projected background; expanding the entire theatre into a virtual reality environment. Though the physical challenge of acting in front of flat screens is not completely resolved, the cumulative visual experience for the audience was nearly seamless.

In 1996, director Ronald A. Willis and designer/technologist Mark Reaney staged Arthur Kopit's *Wings* at the University of Kansas using VR. In the show, Emily, a woman suffering from a stroke, re-lives fragmented moments from her past. Memories of other people, times, and places are layered on top of each other as a visual collage of her personality. The actress onstage shares the audience's visual field with multiple

layers of projected images, video, and other visual data. Because images could be projected directly into the viewer's headset rather than onto a screen onstage, the audience could determine the composition of the total "stage picture" by moving their heads and shifting their focus between the device-projected layers and elements occurring onstage.

The VR augmented production attempts to take the audience inside the degenerating mind of the character, to experience what it is like to have had a stroke. Reaney describes the staging:

> The stage plunged into darkness and the HMDs and projectors began showing fractured scenes of Emily's house, cars, hospitals, ambulances, flashes of color, abstract objects, remembered places and strange faces. At that moment, the audience was launched into Emily's role, experiencing disorientation as she did. With her, they waited through the suspense and confusion. (Reaney 1998, p. 31)

According to Lance Garibaldi, video director for *Wings*, the show presented the audience members with a series of "realities" which overlapped and were superimposed on one another. The audience at once experienced the confused state of being inside the character having a stroke, including perceptual disorientation, and yet at the same time they experienced scenic agency. Garabaldi describes the audience's experience, saying:

> By simply moving their heads, the audience could change the spatial relationship between the live actors and the images displayed on the HMD screens. The audience was thus constantly engaged in actively composing the visual relationships of elements in each scene and generating their own individual performance texts. (Gharavi 1999, p. 270)

This is a challenging theatrical experiment in that the audience is both intimately involved in the character's first-hand experiences, going beyond any ideas of catharsis, tipping perhaps into overwhelm. This could be seen as powerlessness without the intermediary of the actor to buffer sensations/emotions. Yet it harbors a tremendous potential sense of agency in the audience's ability to manipulate the movement of scenic elements in space.

The production may have brought the audience into the mind of the character and allowed them to see her reality and perception of place,

however by using goggles or head-mounted displays (HMDs) the interface can transform the audience from a co-present group of audience members into isolated viewers/participants shaping unique experiences. The production team felt that the interactivity was the most positive aspect of using the HMD technology, but they also admitted that there was a communally limiting effect from the devices. Gharavi says the "…rather intrusive and cumbersome nature of the equipment on an audience member and a certain reduction of the 'community feeling' of attending a live theatre event, [are] an inevitable side effect of the immersive qualities of the HMDs" (Gharavi 1999, p. 271).

Wings and similar Digital Theatre productions also raise questions about the presence of an interface or barrier between the observer, audience space, and the actor. In this production, actors and audience are co-present. But, does the use of headsets constitute a break between the space encompassing the actor and that of the audience? Is the audience still aware of the presence of each other given the blinder-like periphery limiting effect of the headsets? The addition of Virtual reality to a production presents challenges to the fundamental parameters of theatre. Are we not now treading a fine line between a communal audience experience and the experience of an isolated individual at home watching television or a web-cast of some kind, and where does the audience become participants?

Production Example: Threesixty's *Peter Pan*

The global traveling production of *Peter Pan* (2009, directed by Ben Harrison) by Threesixty[9] demonstrates imaginative use of playing with space, perceptually co-creating a sense of place with technology. It is also, however a brilliant use of a 360° screen, and mobile production. This commercial production achieved an artistic effect and theatrical moment unparalleled in staging through its imaginative use of space and projection.

Using a 360° projection surface, much like a planetarium, and an incredibly complex array of twelve projectors, physical set pieces were replaced with visual effects of sky, land, and sea, creating 15,000 square feet of computer-generated imagery (CGI) (BWW News Desk 2016). Through innovative use of not just technology, but reimagining the stage itself to include the vertical playing space usually reserved for circus

performances, the production was able to transport the audience into a sense of "being there" which was truly magical.

The 3D animated set included familiar locations like the Darling children's bedroom, Captain Hook's pirate ship, and the tropical island of the lost boys. The production obtained a sensory, almost VR, feel when the children flew off into the London skyline with Peter Pan. Because the entire set was a projection, it shifted seamlessly, reacting to the pre-choreographed position of the players above the audience, allowing the audience to have the sense of movement and perspective one might achieve on a pleasantly slow VR ride—where the emphasis is on scenic spectacle and smooth, sweeping motion rather than action movie jolts. In effect, it was the audience who was flying along with the children above the housetops and smoking chimneys of four hundred square miles of virtual, fictional London. There was a certain giddy joy that seemed to emanate from the audience when we took flight, and yet, there were no bars, no physical obstacles to it being theatre. We were directly looking at the actors unaided by goggles and experiencing a theatrical moment that simulated the sensation of flight (Smith 2010).

As much fun as it was to fly with Peter Pan, the most compelling moment involved not sky effects, but projected water. In one scene, Tiger Lilly was dropped into water, and the actress was suspended in the air in a way which simulated sinking, then swimming and floating as the animated environment reflected a change in water line to give the audience the feeling of being submerged with her, minus the cold and wet. The colors, undulating lighting, and distortion of view were like looking up from the bottom of a swimming pool. Because the projected world so clearly imitated the physical effects of a real-life experience, and the actress's mimetic movements were so well executed, it was almost like being in the water with her. It was a uniquely beautiful sensory moment.

Production Example: Robert LePage's *Siegfried*

Theatre legend Robert Lepage's 2012 production of Richard Wagner's *Siegfried* at New York Metropolitan Opera broke new ground not only with for its projections, but the mechanical screens with which they were synced. Here the screen is a moving set. Réalizations Inc., a Montreal design company, worked with Lepage's multidisciplinary production company Ex Machina to develop technology to fuse a

mechanical stage/production surface with projections to create the illusion of a virtual reality theatre without the use of special glasses or goggles (Réalisations website).

The physical stage looked like the mechanical spine and ribs of a blue whale. Each of its component weight-bearing beams could reconfigure to create the floor, walls, and other spatial elements which composed the setting around the actors. It weighed forty-five tons and was composed of twenty-four giant planks that rotated on a single axis and moved up and down. In a review of the production, Annamaria Monteverdi remarked:

> The set of 24 swiveling beams formed a myriad of different shapes which, with the aid of complex large scale video projections, created stunning scenic images…transforming from walls, into a ceiling, a forest, cliffs and mountain ranges, and even the surface or the bottom of a river. (Monteverdi 2017)

This innovative approach to integrating scenery as projection surface and multiplicities of projection surfaces is reminiscent of the work of Svoboda, especially *Polycron* (see Box 2.2).

Box 2.2: Historical Precursors: Josef Svoboda
Like Piscator, Josef Svoboda's Lanterna Magica hybrid cinematic place and "live" performance created multiple points of interest and action. Svoboda's visual technique was to create a sense of hybrid cinematic place which incorporates scenic movement and relates directly to stage action. "But then a traveling screen picks up different parts of the [scene] as if you were looking through a window at part of your environment" (Burian 1971, pp. 94–95). What Svoboda referred to as the "confrontation of selected realities: actions, objects, people" allowed these visual elements to be more theatrical than painted sets and usual stage constructions (Burian 1971, p. 95). In *Their Day*, personal response or experience of place is highlighted in the visual retelling of a car accident from the victim's point of view (Svoboda 1993, p. 56).

LePage's extended team created a working structure which was responsive and constructive, configurable to the performer's movements in space while altering the stage space into a visually adaptable kinetic projection surface. The high-tech set "…rotates, bends and transforms into different

shapes — such as a river or a spiral staircase" (Monteverdi 2011). In LePage's words,

> The set is actually not only illustrating some of the ideas in the *Ring*, but it's also literally supporting the characters and the ideas…It is also a projection screen. Whatever configuration it takes, no matter how complicated, it can receive projection and transform itself into all sorts of things. And, of course, the story of the *Ring* is all about transformation. (Réalisations website)

The effect of virtual reality immersion was achieved by the synchronization of physical surfaces through which the performers moved and projections were modified to be sensitive to changes in depth and motion. The set accomplishes physically what virtual reality suggests ethereally through animation and light; the easy reconfiguration of space/place and the objects/world that surround a player, "For instance, an opera singer might move inside a projection of a castle, which would appear three-dimensional to the audience. As the singer moves, the set around him or her would shift in what appears to be 3D" (CBC News 2011). Actors walked through a waterfall, and up a hill, all of which was the transformed or tilted set-machine.

The abstract projections were synchronized with the movement of the set to complete the sense of place, "The set uses a bank of projectors, motion-capture cameras and computers to fashion the images. The tilt on the stage allows for hundreds of different projections, changing in slivers of a second, at the different depths to help create, say, the color, shading and contour of a rock, or at least to convince the eye" (Wakin and Lohr 2011). This non-realism helped to create a sense of virtual reality and plastic space.[10] LePage's comment that the design supports the story, just as the projectionist set supports the actors, shows a high-level of theatrical-technological metaphorical alignment containing both complexity and simplicity at once. The transformation of the set mirrored and enacted the transformative nature of the work. Both LePage and the Met director, "…tried to imagine the Ring the way Wagner would have staged it if he had access to twenty-first century technology" (Réalisations website).

It is hard to find a more compelling argument for creating a Digital Theatre production than being able to create something that fulfills the creator's artistic vision. This production's use of physical and digital sets in

tandem to create another world is not only magical, but shows us the way toward creating ever more complex and compelling theatre environments; real-world blended environments of light and structure that hint again at the capabilities of the fictional holodeck.

In each of these Digital Theatre productions, digital technology found in scene design was used to create illusionary places which transform the stage into the world of the play in ways which go beyond purely mechanical and physical means. The flexibility and responsiveness of animated or digitally projected settings create a sense of life-like depth and movement, in some cases even gaining a sense of presence or character in themselves.

One could think of the illusionary place created by digital spectacle as an active place or performed landscape, which would in a sense make it another actor, or the digital other of the "live" human actor. In addition to creating illuminated settings which immerse and enrapture the audience, these works begin to move beyond depictions of the physical world around us to explore what is in our collective consciousness. By creating new digital worlds onstage for us to experience, these productions explore and embody our evolving concepts of place impacted by the ever-expanding presence of computer technology.

In the next chapter, we will move beyond the imagined realities created through scenic effects into shifting our understanding of the Theater (building) place itself.

Notes

1. "The first *theatron* (or 'seeing place,' as the auditorium was termed by the Greeks) of the Theatre of Dionysus was the hillside that sloped down from the southeast corner of the Acropolis" (Brockett and Hildy 2003, p. 31).
2. Much of the experience of 3D animated sets is modeled on the experience of similarly animated video gaming environments. Video games give the user a unique experience of place and space, providing the user with interaction, power, flexibility of scale, motion, and visual delight (chroma). The sense of power of the individual in shaping or moving through their environment is a major part of the experience. The reward of the place is in the novelty of visually "moving" through an environment which may mirror laws of our own universe, but distorts and sometimes perverts (either through simplification of planes, colors, or actions) or delays or conversely expedites reactions and causes a distorted sense of time along

with a sense of floating or semi-embodying the new place (Reaney 1993, p. 30).

3. "Instrumental Media. Interactive technology is used to create new kinds of instruments. For example, one could cover the stage floor with pressure-sensitive tiles and program each tile to produce a different sound or different image when a performer steps on it" (Saltz 2001, p. 126).
4. Attended by author, December 5th 2003, New York. The landmark piece of Digital Theatre has since received a significant amount of critical attention.
5. When asked to give their names the call center workers in the stage production give their American television show, *Friends* character personas, and work hard to "neutralize their native tongue" (Indianness), and convince their callers that they know American neighborhoods that they have never seen. As the workers put on their Western personas, their faces also morph from the live video feed to TV sitcom characters Ross, Rachel, and Joey from *Friends*.
6. "Each pictorial element is flown in…a revolving door, the concrete blocks of the building's façade, a bus stop and a mailbox" (Sussman 2004, p. 695).
7. "…a large screen behind her begins to simultaneously transform and blocks of images slide effortlessly into place like a puzzle, finally becoming a Virgin Records megastore" (Parker-Starbuck 2004, p. 96).
8. "The Builders Association…have recently used the interface between live and mediated experience in order to engage with contemporary concerns relating to globalisation, including the compression of time and space and the 'hybridisation' of identity, enabled by technology" (Heddon and Milling 2006, p. 211).
9. Attended by author on May 2, 2010 in San Francisco.
10. Wakin and Lohr, "3-D Comes to Met Opera, but Without Those Undignified Glasses." "When the fractals are programmed into the computerized light system, the result is a dense symphony of geometric detail, giving the illusion of three dimensions."

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CHAPTER 3

The Theater Building/Place

Place is doubly present in Theatre, it is the actual physical location of performance and the fictional location of the story being told. It is present as the physical reality of the theatre building itself, which remains at least minimally perceptually present during the theatrical experience as the stage and house. Gay McAuley notes that Theatre is "perhaps the only art form which the name given to artistic event occurs, or where the art object is displayed, is the same as that of the art form itself" (Gay McAuley 2000, p. 1).

There is something else in the basic theatre equation of: Actor + Audience + in a shared Space/Place = Theatre. What is most essential about Theatre is the live togetherness. The shared place makes this possible; usually the theater building itself.

The essential element is the *place* or space for seeing, the building is a container which allows us to gather together and collectively imagine. This shared experience of active imagination, unlike the isolated disconnect of television and other compartmentalizing media which discourage face-to-face interactions, allows us to share a living sense of community as we gather together becoming an audience. The significance of co-presence between audience and performers to hear and see the story *can not* be overemphasized. But it is the place of the theater building which is the binding element which makes a performance possible.

N. Masura, *Digital Theatre*, Palgrave Studies in Performance and Technology,
https://doi.org/10.1007/978-3-030-55628-0_3

While Western theatre began outside with the Greek theatre on and evolved through time and place to meet the needs of audiences, creators, and their surroundings, into pageant wagons, traveling shows, or indoor–outdoor structures like courtyards and the Globe; today, the majority of theatre can be found *inside* a theater building. These theaters can be imagined to have certain familiar characteristics such as having chairs, curtains, and a stage of some form. Whatever the stage configuration, a theatre building is defined by its ability to create a space for illusion. It is a flexible, safe space where other places and people can be imagined. It is defined by its separation from what is inside and what is outside. A definite place whose walls create an interior purposed for entertainment; a box for the imagination.

A theater's walls bring individual audience members together as one body, one which joins through witnessing and reacting; who then disperse into the dark of night as individuals just as they came, except for the memory of a shared experience. It binds audience and actors together in a shared moment. It encompasses the set and the world of the play in this temporary shared space. The theater building itself is the facilitator for the magic of other places, and the people and actions which inhabit those worlds. But in Digital Theatre, the theater walls that bind it all together can be removed, and the still theatre remains.

Digital Theatre is in some senses not a disappearing act, but a conjuring of other places through expanded theatre magic. The flexibility of digital technology lends a level of perceived flexibility and transformation to performance places. The relative portability of digital technology allows for the layering of media onto found spaces or converted locations creating overlap between the real and the imagined. Technology also allows for the creation of seemingly alive active performance spaces and linking diverse places together to create expanded playing spaces.

In this chapter, I will discuss the ways in which digital technology allows us to transform our expectations of the theater place. This includes a discussion of:

1. Portability: Mobile theatre and tools which allow a troupe to perform in a wide variety of buildings and locations;
2. Site-Specific Performances: Performances created about and around a specific location, generally not a theater building;
3. Extended Playing Space: Multi-site performance which composite two or more geographic locations; and

4. Intelligent Spaces: Interactive playing spaces which utilize integrated digital technology to partner directly with the actor, giving them agency.

Brief discussions of the type of performance of place will proceed the groups of performance examples. In the section on extended playing space, the examples stem from the author's praxis as a practitioner and collaborator in multi-site performance with the ArtGrid online community for several years.

Digitized performance environments are at once flexible, fluid performance spaces in their own right. A performance site layered with digital images can complicate the sense of place and temporality or public memory. Stages made interactive through digital means carry a sense of being both a space of potentials and a unique place which can facilitate human–computer interactions. Digital Theatre performances held in such linked, layered, and active venues are staged at once in active environments which blend space and place.

In a sense, a performance where an illusionary place is suggested only through actions in a void, is a precursor to cyberspace which also exists as "a practiced place," apparent only through human interactions (de Certeau 2002, p. 117). In the majority of theatre experiences (with the possible exception of some outdoor and street theatre) the theater is a relatively stable or solid and describable location or place containing a performance space which is inherently filled with action and subject to change. The addition of digital technology to performance spaces causes further mingling of place and space within the performance environment (see Box 3.1).

Box 3.1: Historical Precursors: Edward Gordon Craig

The key to understanding the impact of digital technology on performance spaces is to recognize the ongoing desire for flexible, transformative theatre performance places. Before the use of film onstage, Edward Gordon Craig made important advancements to the flexibility and malleability of the stage. As a scenic designer he is among the first to experiment with screens as scenic element and projection surfaces for light. He sought to create spaces that were transformable, as well as economical and easily assembled (Innes 1998, pp. 142–143). Craig was working primarily with light and the shapes of the screens, allowing the forms of the actors to play

against their transforming arrangement (Craig 1998, pp. 279, 286). In his productions as many as twenty different screen arrangements created a dynamically changing sense of illusionary place (Innes 1998, p. 164).

Craig writes that through the repositioning of his screens, the set "can seem like four hundred other places." It is enticing to imagine that today's digital technology would allow Craig to create a playable space or a set-machine with the "ability to be changed and altered…by a momentary idea," creating the "intangible" flexible machine he imagined (Innes 1998, p. 180).

With the steady advance of technologies which allow us to take media and sound with us everywhere, it should be of no surprise that Digital Theatre, utilizing similar tools, has allowed performers increased freedom and mobility. Spectacle that might have only been possible inside a theater building can now leave this contained space and venture to other places. These next examples evoke the past of the traveling theatre wagons which allowed theatre to step outside of a building while maintaining a sense of portable facade and spectacle; in a sense, taking theater with them wherever they go. Imagine for a moment, a fully equipped digital performance caravan with sound, light, projections, computer animation or other media, interactive sensors which could facilitate theatre performances without the heavy cumbersome aspects of staging, like a Broadway touring show. That type of mobile Digital Theatre venue, like a digital stage wagon is suggested by the work of our next group, Studio Z.

Portability

The insights and advancements made by groups like Studio Z begin to bring theatre back into the realm of the mobile by making advanced scenic technology possible in limited spaces, and making theatre expandable. Portability has the possibility of providing access to broader audiences in spaces that might not otherwise be reached with live theatrical production. It offers a flexibility of venue as well as potentially positive economic benefits by being visually imaginative without being cost-prohibitive through using a digital media library. It is possible that some of these models could even return us to the days of traveling players and self-contained traveling caravans.

Production Example: Studio Z

The portability of digital media can be seen in the model of Studio Z, "A multimedia improv company." In 2003 the author visited the Chicago Digital Theatre company and met with the founder, Dan Zellner who showed their technology before attending *You Gotta Be 'Clidian Me* (2003, written and directed by Gregory Winston). The graphics for the production were rather simple and still evolving, but the idea of creating a library of images to be used for improvisational sets, props and prompts was solid, and the projection technology seemed formidable. The flexibility of space, the performance setup time, and the responsiveness of the media to the actors' improvisations was impressive.

Because the focus of this company was integrating live performance with digital media in the tradition of improvisation, Zellner talked at length about the Commedia and Second City traditions his group embraced. The group consisted of four improvisation-trained core actors familiar with a set of stock local characters (such as a Chicago Cubs fan and a coffee barista), and six different writers creating short-beat scripts. Zellner's vision for the future was to develop Studio Z into a digital improvisation company, with constant players creating new content every night.

In contrast to Reaney's detailed and complex animations discussed earlier, Studio Z's projected and audio media was simple. Their emphasis was on creating a mobile performance library of broadly drawn and scenic elements to be projected behind the actors to create settings and items to support the choices of the actors in the moment—in the manner of a traveling Commedia dell' Arte troupe quickly pulling props and improvising around stock characters. The media library of sounds and images the group were creating, was intended to last through multiple performances, and could be called up instantly and reused by the actors in many ways. The instantaneous availability of a wide variety of digital elements complemented the cabaret-style shows which were simple scenarios following branching narratives influenced by audience feedback.

With simple iconic costuming and props and a highly flexible projected backdrop, Zellner's troupe creates improvisation around contemporary situations complemented by a digital library of stock images, sounds, and other media which can be pulled up or changed with the click of a button in response to actor or audience input.[1] The performances used symbolic props, scenic locations, and sound effects to support the actors' efforts

to personify stock characters. Characters like the Chicago Sports Fan and other modern descendants of Arlecchino and Pantalone, interacted within a number of amusing scenarios in front of instantly changing settings.

Zellner talked about using the screen with projections as one would utilize traditional backdrop scenery but instead of a traditional physical theatrical model which might limit one or two scenic locations, the use of digital would allow for an easy change of locale. He wanted to break down what he saw as the conventional model of limited set locales and use short scenes in multiple settings. To that end, North Western University's EVL (Electronic Visualization Lab) created seven rehearsal (VR animated) sets.[2] According to Zellner there are practical realities of utilizing a screen as a background for action. Actors must adjust to the limited depth of playing space, technicians must adjusting the lighting so that actors' faces are not washed out, and directors must consider blocking uses such as using areas behind the screen and actors' positions as they are dialoguing with the projections on screen.[3]

The physical technology which made their technologized performances possible included easily assembled aluminum frames, rear-projection screens, Mac computers, and projectors specially outfitted with mirrors to cut down the projection throw distance by half. This "theatre-friendly technology" (as Zellner called it in conversation) could be used to create a VR CAVE environment. The reduction of the projection distance allowed the actor to stand in front of the projected sets even in rooms with limited space, giving the group the ability to perform in varied indoor spaces. Like many improvisational groups, portability and flexibility are the keys to their work. They could take the theater place—or the mechanism for visually creating with them. Rather than traveling with sets, flats, and other dressings, the troupe carries only its digital equipment which can be set up in any space with an electrical outlet or two, and new projected image scenic elements can be created to fit whatever is needed by current productions (Farley and Zellner). Zellner suggests that the digital setup is also cost-effective; once the initial purchase of equipment is made the operational cost is negligible.[4] It is possible that once installed, digital production methods could conceivably create economy of space, labor, and financial resources for theatre production in staging other types of theatre as well. Studio Z can create new visual settings in the form of animations, images, and videos which can pack up and travel.

Like Studio Z's updating of Commedia Improvisation through portable scenery, the Globe Trotter model was a project re-envisioning

the tradition of seventeenth-century traveling Shakespeare troupes with technology to bring theatre to diverse communities. The "Globe Trotter, A Portable Shakespeare Theatre for the twenty-first Century" by Office of Mobile Design, resembled a Mars rover when "deployed" from its truck trailer "…on any relatively flat surface" (Office of Mobile Design 2007). The unit was designed to both house a traveling troupe and act as complete mobile theatre unit (with box-office, stage/backstage, electric LED advertising, lights/sound, and photovoltaic power source). In addition to wings for scenic projection and acoustics, it featured web-casting equipment, and inflatable pod rooms. "Wing walls unfold from the side to enliven acoustics, provide scenery surfaces and filmed actor-close ups, and support lighting" (Office of Mobile Design 2007). This sounds very much like the same ideal or dream of a digital theatre wagon.

The portability of Studio Z's actual set-up allows the group to perform in new locations outside of preexisting theatre places, extending the spectacle associated with theatrical place to almost any room. In Zellner's words, "Studio Z fosters the viability and accessibility of theatre in the Twenty-First century, providing new levels of interaction on a cross-community, national and international stage" (Zellner). The relative portability of the equipment allowed them to easily visit different areas in the community, thus "…meeting people at their level." To that end Studio Z's techniques have been transformed into a class which allows students to combine improvisational acting and digital media in existing classroom spaces.

It was Zellner's hope that mobilizing Digital Theatre could bring theatre to new audiences and communities, expanding awareness of theatre and its imaginative possibilities. The idea of reaching audiences in communities that do not regularly have access to traditional theater buildings, due to cost or location, is a valid reason to consider expanding theatre's place via digital technology. We can imagine for example, how impactful it might be to take a relevant new play into rural areas, or insightful classics into urban neighborhoods struggling with economic inequity. Theatre as we know can be an uplifting, humanizing tool for education, and digital technology could conceivably make that more cost-effective and accessible.

In the possibility of Studio Z's work, there also rings the distant echoes of not only Commedia troupes, but also door-to-door Magic Lanterns, Vaudeville, and other nomadic theatre traditions. The ease of setting up in

multipurpose places suggests the possibility that similar traveling companies could utilize projection technology to create mobile theatrical place (see Box 3.2).

Box 3.2: Projectionist Scenery

From the seventeenth century through the nineteenth century in Europe, the Magic Lanterns developed as projection devices and became quite popular. It was an optical box made of wood, sheet metal, copper, or cardboard; it was cubic, spherical, or cylindrical in shape; and in a darkened room it projected images painted on a glass slide onto a white screen (fabric, a whitewashed wall) (Mannoni 2000, p. 33). Projectionists traveled from door-to-door promising to show people the wonders of the world in their own homes (Mannoni 2000, p. 78).

These flame lamps or "living lanterns" using stencils cut in tin (like gobos) to project specters or creatures for entertainment in medieval times. This popular entertainment showed a fascinated public the super-natural, illusions of light, and re-creations of scenes from everyday life in miniature (Altick 1978, p. 117). This would have created a mediated/live experience just as earlier actors interacted in shadow play in some theatrical entertainments (Altick 1978, p. 117). Eventually these forms appeared in the theatre as well (Walne 1995, p. 9).

Site-Specific Performance

In Digital Theatre there is often overlap between real and imagined places. This perceptual shift becomes exceedingly clear in the case of site-specific performance where the playing spaces replace traditional theater buildings. Often these newly rediscovered, re-imagined, and repurposed performance places, become characters themselves; characters central to the performance and the telling of their own story.

Site-specific theater often emphasizes accessibility and values community interests, voice, and collaboration. It can be a powerful tool for community engagement. By going outside of the four walls of the theater, the possibilities of directly relating to the world around us is expanded. However, aesthetically there is a risk of diffusing the potency of this theatre, with the audience dissipating along with a sense of the cultural worth or meaning. This could potentially occur if an event is not closely crafted from specifics and tied to the deep cultural meaning or inherent

nature of the place of performance, whether it be a man-made building or a natural landscape. If the connection to place is clear, then the work has more meaning and impact with a local or inquisitive audience that is place familiar.

Site-specific theatre *is* devised theatre. It is the theatre of *place*. There is much to be said for rooting the performance material, be it conceptual, written, visual, auditory, movement or other data, in the history and civic or use of the place, and in the imaginations and memory of the community in which, and for which, it exists. Successful site-specific performance opens the audience the sense of recognition of a place, and their relationship to it, of which they may not be not fully aware. Thus it is bringing to light echoes of the past, such as who lived there, walked, met, died there like-following the tracers of life. The work of creating site-specific theatre is very often, at its core, the making of theatre of community engagement.

Site-specific performance can be done without the use of digital technology. The addition of digital technology smooths the way to re-imaging the past and transitioning spaces into flexible, layered performance environments. In a sense, site-specific performances are also caught up in the discussion of time. In the three examples that follow time is considered in the recent past (in work by Talking Birds especially *Undercurrents*), the present and future (in *Blind Messengers* by George Coates), and the very distant past (the Coventry Mystery Play).

Production Example: Talking Birds (Undercurrents)

The UK group Talking Birds specializes in community-devised, site-specific theatre achieving acts of transformation of local places and inviting their audiences into their re-imagining as performance spaces. Through creative enactments devised from research and interviews, they reinvest their places with the stories that made them living places rather than edifices.

In 2006, in Coventry England, Talking Birds core members Nick Walker (writer/director), Janet Vaughan (set/costumes/lights), and Derrick Nesbit (sound/video) their process while the author observed them work and documented part of creating a new piece *Three Doctors* (in Fig. 3.1, you can see the three core members Walker, Vaughan and Nesbit and collaborators Steve Jonestone, Lizzy Wiggs, and Jake Oldershaw inside a local decommissioned hospital, exploring, then mapping the space for later staging and storytelling encounters). Though Walker

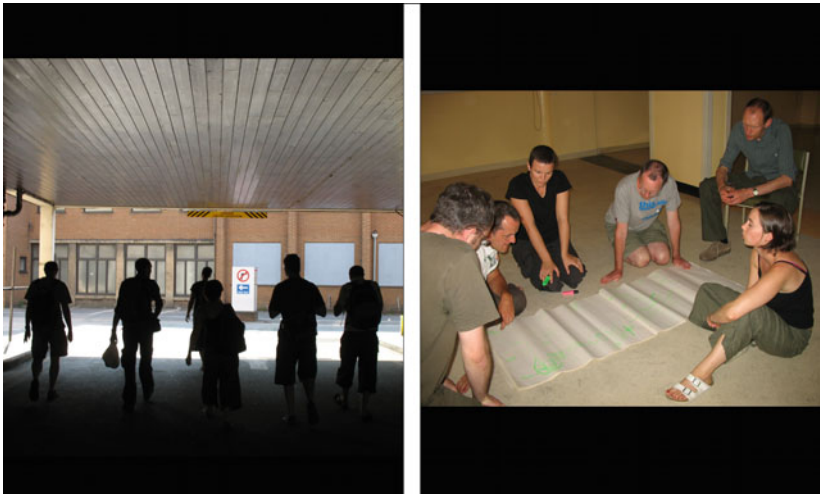

Fig. 3.1 Talking Birds working in a decommissioned hospital, setting up for *Three Doctors*, a site specific performance (*Source* Photos by author)

does not consider the group primarily a Digital Theatre company, it is clear from watching their archival material that they utilize digital video and audio media to help them create an imaginative re-staging of place in many of their works. Walker expressed that the digital revolution helped them move away from theater buildings to other sites. Walker said, "Because the means of production are smaller and more manageable, transformative effects can be carried in a kit with you, allowing you to transform different spaces." The portability of digital technology enabling the geographic spread of their art form.

Place holds a special interest for Talking Birds and their theatre is one of community consciousness as they specialize in "Acts of Transformation" rooted in local history. In conversation, Walker said they are drawn to "…neglected, about to be destroyed places…making sure they don't misuse monuments, or that they don't just slip away—I think that's a sort of useful role." They see themselves as filling a role in the community. The sentiment was delivered with the sense that in earlier times a town like Coventry might have a cobbler, a baker, and a blacksmith, and now they also have site-specific practitioners whose job is to help us remember and revalue the recent past. The role seems to be one-part community

historians and one-part performers who assist the community in joining in performative acts of remembering. This can be seen as a newly integrated and revitalized role for theatre in its community.

According to the group, their process for creating new works is to first find a location that interests them and has a special resonance or significance for the local community. Once the place is identified, the Talking Birds make a connection with the community to discover the place's history and to trade ideas, share resources, conduct research, and learn local oral histories. Vaughan said that they interview people, asking them: "What would you like me to know about this place?" Vaughan said that they are also interested in shifting peoples' perception of a place the next time they visit.

The Talking Birds create media and performance text, and craft a performance in the chosen space. They have found that each site has its own story, and comes with unique challenges that require and an individualized, case-by-case approach. Walker described going into "…places that have touched people, expecting to be pushed or challenged," stating that they "…don't have total control over the specific site, or how things work in that setting." There was a sense of the Talking Birds' rich appreciation for the subtleness of place present in how Walker spoke of "peopled places." He revealed a hint of this complex relationship saying, "If a place like a car park or a hospital was on peoples' walk to work, in the fabric of their everyday life, then the building should be changed for them, and become part of their history."

For *Undercurrents* (2006, directed by Nick Walker), the Talking Birds traveled to the English seaside resort of the Sun Court at the Spa in Scarborough, where they researched the place's history and devised a performance which reanimated life at the resort at its height in the early twentieth century. The project, a unique pedagogical model, was a collaboration between students of the Hull University, Scarborough Campus, and the professional media-art-performance group.

The *Undercurrents* project's progress was documented online in a visually rich website that logged the historical findings, which included: letters, black and white photographs, newspaper clippings and other ephemera, as well as the performance process of the group. The *Undercurrents* project continues to have a digital presence online through the website, which acts as an archival time capsule for both the resort's history and the student/professional group. Describing their process Nesbit said "[we] enjoy collecting stories from people, being put in

touch with various individuals, working with the community, creating an online scrap-book, posting thoughts, images, sounds, or videos, so that to some extent the show is shaped by those who choose to participate." The performance itself combined digitized media (both photographic and memory-based) and live student actors used to stage an interpretation of life at the resort before a local audience (Talking Birds, "About *Undercurrents*").

In staging site-specific performance, there is a complexity of meaning which forms in the minds of the audience. Mike Pearson and Michael Shanks wrote about being "Aware of its nature as a contemporary act, as the latest occupation of a place where previous occupations are still apparent and cognitively active, the friction of what is of the place and what is brought to the place" (Pearson and Shanks 2001, pp. 130–131). This *cognitive friction* is built from the simultaneous awareness of the co-existing real and imaginary actions and elements that are at play in the performance. The actions which are staged, may actually overlap with the historical actions of the past, or they may be imaginings or summaries or composites of past actions and characters. Walker put this in perspective as a practitioner, when he said in conversation:

> Past, present, and future exist on the same place at the same time, kind of like the lay line principle - that becomes the opportunity to see that experience of place…compacted history by overlapping…past intervenes.

This intervention can be seen and even felt in many of their performances.

In the show *Undercurrents*, digital projections were used in a live performance which reenacted elements of life in the place's heyday. Through digital media and performance, the public place was being infused with private memories sourced from archival material and community recollections via oral histories. Viewing the website's archival images of the production, one gets the sense of a pleasant haunting. Set on the promenade facing the sea, projected light finds a projection surface on screens behind the performers, as gaps between screens caused the light to spill over and glint eerily like beacons from the beach (backstage) (Talking Birds). In some cases images of the past were projected back onto the place where they originated. Other historical moments were recreated in video or by the live actors onstage in actions representing the past activities and former liveliness of the resort. There was video imagery of the students swimming in the costumes and manner of period bathers, as well

as live onstage dancing and acting. These live and media elements mixed to create a hybrid temporal spectacle fusing multiple interpretations of the place. At the end of the show, the image of the building was digitally washed out to sea.

In the work, there is a sense of duality inherent in the past re-lived through the performance which both feeds and calls upon the audience's memories. This is achieved primarily through the use of digital video and images projected onto the location. The public place was infused with private memories, from archival material and community recollections. Since through the passage of time, for many the reality of the place's purpose had faded into the world of memory, when the grainy photos were projected against the facade of the building, the past was re-imaged through intersections between the personal and the collective. The performance website states:

> This part of the seafront may be familiar to you. You may have walked here many times. It may hold many memories. You might know its past or have an opinion about its future…Or perhaps this is your first visit…Whatever your relationship is to this place, it will not be the same as the person standing next to you, and it will not be the same as ours (Talking Birds).

Ideally, a sense of continuity for the place is achieved through the local audience who have multiple ties to the past themselves. Some audience members were old enough to remember when the resort was up and running. Vaughan said that Talking Birds is usually only interested in the past century, rather than the ancient past, precisely because there are still people to remember. This possibility for interplay between past and present through invoked memory is important to the Talking Birds. Walker said that "It's a kind of brightness of memory, how best to reflect…and create [it]." He stated that they wanted to use memory as material for their productions without debating the material. By collecting too many examples to focus on rather than just one, they could hint at a few, thereby expressing the many as an abstracted memory. Walker stated that for them, memory was a resource to be manipulated, stretched, warped, and bent like a digital sample. The performance itself was like an act of memory, "…it won't be repeated in the same way, just a pure moment recall, but altered and manipulated."

Perhaps, in digital site-specific performances like this one which layer place on itself via digital media, there is a third sense of place, an *invoked*

place. This semi-fictive place is not purely imagined like fantasy, but recalled. This would be a sense of place formed where the imagined (usually expressed as set) and the real (performance site, usually a theater building) overlap in the minds of the audience, like an active daydream blurring between memory and immediate senses in the minds of those who remember the past.

The next two pieces, are primarily significant in that they illustrate that the nature of the performance, be it civic engagement or historical embodiment in these cases, is directly shaped by the place chosen and its current and past significance. The first location being staged was a thriving public space infused with high-tech investment and buzz, and the latter was the shell of a historical edifice.

Production Example: Blind Messengers

In *Blind Messengers* (1998, directed by George Coates) by Coates Performance Works, George Coates utilized a public courtyard as a performance space, turning it into a place of theatre reflective of the community for which, and in which it was staged. This original performance, often referred to as a digital "opera" used projected digital animation and video to blend fictional and actual places on the side of a commemorative public sculpture (Elliott 1998). As with many other site-specific performances, temporal place shifted while the physical site remained the same. Here it is the future, rather than the past, which was emphasized.

Blind Messengers was a sort of futuristic opera about time and progress using live performers and animated projections. It was staged in a public square in front of a sculpture at the Golden State Museum for the Sesquicentennial celebrations for the state of California in Sacramento. It was a spectacle of civic pride. The production featured live singers and an 80-member choir "from the future," as well as newly composed music by international techno-musician Forest Fang. In addition to the physical edifice and cityscape, the present-day economic landscape was inherent in the presence of production's digital effects. The production was a digital-economy showcase, demonstrating civic pride in California's Silicon Valley tech boom.

The past was a solid visual element in the production through the presence of the new sculpture. This became a key to the region's historical past and fictional future. As the production moved first backward then forward through time, the face of the sculpture appeared to adapt to the element

of time. Tableaus vivantes, reenacted poses using video and live-action seemed to emerge from the rock surface. Through digital projection, the sculptural mural art came to life, showing first early images of cave people to later murals of Diego Rivera, and finally the images aged into the future where the mural's letters weathered from time.

The passing of time and it's physical shaping of place was indicated by animated wear of the stone surface projected onto the sculpture. The new landmark became cracked, dirty, and worn, lending an air of believability to the fictional future characters, and causing the audience to reexamine their physical-temporal surroundings. This demonstrates how digital media can alter our perception of a real performance place by mixing it visually with sets of light.

In this production the future was imagined through the lens of the present. The "future scientist" characters gathered information of the present, acting like temporal tourists snapping photos, an effect that serves the purpose of visually incorporating the present-day audience into the projected scene.[5] This snapshot integration into the projected place made the audience aware of their own place: both in a sense of the actual physical location in seats watching the Centennial celebration and being embedded in the fabric of the community's ongoing history. By digitizing the audience, Coates integrated them into his performance, making them part of the historical moment. The audience was skillfully woven into the artistic tapestry of the sculpture/projections/performance that unfolded before them, and incorporated into the historic epic performance which glorified California's technology. The audience was made aware of their actual role, citizens of community with the very real presence of the tech industry, leaders of the global conversation on digital technology and innovation.

The production used tech innovations for its own community's economic prosperity to enact a pageant of that prosperity. *Blind Messengers* was an exemplar of Digital Theatre of the digital tech boom, in both production means and message. No other means except digital technology could have better represented that particular moment in history as a cause of civic celebration. The next piece deals with connecting to civic history from the distant past.

Production Example: The 2006 Staging of the Coventry Mystery Plays

In the summer of 2006, hundreds if not thousands of people attended the staging of the Coventry Mystery Plays by the Belgrade Theatre in Coventry, England. On a warm night around sunset, modern audience members gathered outdoors in the shell of the Coventry Cathedral surrounded by gothic arches, remnants of windows, cellophane parade animals, and theatrical lighting rigging and were welcomed and enfolded into their community's ancient theatrical and religious past. Historically, these performances date back to the twenlfth Century, with the creation and migration of the festival of Corpus Christi in 1311 to a summer week-long fair. According to the Program Notes the "…last complete cycle was performed in 1579, 1962 marks the first performance of the Mystery Plays since the bombing of the cathedral in WWII." The performance was a thriving example of a community reviving an ancient tradition and featured choruses of local citizens, puppets, digital technology and an updated place-specific script.

Community and tradition are invoked by statements in the program, such as "…for the people, by the people," made in reference to the company's composition and the message of the performance and intended audience. Because they were telling a modern version of the stories, it seems only fitting that they included the digital media with which today's society is so accustomed.

The Mystery Cycle, staged in Coventry's war-ravaged cathedral, utilized digital real-time video effects to project close-ups of action and to create a sense of the place being animated with the past. Great use was made of digital projection. In one case the resurrection of the dead child, a real-time camera feed shot a close-up on the girl and Jesus as the mother looked on and cried. This gave play-by-play sports or live news close-up view and feel to the event; mediatizing it and putting it in context of what we see today as breaking news or important publicly televised events.

The particularly moving and effective use of digital technology overlaid a real-time video of the actor playing Jesus' face projected onto a mammoth stone face in the cathedral's shell. The projection onto the walls of the cathedral came as the character had died and was now risen and talking to his disciple from the other side of mortality. It was brilliantly effective. By projecting the actor's face over a large stone monolithic sculpture of a man, living face on top of stone face, the staging gave one the sense that the divine presence of the Jesus character was speaking

through the past and into the present. It seemed as though the idea of the Christ (a living depiction in stone) was given new life and meaning. The production connected layers of ancient, current, and belief-based place, in a sense-making visible the transformative or holy dimensions of the place. The performed church in a sense rose back to its glory from ashes through gathering the audience and performing the belief in community. It rises, like the act of belief, just as the Christian story is retold throughout generations and is encapsulated in the tradition of staging the Mystery Cycle in this very place. Through staging with Digital Theatre techniques, ancient stories and histories were made relevant to a modern audience, enlivening and reviving a centuries-old performance tradition.

Major advances have been made in the field of projection in terms of mapping animated imagery onto objects both large and small. Architectural projection has turned public squares and historical buildings into visual theatre and moving art. Public projection artists have changed buildings into faces with talking mouths, pillars, and stairs have changed into music box components (Bred Castle in Hungary). These technologies are allowing craft details to come alive. It would not be a difficult step to put a few actors in front of such a building in animated transformation and make the experience Digital Theatre. Christie Digital has done beautiful work on historic and varied places such as San Francisco's Pier 15, Moscow's Saint Basil's, and in India, but there are scores of other examples. Jake Pinholster, Daniel Fine, Alex Oliszewski, and Mathew Ragan have developed a work called *Terra Tractus*, which was a visually stunning site-specific projectionist performance including dance, original music, projected animation, and rock climbers in a rock quarry in Connecticut (Ragan, "*Terra Tractus*: The Earth Moves").

Extended Playing Space and Multi-site Performance

With the addition of digital technology Shakespeare's quote, "All the world is a stage," is literally achievable. With the addition of technologies that achieve telematics and a wide host of video-conferencing tools, now the whole world can be conceivably and perceptually linked in reality into one playing space.

The experience of making and partaking in theatre is an act of and an awareness of edges and liminality. Theatre itself is a time/space/place machine. According to McAuley,

> Theatre is an art form that plays intensively with notions of inside and outside, particularly onstage/offstage relation and presenting fictional…but the theatre building itself, in its relation to its surroundings, is also part of this interplay. (McAuley 2000, p. 51)

This compelling type of conceptual play between the boundaries of onstage/offstage, inside/outside, or here/there is something uniquely human and demonstrable in theatre. Within the contained space of the stage as a specific place within the theater building, under the control of lights, shaped by set and costume, watched by the audience, and sharing the world of the play through the actor's representation of character, the whole world is accessible to our imaginations. In Digital Theatre we can make the imaginary "other" places appear in real-time as one place cohabits with another.

Fundamental understandings of the nature of concepts like place are altered as playing spaces are expanded, joined, and augmented through the addition of digital technology. Place as defined by de Certau as fixed and solid, whereas space is defined as flexible and confined through movement (de Certeau 2002). When real places share one space (via cyberspace) we have an ontological conundrum, something which is both. Multi-site performances take place in multiple playing sites, on stages in different locations, thus combined they become multiple places at once within an extended playing space. It is almost as if we have actualized portals to these imaginary and real places onstage. Through technology, the world *is* our stage. The metaphor has become actual.

Telmatic art, which links places through electronic interactivity, and Telepresent performance experiments like *Telematic Dreaming* (1992, directed by Paul Sermon), *World Wide Simultaneous Dance* (1998, directed by Laura Knott), *Hole in Space* (1980, directed by Kit Gallowayand Sherie Rabinowitz), and the collaborative work *Network Touch* (2003, directed by Galen Scorer) were artistic steps towards demonstrating the concepts of joined place, and the potentiality of interactive agency across distance. These conceptual experiments paved the way for more theatrically advanced performance works to develop. Multi-site performances are synchronous performance elements in disparate geographical locations joined into one show–via audio, visual, and sometimes interactive computer signals. One of the earliest examples of this is the Space Bridge.[6] Another example was ArtGrid's *Interplay* series, beginning in 2002 with *Intransitive Senses*.[7]

Production Example: Outside/In

In 2003 the author devised the multi-site performance *Outside/In* at the University of Maryland with the ArtGrid community. It was conceived as a test of Personal Interfaces to the Grid (PIGs) and other means to broadcast from diverse and distant outdoor environments. Most of the community's performances happened indoors, often broadcasting from inside cubicles or classrooms and generally expressively sterile rooms. The distance bridging capacity of the Access Grid would be better demonstrated when bridging outdoor places that show natural movement like birds, windblown foliage, etc., rather than sterile classrooms.

Outside/In: Part 1 (November, 2003, directed by Nadja Masura) had participants in Boston, Alaska, Utah, Ottawa, and Maryland. The piece was a semi-structured event in which each participating group solved the issue of how to broadcast from outdoors, using the technology adaptations of their choice, and provided content that tied them to their physical environment. Alaska presented a video of lights in the sky, Utah read a poem about the landscape, Boston sang the "Man Who Never Returned," Ottawa recited an original poem about the cold and showed the effects of snow on their bare hands, and Maryland read an archival poem about the region.[8]

The second part *Outside/In: Within these Walls* (2004, directed by Nadja Masura) was a theatrical production complete with script, characters, costuming, and lighting, and staged in a black-box theatre at the University of Maryland with video feeds coming in through the Access Grid from outdoor locations at Maryland, Canada, and Utah.[9] The working script utilized the idea of Emily Dickenson as a woman contained in an indoor space who reaches out to different aspects of herself in varied outdoor places for guidance via thematically grouped poems. The fictional Dickenson was an isolated woman whose physical self was stationary, but her whole mind/spirit was freed into nature. This was a useful conduit for exploring the technology's potential.

The performance highlighted the Place-expanding nature of the Grid by showing actors in variable natural environments. The use of technology supported the artistic idea of creativity as a portal to freedom for the soul. The technology also served as an active metaphor connecting the protagonist to what she needs; the ability to connect to herself in nature. One participant remarked "The script of the production, based on poems of Emily Dickinson, fittingly explores our ability to transcend physical

location, creating a vivid metaphor between imagination and technology, both of which serve as portals to experience new natural worlds and environments" (Anonymous Participant 2003).

The main character performed live in Maryland situating herself between two rear-projection screens with three other "selves" video-conferencing into the performance. Maryland was the primary audience space, though the performance was viewed by multiple online Grid audiences (see Fig. 3.2).

A brief description of the performance:

> Lights down….the darkness of the lab theater feels like an enclosed space…a small light pool comes up on a woman in a white dress….she speaks about loneliness and constriction and the power of the mind/spirit to travel beyond physical places, into the many places of nature…she is an everywoman; a mythologized vision of Emily Dickenson…she uses her poetry as a language metaphor for the teleconferencing technology which opens up portholes/windows into nature, this semi-fictional, semi-historical enclosed woman is incrementally freed as she speaks her poetry about society, nature, love, life/death in the form of aspects of her self

Fig. 3.2 *Outside/In* performance at the University of Maryland, The *Outside/In* post-show talk-back (*Source* Photos by Peter Rogers, used with permission)

> (similarly dressed remote actresses) from these other places one at a time, opening new possibilities in the way she sees the world around her…finally all four windows are open and the multiple place options seen through the Grid windows create a feeling of expanded community, multi-layered Place, and living nature brought indoors into the theatrical world through technology.

There was a striking contrast between the enclosed space and the varied natural environments projected onstage. The outdoor places themselves were as disparate as their climates. In Maryland, there was green grass but no leaves were on the trees; in Utah there were bushes full of foliage and flowers; in Ottawa there was no growth, only bleak winter branches. The performance clearly demonstrated the geographical differences in climate which reflected various stages of nature in Spring. Upon viewing the outdoor environment from a warmer climate while at the outdoor technical rehearsal, one initially skeptical collaborator remarked: "Hey, there's grass…wow…there are blooms out there!" To which the author responded laughingly: "That's the point!" We were demonstrating different climates and locals.

It was satisfying to see multiple sites in nature, and get a sense of bringing the outdoors into the contained black-box theatre virtual node. The piece highlighted the visual differences in actual places linked in real-time through video-conferencing into a multi-layered place. It was the green of the grass contrasted with the bare branches elsewhere—the passing of a bird or student hurrying to class—which made place real and present in the performance.

The talk-back was important for demonstrating the physical distance between playing places via the real-time interaction of video-conferencing. David Saltz observed, "Telematics acquires its greatest impact when the spectators are given the ability to interact directly with people at the remote site, and thereby can experience the uncanny collapse of space first hand" (Saltz 2001a, p. 74). Talk-backs are often an essential part of ArtGrid performances (see Fig. 3.2). Both of these performances were created through the ArtGrid Community and demonstrate how Digital Theatre can be a meeting place for people, ideas, technology, and locations.

Production Example: Alice Experiments in Wonderland

An example of a more fully scripted distributed theatre performance can be seen in *Alice Experiments in Wonderland* (2008, directed by George Brown, Gerd Hauck, and John Shafer). Alice was a live scripted theatre performance which joined three sets of cast, crew, and audience from each of the participating universities. It was staged in 2008 over Internet2 technology with three casts and three audiences by the University of Central Florida in partnership with Bradley University and the University of Waterloo in Canada.

Alice Experiments in Wonderland was based on a new adaptation of the classic story by the Orlando director John Shafer. In promotion materials, the production had been called an experimental multi-site technological shared performance venture, a digital-age recreation of Alice, a convergent telematic performance drama, and a journey down a high-tech rabbit-hole (MacLeod 2008). The project used high-speed internet video to link the geographically disparate performers into a unified ensemble.[10] Part of the draw for some of those involved is that they felt it was an affordable model of transmission and joint production (Fig. 3.3).

Fig. 3.3 Alice Experiments in Wonderland (*Source* Image used with permission by John Shaffer)

As we have seen, magical, dreamlike, or otherworldly environments are especially good subject matter for digital performance because technology allows us to create amazingly surreal effects. In the case of this production, the story lent itself well to the technology because Wonderland is a place where time and space are nonsensical and do not follow the laws of nature, just as its zany inhabitants do not conform to societal norms. In this production Alice moved through the environment as though she were an avatar or digital character. Other characters, like the Flowers were digital or used audio and video tricks. Alice changed size with the help of a projection screen. According to collaborator Gerd Hauck "Rabbits running, Humpty Dumpty falling—these are all things we could do" (Hauck in MacLeod 2008). He indicated that technology allowed for creation of unique animated and video composite characters. The famous story was updated by Shafer to appeal to younger, tech-savvy student audiences. Alice wore an iPod, the Mad Hatter was a computer hacker, the Cheshire cat rode a scooter, and there were life-size puppets by Heather Henson (Fort 2008).

Perhaps the most compelling use of "digital magic" in the production was the clever tech-metaphor of the digital rabbit-hole. The technology was at once most present and its abilities highlighted in the passing of one character through multiple geographies (via stage illusion) simulating the public's sci-fi desire for transporters. One of the three directors, Gerd Hauck talked about Alice and the white rabbit dropping into a rabbit-hole in Florida and showing up in Waterloo (Hauck in MacLeod 2008). John Shafer described the same action:

> She ducks behind a screen, he bounces off of it, and all of a sudden she disappears physically in Orlando, and runs across the stage in Canada…While she disappears there, she then shows up in Illinois, before completing the circuit and coming back to join our audience in Orlando. (John Shafer in Kerr 2008)

This blending of place creates a sense of community for the audience as the actors and technology connect the multiple sites into a single cohesive performance experience.

In addition to increasing audience size, the production required three linked casts. In order to accomplish this "transportation" magic, there were multiple people performing the same main roles, with each school

providing its own set of actors as virtual characters are "transported" in from other universities.

The production had hundreds of people involved with its execution.[11] In addition to joining audiences, those involved pointed out the creative potential compounded when distant cast members were brought together, increasing the creative idea bank (times three) and hinting at future possible uses. Shafer is quoted as saying, "I think people would flock to see, hypothetically, a production of *Hamlet* that combined the talents of the Stratford Festival, the Royal Shakespeare Company in Britain and the Oregon Shakespeare Festival" (Shafer in Posner 2008). In addition to an altruistic approach to using communications media in performance, he feels this type of production stretches acting capabilities. "What we're trying to do in collaboration, is explore the creative potential in these technologies. Everyone is aware of the dehumanizing effects of digital media. We want to find something that brings people together" (Shafer in Posner 2008). By having the same character appear in multiple physical venues within the space of a few seconds, the audience experienced the story of the play in a unique and profoundly interlinked manner. Thanks to the combination of live and digital elements, the disparate locations were linked into a seamless performance place. The actors too, experienced a sense of community. According to Shafer, this type of acting "requires performers to act not only with the local audiences, but with the camera and their partners on the screen… [raising] interesting possibilities" (Shafer in Posner 2008). This Digital Theatre production truly extends the playing space, multiple casts, and offering performance of a theatre script in three locales. It is intriguing to consider what other existing or forth-coming scripts require the same kind of transporter illusion, or utilize multiple places to more fully form their story on stage.

Looking at these and similar examples of multi-site collaboration it is clear that distant places can be linked into one performance place, a cyber-place. It is through the formation of these cyber-places which materialize through the shared interest in their existence, that community is formed around the process and experience of performance. Through these unique, unbound places, imaginative new ways of working together are born as ideas become the actions and foundation for community. Networked performances and art create a sense of Place and a potential for change. According to Knott, "cyber-place possesses…strengths 'real' places do not possess…its nature is to connect people…" (Knott 2001,

p. 15). In this next case, it is not the theater place that moves, but the movement within a place which is of interest.

Intelligent Spaces

Intelligent Spaces are active places where the digitization and responsiveness of the playing space takes on another dimension, and seems almost alive. Through interactive sensors, performance spaces can be wired to become sensitive to human movement and commands, engaging in almost a conversation with the performer, similar to MIDI (Musical Instrument Digital Interface) technology used by Troika Ranch which will be discussed in the next chapter on acting. By equipping them with interactive technology, these performance spaces become incredibly flexible and reactive, suggesting animate sense of space–composed of invisible vectors of motion. And until these wired stages become commonplace, they retain a definite sense of place through their unique status of being technologized. Visitors are made aware of the special abilities of the technologized theatre space itself, and through this awareness we perceive the place itself to be a player in the coming performance.

In her book, *Hamlet on the Hollodeck*, Janet H. Murray talks about the children's book *Harold and the Purple Crayon* as an illustration of our progression into VR staging (like *Star Trek: The Next Generation*'s holodeck). In the story, the young protagonist uses a purple crayon to draw in his surroundings, turning an empty white void (the empty space) into an environment which includes a landscape, stairs, doors, and the moon. Intelligent Stages are a very real step in this direction. They also are a significant step in the direction of creating ultimately the flexible and responsive stage environments begun in the last century (see Box 3.3).

Box 3.3: Historical Precursors: Flexible Theaters

Interest in creating a mechanized flexible or transformable place for performance has been with us since the birth of the twentieth Century. Like Craig, the Futurists were interested in creating a flexible playing space of lights and sounds. Both Futurists and Bauhaus writings offer examples of "mechanized scenery" (Kirby 1971, p. 93; Goldberg 1988, p. 114; Schlemmer 1961, 88). Most intriguing is their idea of a performance controlled by a central source. Futurist light scenes were meant to be controlled by a central artist at a keyboard, who would "stand as 'the

perfect engineer' at the central switchboard, from where he would direct this feast for the eyes" (Schlemmer 1961, 164). The Futurist idea of "sensitive darkness" sounds almost like a description of today's digitally enabled intelligent space (and also perhaps VR environments) (Kirby 1971, p. 223). Oskar Schlemmer wrote of the importance of light in creating a playable spectacle or "space-stage" (Schlemmer 1961, 164).

By allowing the performer to control their physical environment through media cuing, intelligent spaces are giving the actor the tools (their "purple crayon" being a combination of input gathering, decision-making programming and output) to create a landscape or environment through their gestures where before there had only been their body in empty space. As the actor begins to shape the place around them, they are negotiating their physical-spatial limits, from which there is gained a sense of agency.

Intelligent Spaces are wired so that data gathered by sensory devices (which can be a wide array of pressure, light, motion-sensors, or video cameras) regarding an actor's movements or sound onstage, is relayed to and translated by computers running software which interpret the signals (frequency, on/off, etc.), which then trigger programmed actions in the playback of media through projectors and other physical hardware.[12] The actor's movements or sounds can activate digitized media such as music, video, lights, or other wired devices.

Rob Lovell writes this about the active space he helped set up at ASU with John Mitchell:

> The Intelligent Stage is a mediated performance space that responds to the actions of performers as they move. The system's primary sensing occurs through a program called EYES that analyzes video activity to understand what is happening on stage … Sensing by the computer allows performers to control electronic theatrical elements such as sound, lighting, video, and slides through digitized video, photo-electric switches, contact switches, and many types of activity. Media responses occur through the several controller computers that manipulate the theatrical electronic media. (Lovell 2000, p. 256)

When actors draw the space with their midi-trigger "purple crayon," they trigger their own lighting or other media cues, and paint the space directly, lessening the need for some stage crew as intermediaries. They

have begun to interface with the theater space itself. This gives a sense of the theater itself acting, as though it were a body. Although it is not truly an AI-aware environment (yet),[13] Lovell says that it has the "…ability to participate in performances without explicit direction and assist in production through more intuitive interactions" (Lovell 2000, p. 256). *If* a computer intelligence were enabled to embody a theater, and given the ability to control the stage media, to reason, to sense and react to stage action; *then*, says Lovell, the "Theatrical space is the computer's body, the electronic media the limbs, cameras and microphones used as sensors are the eyes and ears, a speech generation program the mouth, and the CPUs and internal programming are the brains, used to interact with the physical world" (Lovell 2000, p. 255). In this case, the theater itself would become an actor.

The wired space is, in a way, relating to the body of the actor. This is a form of seamless interactivity between the human-performer and his scene partner, digitally enabled playing space. Also, there is no longer an imposed visual or perceptual barrier between stage, and wings and house; the theater space is integrated. The invisible connection of an offstage human technical crew relaying light cues has, for the most part, been removed and the information travels directly between the actor and the stage-computer interface. The theater space is laid bare beyond the Brechtian sense; the process is revealed, made part of the spectacle, and the space, both backstage and onstage, feels integrated, with the actor's actions directly cuing desired scenic events.[14] This type of responsiveness to the actor is reminiscent of the desire for a director's total flexibility of staging dreamt of in the plans for the idealized Total Theatre (see Box 3.4).

Box 3.4: Historical Precursors: Gropius' Total Theatre
In 1927, Walter Gropius created plans for a Total Theatre to be used by Piscator to help alleviate the need for multiple performance spaces and to provide ample room for the creation and implementation of media and machinery in production. This space would accommodate multiple filmic projectors, large hydraulic and mechanical sets (such as the hemisphere used in *Rasputin*), and unique playing spaces (multiple levels and catwalks, etc.), and transform according to the needs of production. Gropius planned to create "a great keyboard for light and space, so objective and adaptable in character that it would respond to any imaginable vision of a stage director" (Gropius and Wensinger 1961, p. 12). The most

relevant aspect of this visionary theatre intended to blend "live" theatre and filmic and other elements was the building's adaptability.

In the designs for Gropius's Total Theatre (it was never built), it is the configuration of the actual place of the theater building which shifts and transforms around the audience, forming three different seating arrangements and various opportunities for projecting and acting in multiple playing spaces. Because the space could transform between a proscenium, thrust, circus or arena, and various environmental space configurations, one gets a sense that the place itself would seem alive. Gropius wrote: "…using a system of spotlights and film projectors, transforming walls and ceiling into moving picture scenes, the whole house would be animated by three-dimensional means…Thus the playhouse itself, made to dissolve into the shifting, illusionary space of the imagination, would become the scene of action itself" (Gropius and Wensinger 1961, pp. 12–14). The theatre place would have the sensibility of a kinetic sculpture. Such a Total Theatre would have an active double presence of place, and with its impressive ability to transform, the playing space may have become a character in the performance, a participant of the action itself.

Although the Total Theatre has not yet been built and I know of no space as physically flexible, the Futurist and Bauhaus ideas of a playable space have been translated to our time and carried out by digital instruments. Their desire for control over a media-rich space foreshadows our current media active or intelligent spaces, either set up permanently as in the case of Arizona State University or created temporarily in the case of *Kaspar* at University of Georgia.

Performance Example: ASU's Intelligent Theatre

At the Summer Dance and Technology workshop, 2004 (SDAT 2004), the author was able to experience Arizona State University's Dance Technology Department's active performance space, designed and maintained by John Mitchell. Workshop participants were encouraged to learn through hands-on experimentation about the configuration of hardware and software which made the space receptive to motion-triggered cuing and playback of media.[15]

In ASU's active theatre space I felt aware that when the space was active, it gave the performer an impression of a direct relationship between the actions of your body and the reactions of media-space. This gave the performer a real sense of freedom. The environment was lively and one had a sense of playing in and with space (Fig. 3.4).

Fig. 3.4 Performer Apryl Renee playing with the space at SDAT 2004. The performer appears to be holding a "purple crayon" (*Source* Photo by author)

Through the open undisguised presence of technology, the performer's potential control over the environment, and the general lack of an onstage/backstage dynamic, the interactivity seemed to bridge any remnants of a Wagnerian mystic chasm. What was a system of clearly zones of activity which separates spectacle from the hands of actors, who are then separated from the audience by the necessary mechanisms needed to create the spectacle, is replaced. Technology bridges the technician/performer gap, transferring the magic of spectacle and illusion directly into the hands of the actor. Dance technology practitioner Johannes Birringer writes of the need for a new kind of performance space which reflects the immediacy of life lived with technology: "For many of us, the proscenium, dance studio, and conventional production processes are clearly inadequate. New dance, involving technologies and interactive designs from the conceptual starting- point, needs a different environment" (Birringer 2002, p. 121).

This desire for real-time responsiveness of playing space to a performer (reflecting the relations between human and machine) creating a sense of agency also applies to Digital Theatre created on Intelligent Stages. New relationships between performance spaces and their performers are

building a new expressive aesthetic which can only exist within these technologized playing spaces in which action and reaction are one and a sense of immediacy bridges real and fictional in one playful space.

A similar space was used in a theatrical production at the Hyper-Media Studio at the University of California, Los Angeles to create a Digital Theatre production called *Macbett* (2001, directed by Adam Shive) (Burke 2002, p. 33), where the witches' staffs stirred the storm.

Production Example: Kaspar

In some cases an interactive set built for one performance can achieve the same functions as a more permanent Intelligent Space. This is the case in the University of Georgia's production of *Kaspar* (1999, directed by David Saltz). In this play, the *character* Kaspar is being forcibly socialized using positive stimulus and negative feedback triggered by the *actor* on stage.

When motion-triggers and motion-sensors are integrated with live performers in production, both "live" and media elements become essential and interdependent. The media (video, audio, etc.) does not play unless the human body is there to tell it to do so, which is ironic because in the world of the play, it is the environment which is in control.

David Saltz explains the stage set-up with interactive sensors and how they reacted to the actor's movements, activating or triggering media:

> We selected specific sensors that could detect when each set piece was handled in precisely the way that Handke's stage directions specify. For example, we used an accelerometer to sense the movements of the rocking chair and the pressure-sensitive resistors to detect when Kaspar pressed on the cushions of the sofa. These sensors fed directly into a computer that played the appropriate audio sequences when, and only when, Kaspar was interacting 'appropriately.' For example, the instant Kaspar rocked the rocking chair, we heard the corresponding text through the speakers; the instant he stopped, the words stopped. In this way, the interactive technology transformed the set into a large Skinner box that conditioned Kaspar by automatically reinforcing all and only correct behavior. (Saltz, *Kaspar*)

This creates a call and response between a person and a digital device, or in this case an array of devices including LED lights in the costumes, projection, and sensors in the set furniture.

When the actor moved the rocking chair, rearranged furniture, or opened dresser drawers, both the actor and his character triggered a mediated action such as loud sounds and instructional video chosen by the character's trainers/captors, the prompters. The process of Kaspar's socialization via negative reinforcement, including speech torture, is complete at the end of the production. This is depicted visually though the orderly shapes created by Kaspar's conforming to the proscribed tasks (Saltz 2001b, p. 117).

This production clearly demonstrates the sensitivity of the acting space to the actor's body and actions in the playing space independent of external cuing by backstage technicians. According to Saltz, because he was interested in the interaction between actor, set, and offstage characters, the relationship between cause and effect was initially made clear for the audience and developed a level of sophistication as the play progressed.[16] Because as Saltz said, "The sensors embedded in the set pieces allow the live performer to interact directly with the media" the actor's actions onstage are both theatrical and actual, the wired space is creating an acting arena which is both illusion and reality (Saltz, *Kaspar*).

Here the man–machine interaction takes place in the "theatrical present."[17] Taken to an extreme the actor could have directly received the shocks intended for the character, making enacted gestures real as in ancient Roman entertainments, entertainments which included actual sex and violence. This illustrates the direct and immediate connection between actor and place which potentially bypasses character altogether.

While one could possibly argue that the actor on the average stage making gestures is "triggering" events which change the space through visual cues called by a stage manager, when the human go-between of stage manager or media operators are removed, the performer has greater flexibly and control over the media and the sense of the performance's outcome. Rather than being restricted to cues such as "go" and "stop" delayed by human relays, the performer can control the presence, volume/intensity, and flow of media in real-time. *Kaspar* is both a demonstration of the actor's agency, a striking example of the flexibility of the individual performer to control the space around them, and the fictional place's control over the character. In *Kaspar*, the stage temporarily becomes an active space for the production, the instrument of the fictional instruction—it becomes what it is enacting, a training facility and thus the performance space actualizes the setting. This is a powerful demonstration of how Digital Theatre techniques can actualize a direct

conversation between the performer and their environment. It also speaks of the power of the flexible, kinetic, and fully utilized stage to have an impact on performance.

Production Example: Wonder Dome

The next logical conclusion of place and character merging has been achieved in the production/environment *Wonder Dome*. This piece combines many of the ideas we have discussed in this chapter in that it combines portability, Intelligent Spaces, and in fact the place very clearly becomes a character in its own production. The project (March, 2014, directed by Daniel Fine) was led by Daniel Fine and created by a team of collaborators from Arizona State University and the Ohio State University, including Alex Oliszewski, Matthew Ragan, Stephen Christiansen, and Adam Vachon (Fine 2014).

According to its creators: "Wonder Dome is a touring performance platform that invites audiences into an interactive, 360-degree immersive dome where narrative can be encountered, explored and told by mixing ancient forms of live performance with cinema, gaming, HCI and cutting edge digital technology" (Fine 2014). Like *Peter Pan* by Threesixty, the space uses projection on a dome to create immersive spectacle as the setting for action, but in addition, the space is digitally interactive. The creative team worked the company Vortex Immersion to create their pre-wired dome. They used Isadora, Touch Designer, Wii remotes, projectors, and a host of programs to create an Intelligent Space. The venue/project/performer is portable, interactive, and reimagines the Theatre space. According to Ragan, "Wonder Dome is an attempt to reorganize our ideas of a black-box theatre, looking at how we might create an environment that's immersive, responsive, flexible, and extendible" (Ragan, "Wonder Dome"). Because of its portability and interactivity it goes beyond a black-box space.

Perhaps most compelling, the space has become a main character in the performance devised for it. The children's theatre piece of the same name, was loosely based around the story of three little pigs and included puppets, a live performer, digital puppets, and the character of the space itself. The main character (one of the three pigs) needs to find the narrator to fix the story he is in. "He runs into the story teller, and Leo (the dome personified as a character in the play) who then lead him on a wild romp of misadventures…" (Fine 2014). The space appears as a character via

interaction and animation giving it a face. This is a huge step forward in the blending of place and persona (usually located in the actor's body).

In conclusion, all of these examples show how in Digital Theatre the performance space can respond quickly and reflexively to the human actor's body to create a sense of collaboration in a wired atmosphere, creating a current interpretation of the ideas found in Total Theatre.

The digitally enabled flexibility of performance places seems almost counter to the nature of place, which is defined not by flow but fixity. However, these examples of portable staging in indoor and outdoor locations (for improvisation or scripted works) include, repurposing public places, active performance spaces which respond directly to the actor's body, or multiple spaces linked into one composite performance space. All of these demonstrate a lively interchange occurring between space and place when digital technology is involved. What is exciting about digital technology's effect on theatre places found, active, or linked, is that real places and illusionary places begin to blend and the place of performance begins to reassert itself in the process.

The place of performance is performing itself. The "Theatre itself (is) to become a performer" (The Rockwell Group).

Notes

1. This is somewhat like *The Green Screen Show* and other TV programs that composite the actor's feed shot in front of a chroma-key backdrop with other visual elements like setting, but fairly unique to live theatre which had not yet adopted this technology which been used in non-live entertainment for years.
2. Studio Z had been working with EVL to experiment with movement in relation to stage action (side to side, up and down stage) as well as depth of playing space.
3. In conversation, Zellner said, "For me, the screens solved a lot of atavistic issues, scenically—writing for the TV generation which I am part of," their techniques allow the media to be "alive digitally."
4. Craig might be pleased with the group's financial and physical economy, given the use of screens and projections which do not require physical sets to strike and break down.
5. This same effect was used in the Flying Karamazov Brothers production, *L'Universe* (2002, directed by Carys Kresny), and Svoboda used a similar device in 1965 (Hurwitt 2002).
6. In 1989, International Day of Peace performance was held at the United Nations by Peace Child International—a performing arts non-profit which

created and produced US and international tours of the musical with the same name. The author was one of the hundreds in the US choir which was joined via satellite link (or Space Bridge) choirs in Costa Rica and Russia.

7. *Interplay* was by far the most central performance event in the ArtGrid community. It saw coverage from the *Journal of Higher Education*, greatdance.com, and at the Siggraph and Supercomputing conferences in 2006, as well as being chosen as a finalist for the Peoria Prize. The *Interplay* performance process was directed and created by Jimmy and Beth Miklavcic through Another Language and the Utah Center for High Performance Computing. Jimmy Miklavcic was the central pivot and organizing force in both the *Interplay* series and the ArtGrid community. Institutions included Boston University, The Arctic Region Supercomputing Center at the University of Alaska, Fairbanks, The Center for High Performance Computing at the University of Utah, The National Research Council, Ottawa, Canada, and The University of Maryland, and even later, more joined, including The Envision Center, Purdue University; The University of Montana; The Electronic Visualization Laboratory, University of Illinois, Chicago; and Ryerson University.
8. Because of technical problems, over a cellular phone which was patched into Utah's system.
9. The final performance was staged locally with participants sending video feeds in from Utah via the University of Utah's Center for High Performance Computing; Ottawa via the National Research Council, Canada; and outdoors at Maryland via OIT's Visualization and Presentation Lab (VPL) mobile access node. We were able to receive and transmit from our local black box theatre as well as from the PIG outdoors, and projected the video on rear-screen projectors.
10. Specifically, they used a "digital video transport system (DVTS) – a broadband technology similar to video conferencing – and high-speed advanced distribution technologies" (MacLeod 2008).
11. "The 90-minute performance involved around 150 students, 33 of whom were actors with speaking roles (11 at each campus), and about 120 others working as designers, directors and camera operators" (MacLeod 2008).
12. For a good example of the use of trigged sound files allowing the space to speaking through the moving body, see Birringer (2001, p. 88).
13. An intelligent stage is a reactive performance environment, not (currently) an AI entity. *If* intelligent spaces were actually intelligent (using Artificial Intelligence to respond to action 'onstage') or resemble AI through its interactivity, then it could be considered a data-body (given the nature as a whole data system) within which the human actor was performing.

14. "Brecht wanted theatrical means (such as lighting instruments, musicians, scene changes) to be visible and as simple as possible" (Brockett and Hildy 2003, p. 436).
15. The configuration included SoftVNS video camera hotspots as motion-triggers for Max patches running in the control both which cued and manipulated video and audio to be played back on eight different projectors flexibly positioned on screens and other materials throughout the space.
16. "'The paradox of the interactor': (is that) the more rigorously the performer has rehearsed with the technology, the more clearly the audience will recognize the ability of the environment to respond dynamically and spontaneously to the performer's actions. The performer must teach the audience to understand the conventions that define the interactions by starting slowly with the simplest interactions (e.g., 'the sound plays only while I am rocking this chair') before moving on to more complex interactions" (Saltz 2001b, pp. 117–118).
17. "Handke's play depicts the indoctrination of an unsocialized adult into society. The play radically abstracts the narrative, stripping Kaspar's story of all historical specificity. Indeed, the play is devoid of all realistic context; it transpires entirely in the theatrical present, with no hint of a past or a future. As Handke observes in the play's introduction, 'The play *Kaspar* does not show how it REALLY IS or REALLY WAS with Kaspar Hauser. It shows what IS POSSIBLE with someone'" (Saltz 2001b, p. 114).

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CHAPTER 4

Costuming

Costuming, scenic design, and lighting, together make up the majority of theatre spectacle. And like scenic design, most digital applications of Digital Costuming utilize projection and therefore lighting. This chapter talks about how these forms merge in Digital Theatre.

Costuming has always been an essential part of the theatrical productions past and present. Throughout the ages, from Greek masks to the specific social details of Realism and the lavish spectacle of Melodrama and Broadway, costuming has been one of the most identifiable features of theatre. Without costuming the actor, and sometimes the stage, are bare. Costume spectacle allow the audience to escape into the illusion of place and time necessary for suspension of disbelief. Costuming assists the actor in "finding their character" and assuming the physical characteristics necessary to transform themselves into the new person we see onstage, their character.

Costume shapes character and the actor's silhouette. It changes the actor's movements, gestures, and sometimes (depending on the approach to acting) their mindset and emotive connection to the world of the play. What actor has not experienced or director noted, the change in gait and demeanor of an actor wearing their costume onstage for the first time as they begin to find a whole new sense of physicality inhabiting the physical restrictions of another in space?

N. Masura, *Digital Theatre*, Palgrave Studies in Performance and Technology,
https://doi.org/10.1007/978-3-030-55628-0_4

If costuming is a facilitator of character, can it be assumed that in general costumes lend the actor creative agency? *Perhaps*. Far from being what could pejoratively called an "extraneous trapping of spectacle," in some cases, costuming becomes the direct facilitator of character; especially when digital technology is involved. However, sometimes the costume overpowers the actor in service of the character. In one instance, the addition of technology seemingly allows costuming to erase the actor (as we know him) altogether.

Digital Costuming is the site of both expressive empowerment and erasure. It becomes apparent that when digital technology is introduced, the outlines and edges between actor and his or her environment become mixed. Digital Costuming is the line of transition and site of the blending of theatrical elements that join actor and set. In addition to expanding and shaping the actors expressive edges, in Digital Theatre, the use of projectionist costuming and masks can be used to substitute the bodily playing space of one actor for another's. It is possible to erase the human details of one form and copy in the expressions of another.

Several assumptions are often made about costuming: that it is made of fabric, that it is pliable, that it is in service of the actor and his/her character, and that it is the outer layer of the actor's form or on their body onstage. Digital Theatre challenges these assumptions. In Digital Theater, using projections as in *The Magic Flute* and GSRT's *Making of Americans*, set, light, and costume merge. In this chapter I will introduce several examples of projectionist costuming, projected masks, and talk briefly about implants (subdermal additions to the human form).

Production Example: *The Magic Flute*

In the 2003 *Magic Flute* Kansas production discussed earlier, the actor's costumes are in close proximity to screens or actors approximate "wearing" screens. Costume is another way in which bodies and characters are expanded by the presence of projections on screens in Mark Reaney's design. Here it is the actor who is lending their body to expand the range of the projected nonhuman actor, giving them the freedom to move via mobile screens about our "live" actually three-dimensional world. The projectionist costume of the Queen of the Night is perhaps the best example of the actor's body, and emotional and physical range being extended through projection of media.

The evil Queen of the Night entered with a star-shaped screen crown on her head, parting the woods, including both the projections and the screens all at once; and when she is wheeled offstage, the forest returns. Not only did the screens fly up dramatically for the entrance of the Queen, but she had a round screen dedicated to her which loomed behind her as a halo or part of her cloak. Fractal patterns in liquid rainbow colors swirled on a round screen behind her emphasizing her magical nature.

The screen shape, once associated with the Queen's appearance, becomes part of her silhouette and a physical and visual extension to our experience of her as a character, as powerful, beautiful, and frightening. Through the additional playing space of the screen surrounding her, she is larger and more powerful than a non-magical human figure. She is at once a character of light and animation and of flesh. Part of her total performance is the visual cues that emit from her person in sparks and swirls. When the Queen of the Night reappears, she bursts through the scenery with a crack of thunder. This is animated with a visual spectacle which encompasses both the character's power and her mood. In a sense, through the tech magic, the character has increased agency and power in the world of the play.

Another, effort to bridge the world of human actor and animation character occurred when they attempted to combine actors with projected scenic place. The three genies were rolled onstage on a scaffolding or painter's cart, with their heads protruding above the top of the screen. Projected into their combined middle (the screen) was a kaleidoscope of images like locations, weather, and symbolic elements that furthered the plot including: a magic carpet, a flying machine, and a cyclone. Perhaps the most intriguing of these projections was snow, creating a sense of place on the screen-character's surface. But this attempt was less successful visually and constricted the actor's range of moment, and therefore agency. The actors had a limited range of physical expression without the use of their limbs and the movement of the screen-scaffold-actor unit on and offstage was awkward.

In both cases, the actor was limited to a small physical playing space by the necessity of position relative to the screen. While it may have enhanced the character's expressive or emotive reach and fictional magical agency, it inhibited the physical movement (therefore agency) of the actors. In the next production projectionist costuming is taken to a stunning level in the form of wearable screens.

Production Example: GSRT's *Making of Americans*

A much closer transition between the body and screens can be seen in the projectionist costuming of the Gertrude Stein Repertory Theatre's (or GSRT) experimental piece *Making of Americans* (2002, directed by Cheryl Faver). One piece of the four-part work, *The Making of Americans, Part II: The Silent Scream of Martha Hersland* was originally staged as part of a workshop at the University of Iowa.

In this work costuming became part of a geometric plane used to project the verbal landscape suggested by Stein's writings. Here the actor's body is both present and usurped by the costuming which suggests shapes, silhouettes, and patterns onto the bodies of the actors. With a set which was reduced to a raised ramped platform on a grid, costuming became *the* essential element of spectacle upon which all elements of the world of the fictive reality were played out (see Box 4.1)

Box 4.1: Historical Precursors: Projectionist Costumes

Futurist ideas on scenery can be seen as a unity between set and body—costume elements blend the two. Their idea of co-penetration of human with the environment sounds like a distant echo of today's "live" actor immersed in a mediated environment through the tendrils of digital technology. Costumes served to unite the actor with their scenic environment (Kirby 1971, p. 97).

Body screens or projectionist costuming as seen in GSRT's The Making of Americans can be traced back to performances in the nineteenth century. In her article, "Body-screenographies, jumping back to leap forward," Gretchen Schiller points to the connections between today's projectionist costumes and Loïe Fuller's performances at the Folies Bergère in Paris in 1892. Schiller wrote:

> Fuller attached meters of white fabric to bamboo cane shaped arm extensions to create a screen which enveloped her body. With this screen connected to her arms, she crafted and synchronized undulating flowing movement with coloured light projected onto the fabric… Using these techniques Fuller transformed her body into illusions of fire, animals, and flowers. With a team, at times of 27 electricians, Fuller choreographed movement relationships between the moving-body screen and real time projection… she transformed the figurative female body with bodily screenographies into metamorphic and kinaesthetic sculptures…The disappearance of the body of the dancer was necessary so that the screen became itself the expression of the body. (Schiller 2005)

The cast of eleven co-present actors was blocked on a modular, grid-like stage set with five projectors (one rear and four front) projecting animations onto eight moveable screens. Projected images floated into focus on the bodies of the performers, creating a shifting pattern of character and symbolic elements of life (hats, raincoats, words, diagrams, symbols). The projectionist costumes defined the silhouettes of the onstage performer's bodies, provide the majority of the visual spectacle as the surface for projections, and were essential to the production and to the creation of digitally layered characters. David Saltz has described these projectionist costumes as "Interactive Costumes," which utilize the "body of the live performer as a canvas for the media" (Saltz 2001, p. 124), yet in a very real sense, they are not interactive in the sense that they mask rather than enhance the actor's agency.

The author met The Gertrude Stein Repertory Theatre in their New York studio in December, 2003 including co-director Cheryl Faver, co-director John Reaves, costume designer Michael Oberle, and technical director Hal Eager. Though the archival production tape available at the time was limited, it was possible to examine the specially made projectionist costuming and equipment used to create the well-placed projections.

Michael Oberle showed the costumes, which were constructed of a lightweight, white, light-reflecting material, pleated, sewn, and arranged into angular and geometrically shaped coverings which were reminiscent of the simplistic shapes joined to form Bauhaus costuming (see Fig. 4.1). Each form contained a series of three-dimensional shapes which looked as if plucked from a 3D animation toolbar: circles, cones, polygons, diamonds, all stacked on top of each other.

The costumes had an overall sense of simplicity and utility while evoking both Victorian dresses and Japanese kimonos. They served the dual purpose of creating distinguishable silhouettes which might allow the audience to identify and label characters by their shapes and serving as projection surfaces.[1] For example, one costume had a hat reminiscent of a woman's garden hat or beekeeper's bonnet. At the same time as this might make help make the character shape recognizable to the audience as female, the hat also served the purpose of being a flat projection surface when the head is tilted down. Another costume was a gown with an accordion cape that when unfurled extended the actor's silhouette and projection surface by ten feet. In addition to extending the projection surface on individual actors, the costumes were designed so that two or

Fig. 4.1 Michael Oberle demonstrating one of his designs (Photo by author)

three people can come together to create a continuous projection surface connected to a single character. Here the costume "becomes a moving mask, a catcher's mitt to 'catch' (images)" (Oberle 2003).

Costumes were designed with projection in mind. Details such as buttons were substituted for items such as pleats and other flat shapes that could expand projection surfaces.[2] Oberle stated that his costumes were in some ways less detailed than conventional productions, "and in some ways…even more critical. It can make the difference between a digital performance essentially being a flat movie projected on a stage, on the one hand; and on the other, the potentially dynamic, 3D and interactive experience that theatre promises" (Oberle 2003). He also experimented with black and white surfaces and the intensity of projection/lighting, reducing texture after finding that "details of texture became distractions in perceiving the images" (Oberle 2003).

Oberle and Faver have gone so far as to say that not only are the costumes a "playing space for character," the costumes *are* the character (Oberle 2003). This is because the costumes came from the script and were built before the characters were cast. In production, height problem with the actors caused them to switch the actors in order to keep the costumes. This explains Oberle's seemingly extreme statement he made

in conversation that "…costumes are the character, and the actors are replaceable." In this production it is through Digital Costuming (actor plus costume plus projection) that the characters form visually before the audience.

Because projections are essential in creating the composite visual character, the projection specialist, technology director Hal Eagar, worked side by side with the costume designer. According to Eager, much of the costuming came out of a process of trial and error with attempts to remotely project onto flat structural and mobile screens. Themes of duality, multiplicity, and piecemeal identity were achieved primarily through the projections of images, live and pre-recorded video and animations. Elements of the script appear as projections: umbrellas, lips, the father's hat, etc.[3] According to Eagar, there was a "distinct style for the different worlds of characters. The way they perceive the world was reflected in projection. This gave a sense of transition from one to another world. How peoples' realities match." For example, the character Alice is a storyteller, so her world is "cinematic," while Stein's is made up of "…mapping conceptual diagrams."

GSRT used a robotic mirror to re-focus the projections onto the costumes as the actors moved across the space. The robotic mirror allowed for a flexibility of projection in space, duplicating the effect of 40 projectors with only four. This allowed them, in Eagar's words, "to place a still or moving image almost anywhere on the stage, on screens or one the performers themselves" and adapt the image to the moving target's dimensions—scaling, focusing, and skewing the shape to better fit the intended surface in real-time. By using a robotic mounted mirror connected to computers using DMX to talk to the mirror head, they were able to rotate the mirror which bounced the image. Eagar demonstrated how images could not only be thrown on specific parts of the costume, but size, angle, and distortion (keying) could be adjusted at computer stations while the performance was in process. Because the actors were three-dimensional forms, GSRT members were still experimenting with the colors and shapes which could best be viewed against the existing contours of the body and could thus be easily read by the audience. As an ongoing part of their creative process, the group continued honing their ability to move "A projected digital video image across the stage in synchronization with a performer's choreographed movements, coordinating projected images and performers (senders and receivers) without interference" (Faver 2001).

The outcome of these efforts is the creation of layered characters. The actor's body via costume becomes a surface for character, thus both extending and simplifying him or her physically and expressively in the process. GSRT's exploration of layered characters parallels Stein's creation of personality composites exploring "What is a character?"[4] The production is an attempt to stage a visual example of Stein's technique of "personality mapping," a technique embodied in the character of Martha Hersland, a composite personality still in the process of being formed.

By looking at multiple aspects of character Stein was able to find similarity among disparate personalities. Like the literary work, the production also attempts to map a person's "continuity of structure" and to probe the makeup of character itself, in terms of "who we are when" by tracing continuities and graphing interconnections.

Faver expressed this compositing of character, in terms of the "interconnectedness of human nature; where this piece in one person is similar to this piece in another [person]." She also felt the digital production techniques lent a sense of "layering of things in our lives," and the mind's random, out of time and place, recognition of extraneous elements, like past memories, even during face-to-face meetings.

The multiplicity of human nature is expressed through layers of visual memories, images, and video which expand our perception of the edges of human form and essence. This process of personality formation, reflected in the staging of the character as a series of projected memory fragments on and around the actor, function as an inner dialogue adding to the complexity of the character and providing context for his/her behavior. It gets even more complex when the projection is of other actors. In her article on GSRT's costume drama, costume designer Maud Kersnowski describes the effect:

> By projecting not only still images, but video of other actors (in real time), you have a rich back-story where "You see the whole family scrapbook in front of you…Imagine a world of theater where you can see all the components of a character, both metaphorically and literally – like the overprotective father who wouldn't let his daughter leave the house." To explore that dynamic, a childhood scene between a father and a daughter is projected onto the costume of an on-stage performer. The actor then interacts with the memory, collaborating with the performers in the image as well as those on stage. (Kersnowski 2003)

GSRT calls these projections of other people onto actors, like the memory of the father projected onto the daughter, digital puppeteering; creating a new type of character who is visually the composite of the physical actors layered with live and pre-recorded video and images (Barclay 2002). This is a perceptual restructuring of character and layering of actors' bodies.

GSRT's use of the term "digital puppetry" begs the question of agency when the "live" actor has been turned into a puppet or a screen surface for the use of digital characters (see Fig. 4.2). Most of the "actor-projectors" did not speak, and, as Faver related, often "voice and body were not connected." Faver expressed that onstage, "All things are equal, and the actor is not the center. He is a part of the stage animation." Watching the

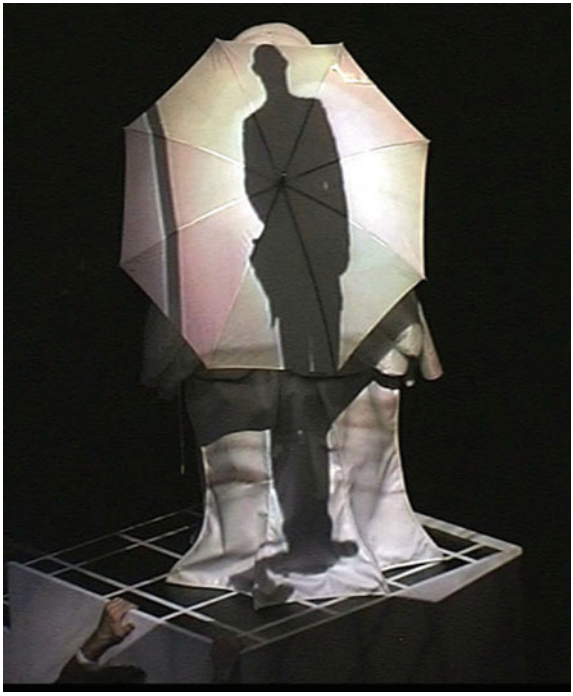

Fig. 4.2 From *The Making of Americans, Part II: The Silent Scream of Martha Hersland* (Note that the actors' shapes are at times subsumed by those of the projected characters. Images copyright The Gertrude Stein Repertory Theatre, used with permission; costume design by Michael Oberle)

archival footage of the performance, one is struck by the way in which the characters appeared hollow and displaced, as the actors were intended to be only surfaces for the symbols projected upon them. What message are we sending when the body of one actor is usurped by another actor's likeness?

Production Example: GSRT's *UBU Project*

Earlier experiments by GSRT with digital puppetry and creating composite characters include *The UBU Project (1998)*. In this piece actors from other countries were layered onto the local performers.

In the 1990s, the Gertrude Stein Repertory Theatre worked with Lucent's Montage, creating distance performance projects which blended multiple performers and their performance spaces into one. The *UBU Project* involved performers in the US, Japan, and Russia, and worked with Alfred Jarry's *UBU*. The live co-present performers offer their bodies to be joined with projected features from distant performers. The transmitted video images fused body parts of one to the moving structure of another, thousands of miles away. Geographically diverse bodies were joined in a single collage of character. As Cheryl Faver and John Reaves explained by, "projecting digital images onto live choreographed moving performers…we overlay images of remote actors (senders) on actors in the local space (receivers)" (Faver and Reaves 2003). In this manner, they integrated "…live, digital, and animated elements into the creation of a single character" (Faver 2001).

Watching the archival tape, the sense of bodies overlapping was striking (see Fig. 4.3). The poetic grace of the manipulation of the fabric draped over the co-present performer, by Bunraku-like handlers is so carefully choreographed, that the whole movement becomes one ritualistic montage, a multiplicity of bodies becoming one stage-entity (Saltz 2001, p. 76). In one scene, "One local actor (dressed in white) is the 'receiver' of the image, and the other helps to manipulated the drapery that serves as a projection surface. One remote actor is the face and body; another the legs" (Anonymous, "Gertrude Stein Repertory Theatre"). As the distanced performer(s) move, flexing their legs and arms or sitting up, the whole co-present ensemble moves in delicately corresponding measures. Each smile, each graceful gesture of another, projected onto the living here-and-now performer, carries with it a luminous quality of otherness,

Fig. 4.3 Projecting images on live performers in *UBU Project* (Images copyright the Gertrude Stein Repertory Theatre, used with permission; costume design by Michael Oberle)

a certain sense of magic and wonder that through technology we are re-embodying the distant in this near body.

Production Example: Digital Masks

Perhaps the earliest example of the use of digital masks was the research into "computer theatre" conducted by Claudio Pinandez at MIT. His hyper-mask covered the actor's face with a projection surface which was filled by a computer-cropped video projection of another's facial gestures. The mask was tested in brief performance.

Unlike a traditional mask (usually artistically depicting human or animal features) this is the substitution of one human face for another's. The projected face potentially moves and responds in real-time with the subtle plays of emotion that can only wash across the human fine muscles. It is intriguing to think what would happen if cameras allowed a distant actor (sender) to see in the point of view of this co-present dummy

face-actor (receiver) who is the projection surface for his/her projected emotions.

This type of facial replacement suggests a potentially subversive hollowing of the individual personality we often ascribe to protagonist characters. The face is perhaps the most expressive tool of the actor, and when replaced by the face of another, this presents the audience with a haunting image of the displacement or devaluing of humanity via technology. Digital Theatre utilizing these tools could send a very powerful (and possibly frightening) image of the social evolution of humanity as individualism becomes replaceable globally, as signaled by recent video image manipulation technologies.

A similar technology was used in Gautier exhibit *The Fashion World of Jean Paul Gaultier: From the Sidewalk to the Catwalk* seen at the De Young Museum in 2012. In this case, it was not a true theatre production, but rather a very theatrical exhibit. There were no actors present just mannequins, but it shows the possibility of the projected-mask technology becoming more mainstream.

As one enters the exhibit, early designs with nautical and religious themes greeted you as well as what appeared at first glance to be models, but were really the pre-recorded visages of members of the Compagnie de Création Theatre company, among others, and Gautier himself—talking about his journey into the world of fashion. The performative spectacle is described on its website as follows: "The Odyssey of Jean Paul Gaultier—… spectacular mermaids and virgins, and welcomes the visitor with singing mannequins and a special cameo by the designer himself" (Fine Arts Museums of San Francisco 2012). D'Alessandro further paints a picture of the visitor/audience experience:

> Throughout the galleries, thirty unique mannequins wearing remarkable wigs and headdresses…, come 'alive' with interactive faces created by technologically ingenious audiovisual projections, surprising visitors with their lifelike presence….A dozen celebrities, including Gaultier himself, have lent their faces—projected on to the mannequins—and often their voices to this project. (Fine Arts Museums of San Francisco 2012)

By projecting videos of faces onto mannequins, this show created something very similar to Claudio Pinandez's digital mask, but on a dumb object rather than a living actor.

Experientially, the feeling was somewhat akin to that of an environmental theatre piece as one wandered from one exhibit section to another and encountered other "actors" arranged in scenes. The mannequins behave almost like a cast, seemingly interacting with each other and the audience. Reviewers noted "…animated mannequins who talk and sing in playful and poetic vignettes" (De Young Museum 2012). As a visitor, one received life-like responses including occasional winks and smiles from the talking mannequins who were not in the middle of a monologue, which was delightfully unsettling and lent an air of magic to the experience. It was unclear just how interactive the exhibit was. Most likely those winks and smiles were pre-recorded; it was uncertain if they were motion-sensor controlled.

Sometimes the scene was as subtle as eye movements and shifting focus among the four spectacular Virgin Mary-like women, where the facial mapping was so close as to be beautiful and eerie. Elsewhere the constructed noses, chins, and other solid elements of the mannequins failed to match up to the video structural elements and a strange distortion would result. One of the most striking moments was the staging of two mannequins facing each other in conversation with projectors mounted behind each projecting the content of the living form on their opposite. It was a rich and challenging idea; a new construction of what conversation is and could be in our displaced and social media-laden world.

To be clear, this was not Digital Theatre but it did enter the realm of performance or at least the performative. This is an example of where art forms are blending through media, and what could be done in a live performance. In addition, it raises some provocative and troubling questions about the value of "live" theatre with "live" actors thus hinting at the replacement of living actors in production.

We are beginning to see instances of video masks or the projection of faces onto other bodies in concerts. It would seem strange for theatre not to explore digital costuming and masks further in future productions, in a society in which average smart phone users are already using apps like Snap-chat, Instagram, and Facebook Messenger among others, to basically give themselves digital mask animal features in real-time, evidence of our current pervasive performative culture is overwhelming.

Projection on small spaces (using handheld projectors now available to consumers) and projection on the body itself is beginning to offer some real creative possibilities. On the television show, America's Got Talent,

one can see a powerful demonstration of the ability to mutate visual appearance through projection, as super-model judge Heidi Klum dons a blank projection bodysuit and is transformed into shapes, and forms, and colors which go beyond costuming as we know it.[5]

A Brief Word on Implants

In the previous examples we get a sense of the technology replacing the local actor's physical visage, erasing over him or her with projected others via masks and costuming. But there is yet another step to the idea of digital wearables…implants. The use of implants in performance could potentially greatly expand the agency of the performer allowing him or her to directly control their mediatized environment in the vein of completely wireless MIDI-dancers. Alternately, there is also the possibility that the technology would wear the performer.

Although not currently recommended, it could be possible to implant reprogrammable sensors and triggering mechanisms in the future cyborg actor. The actor's agency to shape their performance environment can literally be taken to extremes. In one (somewhat esoteric) case, the performer's body became, not only the medium, but the message. In *The Brain Dancer*, a continuous loop fed the output of the performer's brain feedback, which they then danced to, creating new patterns to perform to—into infinity.

Alternately, in performance experiments by performance artist Stelarc and others, the technology that is literally under their skin is in fact controlling them. Several of Stelarc's experiments such as *Ping Body* (1995) allow the audience agency over the performer, creating a truly digital puppet, not out of his form or silhouette (as in GSRT), but from his very body—limbs, organs, and all. The audience becomes the puppeteers of living flesh and the performer, no longer an actor but acted upon, surrenders his humanity to the cause of art.

Performers/artists have begun to push the limits of the performance space by even taking it *inside* of the body. Performers like Paulo Henrique (*Minimally Invasive*, 1998) have inserted cameras into the body to utilize the body as a setting for performance, or like Edwardo Kac and Yacov Sharir, have inserted computer chips sub-dermally to create a feedback loop between the performer's body and digital output by expressing its physical readings in real-time. Sharir has also worked with technology which responded to biological stimulus or inputs, such as EEG which

then output video and other media. EKG devices applied directly on the skin rendered his heartbeat and he used eye motion to control music. These and other biologically integrated or controlled MIDI-wired devices show a potentially very fine degree of control by the performer's body over its media environment. But, so far, only Stelarc pushes the envelope to the extent of giving his body over to the audience. (More will be said about him in a later chapter.)

In each of these examples, be they Digital Theatre or digital art and performance, we can see disturbing trends about the permeability of the body and its replacement or abdication as a host for the agency of others. In some cases the actor is replaced by a dummy, in other cases they become dumb as a moving projection surface. Elsewhere the individual usually found in Theatre as the protagonist, manifested and embodied in the actor performing that character, is erased and replaced with the many; the will of the audience. Digital Theatre can utilize these same tools and their applications to manifest meaning for theatre audience, making them aware of the erosion of individuality and the possibilities of global multiplicities of self. This may come in the form of dystopian hive-think, or it may offer us visions of transcendence. It's up to the theatre-makers of today and tomorrow to decide.

Notes

1. "The costumes fold and unfold to create different geometries and profiles for the performer." John Reaves, "MOA in Iowa," *Digital Performance* (Summer 2002).
2. "…dark buttons on a light colored fabric can become a series of mysterious immovable dots…but in general, costume details become unnecessary speed bumps to the perception of meaning…the production's focus" (Oberle 2003).
3. Projections included images such as stick figures animated with arrows indicating the direction of flow, brightly colored items like yellow rain coats, video, and an anatomical body.
4. The action is in layers following both Stein and her fictional characters and the progress of Leon Katz who researched Stein's work for fifty years, found Stein's notes on *Making of Americans* in her desk and wrote his autobiography and Gertrude Stein's biography. The piece also includes the character of Stein's companion Alice B. Toklas, a collaborator and personality model for Stein's work.
5. A relatively new innovation on the scene is the inclusion of holograms in performance, both live and dead. There are a handful of ground breaking

concert (music) examples such as deceased artists like 2Pac performing at Coachella with Snoop Dogg, or Whitney Houston performing with Christina Aguilera. These performances are clearly examples of live and mediated bodies performing together and raise questions about the nature of the creative human spirit (both legally and aesthetically). Yacov Sharir has expressed interest in dancing with holograms, and there are some internet examples of what appear to be stage performances in Eastern Europe utilizing holograms in spectacle-based stage shows like those at Svoboda's Lantern Magica in Prague (using similar illusions of scale and movement with live performers using non-holographic projection). There are also non-live performances using holograms which can be found on YouTube including a BMW performance by Sila Sveta.

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PART II

Acting

CHAPTER 5

The Actor (Agency)

When discussing theatre, discussing the actor is inevitable. The actor is essential to the living creation and transmission of the art form. It has been famously argued that all other roles (or elements) can be removed from theatre, but the actor remains; the actor is central. So what does the addition of Digital Technology do for or to the actor? Does it make actors more powerful, more potent as living maker of signs and symbols, or does the actor disappear in the chatter of information, becoming noise? The answer is: *Yes*. The actor is potentially both assisted and erased by technology. At times Digital Theatre shows the body as troubled or permeable, but often it is strengthened or expanded. This may seem paradoxical, but given technology's ability to be applied to either extend the actor's reach or to mute or eclipse the presence of the actor's instrument—the body—it follows that both outcomes are possible.

There are several ways in which the actor's role can be affected by the core addition of digital technology. The digitally enabled actor can become a puppet, a clone, or a magician. By introducing technology, richness, immediacy, and depth to the experience of being an actor. This is because now he/she, is not only dealing with the character in the world of the play, but adding experiential meaning to the technical/scenic layer of theatre production—which alters the nature of being an actor itself. As our representative Everyman, as a human element onstage, the actor is

N. Masura, *Digital Theatre*, Palgrave Studies in Performance and Technology,
https://doi.org/10.1007/978-3-030-55628-0_5

also adding to digital technology in the production. This allows the audience to engage in a questioning of human value in the face of ever-present technology. And for the actor it often requires special training which adds another layer to the rehearsal process and the performance experience. The Digital Theater actor must become, in a sense, more than an actor, often times a technician.

There are three primary ways in which the actor is directly affected by Digital Theatre. First, the actor's body and will are extended. Second, the actor can be doubled or othered via the disconnected self or multiple focus of video actors. Third, the actor's body can be erased or made puppet. These first two modes: the actor extended and the actor doubled will be covered in this chapter. The last the actor as puppet will be covered in more depth in the following chapter.

The Actor Extended

The most powerful and perhaps provocative use of Digital Theatre with the actor involves interactivity. Interactivity between the actor and his environment, in which the actor/character holds command over his world, creates a strong display and sense of agency. What better to demonstrate the power to act than the ability to directly impact and shape what we perceive around us? By directly shaping the fictional world around him, the actor is doubly expressing agency; through the character's ability to have an impact on his world as well as through the actor's own ability to directly control cues without a technician or stage manager acting as an intermediary.

Digital technology increases the performer's degree of expressive freedom and extends his bodily instrument into the surrounding performance space. By allowing performers to trigger and manipulate media elements in their environment directly and to control, rather than be controlled by media cues, the performer's sense of agency expands and they begin to play in/with the space.

The Technology: Digitizing Motion

The way that the expressive extension of the actor's body into the space/media elements that make up the world of illusion occurs in Digital Theatre is through an array of movement-detecting technologies. There

are three important and related techniques of following and charting the performer's body in space, they are:

- **motion capture**[1] (Menache 1995, p. 1) is the process of converting a performer's movements into digital data. This data can be translated and applied in many ways such as into painterly drawings in space, or the movement can be remapped onto animated puppets or other digital media;
- **motion tracking** (Pearson 2003) which indicates the position of the performer in space;
- **motion triggering** (King and White 1998) in which the movement of the performer triggers media reactions via sensors placed either in the space or on the body, often through the relay of MIDI (Musical Instrument Digital Interface) signals interpreted by a computer controlling playback of video or audio assets.

These tools activate media directly through the performer's body. When the actor is in a wired space, or is wired for interactivity, and triggers (cues visual or auditory) media directly, he has become more than an actor, he becomes an actor/technician embodying the agency of the character.

Experience as a performer and director, reveals a definite sense of agency that stems directly from interacting with the playing space. It can be like painting with the air, creating something with an arm gesture that was not there before. The performer molds the space around them, becoming an architect of light, sound, and movement. In this sense, the performer has replaced the need for an intermediary technician and become a magician. This heightened performer/space interactivity can also give the appearance of life or personality to digital media (Sharir, "Body Automatic Body Resistant").

The following are several examples of Digital Theatre performances which allowed the actor's body to directly impact the stage-world around them. There are differing degrees of physical and expressive freedom offered by each of the following performance examples. Below are discussed the highly visible and heavy wearable sensors in *L'Universe*, flexible minimally visible wearables in two performances by Troika Ranch, weightless and seamless synesthesia in *The Magic Flute*, and encumbering wires with great visual reach in *The Tempest*. These selections also demonstrate a diversity of theatrical genres that can benefit from digitally enabled

actors from clowning, to Shakespeare, from digital native original scripted works to centuries old opera.

Production Example: *L'Universe* and the High-Tech Tools of the Clown

This first piece touches on the tradition of circus, clowning, and physical performance. It is an example of the actor's body (presence) and digital tools utilized primarily for amusement and novelty. *L'Universe* (2002, directed by Carys Kresny) was an original piece built around the collaboration between the Flying Karamazov Brothers, the infamous troupe of comedic jugglers, and the very serious and formidable minds at MIT (Neil Gershenfeld of the Physics and Media Group at MIT and the MIT Media Lab's Things That Think Consortium) (Hurwitt 2002). In the example of *L'Universe*, the performer's body is in constant communication with the digital appendages which surround them. Here the dexterity of the performer's bodies were matched throw for throw by the responsiveness of the digital medium.

In this humorous piece, the human actor was paired off with digital tool(s) to the best advantage of each, enacting the entertainment and a tongue-and-cheek recognition of the social capital gained by both the scientists and the Brothers in their collaboration. Like the populist circus/street performing tradition they represent, the performance also relied on audience participation such as selecting a small child out of the audience to playfully bat a projected image of the moon around the screen, or selecting an audience member to try on and demonstrate their motion-capture musical apparatus. This is significant because as well as being demonstrated as the toys of the talented performers, there was a sense that the MIT technology was being introduced to the general public and humanized through the skillful comedic antics of the brothers. In a sense, the show was a PR tour for the advancement of digital technology and the innovative work being done at MIT labs in general. It was a high-energy pro-science and populist technology touring show.

Although there was also a loose plot based on science, the performance's emphasis was placed on the evidence of a clear action and reaction and the working relationship between skilled human bodies and high-tech interactive devices. These were the heart of the entertainment. According to the program notes,

> In *L'Universe*, you will see wearable computers that communicate relative position, pitch, tonal quality, volume and duration through micromachined analogue devices called accelerometers, to make beautiful music through movement. You'll be invited into a virtual universe where planets defy the laws of gravity while being juggled by shadows. And you'll also be able to track the pattern of clubs electronically as they change their color according to their relative position in mid air. (Magid and Patterson 2002)

As clubs were passed, the performers moved through the space creating music through their position and gestures. "Gershenfeld created special juggling clubs with programmable displays, and used sonar, long-range RF links and computer vision to track the positions and movements of the four performers. This technology was used to create a complex interplay between the performers and media, with the jugglers' actions automatically triggering sounds and altering the color of the clubs" (Saltz 2004, p. 127). In addition to playing the space with the "jugglatron" there was also a large harness drum-machine which would be triggered by contact with the clubs.

The Flying Karamazov Brothers also utilized a projection screen, as noted by journalist Robert Hurwitt who describes the action:

> The Karamazovs appear onscreen, impishly interacting with their live selves onstage. They juggle virtual planets and other celestial orbs as well as a dazzling array of glowing balls and clubs that magically change colors as they pass from hand to hand… Barreca's…minimalist set frames the action within steel lighting towers against a large disc that looks like an upended trampoline. The disc serves as a screen for… computer graphics, very funny shadow play, complex animation and other images generated by a mischievous HAL-like computer named Joy…. (Hurwitt 2002)

There was a sense of joy, wonder, and novelty in the production. The production viewed at UC Berkeley in 2000, demonstrated a strikingly seamless integration of human skill, humor, and technology. After the show the Brothers talked about the experience of putting the piece together and working with the MIT team.[2] They shared that it was a thorough collaboration between discovering what was possible, and joyfully playing with what existed, then pushing the performance tradition and technology interactions a bit further. Exploring co-creating something altogether new, in a compelling example of a collaborative process of synthesis and discovery. They expressed that it could definitely be glitchy

working with newly invented technology, but it also allowed them to create and explore new aesthetic ideas and performance techniques. What stood out about the experience was the playful integration of specialty built technology demonstrating high levels of interactivity, and the level of skill, humor, and improvisation in the human performance.

In *L'Universe* the Flying Karamazov Brothers' physical, bodily, skill-based showmanship was extended through projections, triggers, and sensors. Here the performers played both *with* and *at* the technology. There was very little effort to disguise the technology; in fact, it was celebrated as the mechanism for both audio/visual effects and humor. The Brother's skill, showmanship, and their *humanity* were highlighted in their comedic coping with the almost magical scientific tools with which they were working. This show would not have been possible without the very human, extremely sharp performance skills, even genius of the Brothers. It was, in a sense, a marriage between two very different types of well-honed minds—technical and performative—and executed through the physical skill of both machines and bodies.

Production Examples: Troika Ranch's *The Chemical Wedding of Christian Rosenkreutz* and *Future of Memory*

Troika Ranch, founded by Dawn Stoppiello and Mark Coniglio, creates digital dance-theatre performances that integrate playful, postmodern, and frequently lyrical choreography with digital video and sound media. The extension of the performer's bodily control over its media environment is achieved through their MidiDancer, which consists of MIDI triggers worn on the body, paired with Isadora, their "dancer-friendly" MIDI-control software.[3] Together these tools offer the performer the extended reach and interaction with the stage environment envisioned by the Futurists (see Box 5.1)

Box 5.1: Historical Precursors: Futurist Actor Extended in Space
Oskar Schlemmer's experiments with dividing the empty space of the stage into a "spatial linear web" (consisting of wires marking the space by a square, diagonals, and circle) (Goldberg 1988, pp. 105–106) allowed the space itself to be mapped with visible coordinates within which

the performer's body interacted, becoming a "space bewitched creature" whose every movement carries (visual) meaning. "…Each gesture or motion is translated in meaningful terms into a unique sphere of activity" (Schlemmer 1961, p. 96). Schlemmer's description of the performer in geometrically marked space could be a very eloquent description of a dancer or performer whose body is monitored through motion capture in a lab or performance space today.

Futurist instruments such as the noise harmonium are the progenitors of MIDI-synthesizers to follow in 1970s and '80s which not only lead to innovative music performance, but form the basis of the digital signals or MIDI-data used in MIDI-triggering and-controlling devices used today to allow performers to control or influence media, both audio and visual, on stage such as the MidiDancer.

Oskar Schlemmer placed the performer's body in the middle of the spatial creative problem. Their gestures, often simplified by costuming, or amplified or extended by prosthetic appendages, they traced the space, creating artistic strokes, painting the space with their movements (Schlemmer 1961, p. 97).

In *Slat Dance*, in 1927, the dancer's limbs were extended through space by the use of attached slats. The performer's bodies traced geometric shapes in the space. This figure drawing shapes in space foreshadows important digital performances, such as *Ghost Catching* and other works by Riverbed in collaboration with artists like Bill T. Jones and Merce Cunningham, in which motion capture sensors attached to the limbs and bodies of the dancers draw shapes in space via projected animations.

Scholar Katherine Farley further describes the wearable/software configuration as

> A bodysuit that allows a dancer to control music, lights and video by his or her movements…(the) MidiDancer, is made of Spandex and is tailored to support and disguise eight wire- sensors and a single transmitter. When the dancer moves, the sensors, located on each wrist, elbow, hip and knee, send information to the transmitter on the waist, which sends it to a computer that commands the lights, music or video… First the MidiDancer tracks a performer's gestures and transmits that information via digital signals to Isadora. Second, Isadora looks at the sensory information, interprets it in a predefined way and sends signals to the media devices being controlled to achieve the desired result. Finally, the media devices present the media as instructed. (Farley in Wilson, "Dance and Technology")

The dancer wearing the MidiDancer is not physically tethered to any wires outside the MIDIDancer on their body. They are not moored to an outlet or overly restrictive location and the gear is intentionally easily transportable so they are able to relocate to multiple dance spaces or theatre venues. Somewhat like Pinocchio, one might imagine their performer singing, "I've got no strings on me." The significance of this is that the performer is free to navigate the performance space with the greatest possible degree of physical freedom. At the same time, they are granted a creative freedom to shape their physical environment. Through bending their arms or legs, the performer is able to shape the audio and video world around them and paint landscapes of sound and light which react to their whim—a potent example of performative agency.

A large aspect of this type of Troika Ranch's creative work is the presence and overt awareness of interactivity in performances. In the workshop, in addition to instructing in the use of their Isadora software, Coniglio and Stoppiello spoke about the range of media improvisation—of using media from a mutable improvisation to a fixed score or script. They asked students to consider whether or not it is important that the audience be aware of the direct relationship between a performer's actions and media reaction. They presented a list of elements of the "sphere of interactivity" including:

- conductor imposed (fixed video)
- clarity (control creating a perceivable result)
- the dancer's freedom (predetermined music vs. improvised)
- obscurity (media results not clear)
- musician (where notes equal action).

The important question remains: *Does it matter that the audience knows it's interactive*—that media is triggered by the performer? In the work of Troika Ranch, the answer is, *Yes*. The interactive element helps shape the creative work that is formed. They noted that, "Expectations of interactivity means that the audience is trying to see the relationship between triggered events." In order to help the audience follow, they suggest initially establishing conventions to get across the way it works, and then move on. Their use of technology impacts the experience of the performer and flavors the work they create.

Troika Ranch is a dance between the mediated and the "live," giving the performer an impressive degree of control over the media world they inhabit. By manipulating the timing and dynamics of the media, the performer has choice, control, and agency, thus extending their body's creative reach. According to their website:

> With the MidiDancer the performer is given real-time control over numerous aspects of the live performance. On one level the control is over individual sonic and visual events. Above this, she is the one who decides when to move from one scene to the next—perhaps the greatest advantage over a prerecorded performance. But the ultimate point of using such a technology for dance is to extend the capabilities of the body in a meaningful way, in a way that allows us, the audience, and the performer to amplify the immediacy of live performance. (Stoppiello and Coniglio, "Media/Technology: MidiDancer")

The agency of the performers to create and control the media is playful and present, as it is the performer's moving body activates the space. The MidiDancer is at times an instrumental costume, allowing the performer to improvise at will. According to Troika Ranch, when the performer "…stands in a neutral position, very little sound is heard. As she improvises and bends her limbs, the rhythmic figures are revealed. From a composer's point of view this is interesting because Stoppiello truly becomes the final step in the compositional process as she dictates the way in which the music is ultimately performed" (Stoppiello and Coniglio "Troika Ranch"). "With the MidiDancer, the dancer is no longer reflecting the music, no longer confined by a musical score. The dancer, rather, is conducting it" (Wilson, "Dance and Technology").

For the question "Why is it important that the performer calls up sound media emanating from them?" Troika Ranch answers, "Memory." They create a mental landscape with and through their bodies. This is an extension of the performer's expressive body into space. In their Digital Theatre piece, *The Chemical Wedding of Christian Rosenkreutz* (2000, directed by Mark Coniglio and Dawn Stoppiello), they used several cameras, including one mounted to the protagonist's head, to produce images of a second-self or second video or image protagonist, projected on a large screen. The effect of this was to show both the fracturing of the self and to bring the audience inside the process of the character's mental transformation. In another piece, *Future of Memory* (2003, directed by

Mark Coniglio and Dawn Stoppiello), the performer's movements trigger and manipulate video passages which reveal past images of themselves, falling, flying, growing.

In Troika Ranch's work *The Chemical Wedding of Christian Rosenkreutz*, dance, video, and spoken words combine to tell the obtuse and experiential story of a man who volunteers for a lobotomy, replacing his brain with a synthetic structure (perhaps a computer, or the Internet), making him a cyborg. Farley explains the story:

> *The Chemical Wedding of Christian Rosenkreutz* utilizes movement, sound, graphic imagery and spoken word performance to explore the transformation process undertaken by two characters, one set five hundred years in the past and the other fifty years in the future. The work, taken from a literary source, examines the writings of a (fictitious) seventeenth-century alchemist who is summoned by an Angel to partake in a chemical wedding…The story is a journey of discovery, rejuvenation and rebirth…and the sadness and confusion resulting from letting go. (Farley 2002)

The head-mounted camera records not what the actor sees but an extreme close-up of his face, which is then projected on a small round screen hung at about proscenium height, thus doubling the actor's presence onstage and giving the sense of duality and fractured identity under surveillance. The use of the MidiDancer to control media allows the audience to be inside the character's experience of memories, and even gives us a sense of mental capacity or personality distorted and controlled by mediatization.

The archival tape was strikingly poignant. It provided a sense of being inside another's perception of the world. There was a sense of contained release as the sensations experienced by the character, as he describes them, are shaped into sound and image through his movement. The actor, Isadora creator Mark Coniglio, was surrounded by dancers who he walked through with dance-like gestures as he spoke. It was beautifully clear that the bend of his elbow or the graceful raising of his arm shaped our perception of the moment, primarily through sound, just as the character's perception of life and his metal capacity, as shaped by the postoperative process, fluctuated subtly in the moment. This gave the sense of being inside another's mental perceptions. An expressive use of the MidiDancer was when a dancer walked around the stage, and then stopped abruptly while she said "silence." Her commanding gesture stopped all sound on the stage.

The core of the piece can be found in a section about lobotomy where the onstage actor uses a MidiDancer controlled playback of his screen image-body. There is a projection of the character's mediated self, his shaved head jittering on the screen caught in a loop controlled by body movement, jerking like a mental spasm as the recording is pointing to a lobotomy scar. As the actor speaks, "I was never the same," the ensemble of dancers unfold a giant piece of paper used as creased projection surface onto which Mark's face is later projected. The lobotomy footage begins and repeats "They made a slit right here…they replaced it…the twister inside my head…" scrubbing the playback of the video self, speaking "new brain…computer…had a new soul…revitalized!" (Coniglio and Stoppiello 2000). This all gave an intense sense of enacting mental fragmentation.

Thematically and experientially, the piece is compelling because the media/performer interactivity lets audience members inside the process of the disintegration of the character and the breakdown of the human soul. The media, which is the cause and mechanism of the transformation from human to other, is enacted in the real-time watching/creation of the piece.

Central to this is the act of sacrifice of the "live" body to mediation as the character becomes a cyborg, his precious, human Self is replaced by a network of technology "…now everything is linked together." Given the reason for the transformation of technology transplant/lobotomy, the character says, "I've been through too many doors." He is keen to be "Changed, crystallized, precise" and says, "Somewhere deep down the experience was exquisite…gives me an empire of surprise." Remarking on the transformation, he says, "One moment I'm the Me before, and the next I'm the Me after" (repeat). In the end, Coniglio is lifted by dancers and carried offstage. On screen his image-body's mind has been wiped clean, indicated by the transition from aged to young as his video face is covered with flowers and uncovered to reveal the face of a newborn baby.

The staging of the piece lets us inside the messy process of becoming technologized and allows us to actively question the relationship between actor (demonstrating agency) and character (lacking agency). It is a compellingly mixed experience as the actor is both in control of the media playback and the character is seduced and controlled by the technology that shapes and transforms him into the other. The piece also asks, *Are you willing to surrender the most delicate thing in your life…yourself… for technology?* It is at once a compelling examination of what it means to be

human, to have human consciousness and memory, and a troubling look at the messy process of the (dis)integration of man into machine, asking, *Where is the locus of control? Is there one?* The exciting part of this show is that through its active integration of interactive media, it becomes an experiment, in a sense, as well as an expression.

Future of Memory by Troika Ranch also interprets the mind and memory, through the actor's body and media. Staging modalities in this live/media work include:

(1) The performers speak directly to cameras located at the edge of the playing space which record and capture their stories, gestures, and rants,
(2) Which are projected in real-time and/or downloaded to an Isadora library or media cue,
(3) From which they can be called up at will and played back and projected at different speeds and directions, scrubbing backward and forward, or with image distorting filter effects applied.

Four vignettes stand out in the production. The first is Dawn Stoppiello applying invisible writing on her face as she is shot from a side camera. Another is Danielle Goldman raging at the camera, "Where were you?!" with fists repeatedly raised and lowered to the sides of her head. When her just-recorded vignette is played back at a slower speed and projected, it makes the character resemble an angry ape, exaggerated just as a disconnected childhood memory of anger might be distorted out of proportion due to the emotional intensity of the triggering event (see Fig. 5.1). Another is a male performer talking about a birthday party. And the last is a performer simply dropping a stone in front of the camera. This action could be played back in an interactive loop, allowing the rock to be visually caught and released at will by the performer as she danced out the media. Digitally enabling the bodies of the performers makes it possible to play with the malleable, temporally obscure, and ephemeral nature of memories.

Visually and experientially, the use of the performer's body to stage the playing and replaying of memory is an eloquent choice, as it is only through our bodies and our embodiment that we gain our imperfect perception of the world. It is directly through the movement of the performer's bodies onstage that we see segments of video replaying

Fig. 5.1 Image from *Future of Memory*, created by Troika Ranch (Image copyright Troika Ranch, used with permission)

visions: the ocean shore—water washing over feet, rollercoaster, water droplets, flame. These visions are repeated and manipulated by the dancers, along with projections of these recently acted memory performances on a multiple paneled projection surface.

Like some of Svoboda's staging, the performer's body is fragmented and multiplied on screens, as in the projection of multiples of Stoppiello's dancing feet. Here multiple views of the performers play against the presence of their physical bodies—signifying layered selves—in the performance space. Memory is viewed as a fracturing, repeating loop, distorted by the very mechanism of playback, the imperfect, living human mind/body.[4]

Perhaps the primary significance of Troika Ranch's work is the agency which is given the digitally enabled performer. According to Stoppiello, wearing the MidiDancer turns the performer into an empowered creative hybrid. "Wearing the MidiDancer a dancer is not only a dancer but is also a choreographer, technician and composer all rolled into one."

It seems essential that expressive technologies like these be examined for not only the performances they create but also for this essential altering of what it means to be an actor. How does this impact training

with the need to master new tools, i.e., technology training? And how does this shape what it means to be an actor with agency experientially and creatively—in terms of controlling and understanding your expressive reach? This hybrid actor–technician–conductor of light and sound has dramatic implications for what and how we shape the stories we choose to portray onstage. Imagine how this might shape our plays with perhaps an empowered protagonist shaping the world they inhabit. Imagine what this might mean to the experience of the student actor, empowered to act, gaining a whole new alphabet of creative expression, and experiencing a fine degree of control of the emotional elements previously outside their creative reach. Here is the actor's body as an environmentally expressive paint-brush in a way previously reserved only for the elements of set and lighting.

Production Example: *The Magic Flute* and the Power of Pure Expression

Here the actor's expressive power is supreme in shaping their visual environment, and their physical expression is unencumbered leading to a very strong sense of performative agency.

In Mark Reaney's *The Magic Flute* in one scene, the volume and pitch of the performer's voices create a fluid, swirling, and ever-changing visual landscape of animated sound. Using a music visualization software reprogrammed by Reaney to accept live input to convert volume and pitch data into visual imagery projected into the playing space in real-time, Reaney created beautifully fluid, abstract animation painted by the very breath of the performers onstage. The performers' bodies were exhaling visual art.

In the second trial, Pamina sings to the muted Tamino breaking the silence. One was struck by the expressive power and beauty of this moment. The performer's voice grows out of her and becomes an unfolding work of visual art. She floats in her own voice, her inner state lost in spirals. The sound wrapped around a purple shape like a wood knot or the eye of a peacock feather. This is perhaps one of the most beautiful and natural uses of projection; to provide a visual form for sound waves, creating a poetry of lines, shapes, and movements to sound. Through the combination of sound and imagery, it is as though you can feel the music, its ebbs of sound spirals, and lines of motion.

This type of blending of perceptual modes, or synesthesia as identified by Saltz in his list of the uses of digital media, was also used in *The Tempest*

when the animated bubble representing Ariel moved and changed shape with the pitch of the actress' voice. Saltz explained: "Synesthesia is a neurological condition in which stimulating one sense organ triggers the experience of another sense; for example, a person might 'hear' colors or 'see' temperature" (Saltz 2001, p. 126). It is the current enactment of a long-standing theatrical interest in the blending and overlap between media. The Futurists were among the first to work with light to create the impression or visual equivalent and accompaniment to sound (Box 5.2)

Box 5.2: Historical Precursors: Theatrical Interest in Synesthesia and Synthesis

Adolphe Appia's play between light, music, space, and bodies in his "Rhythmic Spaces" drawings and working with Dalcroze at Hellearau in 1913 (as in Gluck's *Orpheus and Eurydice*) could be considered a forerunner to this type of audio/visual synthesia (Brockett and Findlay 1973, pp. 203–206). Kirby defines synesthesia as: "The hypothetical concept that the stimulation of one sense can cause a subjective response in another sense" (Kirby 1971, p. 100). This idea of synesthesia is essentially a crossing-point between disciplines and mediums and is essential to movements (like Futurism) which blend art forms. "Montalti mentioned that his Electric-Vibrating-Luminous Theatre was also to be used to create visual representations of musical symphonies…" (Kirby 1971, p. 92). Likewise, "Scriabin built a color organ in an attempt to convert music into visual images." This interest in sensory correspondence and 'psychological synchronism' can be traced back to Wagner's theory of the Gesamt kunstiverk or 'total artwork' (Kirby 1971, p. 100).

In addition to being a demonstration of synesthesia, this Digital Theatre moment is a demonstration of perfect harmony between the actor's human body and the flexible digital impulse. Without wires, without encumbrance, the singers painted the world around them in the pigment of pure emotion. Through digital magic, images were woven of sound, allowing us to understand subtle human expressions with a new sense of nuance supplied by the expanded palette of expression.

When interactivity is a pure relationship between the actor and technology, it creates the experience of an extension of the performer's innate talents. Ideally audience members experience a sense of flexibility and in-the-moment responsiveness, an active dialogue between the "live"

performer and the programmed performance of the digital technology as the two work together in tandem to create something new.

In general, interactivity in Digital Theatre not only affects the audience through what they can immediately observe; it also affects the performers in ways which shape their performance. Having experimented with the technology as artistic director for a piece (*Elements*) where the sonic information, flute music created visual elements to which that same performer danced, the author can say that there is a sense of buoyancy, immediacy, and a charge of largess which comes from real-time creating art with your own voice or instrument. If the performer is freed by the flexibility of the digital technology, they will engage in creative play, experience an expanded range of expression, and gain a greater sense of agency, all of which positively affects the total artistic outcome of the performance. This is then felt by the audience (Fig. 5.2).

Fig. 5.2 Rehearsal of *The Tempest*: Jennifer Snow as Ariel and her digital other onscreen (behind her, interacting with Prospero), photograph by Peter Frey (used with permission by D. Saltz)

Production Example: *The Tempest* (the Actor Caged)

In this next piece the actor is both enabled and encumbered. Technology becomes a partner in creating the "live" performance and thematically expresses the relationship between humans and technology as troubled.

Here is an intriguing mix, in that this digitally enabled actor is at once creatively freed, yet physically restrained by the tools which assist and surround her physical body, the primary expressive instrument. In the production, the choice of a magnetic motion capture system limited the actor's physical range of movement, while their digital other (an animated puppet/avatar) appears to have immense freedom of action within the world of the play. On one hand the actor has great control over her animated surroundings, and on the other she was expressively diminished, her living body is caged and confined. This demonstrates a mixed degree of performative agency.

In the University of Georgia's Digital Theatre production of the classic work *The Tempest* (2000, directed by David Saltz), Ariel was depicted as both a "live" actress and as a shape-shifting animated "sprite." Through the use of motion capture, the gestures of the human actress were mapped onto the gestures of her media other, the digital puppet or avatar.[5] The co-present actress performed in full view of the audience, with sensors at key points on her body, described by director David Saltz:

> These sensors transmitted detailed information about the actress' movements to a computer that produced the 3-D animations of Ariel. These real-time animations were projected onto either the large screen behind the sound stage, or onto a smaller screen (4' wide by 5' high) inside Prospero's cell. Voice recognition software matched the actress' phonemes in real-time, allowing the animations' lips to move automatically in synch with the actress' voice. The only aspect of the animated Ariel's performance not directly under the live actress' control was the animation's facial expression, which an offstage operator controlled. (Saltz, "*The Tempest" [2000]*)

The actress's control over the animated character was impressive and nearly complete. The animation, likewise gave a certain range to the actress that was previously unachievable. The character's magical nature was exemplified by the digital medium's ability to shift seamlessly between the humanoid shape and other animated objects, such as a bee. As the

actor's arms swayed and moved, determining the pitch and horizon of the sea. Her body shaped the digital landscape.

Saltz spoke about the production on the UGA campus, saying he envisioned Ariel "dancing the storm," the actor's body moving within the motion-capture suit to create the projected waves. In the archival footage there is a sense of the actor's control in shaping the fictional environment. In the opening scene, the screen was filled with an animation of wave surges and occasional lightning. As the actor gestured, the audience would see that gesture interpreted as thunder, wind, and lightning. In production, the animation was keyed to the arm movements of Ariel's motion-capture suit, as she raised her right arm, the waves rose toward the right and so forth. Saltz writes:

> The scene takes place on the deck of the ship, and the projection screen at the back of the stage showed the stormy sea behind the characters. Snow held her arms in a crucifix pose, creating a line parallel to the horizon. Her arms represented the surface of the ocean, and as she swayed side to side and pitched forward and back, the sea moved with her. In this way, the actress 'played' the sea, which became not merely an inanimate setting but an active agent. (Saltz 2001, p. 123)

Here the gestures of the body of the actor are extended through technology allowing the body's movements to become integrated into the scenic spectacle, or animated place, surrounds her.

The malleability of data, the ability of the digital Ariel to shift shape and control her landscape, directly contrasted with the solid body of the human actor, Jennifer Snow, who was primarily stationary and tethered by wires. While the actor shaped her visual environment, she was physically restricted by the technology: limited both in playing space and constricted in movement, lacking ability to interact face-to-face with her fellow actors or precisely control the facial gestures shown to the audience—usually one of the actor's greatest and subtlest modes of expression. At the same time as the technology extends the actor's gestures beyond her body and immediate playing space, she is also tethered to the machine.

The technology, a magnetic motion capture unit, is a cage or trap which surrounds her physical body. According to one reviewer, the actor was "Trapped in a small cage in full view of the audience, with sensors strapped to her head, wrist, elbows, hands, waist, knees and ankles, and

special gloves that will allow for more nuanced control over facial expressions" (University Theatre Production Office, University of Georgia 2000). Because of the wires which link her to the motion capture device, she appears to be the puppet of Prospero's technology. At the same time the wires give her the ability to manipulate the digital avatar. Here is the first *actor as puppet*, inhibited or erased by technology.

A reviewer describes the trapped nature of the physical body on the stage in relation to the medium's digitized freedom:

> …far stage left was a platform that was Ariel's cage, the spot where the physical body remained as the sound and light system projected the virtual Ariel around the stage. Each time Ariel appeared she would climb to the peak, then enact her role within the production's digital system. Clearly, the reference in this section of the set was to the cloven pine tree where Sycorax had once imprisoned Ariel; the spirit was still a prisoner, although with some freedom since she was able to send her simulacra, the digital images, to the various screens in the set. The concept—of a caged Ariel unable to break free save through a two-dimensional image projected on a screen—seemed particularly appropriate. (Teague 2001)

Thematically, the wires, and the technology they represent, take on a meaning of their own and help shape the production metaphor. According to Dr. Saltz, "Prospero's magic is a perfect metaphor for contemporary digital media. Prospero creates illusions that everyone else in the play accepts as reality, in much the way that digital media is increasingly shaping and manipulating our perception of reality" (Saltz, "*The Tempest" [2000]*). The technology assisted in supporting his director's vision that the magician's power was mind control.

In a vital bit of stage business, the inherent visual dialogue between the human body of the living actor and her ephemeral digital other, the 3D animated avatar, was brought to a climax. Saltz noted that at the end of the play when Prospero finally sets Ariel free, "Prospero liberated Ariel by opening her cage and removing the sensors from her body, at which point the actress ran through the audience out of the theatre, leaving Prospero alone in an empty, media-free world, his media 'magic' gone" (Saltz, "*The Tempest" [2000]*). Perhaps this indicates the primacy of the human actor.

In each of these examples, the actor's reach into the space around himself is extended. Their expressive freedom is increased or refined with the ability to shape the visions in the air around them. But in some

cases, Digital Theatre demonstrates not only agency and creative flexibility offered by integrating technology, it also shows the flip-side of inviting technology into our lives and culture as dependence, and perhaps subservience. Whether the presence of technology is shown by the directors as positive or negative in the world of the play, awareness of the performer's agency restrictions can impact the audience's experience of meaning, and the actor's performance experience and need for technical training.

Notes

1. Alberto Menache writes of Motion Capture: "it is the technology that enables the process of translating a live performance into a digital performance" (Menache 1995, p. 1).
2. Speaking with the brothers after the show was gratifying because the author enjoyed watching them at the Oregon Country Fair as a child.
3. Although the technology they developed is intended for dancers, both I and my then creative partner have both taken workshops in Isadora and found it to be a useful tool for creating media-triggering effects for theatrical production.
4. A recent study shows a causal relationship between the increased taking of photographs and the decrease in memory.
5. Motion capture data can also fill the stage with the abstract media traces of the human form. A prime example of this is Riverbed's motion capture collaborations with Merce Cuningham and Bill T. Jones, in such pieces as *Ghost Dances*. In one of Bebe Miller's productions, *Landing/Place*, 2005, a dancer was interpreted as a flock of birds in human form, which lent a sense of the media-present body as an artistic element.

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CHAPTER 6

The 'Other' Actor

In "live" theatre there is an expectation that we, the audience, will share space and time with a living human being, i.e., the actor. What happens when this dynamic is modified or even threatened by the substitution of nonhuman actors? It may be that in some future time that all actors will be replaced by androids and hologram projections and human emotions are regularly simulated by computer programs for our viewing pleasure. But until that unlikely dystopian future materializes, there are challenging questions to be raised about the limitations and nature of our humanity through contrast with the mechanical and digital other. A few practitioners today are experimenting with various forms of digital actors alongside human actors, allowing the digital to step forward into the performance as a character and become a central element in telling a story. We will be looking at three types of digital Actors performing alongside human actors. These are: (1) Digital Puppets, (2) Video Actors (3) Mechanical Actors.

Digital Puppets

Puppetry has existed for centuries. What is captivating about the puppets is their simultaneous difference and similarity to the human characters they often portray. Their ridged or fixed range of movement and often solid faces and angular surfaces become the norm of performance when

N. Masura, *Digital Theatre*, Palgrave Studies in Performance and Technology,
https://doi.org/10.1007/978-3-030-55628-0_6

humans step behind the scenes as puppeteers. In Java (wayang kulit shadow play is joined by wayang wong, human shadow puppets) and in Burma, a traditional dancer's skill is measured by their ability to imitate the way marionettes move (Singer 1993). According to Noel F. Singer, in Burmese society, dancers felt it elegant to mimic the movements of their puppet counterparts. To be told that one danced like a stringed doll was quite complimentary. An expression proclaimed that "humans should dance like marionettes and marionettes like humans" (Singer 1993).

When flesh and technology are placed side by side onstage, observations, and audience reactions to the gap between flesh and other become part of the theatre-going experience. By mentally retracing the human form beside its digital other co-star, we allow ourselves to ponder the Actor's body as a locus of meaning—as the common unit of human experience, and situate ourselves within the larger unfolding discussion between the human (organic) and the artificial (man-made). Onstage Digital Theater encounters between human biological and digital actors serve as a testing-ground for future social interactions. They potentially allow the audience to reconsider ourselves in relation to the digital others including: cyborgs, AI, robots, and androids and to navigate the important social discussion of who we are, what we create, and who or what we are becoming.

Digital Puppets are puppets of light; hollow, strange, weightless, and flexible (Flanagan 2004, p. 177). Sometimes called animated characters, avatars, digibodies, these digital puppets are non-human Actors that have surface but no substance. Their strangeness comes from their close visual proximity but not duplication of human physical attributes including unnatural skin color and molded proportions. Artist, author, and educator Mary Flanagan writes:

> Blurring the real, their perfect bodies are unable to contain the strange eruptions of shiny plastic skin, of green hair, of almost slithering movement. Like melodrama and pornography before them, digibodies must manifest the excess of the perfect in hyper-real "bursts". (Flanagan 2004, p. 176)

In addition to their visual strangeness, these non-human actors are free from conforming to natural laws like gravity. They bend, float, and contort in ways unnatural to physical beings. Kimberly Bartosik, a performer with dancer Merce Cunnigham writes about the experience

of being a fleshy human performing alongside digital others (LifeForms animations).

> LifeForm*s*, however, are really only a shape of space: their bodies of colored coil are see-through, their insides empty. They have no blood or organs, no heat, no fragility. No bones or flesh, they are weightless, without mass. Sexless…They are infallible, uninjurable…Perfectly disciplined, they react at the touch of a finger, showing up when the screen is turned on, disappearing when the correct key is pushed… In all its perfection, however, the Lifeform does lack one element-life. As a live explorer of movement, I continually restate, regenerate life. My life exists in the state of trying, of never knowing, of taking a chance, risking failure… Nature changes me daily. I can never exactly repeat anything; each movement lives only in the time it is executed. I have no rewind or delete button…. (Bartosik 2001)

From her words, one can get a sense of the difference between the Digital puppet which she characterizes as a controllable tool, and the beautiful "live" imperfection of the human element which has weight and substance. Some human co-performers also reflect on the digital performer's elastic nature and the abilities to morph or change fundamental aspects of their physical form (Sobchack 2000, p. 144), which is near impossible to the human actor, well beyond the use of makeup and costumes. In addition to being controlled by a program, these puppets generally exist as projections on screens—which must be integrated into the performance space whereas a human actor usually has free reign of the performance space—within the restrain of gravity addressed by sets and theatrical fly systems.

In this first section on digital puppets of light and projection, are performance examples by Yacov Sharir who choreographs and dances with animated figures, continued discussion of the *Magic Flute* and it's playful creatures of light, *Dinosourus* also created by Reaney, animations fill in for super-natural creatures in the *Skriker*, and in *Blue Bloodshot Flowers*, the addition of Artificial Intelligence (thinking machines) takes us beyond puppetry to the true digital other mechanical actor. Each of these examples utilizes motion sensing or tracking to align and coordinate the movements of human actors and animated characters, each with differing devices and degrees of freedom. Performers, human and otherwise, rely on input on what is around them to make decisions and appear to interact. This interaction is fascinating to audiences.

Choreographer Yakov Sharir, has created several performances in which he tested a series of cybersuits, wearable computing suits, and wired vests to interact with media and data including biological feedback, allowing him to dance alongside with projected 3D animated digital puppets. In his work Sharir is interested in creating a movement-based relationship between the human and digital "cyber-human" performer and the cyber performer, digitally animated body, creating what he calls cyborg—a technologized human-performer (Sharir and Yei). Describing his work on an early project with a digital puppet controlled by himself the human-performer, Sharir said, "You could move your eyes and the image would move, or extend an arm and the image would extend…a dataglove also lets me manipulate that material in realtime" (Sharir and Yei). In many ways he is a media puppeteer who is also present and fully engaged in the dance.

In Sharir's words, "Issues of space, time, physicality, and gravity must be visited as the question of how the body is to be represented and inhabited within a virtual space" (Sharir and Yei). His choreography examines the dance between biological and nonbiological bodies over which one has great control. These performers, as he says, "will stop at a specified magnification of desired size, speed and astonishing liquidity" (Sharir). The same questions which were emerging in the minds of Futurist and Bauhaus theorists decades ago, are now beginning to be answered by Sharir's dances with his digital counterparts.[1]

In *Lullaby* (2002, choreographed by Yacov Sharir), the animated figure floats in an effortless duet with a live human dancer as Sharir controls the position and movements of his androgynous ghostly avatar (his animated puppet alter-ego).[2] At the Summer Dance and Technology workshop held at Arizona State University in 2004, the animation track lead by Sharir offered insights to his process working with animated dance partners. The most astonishing part of his process is that after animating choreography into his cyber-figures (animation sequence) and warping their motions, he then taught living human dancers to emulate and embody these physically impossible motions. This means that the human-performer is emulating the cyber puppet; it is as if the boy is emulating Pinocchio. Dancer Apryl Seech worked hard with Yacov to find human interpretive equivalents of clearly inhuman morphs and the contortionist-like yet fluid gestures of animated routines. Sharir's sincere efforts to explore new types of movement through developing new choreographic human to nonhuman performance relationships, along with the human dancer's willingness to

try to learn from the skeletally near impossible gestures were equally impressive. The experience of watching their intensive creative play gives the impression of a dynamic partnership between the teacher and his two pupils, the cyber and cyborg dancer, as each adjusted to the movements of the other. Here the actor learns from adapting the movement gestures from the digital other.

Production Example: Dinosaurus

In *Dinosaurus* (staged with technology by Mark Reany at the University of Kansas, 2001, directed by Patrick Carriere), a children's theatre piece about explorers who discover living dinosaurs in a cave, human actors were enhanced through projections which expanded their physical stature and bulk to the approximate size of dinosaurs. The actor's movements mirrored the animated creatures creating human-dino "hybrid" characters.

By mimicking the lumbering movements of large land animals, the "live" actors enacted the dinosaur movements projected behind them. While the bodies of actors playing dinosaurs mimic the motions of the great beasts, their glowing hyper-colored projections seemed to fly by effortlessly in a surreal dance (Mast and Bensinger 2001). Visible in archival tape of the production were the projected ceiling, walls, and floor of a cave complete with stalactites and stalagmites. It was against the darkened void in the center of the cavern that the six to eight foot tall, brightly colored dinosaur animations moved in concert with the human actors in front of the projection screen. It was as if the actor had grown in stature as one might from wearing a large stilt parade puppet (like those in Bread and Puppet Theatre); and yet, the puppet was made of only light, and the humanity of the performer was not covered by any physical masking but stood beside the puppet, in full view of the audience.

In the words of Reaney:

> Our solution was to combine traditional actors with virtual avatars…Each actor was assigned to play 3 or 4 dinosaurs, delivering their lines, reinforcing their actions and playing the more detailed emotions that were beyond the rang of the CGI dinosaurs…On the entrance of a dinosaur character, an actor entered the stage from an upstage entrance near the projection screen and a projected virtual dinosaur would appear on the screen simultaneously. Through the scene, the actor and dinosaur

> worked together as a team. After much rehearsal, the computer operators were able to move the dinosaurs in close unison with the live actors. Actors learned to modify their movements to accommodate the slow moving dinosaur models and the computer operators learned to move the dinosaurs in ways that were very expressive despite limited mobility…walking, running, and moving the head and neck. (Reaney 2001)

What seems most significant in Reaney's description is the close working relationship developed between operators and actors, and between actors and their digital others, the dinosaur 3D avatars. Here the actor and animation worked together, via technicians, becoming a team. This teamwork could be likened to the multiple agents necessary to create a Bunraku puppet's movements. In this case, both the actors and technicians play the role of handlers for the digital puppet. Reaney's description of the mutual adjustments needed by human and digital actors, adaptation of the human bodies to the speed of the rendering digital puppets, and the adaptations of digital actor's movements to the limited stage of the real-world—their usually potentially infinite data fields limited by the projection surface—suggest that a composite character began to evolve between worlds, between the real and hyper-real.

Perhaps one of the most interesting comments from Reaney on the production is his insistence that the co-presence of live actors and media characters gave a "sense of presence" (Reaney 2001) or life to the extinct characters. The actors lent their live bodies to the incarnation of the digitally rendered reptile shapes. Children who watched the show apparently recognized the dinosaur character's personalities, but not the individual actors who played them (Reaney 2001). In a sense, the human bodies imbued emotion and life into the reptilian animations and then receded from consciousness. The human actors lent their aura of being alive to the characters and the animations lent the physical attribute of shape. The composite or hybrid characters were the joint product of human and digital Actors, which revived a sense of presence of creatures from the distant past.

Production Example: The Magic Flute

In many of his works, Mark Reaney plays with the interaction between performer and screen. In *The Magic Flute* (2003, directed by Delbert

Unruh) and to some extent in *Dinasaurous*, there is a sense of physical interaction occurring between the actor's body and digital characters on screens through choreography and blocking.[3] In addition, the line between costume and set is blurred as the bodies of the performers merge with projection surfaces. In *The Magic Flute*, screens are used to hold both nonhuman actors, 3D animated digital puppets, and aspects of imagined place usually associated with scenic spectacle.

When blocking the production both Reaney and director Delbert Unruh attempted to integrate the live human, three-dimensional actors with the two-dimensional surface of the screen "containing" the animated characters. This meant coordinating the virtually positioning within the animation program and the physical blocking onstage or the position of screens in relation to both the human actors interacting with the characters and the pages holding the screens featuring the animated characters. According to Reaney, they needed to experiment with new projection surfaces to bring to life or to stage, the "creature-performers," rather than just rectangular screens for sets.

> For *The Magic Flute*, the actors stood alongside the imagery, so we needed surfaces that would move with the performers and be manipulated by them…The virtual elements, like the actual actors, had an extremely visible role in the opera, as they were projected directly onto the stage. For this setup, the group used a front projector located in the orchestra pit and a rear projector placed upstage. These were trained on six mobile screens that were pushed, pulled, wheeled, or carried by stagehands during the performance. (Moltenbrey 2003, p. 32)

Perhaps the most playful and enjoyable part of *The Magic Flute* was the lighthearted interplay between the live actors and the puppet-like screen characters of the dragon, bluebird, and animals. These "screen characters" were composed of both the animated character and the screen on which they were projected, and when this screen was carried by a page or other minor actor, it was in fact a joint product of their movements and spatial reactions as well as those of the digital animations. These composite characters challenge the notion that the locus of the character is in the body of the human actor alone, as he or she performs with screens and projected characters and becomes spatially embedded in the projectionist set. The VR technology "enabled the live actors to traverse the virtual worlds and the synthetic animals to jump and dance" (Moltenbrey 2003, p. 32).

The physical/spatial and ontological gap between the actor's physical body and the projected digital puppet's virtual shape within the screen shape was clearly handled. In *The Magic Flute* presentational staging drew awareness the both the presence of the screens themselves and limitations of the screen-dwelling animated characters on them. The production staged the dragon and other animals in relation to the audience, to the live actor, and to the screens.

In production, the audience was delighted when the action began with a green scaly dragon lumbering across the set. More funny than fierce, the animated dragon—which was Kermit green with holes in his coat of scales showing his wire-frame polygonal structure, revealing his digital magic nature—began exhibiting humorous reactions to the audience and to the actors onstage playing pages. It was made clear through its timely reactions that the dragon was controlled in real-time. When the audience clapped for the dragon, he responded by bowing, breathing fire, and then lumbered off. A bit of a ham, he soon returned, peering around the screen. His behaviors such as fire breathing, bowing, and smiling toothily to the audience clearly in reaction to actions of the audience, gave him a definite sense of personality as a "living" character.

There was also a great deal of interplay between the animated and human Actors; between the animation and the edge—between screen-world and real-world. The dragon's movements also made him seem aware of the edges of the screen. As he peeked his head around the corner onto the screen from virtual offstage, it was as if he were looking through a window where he could now see the stage action. It was as if the character were looking in on our world from another virtual realm, and could only share the stage through the presence and digital magic of the screen.

This idea of the projection surface as a marked boundary for the dragon was also played with when the pages needed to pick up and manipulate the position of the screens to allow the dragon to chase Tamino. In order for the dragon to physically move across the playing space after the fleeing prince, the pages had to carry the dragon on a sheet-like projection surface. This becomes a spatial composite character in movement. The interplay between actors, screens, and animations is expressed by Reaney, in terms of creating conventions of spectacle that explore the edge of illusion and create a sense of play and partnership between the audience and the actors.

> "From the beginning, our intent was to open the edge of the illusion to the audience," says Reaney. The technologists took this a step further by hanging the main screens a foot or so off the ground, revealing the legs and feet of the stagehands. "By bringing the audience in on the mechanisms of the illusion, they became partners in making the magic. Therefore, the effect became stronger rather than weaker." (Moltenbrey 2003, p. 32)

Another example of clever screen/space interplay between animation and living actors is found in the performance given by the screen character of Papagano's little bluebird. Papagano chased a plump little comical bluebird reminiscent of a Pixar animated short. The little bird about a foot to one an a half feet tall, was projected onto a round screen on a pole held by a page. It mimicked the shape and movement of Papageno's net playfully, and flew away from it. Reviewer Moltenbrey writes, "Reaney looked at moving screens, and in *The Magic Flute*, there are six different types, including a 'lollipop' screen, onto which the group projected a bird. Then, a stagehand carried it while running in front of the audience, thus making the bird appear to fly" (Moltenbrey 2003, p. 31).

Here the page gives physical presence to the animated character by running with the screen and thus allowing the bird to fly away from the lead character's net. The page provides a moving, reactive projection surface for the bird to be projected on, so not only are the facial and "body" expressions of the animated character in motion present as reactions to his pursuer, but it physically takes up space and the motions of the screen have playful and comic timing through the actor's body.

Later in the production, the bluebird returned to the barren mountainside in the snow with one craggy tree in the center. Watching the somber scene, there seemed to be many layers or levels of reality in play: the page, the tree, the three screens, and the projection of the bird. A projected animation of the bird "lands" on a projection structure—consisting of a tree branch with three small screens attached—held by a page. At the happy conclusion of the scene Pamina returns to Pamino and the bluebird is joined by a female bird and several babies, each roosting on one of the clustered multiple screens. This demonstrates that the animated character is not fixed within one screen arrangement.

Multiple animals are also featured on screen during Tamino's flute performance (Act I, Scene 3). As he played the flute, three pages with legs and hands visible held a screen on which four animal heads of an antelope, elephant, monkey, and lion sang along with him (see Fig. 6.1).

Fig. 6.1 Tamino with animal heads on hand-held screens in *The Magic Flute* (Image copyright Mark Reaney, used with permission)

Again the screen has character as the pages dance, and the human actors lend presence to the projected character's movements. There was a playful acknowledgment of the presence of the screens as the mechanism for creating a composite character—which included the bodies of the pages whose feet and hands make up a good part of the stage action. In this performance, we can see that a second type of actor, the page/stagehand, must be trained to be both screen handler and a human avatar or facilitator for the animated character. As the animated character steps out of the shadows, the human handler recedes, but his "liveness" remains and lends playfulness and flexibility to the movement of the screen-bound digital other.

Production Example: The Skriker

In 2008 at Henry Ford College's Virtual Theatricality Lab, George Popovich talked of his use of 3D animation in live production, somewhat along the same lines as work being done at the University of Kansas, but with an emphasis on Motion Capture. They had recently mounted *The Skriker* by Caryl Churchill (2006, directed by George Popovich). The

play provided a perfect canvas for experimentation with digital puppetry and the agency of the human actor utilizing an avatar for expression of character. *The Skriker* is a great example of a text that requires something more than human from its actors. Like *A Midsummer Night's Dream* (which they also staged), or *Dinosaurous* (which was in production at the time), *The Skriker* features nonhuman creatures as main characters.

Popovich and his team's facilities included rooms for recording, a screen room, a control room, and a motion capture (mo-cap) room. They also had two identical cameras to accommodate real-time 3D characters appearing onstage with the performers. Popovich's interest in VR and live performance was highly influenced by sci-fi pop-culture like *Forbidden Planet*, *Tron*, and *Lawnmower Man*. According to Popovich, *The Skriker* was the first theatrical production in the world to incorporate both 3D stereo and motion capture in a live theatrical performance of a stage play. Their choice to include motion capture in production came from an interest in the creative agency of the actor. Popovich explains this decision in his production notes: "After examining *The Tempest*, the element which seemed to be lacking in *The Tempest* was a direct emphasis on the actor. While the interactive aspect of the production did provide some outlet for actors' creativity, the overall scenic approach, although VR, did not involve the actors to a great extent. It was for this reason the VTL Lab decided to explore the area of motion capture" (HFC Virtual Theatricality Lab).

Another innovative approach to the production was to include multiple actors in motion capture suits embodying or controlling multiple animated characters, avatars designed with detail by artists Chris Dozier and John Wilson. In fact, the production had two casts, one "live" and one "digital"; one working on set using the standard expressive gear of human actors, and one working behind the scenes in motion capture suites using their own movements to control the "bodies" of the digital puppets projected onstage in real-time.[4]

Although we have had other mentions of motion capture, in David Gibbons' review of the production, he gave a clean, compelling explanation of what motion capture is and how it was used in the production.

> The performer wears sensors or markers near each joint to identify their motion by positions or angles between them. Acoustic, inertial, LED, magnetic or reflective markers, or combinations of any of these, are tracked in precise increments. The motion capture computer software records the

> positions, angles, velocities, accelerations and impulses, to log an accurate digital record of the motion…The movements were recalculated to match the physical proportions of each animated character. The characters came to life with movements that were a natural fit with actors live performances during the play. (Gibbons 2007)

The need for this technology in this live production stemmed from the great number of magical characters. There were ten animated figures representing otherworldly beings, corresponding to the Celtic sprites, bogies, demons, and supernaturals written into the play by Churchill. Because these characters come from mythology and lore, and are meant to look nonhuman, they required visually spectacular incarnations. In person, Popovich expressed that he felt like the play was almost "un-producible" in that traditional costuming and makeup methods could be cost-prohibitive—citing the $25,000 sci-fi movie costumes of Stan Winston and Rick Parker. He felt the production's otherworldly characters were a product of the filmic aesthetic of the playwright. Elsewhere he has been quoted as saying that in general, "Playwrights today are making scripts that require changes in scenery and locale like that of film," locations and filmic characters like these are "essentially un-producible by the old methods" (Suchyta 2006). He said his goal was to do the play as Churchill wrote it, and create the characters onstage as Churchill describes them without making any concessions in bringing the supernatural characters to life onstage visually.

During the performance the audience, wearing 3D goggles, was live and co-present with both the projections and actors. Live motion capture ruled out the need for human operators other than the actor for the animated characters. In conversation, George Popovich said they were able to create the illusion of the creature next to the performer in the same space. He said, "We strive to create the illusion that the actors are in the virtual environment. We strive to create the illusion that Mo-cap creature is directly next to or in the same space as actor(s)." Popovich talked about the real-time mo-cap and computing needs of the project, saying that "if you are doing mo-cap and it's going to be interactive, it must be mapped live with the actor. Doing this in real time requires a system that can handle ten actors." In terms of the production, he felt that they were pushing technology to its edge, using whatever tools worked, and creating something "big and rich, a synthesis of many things." At the

same time that he expressed a desire to "do Artaud justice," he also said that *The Skriker* comes off as more magical than harsh.

To understand the need for technology in this production, let's look at the super-natural nature of the play. Briefly, the plot of the play can be summarized as the tale of two sisters: one pregnant, and the other who has recently killed her child, and their encounter with the Skriker, an ancient shape-shifting vengeful faerie and its otherworldly entourage, angered at the state of the world—the ecological and moral destruction caused by humans. The Skriker assumes the form of or possesses characters in an attempt to win over the sisters, bring them into the underworld, take the baby and bring about the end of humanity.

The characters in *The Skriker* include the Skriker as spirit who is, in his words, an "ecological warrior, a vengeful spirit, baby killer, damaged women/earth spirit, crone, ferry, sexual and protean, possessing/borrowing human bodies." Incarnating this demon virtually allowed Popovich to experiment with using mo-cap and animation for costuming, while allowing him to pursue Grotesque acting techniques and stripped-down costuming. In a review by Michael H. Margolin, the Skriker is described as:

> a grotesque Golum-like figure, is performed by actor Hugh Duneghy, wearing a motion-capture suit. The skriker also appears in human form, played by actress Laura McCallum, whose movements shadow the digital puppet down to lip-synching. Popovich describes this as an avatar approach — the incarnation of a deity in earthly form. (Margolin 2006)

Other animated folktale creature characters included: Yellery Brown, Black Dog, Kelpie, Green Lady, Jennie Greenteeth, Bogle, Brownie, Spriggan, and Rawheadandbloodybones. In Popovich's words these digital puppets are "3D avatars making visible what is invisible." The production had an Expressionistic and Film Noir look, with the presence of saturated color acting as a symbolic cue for the other worldly characters, such as the Artaudian fountain of blood. In the production notes we get a good sense of how and why the digital characters inhabit the set as they do:

> Interspersed throughout the scenes are various appearances of the creatures. We have not altered the play. It is presented essentially as written. The creatures are shown to exist in a dimension gateway between our

> world and theirs. There is no attempt to present the creatures as "Real," but as elements of fantasy. Sometimes they influence human events, sometimes, they just observe, and "hang out" in the irreality [sic] between their world and ours. Interspersed through the play are various characters (Man With Bucket, Passerby, Girl With Telescope, etc.) that in some way are influenced by the creatures and can see them, usually because they have sought out the creatures through magical means. These characters drift in and out of the play. (HFC Virtual Theatricality Lab)

By insisting on the real-time motion capture of the animated characters, Popovich values the creative agency of both his digitally enabled actors and their onstage counterparts. He noted that if the characters had been animated first,

> then live actors would become a slave to them. The live actors would have to conform their performances to the pre-animated performances. Since the live actors rehearsed with the performers in the action capture suit, they communally set the timing for their performances. (Popovich in Gibbons 2007)

Instead, backstage a human actor or digital puppeteer was present through and active in gesture, and the onstage actor was less encumbered than they would have been working with preprogrammed animation and was able to respond with the improvisational fluidity that live theatre demands. In the words of animation creators, "It's a 3-D puppet that was created by a digital artist, but the motion and the life of the puppet is created by a real actor and transferred to the digital puppet" (Brandon 2006).

In addition to the imaginative, detailed depictions of otherworldly characters as digital puppets or avatars, the production allowed Popovich to raise some interesting questions about the nature of performance. When talking to student actors he asked "What is an actor?" and talked about the difference between movie and stage acting; encouraging actors to engage their dramatic imagination when dealing with avatars or virtual bodies with disparate physical positioning and size relative to their own bodies. He feels that it is important for actors to be able to see what the avatars are doing in real-time and develop a good sense of spatial timing and how their movements translate into animated action. For this reason, he offered a class on acting for VR/Motion capture and incorporated Leban movement into production. Popovich acknowledged

the skill of the actors, saying, "The actors can't see a set, but everything they do has to align with scenery. They also have to act, to emote and respond to the environment" (McCellan 2007). Clearly, this is an extended set of acting skills to be learned. In one case, he demonstrated the process to an audience, "We wanted the audience to see what it's like to perform in an empty space with nothing, but imagination for a guide" (Popovich in McCellan 2007). Perhaps this is the ultimate test of the actor's imagination.

Production Example: Blue Bloodshot Flowers

Perhaps the most intriguing form of computer to human interaction which points to future theatrical and social possibilities can be seen in performance experiments with Artificial Intelligence. In *Blue Bloodshot Flowers* (2001, directed by Susan Broadhurst) human actor Elodie Burland, shared the stage with Jeremiah, an artificial being. Jeremiah was a computer program adapted from a security program which saw via a camera and was designed to recognize and respond to human input, primarily movement. The impression given from the archival footage is that Jeremiah perceived Elodie's actions in a way which resulted in his responsive behaviors indicating emotions, like raised eyebrows, that she could then respond to, thus the AI was actively engaging the human actor in developing a scene (Bowden). This is closest to being a truly nonhuman actor with agency, moving way beyond what is possible for a puppet.

Jeremiah is a computer-generated animated head based upon Geoface technology. He has a simple bone structure which allows him to express himself and emotions with which he can become angry or sad. But most importantly, he has eyes with which he can see. He doesn't only interact but also reacts. In fact he possesses Artificial Intelligence to the degree that he can demonstrate several emotions as a reaction to visual stimulus. Jeremiah is unique in that he demonstrates intelligence that is no way prescriptive. Therefore, the performance is a direct interaction between performer or audience and technology.

Jeremiah's randomized emotive reactions triggered by human actions or in dialogue with human actors points to the fact than nonhuman actors are creating something new and "in the moment," a skill or attribute formerly ascribed to human-performers. However Jeremiah, the nonhuman actor, is one singular entity—both character as interpreted by

the audience and AI are one depth—whereas the human actor exhibits the dual nature of being both the actress and the character she plays (Broadhurst 2004, p. 3). The human is still the more complex performing entity.

Jeremiah's image is displayed as a large, blue, disembodied face which create the illusion of emotions: happy, sad, curious, nervous, bored, surprised, etc. As the actress speaks a rapid rambling poetic monologue and dances around the space in her slip occasionally throwing or picking up flowers, the digital actor beams; when she leaves, he expresses sadness, he pines for her. His reaction is determined by the general distance or position of Jeremiah's scene partner (Broadhurst 2004, p. 5). Co-creator Susan Broadhurst describes the AI actor's emotional workings:

> The emotion engine determines the current state of emotions from simple parameters extracted from objects of interest within the visual field. This simple set of rules allows chaotic behaviour in a similar fashion. For instance, Jeremiah likes visual stimulus – high rates of movement make him happy. He likes company – no stimulus makes him sad. He doesn't like surprises – high rates of change in the size of objects make him surprised. Jeremiah doesn't like to be ignored – if objects exist but don't move then he assumes they are ignoring him and hence gets angry. (Broadhurst 2004, p. 5)

His responses to attention and neglect are much like a young child, or perhaps a domestic animal, and are familiar enough to be relatable, humanizing. The theatrical interaction described is a poetically simple and beautiful first exploration into the dramatic dialogue between human and AI. In a provocative statement, co-creator Richard Bowden writes, "People want to believe he is sentient so they make him as real as they want him to be" (Bowden and Broadhurst). In the performance, Jeremiah's character is left to the audience to interpret. Perhaps he is a lost lover, a child, or other disembodied memory of the young woman. The following selections from the performance text by Philip Stanier, indicates a relationship:

> … We were broken down and drained, he more than I. We parted once he left me laid out in the flowers and I loved him for it. This is his corpse what I now make with my tongue, these are his remains raked through, ploughed up, and cried over. His breath rattled, mine he called quiet algebra…. (Stanier)

This simultaneously complex and pure interchange between human and AI is distilled in the image of the young woman gently stroking the giant blue face as he stares back seemingly longingly at her. In a sense this demonstrates the opposite of the über-marionette, for although Jeremiah is free the restrictions of a human body, he is sensitive to human emotions, and demonstrates the ability of the artificial to border the human and self-aware—thus showing agency antithetical to the totally controllable actor Edward Gordon Craig desired.

In addition to enacting a performative demonstration of the Turing Test of whether a computer can pass as human (Turing 1950, p. 433), it is a depiction of the boundary between humans and our creations or future selves. In Broadhurst's words, it demonstrates the liminal space that is the "sublime of the virtual/physical interface" (Bowden and Broadhurst). This production shows a first step toward challenging audiences to accept AI Actors.[5] The audience reactions show general curiosity and perhaps indicates a larger cultural response to artificial beings.[6] Broadhurst writes:

> One of the most interesting aspects of this project is how much the spectator projects into the avatar. Jeremiah, as we know, is computer technology programmed with some artificial intelligence and has the ability to track humans or objects. However, the interaction with him is anything but objective. Most people when they first see Jeremiah find him fairly spooky. After the initial contact people tend to treat him in the manner of a small child or a family pet and behave accordingly. Usually trying to make him smile and generally please him. His face becomes so sad when he is left alone that it is becomes quite difficult to walk away. Although he is programmed with emotions to react to certain stimuli, he can demonstrate fairly random behavior that can be fairly disruptive during a performance adding a further dimension to experience of working with a virtual body. (Broadhurst 2001)

The online archival video makes two things clear: one, the genuine surprise of the audience at interacting with Jeremiah in the demonstration, and two, that his keen interest in the live actress during the production is uniquely emotionally compelling. The audience response is telling of our own degree of acceptance of AI and developing nonhuman entities. This new type of entity creating performative interactions gives us pause to think about the future of the concepts of both aliveness and performance. The sweet, almost romantic co-presence of these human and digital entities onstage, publicly provokes questions the nature

of being. This human and nonhuman interaction enacts an intimate encounter between organic and engineered beings.

The Video Actor

One of the most utilized Digital Theatre effects is the video other or the *Actor's Double*. The idea of doubling the actor onstage with his own image lends an air of the uncanny and self-introspection. This effect most often includes the playback of prerecorded media to which the onstage actor responds, but it can also include the projection of real-time video footage from performers, usually offstage. The effect is often to create larger than life 2D impressions of people in another place, time or mode of existence. It is generally the simplest effect to achieve, and video is pervasive as a technology today. And yet it can provide stunning and meaningful theatrical moments. This technique is often combined with other technologies like interactive playback devices. For example, in *The Future of Memory* by Troika Ranch (discussed earlier), the performer with MIDI capabilities, was able to produce this doubling effect in real-time and playback a theatrical moment on command, adding an improvisational quality to the reoccurrence of memory.

Often video can be used as a potent, and fairly easy approach to integrating digital technology into production. The technique of using a cinematic or screen actor to portray characters out of place or time has a tradition at least stemming from the days of Erwin Piscator. There are so many examples of this use of digital media, that a whole book could be written on the subject of mixing video and live actors onstage. The simple moment of doubling, illustrating, or capturing internal states can be quite theatrically effective. In the case of a living actor set against the 2D video actor, there is a perceptual difference which can open up a visual and ontological dialogue between the body of the Actor and the image-body of the screen character. Here the actor is othered by the contrast to his or her project image.

A prime example of this could be seen in the Builder's Association's production of *Jet Lag* (1998, directed by Marianne Weems). The actor was onstage directly in front of the screen showing his real-time recorded journal, his image-body, along with a larger screen that showed the composite of his image into his fictional mediatized location and weather conditions. Reporter Jonathan Romney commented on, "The gap between real time acting and life filtered through the

media" (Romney 2000). The Builder's Association website noted that "In Crowhurst's world of faked geography, his location and identity are manufactured solely through his representations for and by the media" (The Builders Association). In this performance the character's "live" body loses its life to the perpetuation of the immortal and fictional image-body.

Production Example: Continuous City

The Builder's Association's *Continuous City* (2007, directed by Marianne Weems), is the story of four lives simultaneously connected and disconnected through technology. Dramatizing our world linked by teleconferencing, social networking, and other place-spanning technology; it is a cautionary tale about virtual proximity at the cost of face-to-face interaction. The play follows the networked lives of Mike, a father and businessman; his boss/partner J.V., Mike's young daughter, Sam, and her nanny, Deb as they function as the nodes in this social web. Of the four central characters, three occur as live, co-present performers, while the pivotal character, Mike, is seen through his absence; his video image. Eventually the girl's blogging nanny sees the girl's need for direct interaction, and involves Sam in the blog, and in life. They are brought together through a shared interest in technology.

The girl, Sam, is precocious, tech-savvy, and lonely. Her living presence onstage in the dark, clearly waiting for someone, carries the current of human urgency which underlies the show and drives much of the action. Sam has mastered so many new technologies, that she is easily bored and begins to act out: leaving school, and refusing to communicate with spoken words and using only text-messaging to communicate. Ultimately, our concern lies more with the survival of the family than the business, because we feel for this innocent, a symbol of the developing future generations.

Sam's father, the traveling businessman Mike seen as a video transmission, undergoes a transformation from detached to engaged father. In a sense, he is a current Everyman, torn between work and family, between the promise of connectivity and having real connection. In perhaps the most compelling moment of the production, Mike calls in on his daughter from the road. A blur of traffic lights washes across stage screens: rain, city lights, streets, car lights passing. We realize that Mike is in the back seat of a cab. The contrast between the little girl safe at home in bed, and her

father's location, crystallizes a moment of realization of the fragile boundaries between private and public spaces, and the sense of danger when they bleed together, contaminating each other. As Mike watches his daughter drift off to sleep, a shift occurs and there is a sense of restored peace as the girl's sleeping face bathed in warm comforting color washes across the whole set; indicating a shared sunset in their personal world. Later, father and daughter go on a virtual play date; an outing in South America, where they visit a market, pick out sprinkled doughnuts, and play hide and seek in a park. The familial bond between father and daughter is strengthened through these virtual interactions, at the same time as the business bond between Mike and J.V. fails.

The integration of video and live-action was aided by a system of fourteen poles with multiple pneumatically trigged screens which were almost invisible until they sprang open—allowing images to pop-up at a moment's notice. The screens became a primary place of action and interaction. Throughout, place was transposed, as Mike journeys as emissary to emerging markets in places like Africa, China, South America, hyperreal nonplaces like the Las Vegas versions of New York and Venice, and interstitial spaces of transit which compose the Continuous City.

Through the inclusion of real-time video-conferencing from participants across the globe, the audience gained a sense of the possibilities of cyber-community. Video feeds chronicled diverse responses to the prompt: "when I think of home, I think of…" At one point, thirty-two screens flash open with a personal account of belonging and longing for the connections of home-place. The audience left giving their own accounts of how technology both isolates us and brings us together.

Mechanical Actors

Perhaps the most alien-looking theatrical player to be set in contrast to the fleshy human form, is the cold metal form of the robot. Here we see the starkest contrast between human and other. Some terminological and historical background may aid this cursory exploration into how these machines interact with humans in general, and onstage (see Box 6.1). But robots, as nonbiological mechanical physical objects engineered with moving parts, do not need to be humanoid in shape or size, or obviously built of metal or shiny plastic in order to be compelling in their uniqueness from their human co-stars. Their performative value is in their uniqueness from and their sameness to us and to "life," at once.

Box 6.1: Historical Precursors: Mechanical Actors

Although the term "robot," stems from the modern play *R.U.R.* (*Rossum's Universal Robots*, 1920) (see Perkowitz 2004, p. 72), the idea of automated creatures is ancient (Hill 1984, p. 205). As Donald Hill writes, "the 'urge' of man to simulate the world about him…to impart movement to static simulations and so create automata…man-made organisms, magically endowed with a life of their own, has exercised a powerful fascination" on us for generations (Hill 1984, p. 199). This fascination also influences human-performers. In Javanese wayang wong performance, human dancers emulate the movements of shadow puppets, likewise in Burma dancers and marionettes aesthetically co-influence according to Noel F. Singer.

The idea of mechanical actors can be traced as far back as ancient Greece and the miniature plays staged by Heron of Alexandria and in ancient Bermese Author Sidney Perkowitz gives the clearest definitions of types of human and machine forms, identifying automatons, robots, androids, and cyborgs.

> An *automaton* is a machine that appears to move spontaneously, although actually it moves 'under conditions fixed for it, not by it' according to one definition. A *robot* is an autonomous or semiautonomous machine made to function like a living entity…It can be humanoid, although not necessarily so; most contemporary robots take nonhuman shapes that are useful for their particular applications. An *android* is similarly entirely artificial but has been made to look human (the word comes from Greek roots meaning 'manlike'). A *cyborg* (cybernetic organism) and a bionic human (from 'bio logical' and 'electronic') are different from the previous three categories, in that both involve a combination of machine and living parts. (Perkowitz 2004, p. 5, my emphasis)

Historically, these nonhuman others have been built to fascinate and amuse us by both performing their uniqueness at the same time as they exhibited their similarity to biological systems, through imitating natural motion. Some famous examples of these interactions of likeness and difference include a duck, a chess player, and mechanized boys at a writing desk. These demonstrate parallels to biology, the illusion of human skill, and our fascination with mechanical différance. In the case of Vaucanson's gilded-copper duck imitating and exposing the mechanisms of biology—especially digestion—was the essential scientific and entertainment value of the work (Altick 1978, p. 65). Thus the mechanical was a window into the organic.

In the case of Wolfgang von Kempelen's chess player automaton which was opened in order to show the gear mechanisms in its mysterious inner

cavity, and the boys at their writing desk "…their clothes are pulled away and their spines pried open. Inside each child is a moving piece of golden clockwork" (Wood 2002, p. xiii). Each of these is a demonstration of différance, to contrast the humanistic movements, and shows the audience's interest in the inherent dissimilarity between functions of machine and human.

In this section robots are the main players in theatrical human–machine interactions. Since mechanicals have been around for millennia, one may ask, "Why examine performing robots now?" Because, as our technology advances, the perceptual gap between the human and nonhuman decreases, and the frequency with which we encounter these mechanical creations increases. Their potential to interact in our social and biological experience increases exponentially. These interactions can be modeled in Digital Theatre.

In Digital Theatre, interaction is key to performances between human and nonhuman actors. The continued exploration of mechanical/biological différance allows us to better define and understand ourselves. The mechanical can serve as an insight into the flesh: how we live, how we function, how we react, and what we determine is essentially "life" or alive. Author Gaby Wood writes,

> The definition of the term automaton sheds some light on the insights to be gained by putting the human and the machine on stage as contrasts which inform their respective meanings. (automation) 'It is either 'a figure which simulates the action of a living being,' or conversely, 'a human being acting mechanically in a monotonous routine. (Wood 2002, p. xix)

In these mixed productions—of metal and flesh, we can see ourselves in relation to the other and come to new understandings of human nature and the urge to create and control. Sometimes, machines have the ability to evoke an emotional response as computer program Jeremiah did in *Blue Bloodshot Flowers* even without a material body. In this section we will be examining ASU's Baxter a large industrial robot actor, Zeeb Zob a small android Commedia robot, and drones, small non-humanistic flying machines used in *A Midsummer Night's Dream*.

Robots like Cog, Kismet, or AIBO are more like caricatures than copies of nature, yet they still elicit a response from humans. As author Sidney Perkowitz notes, mechanicals or robots

> …need not work very hard to elicit human reactions. If the creature…can learn—and displays natural-seeming behavior, it can project a well-nigh irresistible impression of life…it's easy to feel *something* toward the mechanism: amazement that it listens to you or a small rush of affection…if the synthetic being looks like a human…its emotional power is far more intense. (Perkowitz 2004, p. 3)

Kismet, created by Cynthia Breazeal, Associate Professor of Media Arts and Sciences, MIT Media Lab, has the ability to make small-scale, detailed facial moments and thus has an air of human expression and can appear to make eye contact. According to Breazeal, "It is night and day when something looks into your eyes versus at your face or just at you. Eye contact is profound" (Perkowitz 2004, p. 130). Digital Theatre is an opportunity for this type of experience, a venue for more people to look into the eyes of the now digital mechanized nonhuman actor and see if they make eye contact with the future.

There is a small but increasing number of performing entertainment robots. In his article, "Robot Dramas: Autonomous Machines in the Limelight on Stage and in Society," Aaron Dubrow of the National Science Foundation (NSF) mentions several including: Data a standup comedian (created by Heather Knight at Carnegie Mellon), *Heddatron* a 2006 adaptation of Ibsen's play with robots, and Zeeb Zob a Commedia dell'arte performing robot. As part of the NSF's media team, Dubrow's article is positive public relations outreach. It links these performances with the efforts of the National Robotics Initiative to research and create policy for interactions and perceptions of encounters between humans and robots.[7]

The ideology behind his interest and article is that while theater may not be an area where the NSF is funding robot research, artists are often early adopters and can be innovative users of emerging technologies. As Dubrow states, "…artists create the narratives that subtly influence our perceptions. In the case of science fiction, this influence often shapes the development of the phenomenon they depict" (Dubrow 2014). Dubrow quotes Artistic Director, Adrienne Mackey who explains the link between the arts and innovation in another, perhaps more artistic and human way:

> Culturally we're obsessed with beings that cross this human-inanimate boundary…I think it's because this kind of robot is a way for us to reckon with the expansive inanimate that surrounds us, for us to contain questions about difficult concepts — like sentience, technology and the cosmic scale — in forms that we aren't quite so afraid to interact with. (Dubrow 2014)

Digital Theatre with robots and humans raises important questions about the implications of robotics in a way which is safe and accessible to the public, thus educating the audience, and sometimes the creatives and scientists involved as well.

Production Example: Baxter, the Robot Actor

In 2015 Arizona State University (ASU) director Lance Gharavi introduced the author to a very special actor, named Baxter.[8] Previously, Gharavi had been approached by Emerge 2014, an annual festival at Arizona State University bringing together artists, scientists, writers, and engineers, "to imagine and design the future of the human experience" (Gharavi 2014) to create a show involving a robot. The collaboration between arts and sciences focused on human interaction with (and perception of) robots. Ideally, by making a robot actor more human through mirrored and responsive gestures in this type of public appearance, the idea of robots would become more accessible to society.

According to Gharavi, the project was mutually beneficial to artists and robotics engineers. The collaboration allowed them to explore: "what robots teach us about being human, how to get machines to move in a more natural fluid human fashion, a more embodied way of interacting with a robot, how can we make robots more sociable and approachable, and how to move and behave like a human in expressive manor." Thus, in a sense the performance experiment was enacting a meeting-place between science and art, and a meeting-place between future and present.

In the ASU lab, surrounded by computer stations, drones, bits, and pieces of equipment, was Baxter, a simplified torso with arms. It was a bulky, red unit about five feet tall, that reminded one somehow of Legos, or another brightly colored plastic toy, with arms that looked like they could crush you to death and a monitor and sensors for a head. There were no legs to speak of, but a stalk and wheels for movement. Baxter was

bought for a NASA project to pick up moon rocks, and created for repetitive industrial tasks (like lifting items in an Amazon warehouse). This project allowed for exploration of its further capabilities. The system uses Kinect as machine vision, allowing the robot to look at person's movement and in Gharavi's words, "interpret it based on his knowledge or grammar and not dumb mimicry – it is autonomous intelligent [intuitive] behavior. Exhibiting characteristics of autonomy and that's a big jump forward."

Baxter's programmer, Si Vernprala, said there are three types of robot functionalities: (1) preprogrammed (2) motion-sensor mirroring, and (3) completely autonomous behavior. They were currently programming movement primitives to allow it to construct its own version of movement. The stages of progress are analogous to building a language structure; moving from creating letters, to words, to sentences. At the time, Vernprala said they had discovered "not the alphabet [itself], but *how* to create an alphabet." They are working on creating a responsive robot movement model adaptable to any robot. They also explored the constraints and limitations, getting to know the "sphere of movement." Future exploration will include Leban movement. These primitives, algorithms, and constraints seem a far cry from blocking, character study, and motivation; but in this case, they were the building blocks of this actor's performance.

The project included mapping human proportions onto a nonhuman body, which included figuring out how to relate two different kinds of arms, biological and metal, where there were different structures, joints, and moving parts. Molly Schenck, the choreographer on the project, felt a need to adapt her human movement to the robot. According to Gharavi, "She feels like she constantly needs to rotate shoulder arms forward to accommodate his [the robot's] movement." Gharavi talked about working with the robot in terms of "impressing with Baxter." He said that when using the Kinect system, "it is uncanny how Baxter kind of makes you feel like he is controlling you." During mirroring exercises, familiar in most beginning acting classes, there was a sense of connection between the actors moving the robot and the robot moving the actors.

The Performance: YOU n.0

Gharavi explained the performance in terms of the goals of social robotics,[9] asking, "How can we make robots more accessible/acceptable

… less threatening… unpredictable?" The loosely scripted, *YOU n.0* was an experiment in this direction. Gharavi said it was envisioned as a "Carnival of the future, exploring how humans communicate in past, present, and future." It was very colorful, with juggler in green, an aerialist in red, a purple clown, and of course, Baxter (red). At one point the choreographer kissed Baxter and hugged him, and Baxter handed the juggler a ball. He spoke of considerations of staging, of sound, expressiveness, smoothness, the visual impact, of putting a robot onstage and interacting with the audience, and actors.

Upon entering the lab Gharavi embraced the robot, and with child-like joy expressed the effect of the mirroring which the audience got to experience; moving their arms and watching the robot move. On the archival video, one can see both audience and performers interacting with Baxter. He discussed the idea of memory (or immediacy), of live-capturing movement and translating it onto a mechanical "body" in real-time and recording it to play it back later, versus preprogrammed motions. This difference was explained as: "a robot I am commanding with my own body" versus information recorded last year. According to Gharavi, there are direct parallels between other digital performance techniques using interactivity, like video playback versus video triggering. He sees the use of other robots onstage in recent productions including the recent Broadway production of *King Kong* (2013, directed by Drew McOnie) as, "Naive implementations of a remote control car, one step above animatronics; a push button control interface, parallel to using a CD to press play and watch for video cues."

The impact of interactivity can be seen in positive audience reception in pre- and post-show demonstrations. Both director and programmer concurred that the Kinect was a "big hit" with the audience. Gharavi thought the audience's perception of interactive liveness "will likely come down to the way in which the audience is or is not involved in the work, for Kinect-ablity (i.e. connectiblity) you need to build in signs and indices of real time interactions." Gharavi wanted to have the audience members directly interact with the robot, and sought to discover if there was an organic way to involve a robot in theatre.

In contemplating shaping the future, he has given some thought to robots displacing humans and actors as a workforce. But, he added, "If we get to a point where robots can act as well or better than humans, there will be people who will crave performances by genuine humans. Like today, people who like listening to music on vinyl. There will be

the flipside; the valuing of human life." There is also the possibility of pushback: "As robots become more human-like, humans may become more robotic; computer chips, interfacing. Some people will look like robots." He followed this with a wry director's joke: "But who wouldn't want a kill-switch for their lead actor?"

Anthropomorphizing

When asked if he felt that Baxter had a personality, Vernprala replied, "No. Artists tend to do that (anthropomorphize) by putting faces on the display in the show. Me personally, I haven't thought of him that way…for us, it's more of a machine." Yet there was a strong pull from the audience (and performers) to want to humanize the robot actor. Audience members often asked how hard it would be to put legs on Baxter.[10] Vernprala expressed that using an android (human-shaped) robot like the Nao, developed by Aldebaran Robotics, would more easily elicit a connection with the humans. But the issue of anthropomorphizing is about more than looking human; it is about acting human. Vernprala said, "It comes down to us forcing it to be human. But there is no natural human aspect to Baxter."

Vernprala found that working with artists was not as hard as he had imagined, because both artists and engineers have the same questions. "They just ask it in other ways; from different backgrounds. They want to make people move and we want to make robots move." He sees the natural tendency of the artists as an extension, perhaps a magnification of the "natural tendency for us to anthropomorphize robots." (He referenced *Star Wars'* C3PO.) When asked if seeing the creatives act familiar with hugging his machines was strange, he said "No, that it is part of social robotics… we want to analyze what people's responses will be." Yet to an observer, the sheer strength of the machine was intimating. The future outcome of these studies will be to make robots more adaptable to human environments and interactions. "We don't yet know how extensively robots will be used in the future. There is definitely going to be an increase."

When asked how much more human will robots need to look before people will accept them walking around with us (looking human vs acting human), reminding him that R2D2 was the favorite of audiences because of its perceived personality, even though it was shaped like a trashcan. He answered, "Yes, so there is a factor of being… acceptable, approachable…

Like if somebody sees Baxter, they don't really feel like hugging, right?" (But clearly they do.) When it was suggested that if one were able to make Baxter seem more human through his actions that would override the bulky nonhuman shape, he said, "right, that's the kind of thing, challenge, we are interested in."

It is an interesting challenge between looking and behaving like a human actor. He concurred that in contest, the mechanical looking Baxter might win because: "We've seen how people respond to Baxter and they are doing the mirroring…[*gestures to indicate actions.*] …They feel completely at ease. They are very happy with it. Him. …So once Baxter is interacting, it becomes more humanlike." For this scientist, Theatre has been a valuable testing-ground for human/computer interaction because of the abundance of audience feedback. According to Vernprala, "Science is about answering questions." Which seems a good partner for Theatre Arts, as at our core we are about posing questions.

Production Example: Comedia Robotica (Zeeb Zob)

The action of the short production *Commedia Robotica* (2012, directed by David Saltz) is that the robot Zeeb Zob, initially rehearses with a reluctant actress for a commedia dell'arte play-within-a-play. Over time, the robot develops romantic feelings for his co-star, but when he finally expresses these feelings, a human engineer waiting in the wings destroys the robot; at which point, the actress realizes that she had feelings for the robot as well (Dubrow 2014).

The primary purpose of Dr. Saltz's robot, Zeeb Zob, is the performance of Commedia dell'arte. This type of movement is highly stylized and based on broad physicalizations, influenced by the body types, movement, and lazzi (physical shtick) of stock characters. Saltz programmed the one-foot-tall robot to perform poses and gestures which were within the scope of Comedia behaviors. According to Alex Wright's article in the New York Times:

> For any given scene, the robot can then assume an archetypal Commedia-style persona — the comic parent, the miserly merchant, the pompous doctor — each programmed with distinct gestural characteristics. The robot can then follow a stage direction to greet another character, to hide or to flee, and to do it all in character. (Wright 2012)

When working with robot actors, one has a limited palette of expressions, but the directives are followed precisely. Because the robot has limited facial plasticity and emotive range, it is the overall movement of the unit which expresses the desired emotion or character-based reaction. Dr. Saltz states that robots have limited expressive capabilities, saying, "So instead of trying to replicate human beings, you embrace those limitations" (Wright 2012). Another way of thinking of this difference between human and robotic movement is that, the robot actor is, according to teacher Alex Wright who uses them to teach acting, a "model of pure movement" (Wright 2012) unadulterated by an individual human being's imperfections or free will, i.e., irregularities of gesture or form.

Research director Alex Wright writes that the purpose of such robot-actor exercises is not to replace human actors, but rather to "explore the mechanics of how movement evokes emotional responses. For human actors, projecting emotion is often a matter of instinct, but for robots it requires painstakingly detailed instructions" (Wright 2012). As such, roboticists must learn to "cultivate a humanistic understanding of how movement and gesture combine to create emotional responses in audiences" (Wright 2012). That may not fully assuage any luddite actors, but it does explain the scope of today's questing into robotic actors. Dr. Saltz further ponders the human/computer continuum asking, "At what point does a robot, a human-crafted machine, develop its own agency and become a performer? And who's performing?" (Dubrow 2014). As a director, working with actors and acting is about suggestion. If one gives a robot a command, is that the same as giving actors a direction? Or, does the lack of a human interpretive filter make it something else, something less artistic or human? Is that ever truly acting, or is the craft of Acting irreducibly unique to biological humans?

Production Example: Robots in a Midsummer Night's Dream *(Non-humanoid Robots)*

As mentioned earlier, robots need not be androids or human shaped to be compelling onstage. One production of *A Midsummer Night's Dream* (2009, directed by Amy Hopper) staged at Texas A&M, used seven drone-type flying robots as fairies, as well as using live human actors. The robots were integrated into rehearsal from the beginning and actor behavior altered toward their co-stars throughout the process. Like many other productions using robots, collaborators saw it as an opportunity to

experiment in human/computer interaction and introduce the robots to the public. Science collaborators here also point to working with Theatre personnel as being a rich opportunity for sciences to experiment, because we are accustomed to maintaining a process of open exploration where many factors are unknown.

In this case, the robots were from the Center for Robot-Assisted Search and Rescue and the practical question at hand for the researchers was: "what would make humans either trust and approach, or fear and flee a robot?" which could make a significant difference in a rescue scenario. According to Robin Murphy who leads the center, because the robots are used for rescue and crowd control—gathering or shooing away people, "we needed additional research on how to make them move like friendly hummingbirds or angry bees to get the desired effect," and information gathered in the production could lead to a more "trustworthy" robot (Squatriglia 2009). And the addition of actual flight (rather than symbolic flown in set pieces) to Shakespeare's classic about fairies and sprites also added a novel dimension of movement in the theatre space. These mechanical fairies created movement patterns likely only achievable with lighting in the past, because of the size and shape of the object—as no human actor can fly, dart, and hover. Director Amy Hopper said, "To see them flying, spinning and bouncing through the air just adds to the magic and mystery of the world Shakespeare created" (Hopper in Squatriglia 2009). Likewise, in *The Ship's Detective, a Curiosity Machine* (1996, directed by Adrianne Wortzel), a small robotic device which resembled a Mars rover, played incidental characters.

In each of these examples the purely digital actor or agent—be it animated projection, robot, android, or AI—exists side by side with the human element. This allows us to see what we have made and question what we are becoming. In the case of digital animations used as digital puppets, we can clearly see the break between flesh and light found at the edge of the screen. When working with robots and machines that look nothing like us, because of their shape or texture of glossy plastic or metal, we can delight in their abilities and their differences. But what happens with more sophisticated android models currently being made as receptionists and personal aids take the stage? These types of production often serve as PR vehicles for public acceptance of robotics. Will the uncanny valley observed with humanistic androids be enough to keep androids from replacing actors, or will we embrace the perceptual discomfort and become accustomed to non-bio actors? Will the next generation

of AI actors be housed in bodies we can mistake for real? The puppet has finally lost his strings. Are we ready for what we are making?

Notes

1. "These are the possibilities of Man as Dancer, transformed through costume and moving in space. Yet there is no costume which can suspend the primary limitation of the human form: the law of gravity, to which it is subject" (Schlemmer 1961, p. 28).
2. Yacov Sharir, *Lullaby* shown by Sharir in his SDAT lecture where the screen for the duet was a glass bead 3 × 3 beaded curtain, giving the appearance that the 2D animation and 3D human shared the same space.
3. Also noted by Karen Moltenbrey, *The Magic Flute* incorporated "'digitally enhanced characters,' or synthetic human-performer hybrids…During *The Magic Flute* performance, the group projected digital images onto specially designed costumes, props, and masks" (Moltenbrey 2003, p. 31).
4. "A motion capture suit is capable of transferring the movements of a live actor to a digital puppet. The creatures were created in Lightwave 3D, a digital modeling program. They were then imported into the motion capture program, Motion Builder, for use by actors equipped with motion capture suits" (HFC Virtual Theatricality Lab).
5. "Richard believes the interactivity and human embodiment of Jeremiah is sufficient that individuals see him as a living entity" (Broadhurst 2001, p. 5).
6. One can watch the audience react to Jeremiah in a pre- or post- show demonstration available online as a video in links from Broadhurst's article or the website: *Blue Bloodshot Flowers*, http://people.brunel.ac.uk/~pfstssb/.
7. "In better understanding the human perception of robots in our lives, designers and policymakers can make better choices to ease human anxiety, facilitate greater acceptance of robot and build robots hardwired to be safe and trustworthy" (Dubrow 2014).
8. Gharavi's other works include: *Beneath: A Journey Within* (2017, directed by Lance Gharavi), an original performance using a stereoscopic projection of data visualization—animations interpreting seismic data from a CAT scan of the Earth and *A Brief Anniversary of Time* (2013, directed by Lance Gharavi), which employed stereoscopic scenery using the Skyscan System to tell the story of three generations and to celebrate the 25th anniversary of Stephen Hawking's book, *A Brief History of Time*.
9. The piece was featured as part of ARS Robotica, as a collaboration between the Autonomous Systems Technologies Research and Integration Laboratory, and the School of Film, Dance, and Theatre at ASU.

10. Vernprala assures us that it would be very hard, but he humors the audience by saying, "We'll look into it."

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PART III

Creative Authority & Authorship

CHAPTER 7

Director/Dramaturg (Creative Authority)

Generally in Theatre productions, there is an established direction for the flow of information from the director, often assisted by dramaturg, through the actors and staging elements to the audience. With the creative intervention of digital technology, the usual flow is sometimes bypassed, restructured, and even inverted. The traditional discussion of authority and authorship is complicated by intervening elements which allow for interplay and integration of audience input and nonhierarchical production structures. It is true that technology need not disrupt the established production hierarchy which facilitates the flow of performance information from director to the audience, but when it does, it creates some wonderful new possibilities for collaboration within the creative process leading to new aesthetics and learning models.

This chapter is unique, in that each of the Digital Theatre production examples are works in which the author has participated directly. Participation took the form of collaboration (local site direction) performance in the *InterPlay* series (1–4), and directing in *Elements*, *Re-Membering Harmony*. Most of these pieces dealt with place. *Interplay* was a series of multisite performances over the Access Grid, in which place and the joining of distant places are inherent. *Elements* contained a scene on Earth. *Remembering Harmony* was a site-specific performance set in a small town.

N. Masura, *Digital Theatre*, Palgrave Studies in Performance and Technology,
https://doi.org/10.1007/978-3-030-55628-0_7

Each of these works is an example of collaboration and inclusiveness of creative voices making theatre. They demonstrate that devised works often subvert the hierarchical expectations of theatre production. Here the director is no longer necessarily at the top, but often standing side by side with her fellow collaborators. The devisor, or creative conduit for telling a communal story is at the service of the many. As a collaborative director, it is important to involve creative artists as equals. Creating a structure for collaboration that allows for this is challenging and can produce enriching experiences and strengthen a sense of community.

Production Examples: The *InterPlay* Series, Devising/Collaboration in Action

In the *InterPlay* series, both the process and the product were unique outgrowths of Art Grid collaborative online environment. Each geographically diverse site responded to the call for participants by interpreting theme with the artistic and technological resources available. Each site directed its own scenes and created its own content. The central Utah node acted as the overall artistic director—that culled and refined the art/tech content and facilitated meetings to shape content and tech interaction/ideas. The mixture of disciplines included: artists, musicians, poets, performers, and technologists.

In the *InterPlay* performances, Jimmy Miklavcic of University of Utah's Center for High Performance Computing, was the central coordinator or artistic director and chose video streams from each participating sites and integrated them into a main "mix."[1] This was then broadcast over the Internet. The mix itself, and the other performance video streams, which were different each time, could be viewed by numerous online or gathered "local" audiences.

In one performance a scene could primarily feature images from one site, and in the next moment it could mix elements from another. Images of giant books, a cellist and a Zen garden, images of water and faces overlapped with places, and bodies filled with other forms and places, hands swimming through hamburgers, rhythms from Alaska, graceful animations of blue floating boxes, people swimming through space, dancers triggering words hundreds of miles away, virtual reality environments—all of these happened and combined in a seemingly random, fluctuating

flow. Exhausting to perform and to watch, it was also exhilarating. *InterPlay* stretched the audience's ability to watch. As Micklavcic liked to say, "There is no way you can see the whole thing."

Through technology, disciplines combined: a sculptor in Utah, a cellist in Boston, percussionists in Alaska, visual artists working with animation or video in Illinois, Alaska, and Maryland, a violinist/programmer in Montana, writers and dance/theatre performers in Maryland and Utah, and dancers in multiple states. We met to discuss, rehearse, and perform through the Access Grid and our art and experience of art-making was shaped by the individuals who made up the collective process. It was mediated interdisciplinary collaboration in the fullest, most chaotic, and richest sense.

Production Example (1): InterPlay—Hallucinations

InterPlay: Hallucinations (2004, directed by Jimmy Miklavcic) was a real-time surreal mix of image, sound, and movement suggesting both a psychedelic state of mind and the impact of social perceptions of identity, consumerism, and control. In *Hallucinations,* the Maryland team was composed of the author and Brian Buck. We were joined by Scott Deal and Miho Aoki in Alaska at the Arctic Region Supercomputing Center. This formed a creative tripod with Utah's flash animation, and multiple rooms and camera POV staging of a piece on identity and cultural stereotyping with Jimmy & Beth Miklavcic and team entitled "The Surface of Things." Maryland contributed dance choreography inspired by the Möbius strip and Max/Jitter-controlled video clips merging consumerism and politics, and Alaska contributed complex ethereal computer animation and live electronic percussion.

This was a very balanced creative experience; Brian danced to Scott's music, Jimmy mixed Miho's animated hands and the author's video of a hamburger commercial, Brian danced back and forth to the pedestrians forever caught in a recursive loop walking up the Lincoln Memorial steps, and Beth Micklavcic's words and the image of the imposing bald executive blended with Brian's eyeball or a giant Barbie doll or my video of the American Flag. It seemed to have its own sort of radical, slippery logic.

In Maryland the team was in a small room with two assistants, two Personal Interface to the Grids (PIGs, which were comprised of computers, video cameras, head-sets/microphones, and speakers), one projector, and an archival camera. Local participants improvised and

provided costuming, properties, and much of the computer equipment. A classroom was converted into a mini-Access Grid performance space. The team performed the roles of technicians by installing and maintaining the PIGs, even during the performance if necessary, as well as camera operators, performers, and digital content creators. It was an experience of community and experimentation epitomized by the proactive ethos "hey, let's try it and see what we can do." Collaborator Paul Jackson likened the enthusiasm and aesthetics to garage theatre or the old summer stock trope "I've got a barn…let's put on a show!"

Each site was exploring this type of collaborative improvisational online performance for the first time. All participants were testing this new art form; collaging images, and reacting to the sounds and shapes created by others. With everyone reacting to multiple stimuli to create mediated art with people hundreds of miles away in real-time, there was a sense of the performances being electrically charged. It was as if the real event was taking place in an unnamed virtual intersection between collaborators creating a pure moment of communitas.[2]

The next year the series doubled to six total sites participating. As *InterPlay* grew to include additional sites, it evolved in computer, artistic, and practical complexity—which necessitated creating a simple color-coded dramaturgy, and scheduling rehearsals.

Production Example (2): InterPlay—Loose Minds in a Box

InterPlay: Loose Minds in a Box (2005) included VR from the Electronic Visualization Laboratory at the University of Illinois at Chicago, a performer in a motion capture suit at Purdue sending data that triggered a MIDI patch written in Montana, to playback the author's poem at varying speeds, pitches, directions, and voice tracks. The show included animation from Alaska and a sound duet between Scott Deal in Alaska and Charles Nichols in Montana, multiple dancer/movers in Maryland mixed into the visual scene with Beth blue-screened in Utah.

The work was mixed live from multiple feeds into one central stream which was broadcast online as well as over the Access Grid, where multiple windows could be displayed and arranged by any Grid audience site. The immensity of the project, lead Jimmy liken it to an "earthwork," in an attempt to express the idea that no single audience could grasp the totality of the whole event.

The starting point of each *InterPlay* performance began with a title or theme to be interpreted by each site and folded into the total process. Interpretation of *InterPlay: Loose Minds in a Box*, was the idea of social roles as societal boxes in which we put ourselves (see Fig. 7.1). The author contributed a very short poem.

> There was a girl.
> She left.
> Taking with her
> a small,
> blue box.
> In it,
> was the world.

This became the central pivot and seed for much of the visual story which then joined with music and interactions. In the screenshot above you can see Beth Miklavcic in a red cloak holding "the box," Brian Buck's

Fig. 7.1 Screenshot of *Loose Minds in a Box* (*Source* Screenshot by author)

hands, and the Perdue mocap-dancer. Locally the team transmitted video of the four dancers and physical objects of child's play, including a dollhouse and oversized, brightly colored building blocks. These blocks were boxes from which costumes were removed and layered on haphazardly following Beth's idea that there be "dressers" adopting certain social roles as their garments changed.

Over time *InterPlay: Loose Minds in a Box* evolved into three other iterations as the local cast/crew changed. Certain aspects remained, including: a pure unsocialized individual coming out of a blue cocoon against a white wall, a red mother and daughter violent hair brushing scene, a couple's waltz, a dollhouse, paper dolls, a dressing scene, and the little girl in blue for the poem that ended the piece. One of the most compelling ideas for a mix involved scale, included the author's body posed and ready to be dressed in cutout paper doll clothes from Alaska and then put inside of a dollhouse on the other side of the room in Maryland. The bit also played with audience participation, having the Access Grid audience dress the performer by typing in colors into the MUD or textual interface in real-time. When users responded to the prompt: "audience, dress Nadja, choose a color," Moira Jackson would layer on a garment that corresponded to their color choices from similarly colored boxes (like play blocks): red, yellow, orange, green, blue, or purple. Though the experiment was only carried out for a few performances, it did demonstrate a modicum of telematic interactivity and raised interesting questions about the agency of the audience over that of the performer.

Production Example (3): InterPlay—Dancing on the Banks of Packet Creek

In the performance of *InterPlay: Dancing on the Banks of Packet Creek* (2006), again with six participating sites, the number of video streams sent out was much higher, even perhaps overwhelming Participants included the University of Alaska Fairbanks, Boston University, University of Maryland, Purdue University, University of Utah, and Ryerson University-Toronto in Ontario, Canada.

Alaska had a class involved in playing percussion and an Irish jig as well as animations from multiple sources; there were a cello and Zen gardening duet wrapped in string joining Boston and Utah; Maryland had three to four performers contributing spoken words, video of water

the author shot in Maryland and California, and images of rivers from space using Google Earth Purdue provided motion triggering; and Utah also had performers in multiple venues such as staircases and an artist creating sculpture out of books.

This was an immense undertaking, an event which was growing beyond the scope of anything they had collectively done before—and far beyond what any one audience member or participant could take in at once.

The four collaborators gathered locally at Maryland for this performance event—Paul Jackson, Moira Jackson, Peter Rogers, and the author—generally had multiple performance tasks and technical responsibilities. Because all had previous experience with *InterPlay* or at least basic training in the use of the PIGs, we were able to function as a unit. Each member interchanged roles between performer and technician on various levels at different times within the performance. One might hold a camera on another while they danced. Another would take screenshots then switch and allow the other to move in front of the camera. It often took all four people to create the desired effects on both PIGs or with staging. For example, two people waved a blue cloth symbolizing water, one manipulated the puppet boat, and another operated the camera and framed the action.

The real-time art-making process requires the flexibility of both mind and body. In the middle of each performance one reaches an active sense of flow, as elements of sound, movement, and art shift and blend from one aspect into another. The experience creates a heightened awareness in which many roles: director, technologist, visual artist, poet, dancer, actor, and problem-solver occur in quick succession. Elements mix seemingly simultaneously. This multisite performance "high" is both exhausting and exhilarating. It is an hour filled with idealism, disappointment, stress, and elation. The sense of synergy which comes from being a part of such a performative experiment is like nothing else I've experienced as a performer or director. As performer/technologist we were "on," mentally present, virtually connected, taking up and discarding creative roles in real time, flowing with the data.

Production Example (4): InterPlay—Nel Tempo Di Sogno

InterPlay: Nel Tempo di Sogno (2007) was a fully scripted collaboration, much more structured than any other previous incarnation of *InterPlay* (see Fig. 7.2). As a complete work, the performance corresponded to

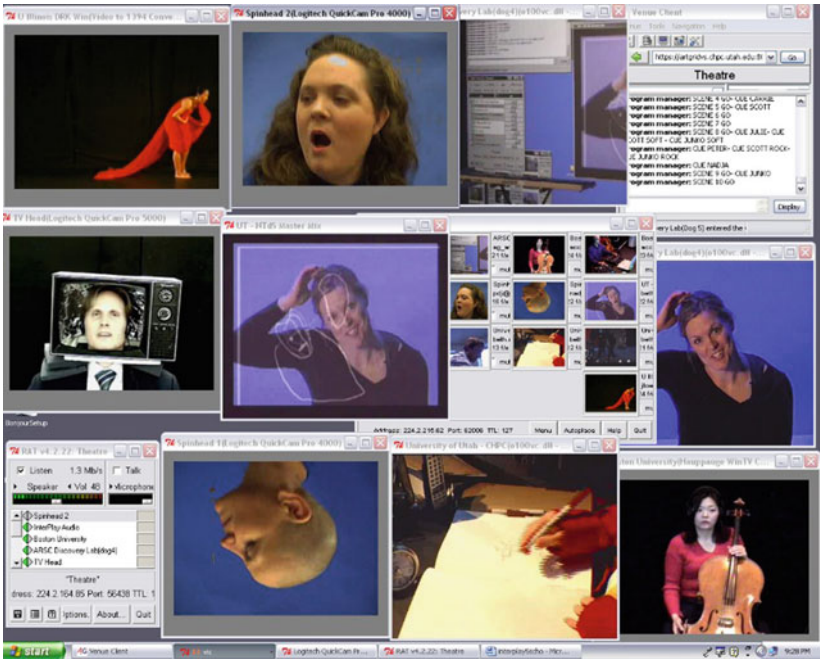

Fig. 7.2 Screenshot of *InterPlay: Nel Tempo di Sogno* (*Source* Screenshot by author ©)

Dan Zellner's playwright model of digitally enhanced theatre,[3] less of an improvised art event and more akin to a recognizable theatre production. In the process of conforming to the tradition of theatrical hierarchy, it both gained artistically but lost creative uniqueness. Below you can see a screenshot (from the author's perspective of the performance feeds) of a dancer Chun-Chen (Urbana-Champaign), the author singing (UMD), actor Peter Rogers inside a TV a media-man (UMD), Carrie Baker center with live art-making overlay by Miho Aoki (Alaska), Julie Zdanoski as an upside down rotating talking-head (UMD) and Junko Simons (Boston) on chello.

The production was billed as a "forty minute, live, distributed surreal, cinematic exploration in the ever-elusive passage of time." The work was fully scripted first by Beth and Jimmy Miklavcic and their Utah performers

and then by online collaborators. This production signaled a major shift in the creative process and ethos of the group.

Scripting the show led to a more polished online theatrical production. This was one of the most interesting of the *InterPlay* performances to watch, given its stronger sense of narrative. There was a predictability of actions that could be viewed as a sign that rehearsals and scripting worked well, with on-camera activities happening on cue. The mixing of the video from night to night was also more predictable. This was good for performers, but it was less in the moment for the audience leading to a more cinematic and a less live theatrical experience.

Likewise, the increased quality of the artistic product came at the cost of egalitarian collaboration, the essence of the ArtGrid community. For efficiency, community meetings were replaced by production meetings. Idea exchange diminished, and when meetings began to be held in sections until the final work, the process became creatively isolating. Musicians met separately from artists, who met directly with the directors. Online performers, who had earlier been scheduled to meet with each other and collaborate, now only met individually with Beth or Jimmy. Artists became scenic artists, visually interpreting the director's vision.

No longer were artists talking to musicians and performers, sharing ideas, sounds, images, and impressions across the disciplines. The interdisciplinary free exchange of ideas at the core of egalitarian devising/collaborative creation was strained through an aesthetic filter. The community interaction appeared to have significantly decreased between members of different disciplines and locations. It had become more like a traditional theatre production with highly specialized roles and less creative interplay.

Allowing for unscripted interdisciplinary play can lead to imaginative innovation. The sharing of ideas across disciplines is essential to this type of collaboration. The object is to find a synthesis between the art forms and the styles involved. In the community, ideas circulated and evolved from one participant or site to another. For example, in *InterPlay: Dancing on the Banks of Packet Creek*, the author suggested drawing live on the screen by mixing the output of a graphics program like Photoshop with the real-time image of a dancer and the next year the idea was picked up again organically and executed by artists in Alaska. Collaboration, and open calls for participation remain the cornerstone of the ArtGrid online performing community.

Within the production of *InterPlay*, there were multiple directors. Although there was one central director, Jimmy Micklavcic in Utah, there was in a sense as many directors as there were sites participating. Each site had someone coordinating their local node. In addition to distributing the authorship of text and the sharing of audio and video elements, there was an element of sharing authority. Each location dealt with its own technical and artistic issues. Although considerations such as visual position and volume relative to other elements in the video mix could be altered or directed by the central director, much of the contributed action was directed locally. Throughout the length of the four year collaboration, it was this sense of distributed authority and authorship which keep the performative nature of the online community feeling fresh and egalitarian, always open to creative/technical innovation.

It was a wonderful, challenging experience to participate on multiple levels, often at once. Performances with technology are rarely without incident. Anything can happen; the key is to just keep going. Unexpected events are part of "live" theatre, and multiplied through technology making clear the necessity and difficulty of working in multiple creative and technical roles. This type of performance cannot, by its nature as a technology-blended event, be perfect. The evolving nature of the Access Grid platform and an awareness of the individual's limitations instilled a sense of team competence and readiness. We needed to be able to fix things as they happen and "roll with" the unexpected. The performance event is always evolving. Committing to this type of multisite performance means retaining flexibility and, above all, remaining in the moment and being alive to all the sights, sounds, and messages around you.

Production Example: *Elements*/Digital Performance Group

At the University of Maryland, the author conceptualized an experimental performance called *Elements* (2006). It was experimental not only in the sense of utilizing digital technology in performance in ways which had not yet been seen on campus, but primarily in the sense of creating an egalitarian collaboration among the interdisciplinary members of the newly formed Digital Performance Group (DPG). The DPG was made up of seven artists and performers[4] working with and intrigued by technology. DPG was made up of faculty, staff, and graduate students from the Art, Dance, Music, and Theatre Departments. This unique group

of artists, performers, and technicians worked together across disciplines utilizing their skill, interest, and equipment to create a new performance process. The idea was to create conceptual space for creative play where technologists and artists could meet as equal partners.

There were several levels of difficulty in creating this venture: the logistics of space, scheduling, adapting technology, creating an organizational and artistic framework for the collaborators, and overseeing the process and product while allowing members the ability to grow together across disciplines and incorporate the technology. As organizer, the author's primary job was to save space for art-tech serious play.

Creator of the super-structure, I kept a director's eye steadily on the overall desired outcome and created appropriate team pairings being mindful of the freedoms needed by scene collaborators. The role included process facilitator, artistic director of the overall experience, and acting as a media artist and performer. Paul Jackson, acting technical director, was indispensable at all stages of the process. As soon as a team of like-minded interdisciplinary collaborators was recruited around the same basic philosophy of the ArtGrid, framing structures were developed. Next artists and technology were matched together based on the author's research in existent Digital Theatre practices. The idea of *Elements* allowed members to choose between Air, Earth, Fire, and Water. For each, a lead artist would interpret the mood and theme of the element in concert with performance, media materials, and input from their fellow collaborators.

As the organizer, I set up a blog for members to post ideas and inspirations on each section and begin the creative conversation. All members had equal access to the show blog, and used it to organize, work, and share sample media and written content. The blog also helped the group to document meetings and chart scene progress. Face-to-face meetings occurred weekly to discuss developing ideas and practical needs. Scene groups met independently, and reported back to the whole in Monday meetings. Soon the teams began creating text, video, and other media. In addition to posting links, images, and ideas on the blog, the Earth scene used the space to write a script. This began with reading each other's works to compose similar segments and then to edit those segments into a script. This semester-long process of shaping ideas led to a workshop phase.

The workshop was an intense time of experimentation and improvisation between artist/performers and technology. The majority of the work developing the scenes in relation to real bodies, triggers, space, and

media refining occurred before the performance, in a three week workshop during the winter term. Most of the creative content and materials that had been envisioned the previous semester, was created in this phase. It was an intense yet playful time in a dance studio space where we tested technology, worked with a group of student dancers, and exchanged the media files that were creating at home at night. One of the more delightful aspects of this collaboration was that everyone got involved in several angles of the creative process. The work would not exist without the contributions of each member in multiple formats, verbal and visual content, performance, and technical skills. Local collaborators were joined virtually by Beth and Jimmy Miklavcic from the University of Utah. For the Earth scene, the text was collaboratively scripted. The group wrote the script together in sections posted on the blog and via e-mail. The author provided prompts of keywords and an anchoring text using the repeated section called "compass points." Then the team rehearsed and even did more editing via the Access Grid.

Each of the four elements also included four:

- *disciplinary approaches* to creating performance: Art, Dance, Theatre, Music.
- different *interpretations of themes*: ephemeral, personal, political, and ecological, and,
- *types of technology* employed: projectionist costuming with interactive sound, video-conferencing, motion triggering, and real-time video compositing/projection.

In the last part of the workshop the group prepared the space for the technology. The technology allowed for the performance experience and turned the Dance Theatre into an Intelligent Space. This is when the performer/artists got to engage in serious play with the tech and rehearse with live elements while finalizing media elements. The DPG transformed a normative performance space, the dance-theatre at the University of Maryland, into a temporary Intelligent Space. Primarily, this consisted of screens and projectors for the display of media. The playback was triggered by performers interacting with camera-driven visual hotspots, audio receptors, and physical sensors, as well as a series of computers running Max-Jitter as well as additional media playback. In addition, there were two working nodes to the Access Grid that allowed the cast to include

online or distanced-performers. It took several days and the combined expertise of many members, to set up the space. But, it was an achievable goal and could have easily remained as a permanently installed interactive space without great effort or expenditure if the given resources were to remain in play.

A great deal of faith was needed to hold space and time for the artists and technologists to begin, reluctantly at first, to play. Beyond the necessary technical improvisation and workarounds, perhaps the most challenging aspect of the process was the various levels of expectation and experience each member brought to the production from their own discipline and mode of working. As creative individuals with varying levels of experience working with technology or performance, each also came with unique perspectives and blind spots. As someone who knew through research and seeing the work of others, that this type of project was possible, the organizer had to make a leap of faith and trust in our combined ability to pull this off, when no one involved had ever tried anything quite like it before.

The biggest stumbling blocks came when disciplinary practices collided. There was an art technologist who was used to working alone and who wanted specific instructions as to what the desired technical effect would be. The idea of a final tech week was foreign to him but necessary for the performers. On the other hand, there was a choreographer who didn't know what the technology was capable of and felt she needed to see media before choreographing. There was also a dance-theatre practitioner who needed to feel her way through her work, and a theatre person with an extremely low tolerance for ambiguity who needed the structure of a dramatic text and specific directions. Added to this mix was a calm but over-committed musician, a group of dancers, and online participants.

My job as organizer was just to hold onto the belief that the performance was possible and to do my best to give others a chance to create it together.[5] The project was a tremendous stretch for everyone involved. All had to look past their own comfort zones, give up the familiar, and jump into the uncertainty of interdisciplinary play. There was an early realization between the organizer and tech director that this playtime, this experimentation, this give and take, push and pull, was essential to the interdisciplinary process. Along with the daily frustrations, there came exhilarating play and "ah-ha" moments of discovery when things began to click.

From the production journal:

> It's crazy just watching everything come together, working with artists and technologists, putting them together with dancers who don't usually use technology. It's an amazing process where we're trying to keep everyone equal collaborators—like chasing or herding cats. But it's really fun and today was our first day of really rewarding work/play.

Through having people invest and participate in multiple levels of production, each came in contact with each other's art, themselves as competent art-makers, and themselves as novices-new to technology or performance. Almost everyone performed in one way or another: on the audio track, back stage, onstage, or through media expression or technical support.

What follows is a brief breakdown of the four scenes in the order they were staged. In the first scene of Air, one heard the sound of breath and wind chimes. Moira Jackson, dressed in a white-winged projectionist costume, entered the stage dancing and playing the flute which triggered responsive bubble-like vector-based animations by Brandon Morse projected across her and into the space. Additional images were projected on her from above. The piece had a fluid, ethereal feel with the play of light, music and movement. In her production notes, Jackson described her intention with the dance scene:

> In envisioning the performative expression of Air I was concerned with embodying some of the imagery we associate with air as well as "creating" air, and triggering media interaction via sound produced by air; wind chimes, various flutes, and recorders. The use of costume to extend the performers spatial presence is designed to create a moving screen on which both triggered media and static images can by projected. The "wing" attachments were designed to permit the possibility of flute/recorder playing. Working with Karen Bradley, I discovered movement possibilities based on Laban's Effort, Shape, and Space theories.

Next came the Earth Scene, a distributed theater piece. The scene opened when the author came onstage and began to speak about my relationship to home, to the land in Northern California. Moira Jackson joined with her thoughts on generations in Iowa. Aaron Tobiason next joined via the Access Grid broadcast onstage and projected into the space, talking about mortality and Mount Saint Helens in the Pacific Northwest. Beth and Jimmy Miklavcic joined via the Access Grid from Utah projected on

a screen (fully mediated) and spoke of change and the Great Salt Lake in Utah. In the background were occasional images from Google Earth and Brandon Morse's evocative animation of a landscape, with subtly changing cataclysms in the distance. Once all of the compass points had been recited by the ensemble, players exited one at a time. The scripted scene as described in the program notes:

> Compass Points is a collaborative script developed around personal connections to earth, soil and landscape. Each performer explored ties to places and people, and these segments were woven together into a narrative landscape. Some voices are scientific in tone and others sentimental; some delivered from on stage and others from Utah via videoconferencing. All are linked by geology and mortality. The guiding aesthetic metaphor of hypertext narrative (keywords linking data) becomes secondary to the growing sense of live and mediated human connection as the separate lives of geographically distant individuals overlap into a cumulative sense of embodied earth.

In The Fire scene, dancers were followed by interactive flames, triggered by hotspots on a video camera fed to a Max-Jitter patch, which read their position on the stage and responded by growing and diminishing with the performers' expressions in space. This was followed by the recorded monologue of Karen Bradley who described her involvement in political protests in the DC area and the story of colorful protestor "Vicki the Torch." The dancers choreographed by Bradley responded to ideas of political combustion as video of hamburgers grilling, political marches, and even an atomic threat with an animation of a countdown occurred around them. Images of the capitol and capitalism spliced together were triggered by dancers stepping on tap-tiles.

For the final scene, Water, all but one dancer left the stage. As she danced, her body was filmed by a camera backstage. Her silhouette was captured and composited live by Max-Jitter patch which then filled her form with my pre-edited video of water from the DC area; the polluted Tidal Basin of the Potomac, the rushing waters of Great Falls, the Baltimore Aquarium pools filled with life, and the twinkling purity of streams in the light. The audio that joined the music was the entire DPG creative team reading selections from the *Secret Life of Water* by Masaru Emoto. Because the dancer was able to see the video that danced within her, she was able to adjust and dance to the very nature of the things she was filled with. From the program notes:

> *Elements* concludes with images of water full of life and richness, flowing, cascading, washing, replenishing, dripping, swirling, and moving; continuously moving forward. Through video, movement and words, this scene expresses water as the essence of change. We are made of water, and how we treat this resource may determine our survival.

Following the performances there was a brief talk-back which proved to be very engaging. The audience asked the group questions about ideology, methodology, artistic choices, equipment, and media implementation. In general the response was very positive. People were intrigued by what they had seen and heard. But the real success was coming together and innovate artistically through technology. As one campus reviewer noted:

> *Elements*, a production by the Digital Performance Group addresses the fluid and dynamic changes imposed on our mother earth as a result of our thirst for technological advancement. Ironically, this production also signals arts' successful coexistence with technology. Created through collaboration between artists and scholars in Art, Dance, Music, and Theatre, this production utilizes teleconferencing, motion triggering, animation, and video projection to stimulate creative conversations between movement, words, sounds, and visual images. In the end it's all about humans doing what they do best. Continually innovating and in the process redefining the standards we live by. It probably would have been easier to put up a production which did not involve all the technicalities and thus eliminated the glitches. But instead they chose to take a new path around and proved yet again that Humans are driven by change.

Creating a new technologized collaboration process in *Elements* was a challenging and rewarding experience. The team created both a unique collaborative process and digital performance. This was no easy venture. It did not fit any preexisting performance molds at the university and participants had to educate themselves, their colleagues, and each other along the way. Through the making of the piece, previously unconnected artists, technologists, and performers learned to work together in a collaborative spirit that was sometimes amorphous, sometimes push and pull, but often exciting and fruitful. With assembled skills, technologies, and imagination, together the group was able to achieve something beyond the abilities of a single artist or disciplinary unit. Everyone involved gave of their time, skill, equipment, and creative talent. We devised our

own framing concept, text, sound, video, animation, dance, and worked combining these facets into an integrated whole working, all the while on multiple fronts toward a central meeting point of perspective.

A big part of this success was just holding room for possibility. It required a type of directing in which you are both invested in the whole and divested in the specific, guiding rather than directing. It required letting go of control, while guiding the process and moving people into working relationships where their collaboration can take over. It took a lot of patience, oversight, resilience, and faith. In a sense, the organizer was an idea holder, a creative facilitator, rather than a traditional director.

Production Example: *Re-Membering Harmony*

Re-Membering Harmony (directed by the author 2010) was a site-specific performance held in Occidental, California, presented by the Virtual Performance Collective (VPC). This site-specific performance could not have existed without the place in which it was performed. The place, an abandoned school in transition into private housing, was the site of the memories of a whole town. The performance was an opportunity to open civic discussion and allow the dispossessed memories of the community to re-inhabit the school.

The project explored the lasting traces of memory in a small town, and sought to aid the community in the transition between public and private space when a rural elementary school was transformed into high-cost housing after an economic downturn greatly affected the local demographics, driving young families from the area, which in turn closed the school. In addition to acting as a potential catharsis of memory, this community event sought to serve as a bridge between the past of the site (as a public school) and its future (as private housing and the Occidental Center for the Arts, OCA). At the heart of this project is a revaluing of the local and the memories that composed the town's culture.

The closing and sale of Harmony Union School had left an emotional void in the life of the townspeople. To ease the site's transition from public to private, and to invite the community into the new arts center that would occupy some of the buildings, the author was asked in 2008 by the OCA board president to create *Re-Membering Harmony,* a site-specific performance which allowed community members back into the scene of their childhood for the first time since the school's closure a decade plus before. The production was devised to reclaim the memories

of place and to strengthen a sense of membership in the community with a public acknowledgment of their shared past (see Fig. 7.3). Digital technology enabled us to project images of these memories back onto the walls where they were created and utilized the unique configuration of the site to encourage movement through the halls and corridors of time, letting the voices from the past echo in the present.

The project took over two years to complete and involved engaging multiple generations in the conversation they so deeply needed and had not yet had the opportunity to share. It asked:

- What happens when the seed of your childhood memories and sense of self in community becomes inaccessible?
- Where do those stories and memories go?
- What happens to a community without a center?

To answer these questions over seventy oral histories from grown-up children, parents, teachers, lunch-ladies, anyone who remembered the school

Fig. 7.3 Frank Ferris as the Janitor/Narrator, Craig Loomis *Re-Membering Harmony*, and a town person's memories projected onto the side of the model home on the old playground where video of kids on the playground was later played back by audience pressing tap-tile (*Source* Images by the author)

and wanted to talk were collected. With a standardized set of questions and the town's people were videotaped as they revisited the site for the first time since it was closed to the public. Some were taken aback by the vandalism. Most were shocked by the renovation. All were caught up in the act of remembering. Above is an image of a town's person, former Harmony student, recounting her memories of the past on the side of the housing development where she used to play at recess.

What was unique about this project from a theatrical stance is the role of the director of the whole theatrical experience was closer to that of an ethnographer/dramaturg and perhaps artistic or over-all-site-director and less like a director of actors on a stage. The work was conceptualized as a whole. All aspects were one: technology, scripting, staging, community, and video assets. Although they would come together in their own time, everything was tracked with an eye to the total experience and the integrity of telling the multiplicity of memories of the town back to itself. A part of the process, included attending a town hall meeting in which community members expressed their concern over the development.

Re-Membering Harmony sought to repopulate the school with memories. It is in those flashes of memory from which the perception of self in specific places and times that form the building blocks of who we are. In a June, 2010 interview, local resident Tom Gonnella expressed his strong connection to the place:

> There's ghosts for me, in the halls, there's ghosts all through town… Going to school here for me was definitely, it was part of my life. You know, it had the essence of community was with this school. You knew *everybody;* everybody was a family, you know? It just felt so real, you know?

In an interview with Colleen Topper in July 2009, she said:

> It was like the biggest memory of my life… We were all very important to each other. It was just so many memories, and the bonding and the friendships that we made back then, and working together, I mean we felt more like siblings than colleagues… We learned how to play together, how to fight together, we learned the social dynamics.

The interviews were transcribed to provide the basis of a script and the heart of the theatrical action. Unlike a fully scripted or pre-scripted play, the words spoken by the actors, who were locals and often knew the

people who formed the basis for the characters they were portraying, were either improvised around or spoken from text that came directly out of interviews with their fellow townsfolk. In this way the actors were speaking for the past through the collective memories of the town itself.

The final script was composed out of a culling process which distilled the hundred-plus pages of transcription into about a dozen pages of repeated information in the form of quotes and anecdotal information grouped into common themes. From there, the actors and the text were examined and the most compelling stories and sayings were selected. There were six cluster groups of ephemera created out of actor improvisation and participant memories, paired with six paragraphs of text. The cluster groups of themed text included: candy, history/school mix, dance/sex, food, playground, and smells/sounds. Originally the six sections of the performance text were about: the small town, growing up, the alternative program debate, what the janitor saw, old houses, and generational economics.

The final text was flexible. Each night's performance would differ. Frank Ferris, the talented improvisational actor playing the janitor (pictured looking on from the hallway, watching the audience enter the heart of the school grounds) chose from a variety of items around a theme for each performance station, so that each performance mirrored the mutability of memory. The Janitor charmed the audience with his stories of girls kissing the bathroom mirror, boys unscrewing desks, the trials of puberty, and the sex education film. The character says: "As a janitor here my life was hardly glamorous…picking up lunches after hot dog and hamburger days, cleaning up wrappers." But perhaps the most striking moment was when the janitor finally spoke *for* the townspeople and aired feelings about the model house on the field. During one performance, he spoke directly to the actual developer who was in the audience.[6]

The rest of the actors were directly involved with creating their lines. The Yard Duties worked together creating authoritarian banter to entertain and direct people through the halls, making them feel like kids at school and helping keep them safe as they walked the grounds at dusk. The Yard Duties worked as a group, becoming familiar with the spaces by using an event map which indicated where they would need to stop and interact with actor, or how to allow for the audience to view media. The actors playing the teachers created their own class lessons. They encapsulated the caricatures of the hippie and the conservative without abandoning a sense of connection with the human roots of the composite

characters. They worked together to create dialogue from conflict exercises that express the political/administrative layer of school life along with the school principal.

The process of creating the event was intensely involved. In general VPC followed the example of the Talking Birds in creating the process, that would in turn shape the performance. Technical director Peter Rogers utilized Troika Ranch's workshop to help set the interactive technology. In addition to collecting interviews and digitizing archival materials donated by former teachers and the new school's library, I also shot staged footage recreating children playing on the playground and singing the school song thus putting her in touch with teachers and kids at the new campus. Throughout the remodeling process the transition of the site through photography and video was documented which was later incorporated into the site-specific theatre performance. Much effort went into creating media assets, including film of the interviews.

The location was mapped, creating an audience traffic flow with a mind to what objects, media, or people they would encounter at each station/location. Having interviewed alumni and former employees on the grounds, many areas of the school were identified as hotspots that were then used for social interaction and communal memories. These memory hotspots to choose the locations for staging media and character interaction. Perhaps the most overtly charged areas were those spaces where the physical arrangement of things had changed the most dramatically, like classroom buildings that were removed or new homes built on the former playgrounds. VPC worked with the actors on improvising character types such as strict Yard Duties, hippy teachers, the principal, the janitor to help them see the inherent hierarchy and social structures which would govern their and the audience as children's behavior. The ensemble collectively created the character portrayals through a series of games, watching archival footage of the people their characters were composite from, and affirmed the idea that each type of character had a function.

Since the piece occurred between dusk and dark, and the abandoned place seemed haunted with memories, we played with the idea of each type of character relating to a type of paranormal phenomenon such as: aware, residual, electronic voice phenomenon, which dictated how the actor's characters saw and interacted with the audience members. The yard duties were caught up in the past and saw the audience as children to be moved from place to place, from station to station varying between media and live-action. The teachers were also stuck in the past

but engaged the audiences in their two classrooms. The principal was like a dark shadow that came forward and spoke then vanished. The media were flashes of the past projecting on the walls of the buildings where they were made, and their was the echoing laughter of children in empty hallways. The janitor, the lowest on the school social hierarchy, was the wise fool who could see both the ghost memories and the audience. He gave context and continuity to the town's re-experiencing of the school and itself. His character spoke for the town and could speak the uncomfortable things that needed to be said as well as provide continuity and a comforting presence as he treated the audience like peers.

This is what you would have experienced as an audience member. Most of the school is laid out around a central square courtyard with classrooms and a hallway enclosing it. Arriving at the art center you could enjoy art from the children at the new school in the gallery, or watch a film of the interviews by you, your friends, neighbors, and old classmates in the cafeteria. At the appointed time[7] you would be loaded on to a school bus and ride around town, which would bring back visceral memories of being in the educational system. A teen actor would be kicked off the bus for acting up, sometimes people sang or told jokes. You would return to school where the Yard Duties with whistles would give you some rules and safety precautions and treat you like kids.

They would lead you through the main hallway where you would trigger motion-sensors and hear the sounds of kids laughing. You would emerge into the courtyard where you would encounter two teachers, one hippy and one straight, arguing about allocation of funds that would be broken up by the principal. You would be moved along by the Yard Duties to a media station with images of kids at work in the classrooms, there would be a bottleneck caused by the fencing around the old-classrooms now condos, causing you to smoosh together with your fellow classmates, forcing intimacy.

Next the janitor would come forward and talk about what it was like to be at the school as a kid with stories of bathroom hijinks, etc. Once he had receded, you would be led to the concrete slab where two classrooms had been and you would take part in a strict A-plus normative style class with rows all neatly aligned in front of a chalkboard. You would be quizzed and asked to raise your hands to give an answer by a very strict teacher. Images of children's artwork were displayed on the building behind you. Then you would be invited by the yard-duty into the Alternative classroom next

door where you would sit in a circle sing and talk about fieldtrips, and the principal would show up and deliver news.

Then you would be led to another media station, in what was the junior high area where you could watch images of the school at play before encountering the janitor who talked about the process of growing up while at school. You would then be led to the upper-field or playground. Upon ascending the stairs, you would find a row of garages on what used to be the basketball courts and a huge white model house on what used to be your open playing field. On the house, video of that same building being constructed was being projected. You are invited to approach a control station and by pressing down on a trigger the video of construction is replaced by happy children playing red-rover on the green field as in the past. The harder you push, the longer they stay. It is almost as though you can bring back the past. It's almost like you have a choice in how the place exists.

Once everyone has had a turn, you are led back down the steps where you encounter the janitor outside the old school library, which is now the only occupied housing unit. He talks of his disappointment in how the school was sold, how the town has lost its core without the sounds of children's laughter, and how the town has lost the school as a public meeting-place. He talks about the McMansions and emptiness of the town now that it's becoming a vacation spot for the rich who do not reinvest in the community, and he talks about how it hurts that his own children are unable to afford to live here. As you walk away down the hallway, you trigger the sounds of children reading the yearbook's humorous wills to the children in the classes to follow them. You might reflect briefly; there will be no children to follow them.

You pass several classrooms in the midst of renovations. Inside are monitors showing the bulldozing of the site, cutting of trees, and pictures of the old one room school houses which Harmony school replaced. You encounter the coach and the principal and are led by the yard-duty through a passageway to a concrete area, where school class pictures are projected on a wall while the janitor talks about new possibilities and how the site is becoming an art center, still a place for community. People around you are so excited to see their old classmates that they barely listen to the yard-duty when she suggests that you go into the cafeteria for milk and cookies. But eventually you move inside where you use your ticket to pick up your treats and settle into a chair.

Steve Fowler who played the hippy teacher, welcomes you to the new art center, for which he is the board president, and talks about the continuation of community. An old music teacher comes onstage, and most of the audience sings the old school song along with video of children at the new school. After a couple more songs, people visit with old teachers and friends. A woman speaks up and talks emotionally about the need for the town's support at the new school outside of town. A discussion begins between the art center and the new school. There is a sense of energy and possibility. People are talking.

In creating this unique community event and devising the site-specific performance, the foremost goal was speaking the truth of a place once filled with the voices of so many children, many now grown. Local voices were silenced politically. Our job was to encourage heteroglossia and let the memories of the town speak their truth, whatever that was. Since there was no one person who was the expert on a past lived by so many, it was the collective memories that told the story. The stories from the interviews and the place itself became the most important pieces of the experience.

The majority of the work went into collecting memories, community outreach, logistics, and technical elements. In a sense the actors (who were community members) stepped forward to create the *theatrical* parts of the show which allowed the *real* to come through for the audience when they walked the site, seeing and hearing the digital media that replayed their memories on the buildings where they originated. In a sense, there was no director, only a digitally enabled dramaturge—a memory keeper for the town's love of the place.

Each of these productions offers a glimpse of how directing might take on other shapes when digital technology multiplies the number of people involved in the creative process and the number of voices that can be heard. Below is a list of possible directing or production models utilizing technology suggested by the productions seen in this book.

Types of Directing or Production Models:

- Director-driven hierarchy model (often around existing literary scripts, examples: *Magic Flute*, *Morning Star*, *Machinal*)
- Technology/idea-driven model supervising team (George Coates) may also occur as technologist primary/director secondary examples:
- Director as technician (UGA *Kaspar*, *The Tempest*)
- Single tech-artist (Stellarc, Yacov Sharir)

- Single time partnerships between established artists and technicians (*L'Universe* MIT and Flying Karamozov Brothers)
- Balanced working partnerships between art and tech (as the seed for a larger group) (Troika Ranch)
- Audience-driven performances (Stellarc, *M@ggy's Love Bytes*)
- Teams (GSRT, Builders Association)
- Performative ideas demonstrated via equal tech collaboration, audience are the performers (*Networked Touch*)
- Tripod team (equal parts video/sound, physical sets/props, writing/directing around unifying topic (Talking Birds)
- Dramaturge/tech idea as director/author: (*Re-Membering Harmony*)
- Complex multidimensional model with different nodes contributing tech and art content according to a coordinating theme (*InterPlay*)
- Egalitarian collaboration with equal parts art/tech partners coordinated around joined themes (DPG's *Elements*).

In many of the productions we talked about the director is still the primary artistic voice, supported by scenic design as the nexus of digital media. But there are as many possibilities or permutations as there are creative teams willing to risk something new, not just in the use of new technology, but in discovering new formats for creating living artwork. It is likely there are many more models for creating digital theatre works waiting to be discovered. The above list expresses some possible ways that directing can evolve with the addition of integrated digital technology. As more and more people turn to video conferencing as a work-around for in-person rehearsals and performances during the pandemic, and as additional technologies develop, it is hopeful that we will continue to evolve our performance-making structures as well, making them more inclusive and illustrative of our times and potentials.

Notes

1. "Kristine Diekman: Finally, the 'master-mixer' sends it out, and the stream itself, with its bandwidth limitations, finishes up the job" (Farman 2005).
2. In the sense of Turner's "instant of pure potentiality" (Turner 1982, p. 44).
3. In the playwright model, "The Playwright designs the space, sound, movement (to varying degrees), smell, and sight. The playwright lays down the blueprint for the space or the field" (Zellner 1999, p. 21).

4. Karen Bradley, Moira Jackson, Paul Jackson, Nadja Masura, Brandon Morse, Mike Sparrow, Aaron Tobiason composed the DPG. http://performancegroupmd.tripod.com/blog.
5. Work moved forward when the necessary people gathered and essential group work was done several times a week while individuals came in with media sometimes daily. Sometimes it was a matter of supervision, checking that people were aware of who was in the room with them (thus available to work on some aspect of on scene or another) and starting them off working together, in other cases it was a matter of checking on the progress of necessary media clips or other elements of production (even acting as a courier if necessary).
6. The actor's tone eased and lines became less direct on this occasion which indicates his actual sense of social pressure.
7. There were two tours per night over three nights, timed so that groups did not overlap on the circuit. The interview film played in the old cafeteria, now a performance hall, allowing for people to be engaged while they waited for their tour to begin.

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CHAPTER 8

Writer and Audience (Authorship)

Theatre is many things to many people, to say that there is one definitive model of how it is created and performed is presumptive and inaccurate at best. There are as many messy, beautiful variations in the creation and execution of the craft and its composite arts as there are human beings involved in creating the living art form. However, generally in Western theatre there is a recognizable power dynamic that binds the theatre production process together. The most familiar model involves the transmission of a story in the form of a play written by an author. The play in production is then shaped and interpreted by a director who is at the apex of a creative team including: actors, designers, and technicians; through their directed efforts the message reaches the audience in performance. Most of us are familiar with the flow of message from author to director to actors/designers to reception by the audience. But what happens then when the audience becomes empowered to create the text? The message begins to flow both ways and the power dynamics of message creation and transmission are altered dramatically.

This chapter explores the ways in which theater roles: author, director, designer, performer, and audience, overlap and change when digital tools alter expected communication power dynamics.[1] It begins by addressing new plays written for our digital society and technologies which impart writing structure, then turns to the sense of interactivity and audience participation created through blurring the role of audience with those

N. Masura, *Digital Theatre*, Palgrave Studies in Performance and Technology,
https://doi.org/10.1007/978-3-030-55628-0_8

of author, scenographer, and director. Digital technology can facilitate participatory interaction, allowing the audience to become co-creators, and ultimately members of the creative community producing the performance. In some cases, Digital Theatre audiences become authors by participating in shaping the dramatic text through messaging or online feedback. In other cases, they contribute other types of audio and visual content.

Authorship and Plays Written for the Digital Age

The author writes the play, which becomes the seed of the production. That was easy. But wait, in some Digital Theatre performances, audiences participate in shaping the dramatic text through online messaging or interactive feedback forms. When digitally enable audiences get involved in creating creative content for a piece of theatre, they become the Authors or Co-Authors.

There are an increasing number of plays being written which deal with digital technology in a way that is organically woven into the world of the play. Designing for Tom Stoppard's *Coast of Utopia* trilogy (2002, directed by Trevor Nunn, National Theatre, London), inspired Knife Edge's principal designer Timothy Bird to use video in scene designing. The famous playwright reportedly said, "I've written it like a movie. I'm not apologizing; it's your problem." To which Bird responded "I told him I've cracked the problem, thanks to video projection." (Shaw 2012) Many recent plays have been written with technology in mind, like Pulitzer winner *Water by the Spoonful* by Quiara Alegría Hudes, and Richard Manley's *The Truth Quotient* (about AI), and *Before You Ruin it* staged with video which indicated the world of gaming. Now let's look at two new works *Grace Plains*, developed as a theatrical performance with GoogleGlass, and *Compass Points* a short piece collaboratively scripted for and performed on Access Grid videoconferencing for *Elements: Earth* .

Production Example: Grace Plains

Jeff Burke of UCLA's REMAP and Department of Theatre Film and Television has a long history of creating innovative Digital Theatre, performance experiments, and pedagogy. A recent class called "Location-based and audience-aware Storytelling" used Google Glass, as part

of the Glass Creative Collective, to allow students to push the frontiers of writing performances for augmented reality performance places. According to Burke's online portfolio, his course "…was designed to guide students through the process of conceptualizing, authoring, producing and distributing 'next generation' experiences, allowing the possibilities of wearable technology to expand and rebuild narrative conventions" (Burke 2013–2014). Students wrote both software and script content, and staged an off-campus location at Google's YouTube Space, in Los Angeles to create the piece called *Grace Plains* (2014, directed by Jeff Burke).

Grace Plains used Google Glass to combine live-action role-playing with participatory theater in which participants solve a murder mystery. The staging included actors in roles and as plants, six roles for participants wearing Google Glass, and multiple film sets. Participants and actors alike were monitored heavily through the Google Glass POV cameras. Here is a brief description of the event from Mike Fricano:

> Upon arrival, participants were greeted by someone from "Grace Plains Research Laboratory" who welcomed them to a meeting with scientist Erinne Kirschner who was going to talk about her latest advances in artificial intelligence. The participants were given a quick orientation about how to use Glass and instructions about the characters they'd be playing — a general, an investor and a filmmaker, among others…Once the program began, the invited guests discovered that Kirschner had been electrocuted by what seems to be the artificial intelligence. They then had to figure out what happened and ultimately whether to free, destroy or contain the artificial intelligence. (Fricano 2014)

The writing of new theatre and performance works using Google Glass, and similar augmented reality wearables and hand-held devices, can take on elements from geo-cashing, environmental and site-specific theatre, video gaming, and LARPing (Live Action Role Playing). The introduction of new technologies makes non-traditional theatre spaces appealing due to the layering on of additional information, which aids the development of character, plot, even scenic spectacle and the appreciation of the imagined/real blended environment—which is set, stage, and theatre building or neighborhood at once.

This expanded scope of movement and data layering has an impact on the type of theatre material being written. To again quote Fricano,

> Using Glass, students realized, would require them to develop a whole new form of participatory storytelling. Writing scripts for a device that can simultaneously record and display media while you wear it meant writing for performers who would be free to use their hands and maintain eye contact while being fed dialogue or instructed to do something in real time through Glass and, if desired, an audience that can be wearing Glass as well…The project drew heavily on video-game writing, which incorporates a non-linear story structure that relies on participants' decisions to open some narrative paths and close off others. (Fricano 2014)

The archival video shows the immense amount of surveillance that takes place in this performance, in which a participant's point of view and multiple POVs are seen in the control room. Burke encapsulates the production setup: "A team of writers, directors, and technicians from control rooms elsewhere in the complex fed the participants and actors shifting plot points, dialogue, motivations and instructions via Glass, as well as images and audio within their surroundings" (Burke 2013–2014). Although the event seems to have been very enjoyable for participants who wanted it to last more than one hour, from an outside point of view the whole of the experience given the amount of surveillance and information manipulation is deeply imbued with dark, even dystopian overtones. The production method could be more closely examined as a prototype for these themes. Either way, it is clear that the production made possible by technology, carries with it fundamental changes in approach to writing for live theatrical performance and acting/directing as well.

Production Example: Elements—Compass Points

In chapter seven the production of *Elements* (2006) by the Digital Performance Group at the University of Maryland was discussed. For the Earth scene was a collaboratively scripted performance piece around the ideas of place/home/land called "Compass Points." The tools used were email, blog, and video-conferencing. When the scene was performed, two creators were onstage directly addressing the audience, and two feeds were mediated via the Access Grid.

Scripting passed through several stages including an initial stage in which conversation and email led to the seeds of text written by the four different sites/performers representing four experiences of embodied place. Each wrote about a specific geographical location that carried

personal meaning to them, and each wrote from different life perspectives. As the scene director received submissions, the author wove together themes as a framing author and solicited connecting materials from other members. On at least one occasion, new text elements were edited together on the fly as they were triggered by keywords and parallels found through conversation in a video conference production meeting. There was an immediacy and natural elegance about how things came together between local and distributed members of the cast in that moment.

To facilitate distributed authorship through parallel writing, the framing author came up with the idea of using repeated "compass points," hubs for recalibrating location, short identifications of the four places in the United States, symbolic characters, and thematic ties to locations as a refrain to connect and re-focus the strands of narrative (death, geological events, gardens, aging, growth, play, etc.). This helped the members focus their writing and helped editing together the master script. What follows are the Compass Points text anchors, which introduced and joined each of the monologue sections (not shown) into one cohesive tapestry of words, the embodiment of personal place and locale.

> Nadja: (Compass Point, Northern California)
> To the North are the redwoods,
> To the South is the city,
> To the East are the hills,
> To the West is the Pacific.
> Following the road home, the highway that stretches North between gold hills and the Pacific; I am anticipating the smell of Redwoods, dirt and Gravensteins ripening, the taste of blackberries, and the touch of fog.
>
> Aaron (Compass Point, Pacific North West):
> To the North is the very first Starbucks; the rainiest spot in the continental U.S., tallest mountain in the lower 48
> To the South is where I came from/started
> To the East is Mt. Adams, where I will continue my search
> To the West is my home; Goat Lake
>
> Moira (Compass Point, MidWest):
> To the North is the crystalline cold

To the South is warm and spicy
To the East is adventure and mystery
To the West is my childhood and my growing up

Jimmy/Beth (Compass Point, Utah):
To the North is the Point of the Mountain
To the South is the Point of the Mountain
To the East are the Wasatch Mountains
To the West are the Oquirrh Mountains and the Great Salt Lake

The final script became as much about the connections between performers as about any one individual's story. The self-identification of our own compass points became call of belonging to the Earth, no matter where you are from.

Audience as Author and Participant

Often when attending theatre, the audience comes with expectations determined by knowledge of the playwright and his works. In the following cases of Digital Theatre and performance, the audience takes on the role of playwright crafting messages and occasionally performing. Each of these performances complicates and intermix the roles of audience and author or audience and other creatives. Here the audience is anything but passive. They help generate the performance. In the first two Digital Theatre productions, *Crazy Wisdom Sho* and *Living Newspaper 1935/2001*, the audience steps out of the shadows and lends language to the actors. In *M@ggie's Love Bytes*, the audience contributes media. Finally, in *Networked Touch*, the audience enters the spotlight and becomes the performer. This was experienced firsthand by the author. Though more digital performance than Theatre, it prompts a discussion on the multiplication of audience in a multi-site performance. In each of these examples we can see the unraveling of expected theatre roles into something new, messy, and challenging.

Production Example: **Crazy Wisdom Sho** *(Audience as Authors)*

In *Crazy Wisdom Sho* (2001, directed by George Coates), the online audience acted as playwright, extending a sense of creative agency beyond the

accepted theatrical role separation. In the show, Coates set up a performance structure without structure—funneling the written text of online audience directly to the actors and bypassing the role of playwright and director. By typing in on the group's website, users became the authors of the "Crazy Wisdom," relayed directly to a Teleprompter and read by the actors onstage.

The seemingly random thoughts of the online audience were spoken directly to the local audience. Here the spoken word is delivered in a form beyond loosely scripted. It is, in fact, externally scripted. Although the text was unedited, and read off-the-cuff often in real-time, the actors had limited creative control of what was coming out of their mouths through their delivery. They could choose to interpret the value of the message by reading some transmissions with invested energy, or incredulously with an ironic or undervaluing tone, even mocking the author by creating a caricature of the author's personality type. The overall impression from the archival video is that of watching theatrical clowns interpret eccentric homeless people receiving radio transmissions from outer space via tin-foil hats or fillings (Coates). It is a silly, crazy, and often-sweet series of comments picked up from the ether, indicating the larger community consciousness. Through the actors' interpretations, the words of the random authors, from any location across the globe, were given a public voice.

The piece was conceived around the trickster character and web technology. According to the group's website, the piece featured "…characters who to some might appear to be clowns or fools, but to others seem to possess great wisdom" (Coates). Here are some examples of the words that were spoken by the actors onstage to a live audience in San Francisco:

> "I make it look easy." "Are there any girls with large breasts?…I like them…" Spoken by actress Sarah More in a demeaning/mocking tone of voice. The political commentary, "I support my local police because they twist my arm" is contrasted with the less meaningful, "Giant wombats have attacked the capital…" delivered by Nigerian actor Babatunde Garaya in a calmly authoritative and congenial tone of voice (Coates).

If traditionally the person of greatest value to the core meaning of a theatre play in production is the playwright, what is it saying about our culture if the words and process of message making is being opened up,

or even given away to transient online audiences who may wander into a venue and deposit their random thoughts, passing them through the bodies of the actors straight to the waiting audiences? This production provokes questions about the value and nature of communication itself, rather than offering answers. Questions like:

- Is our culture in a state of random flux without legitimized meaning makers?
- Has Internet and Social Media impacted the production of meaning to the point where it has become hollow and overly democratic; all sound and no meaning?
- Does it hint that we are only capable of producing processed sound bites, and repeating juvenile ideas or messages which are not our own?
- Or are we on the verge of opening up to the acceptance of systems of communication, where new communities are formed and disperse in fleeting interactions?[2]

These questions testify to the sense of freedom and open communication initiated by the Internet technology boom at the time. It also destabilizes the value of authorship and asserts the rise of the audience as meaning maker.

Production Example: Living Newspaper 1935/2001

In 2001 University of Georgia then graduate student Kathryn Hammond revisited the idea of the Living Newspaper using digital technology. The agitprop inspired documentary drama format, instituted by the Federal Theater Project, was updated to reflect the current mode of media saturation. *Living Newspaper 1935/2001* (2002, directed by Tim Harris and Lee Smith) featured a 1935-inspired set design, but included a nod to very modern technology, including a projection screen on either side of the stage, two robotic lights, and MIDI controls.

The structure of the piece was split into two sections. The first act was derived from the 1935 Living Newspaper Archives, and the second resembled media in the MTV generation (Hammond 2002, pp. 17–18). Perhaps the most significant aspect of the production was the use of digital technology to empower the audience. The Macromedia Director

based interface allowed the online audience to vote. This agency was not duplicated in the inhouse or localized audience. According to Lee Smith, the "…in house audience was undervalued, throwing (stuffed) mice on stage." Allen Partridge set up the show's website to allow for a sophisticated user experience. The interface allowed for users to login, manipulate buttons that could change dynamically, participate in a chat window, and it offered question prompts and background information on the production's historical inspiration. In addition, website users could choose and mix multiple camera views.

Perhaps most significant was the ability of the online audience to influence stage action and content. Chat-room banter was displayed within 30s of it being typed, and online users shaped the order of events on stage. In conversation, Partridge explained, "Chats were funneled into the moderator in the booth who chooses responses to questions to show on screen…sometime influencing stage cues." People would vote for a number or option and the responses would be listed and counted, resulting in stage action. Partridge explained that the cuing machine held cues, and updated the cue if requested, and that the highest vote determined the cue unless the moderator overrode it. So to some extent, the online audience shaped the stage action, thereby extending their role into authorship of text or directing by giving cues. Saltz expressed that the performance experience might have been better for an Internet audience, rather than the live and co-present, in-house audiences.

Saltz also indicated that as production progressed there was a mixing between "live" and online audiences. In his words, in-house "audience members could go home the next night and reflect/interact online." Saltz found it compelling and said that, "You could read into the minds of the internet audience." This ability to receive feedback from the audience during the production, broadens the sense of creative community, extending the conversation between the artists to include audience opinion, possibly as part of a creative partnership. Saltz said, "Night after night [they] returned to say things like 'I love this scene.'" This shows a level of involvement beyond most audiences.

Perhaps, if the in-house and online audiences had been networked together and equally able to influence events or communicate, there could have been an expanded sense of audience which was both physically present and existing online. Scripts may be built around multiple world views shaped by global media, as in the case of the Builder's Association's *Aladdeen*.

Production Example: M@Ggie's Love Bytes *(Audiences as Director, Author, Designers)*

In some cases the online audience shapes the performance by providing non-textual content as sound and scenic designers. One such example of this can be seen in the performance of *M@ggie's Love Bytes* (1995, co-directed by Amanda Steggell and Per Platou), a series of long-running (1995–1999) online and "live" performances by the performance group Motherboard. In addition to a wide online presence, local performances occurred throughout the world in locations in Amsterdam, England, Australia, Prague, Cologne, and Norway. According to site statements, *M@ggie's Love Bytes*, was "combined media dance performances in real and virtual space, where dancers interact with multi-layered sound, text, and real-time video images through net facilities" (*Connecting Bodies Symposium*).

M@ggie was a creation of technology, a cyber-character. She identified her place, location, and origin as cyber rather than having a physical geography. Perhaps more significantly, her existence as a character is created through the desires of the audience.

> Hello my name is M@ggie, and I'm a persona. Since 1995 I've been performing via video teleconferencing facilities available to anybody with a computer, a telephone line, a modem and a camera. I'm also a cyber fem…and what makes me a cyberfem is my very special tool, or weapon, if you like. Here I'll show it to you. This tool epitomizes the digital gender binary we so often hear spoken about connected to cyberspace being both feminine and masculine at the same time, (she manipulates her plunger) 0, 1, 0, 1, 0, 1. (Steggell and Platou)

M@ggie was a gender-ized fiction, a blonde-wigged woman in a black bra bearing a symbolic plunger who plays out cyber-fantasies among fragments of audience input and a collage of modern images, sounds, and videos on the web. The level of collaboration that occurred between the performers and the global online audience created a truly unique performance situation. Due to the length of M@ggie's run, her audience developed into a cult following which may have resulted in a stronger influence shaping the character—whereas usually it is the creative role of author and director that influences the actor's shaping of character.

There were multiple actors playing M@ggie. Her performance was directly related to audience input in the form of visual, audio, and text

data sent to her variable local geographical locations. The media was mixed by DJs and rebroadcast as a performance. This format of performance does not follow any preexisting intercultural performance models.[3] It existed in cyberplace as collaboration *between* users, or the online audience and performers. While the contributed material of M@ggie's performance was hardly without cultural context, in many ways M@ggie was a global character, existing in cyberspace, and having a fictional immaterial origin.

Through offering herself collaboratively to anyone who had a computer and Internet connection, Maggie's performance and the construction of her character exemplified the Open Source of early web technology. M@ggie reached out to a global audience that surfed in from places as diverse as San Francisco, Berlin, Chicago, Yokohama Japan, and England.

Popat described *M@ggie's Love Bites* as a positive example of a complete cycle of creativity and participation, a creative interplay between online audience/participant and a localized performer. In this case, multiple back and forth interrelated creative exchanges could occur (Popat and Smith-Autard 2002, p. 35). Popat stated that the cycle of creativity occurs with the participants taking part in phase one, then watching phases two and three. This gives the participants the ability to offer more feedback than expected by the authors due to the continuous communication. *M@ggie's Love Bytes* shows a compelling ability to incorporate online audiences into the creative process and expand the community of collaborators to create a character.

Production Example: Network Touch *(Audience as Actors)*

The online community Art on the Grid (or ArtGrid) produced several collaborative performances ranging from simple improvisatory events, to workshops, loose performances, rehearsed and scripted theatrical events, and fully orchestrated multi-site performances via the Access Grid. The author's first performative experience in the community was an invitation to join in *Network Touch* discussed here, followed by *Collective Hope* (2004) which composited video of candle flames, and *Impossible Sky—Digital Cotton* (2005, directed by Galen Scorer) which composited sky in real-time, conceived by participants at Ryerson University. Like *M@ggie's Love Bytes,* ArtGrid allows multiple online users to contribute content. Unlike *M@ggie,* this ability is shared primarily through a unified

platform, the Access Grid, which potentially allows all users to become audiences and potentially the sites of local audiences exponentially multiplying the possibilities for both performance and audience reception. This type of collaboration is simple but visually and emotionally effective for the actor/audience participant.

Network Touch by Galen Scorer was a visual collage of hands "touching" across space. The call for participants asked people to focus cameras on their hands, and through relative positioning of hands mixed in real-time, the composited video streams created a telematic meeting of bare hands (see Fig. 8.1). *Network Touch* was an effective experiential piece that communicated the visual impact of a perceived sense of shared place and proximity between participants meeting across distant geographies. This participant felt compelled by the experience of reaching out for and sensing another's hand, feeling a slight tingle when they watched the mixed video stream joining her image with another's.

The Synth/Ops project statement for *Network Touch* states:

Fig. 8.1 Network Touch (*Source* Screenshot by author)

> At this moment of touch we give reference to our self and to our surroundings that orient us but also symbolically orient ourselves to another. The idea [is] of the possibilities and impossibilities of this moment in cyberspace (Scorer).

This statement is very telling about not only this initial collaborative experience. It also describes the interactions and ethos of the ArtGrid community as being open to participatory and egalitarian forms of collaborative artmaking. In addition to the expressiveness of the hands "touching," what is striking about the piece is its simple improvisatory and open nature of participation. Another aspect of multiples of open collaboration can be seen in collective efforts of online audiences in the participatory performance of telematic, and especially telepresent art, such as *Telematic Dreaming*.

Multi-site Performance Leads to Audience Multiplication

In multi-site types of performances like those of the ArtGrid, there are multiple levels and types of audiences. There are participating ArtGrid sites, as well as random visiting ArtGrid audience members, online audiences watching a Quicktime feed of the mixed video stream only, and the *local* audience, relational to wherever one is in space. There may be several ArtGrid sites participating, each potentially with its own co-present audiences as well as performers, artists, and technicians—in addition to ArtGrid audiences which watch and sometime inadvertently[4] contribute their presence, viewpoints and possible interactions.[5] Each Access Grid site, or rather each of its nodes or Personal Interfaces to the Grids (PIGs) of which there may be many, may arrange how it views the windows containing the action, and then displays that to the local technicians, performers, or local audience. Factor in the fact is that all of the people performing are also watching, sometimes to get their virtual bearings or mark in relation to others in the mix, sometimes as an on/off camera audience. So clearly there is no single show, just as there is no one audience or point of view.

What would this look like as a math equation?

$I + L\ (P \times R \times W\ (N + X)) + G\ (P \times R \times W\ (N + X)) + M\ (V \times R \times W) =$ *Total Audience Viewpoints*[6]

Where

I = Internet audience, a unique number of online viewers each night,
L = Local audience, where let's say at Utah,[7] for example, there are P number of participants and audience members, R number of rooms, and W possible window viewing configurations,
G = Access Grid participant site audiences, where there are P number of participants and audience members, R number of rooms, and W possible window viewing configurations,
M = Random ArtGrid audience members, where there are V number of viewers in R number of rooms, and W possible window viewing configurations;

And Where:

P = Performers + artists + technicians + audience members
R = Rooms ranging from a small office to meeting rooms to full auditoriums
W = Possible arrangement of windows

Where

N = Number of participant site video streams, usually 2 or more per site, with approximately 6 sites participating,
X = Main Mix, from Utah, for example.

What does this fracturing of viewpoints and tremendous multiplication of audiences and possible performers mean? It means that the whole collective experience is too large to watch as one whole thing, and the viewer cannot assume there is *one* singular audience experience.

The whole experience is an act of questioning and reevaluating prior assumptions. One thing this multiplicity points to is the infinite nature of possibilities. The other is the prevalence of performativity in our culture. Arendt once wrote: "The presence of others who see what we see and hear what we hear assures us of the reality of the world and ourselves" (Arendt 1958, p. 50). What once Postman attributed to the TV entertainment ethos conditioned society is vastly increased in today's society where everyone is holding the video camera. Alice Rayer once wrote that,

"Solo performance of personal material is what one could call a twenty-first-century cogito (I perform therefore I am)." I would add to this that, to the extent everyone webcasting into the internet is in their own solo-performance, a new sense of public is being built out of the multiple performances of self, character, and community. And with a world full of performers, it is the audience that is in demand.

Composing for, and in some cases through, digital media is the direction our societies are moving. As Theatre is intended to be a tool for understanding ourselves collectively in a moment as well as the escapism of this historical moment, it gains strength and potency when the current moment is reflected in the construction and underlying ideas communicated through scripting. If we want to know and communicate what it is to be human in this current timeframe, the digital needs to be considered, if not included. In addition, when the role of audience becomes expanded and given the creative agency of author, performer, or collaborator, it makes things messy. We need an audience to witness, to be the recipient of the actor's energy and the playwright's message. It is a mutual gift to have an audience and to give them a finished production. More than giving us answers about how theatre should be done in the future, these Digital Theatre performances ask us to reconsider roles and ask us what happens when the whole audience wants to perform/participate and there is no one willing to watch? How do we reconsider theatre in the face of performativity as the norm? What incentives exist for the live theatre?

Notes

1. In the case of Plaintext Players, sometimes performed online in chatrooms or MOOs, works such as *The Roman Forum Project* (2003, directed by Antoinette LaFarge, and Robert Allen), included co-presence.
2. *Bodies for a Global Brain* (2015, directed by Jeff Burke) staged at UCLA substituted Google Glass and Twitter as the mechanisms feeding actors language.
3. There is no source culture per and no specified target culture as the nationality and performance place are open to all viewers of the net, and though the character speaks in English, the project receives files from all nationalities.
4. Members and visitors must monitor their own behavior (in terms of audio transmission and video placement) and roles often blur between audience and participant/performer. Because there were formerly no controls to limit incoming transmissions on first arrival into a Grid room (venue), during our

public (live and mediated, local and virtual) performance, group members online had to make announcements to new arrivals not to make noise (to 'turn off their talk', i.e. sound transmission) and therefore participate in the show. In one case a production from Utah was broadcasted without sound, and the virtual audience in Boston not only added video data for our enjoyment, but added their own soundtrack for the performance in the form of a local radio station.

5. In Utah's case several rooms with action accessible to wandering audience members are linked along with a central viewing auditorium. In other locations like Alaska a CAVE environment displays graphics and multiple AG feeds for local audiences. At UMD limited local audiences have been present. In some performances, such as *Outside/In,* it was calculated that online ArtGrid audiences were higher than the fair sized local audience. In *Elements*, local audiences outnumbered ArtGrid audiences.
6. This does include traditional viewpoints in terms of the audience's relative position to the live and/or mediated actions.
7. Jimmy indicated that year each of their performances spaces were able to see a display of the performance as it unfolded on the Access Grid.

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PART IV

Theorizing Digital Theatre

CHAPTER 9

Theorizing Body/Place: The Agency of the Digital Performer and the Body as Place

The tool of the actor is his/her self. Mentally, physically, and emotionally, the actor gives of themselves in service of the play in production. The actor is the vehicle for communication into which the audience may place themselves for the original—low-tech—VR experience. As the avatar for all of us gathered watching and listening in the audience, the actor is the irreducible unit, the individual human embodiment in the living fiction unfolding onstage. In a sense, the actor's body is one inhabited by many. Thus the actor's body itself is quintessential in the theatre experience.

As a director and actor, it is necessary to state that there are nearly as many flushes, variations, and approaches, perhaps even uses of, actors onstage as there are actors and roles they play. Because of the myriad of methodologies and approaches to the craft of acting, it is virtually impossible to pin down which of these work best with the use of digital technology. A more general conceptual approach allows us to theorize what an expressive living being might become through and in contrast to technology.

The essential nature of the actor is her body on the stage. The experience of being that actor in space is an ever-changing temporal and spatial dance involving words, gestures, and other people. The finer the actor's tool, the more awareness and range they have in their ability to control their face, voice, and movement; to elicit through the mental choreography of the director, the intended audience response. The actor's art and

N. Masura, *Digital Theatre*, Palgrave Studies in Performance and Technology,
https://doi.org/10.1007/978-3-030-55628-0_9

responsibility lies in her control of her body in the ever-evolving imagined space/time of the stage. This bodily control is a primary expression of the actor's *agency*.

If the *place* of the production is the theater, and within that the stage where the actor stands ready to do her work, then in a sense, theatre can be seen as a binary opposition between *body* and *place*. Digital Theatre, as we have seen, muddies this distinction at the same time as it enhances the actor's potential control over the place.

Theorizing the Body and Place

Everyone has a body and we all experience place. These are elementally universal, common points of understanding. Yet they can be linked and problematized. Professors Heidi J. Nast and Steve Pile indicate they are unique and complexly linked:

> Very few things are universal … *since we are alive, we must have bodies. And, since we have bodies, we must be some place*.... [O]ur universals—the body, the body in place, being in place—are actually unique, specific, singular… interrelated, one to the other—because this is how we live our lives—through places, through the body. (Nast and Pile 1998, p. 1)

Scholar Hannah Arendt wrote that it is not the sheer number of people which makes Mass Society so difficult to endure, but the world's inability to "gather us together, to relate to and separate us" (Arendt 1958, pp. 52–53). With social media, the sheer number of voices crying out for attention for an *audience* is overwhelming. Theatre has an ability to gather people together on a local scale and reestablish a sense of relevance and connection to our communities. Perhaps, in this global age, the actor's living body has the potential to serve as a common sign across cultures.

Digital Theatre provides a space for dialogue between the individual body and that of the *other*. By setting the actual, "live," co-present human body against its mediatized other, the hyperreal, which can include cyber and cyborg characters in the form of video images, 3D avatars, or robots, a dialectical moment occurs between the concepts of human and machine. I will discuss the body as the common element in human experience and seat of identity as opposed to the "image-body." Then I will introduce

the neologism *neo-Bakhtinian* and utilize the term *différance* (Derrida 2004).

The body is both a visual sign and experiential touchstone in theatre, behaving as a point of connection in a disconnected world. It is through our embodiment that we exist in the world (Dyens 2001, p. 55). If the human actor stands in for the self, then there must be an other. According to Bakhtin, "the other" is necessary in order to observe and therefore define the edges of the self (Mead 1962, p. 171). The "other" is an agent that refers to and elaborates on the self.

In Digital Theatre, the digital defines the edges of the biological and vice versa through their simultaneous presence onstage. Its contrast opens up dialogue between the two natures, creating a semi-fictional "dialogic interaction" (McNally 2001, p. 124) relevant to our current social evolution. This dialogic interaction allows audience and performance creators alike to better conceptualize our selves in relation to our changing environment.

This duality of performance between live and mediated, human and digital other, is essential to the performance of Digital Theatre. The value of this experience lies in its ability to reinterpret current perceptions of the body and its value as both sign and symbol of the human individual. If we invert the term *body image*, used to connote the commoditized body represented through media, to *image-body,* it can be used to indicate that the object of conversation is the digitized or mediated image—the digital other. It is the living performer *in conversation* with this other which creates the rebellious neo-Bakhtinian body of the 'living" performer.

Many in the theatre are familiar with Bakhtin's great posthumous success in 1960s theatre which celebrated his grotesque body including bawdy, gritty, and ecstatic presentations of sex, bodily functions, and violence in carnivalesque productions like those by Living Theatre, Grotowski, Schechner, and Brook. Today the idea of a new Bakhtinian ideal of the rebellious body that utilizes *heteroglossia*, or multiple voices and viewpoints, against the passive consumption of the official norm; today glossy illusions of consumer choice (McNally 2001, p. 231) or corporate control, is a compelling theatrical and social tool.

At the core of Bakhtin's work *Rabelais and His World* is the body as a tool of the people and a sign of resistance to official powers or messages. Bakhtin idealizes Rabelais' basic goal to "destroy the official picture of events," and seizes on the body as a source of disruption and inversion and redistribution of power (Bakhtin 1984, p. 439). The ability of the

body of the performer to uplift and liberate the folk from "the deadening weight of the 'conventions, and established truths' of the dominant world view" is still a desirable ideal which must be found in a new form (McNally 2001, 146).

And as we have learned in our current information-saturated culture, all data and ideas move in cycles, remixed to meet the current need. It is time for an intelligent appropriation; for a neo-Bakhtinian, digitally enabled or conversant performer to carry the spirit of revolt, of questioning. Whereas Grotowski[1] in his time was able to promote the body as his only tool, today we must utilize the strength of the co-present body in conversation with the technology which permeates our lives as a means for connection.

I propose the rediscovery of the "live" body of the individual as a powerful sign through Digital Theatre. Through the coexistence of media and the "live" co-present body onstage, in Digital Theatre the tension between passive consumption and active recognition is made present, to be resolved by the audience. This co-present body is "neo-Bakhtinian" in that we see the resistant human body of the "live" actor contrasted with his digital "other." Today's neo-Bakhtinian body demonstrates the strength of the folk to "overthrow" the official norms, utilizing the contrast of flesh to digital (instead of base bodily and topsy-turvy behavior as in the original work), to signal the body as a tool of overturning behavioral norms or messages. The neo-Bakhtinian body is the site of resistance of reclaiming power.

When the living, biological body of the performer is seen alongside digital media, it is up to the audience to recognize their own human situation and determine the relative value of the contrasting entities onstage. In this didactic moment between digital and flesh, it is not essential whether the biological performer or the digital other is dominant. Whenever the human is viewed alongside the digital, the "live" body is resistant. The neo-Bakhtinian body could not occur without its contrasting other—digital media.

Unlike Peggy Phalen, who extols the live actor's body onstage, I believe it is not the biological body onstage alone which is essential to today's theatre, but the neo-Bakhtinian body, a site of resistance which manifests when both biological (real) and digital other (media) coexist on stage. The space between them is charged with their *différance*, the play between like and unlike, and the slippage between meanings (Derrida

2004, pp. 387–388). It is then left to the audience to determine their response to this inherent tension.

Jacques Derrida's term *différance* evokes a certain flexibility of meaning which plays between not only words and ideas, but opposites as well.[2] It is a word to make visible the invisible multiplicity of meanings in conversation in the present. Derrida expresses *différance* variously as "the difference between differences" and the "play of differences" (Derrida 2004, p. 384, 392). Because it is associated with the space in between, *différance* is manifest in the process of exchange and interplay between seemingly opposite, othered or unlike things (Derrida 2004, p. 390). It is this paradoxical flux between sameness and otherness, and the resulting shifts of meaning, which makes the term resonate with the near invisible yet palpable interaction between the opposites of digital and "live" bodies, which are both alike and not alike simultaneously.

In Digital Theatre, opposites or conflicting polarities seen in proximity allow us to explore the charged areas where they overlap, the spaces in between, and the ways in which they mix unexpectedly. It is through the body co-present with digital media that we can rediscover the edge between body and image-body and distinguish between real and the hyper-real. There are theatrically and conceptually intriguing interstices provoking socially relevant reevaluations, found only through the confrontation of these opposites. In Digital Theatre the living or "live" body of the actor can encounter his digital "other." This nonhuman or media actor can take many forms: avatar, cyborg performer, a video trace of another or even the same prerecorded actor, animated puppets, robots, even Artificial Intelligence (AI). It is the *différance* between biological actor and nonhuman actors, our modern digital interpretation of puppets, which allows us to reexamine the liminal present to gain an awareness of who we are and who we are becoming.

Digital Theatre productions using video projection of actors offer perhaps the clearest visual example of the image-body in dialogue with the living actor, thus empowering the neo-Bakhtianian body, a rebellious, physical body engaged in active conversation with the mediatizing world. In this mode of Digital Theatre performance the image-body, flattened into the same plane with other filmic elements, is contested by the living presence of the actor's three-dimensional body—similar to the early twentieth century filmic projectionist theatre of Piscator and Svoboda. Andy Lavender explains the meeting of live and digital:

> We are presented with the meeting between the live actor and mediated actor-as-other, seeing the same person as two people and the human figure as both actual and expanded. The actuality of the actor's presence is heightened by the co-presence of his or her mediated selves, which are themselves staged as part of the theatrical mix. (Lavender 2006, pp. 62–63)

Jennifer Parker-Starbuck has talked about "screened bodies" created by the media, including analogue media (Parker-Starbuck 2011, p. 121),[3] and Matthew Causey discussed the "self as other in the space of technology present[ing] an uncanny Double" (Sone 2005). Causey writes of the "…moment when a live actor confronts her mediated other through the technologies of reproduction." He sees the meeting between the "live" and the mediated as a victory for the video image as "more real than the live actor" (Causey 1999, p. 389). Yet, it is the confrontation of states which is compelling. The living body of the actor is ultimately compelling. It is the very contestation, the *différance* between breathing and televisual/hyperreal, which is primary and which emanates ongoing dialogic moments within the staged story between the two states, human and human-made.

At the same time as it repeats some aesthetic techniques or effects with analog forms of projectionist theatre, digitization offers a host of new staging opportunities and conceptual challenges. Digital video's uniqueness lies in its flexibility and ease of manipulation. Cinema and media theorist and cultural critic Vivian Sobchack explains: "What is historically and technologically novel about digitization is precisely its unique capacity to translate all other media representation into a homogeneous algorithmic mode of expression," which can then be manipulated or interpreted in a number of ways (Sobchack 2000, p. xiv). The digitally created imagebody stands in contrast to that which is human and irreducible. Ollivier Dyens notes:

> A digitized human being becomes other.… Once digitized, the image of a human being is released from its origin and can transform itself into a multitude of landscapes; it becomes a system unimpeded by any conceptual limits. (Dyens 2001, p. 85)

This reproducible digital other stands in direct contrast to the corporeality of the human actor. As scholar Erica Fisher-Lichte wrote:

> The actor's particular corporeality, his bodily presence, are the conditions which underlie the possibility that dramatic character comes into existence on stage… the dramatic figure which appears on stage as unique cannot be conceived of or perceived without the actor's particular bodily being-in-the-world. (Fischer-Lichte 2000, pp. 65–75)

The actor gives of themselves to bring the character "to life" or into breathing flesh—into embodiment. This is how we, as an audience meet Tom from *The Glass Menagerie*, through the many actors who have lent the character their bodies for that brief hour or two under the lights.

Unlike the relatively permanent physical frame of the human actor, the digital actor is completely protean. Once digitized, this imagebody can combine with all other forms of digital actors, including animations, robotics, and scenic elements.

When we recognize the visual and ontological difference between biological and digital bodies *onstage*, we are also assuming a sense of containment of the actor's unique body in space or place. On the surface, it is easy to differentiate between the body, the biological unit of every human being, and place, the physical location or environment in which we exist—between actor and stage. However, through the use of digital technology, some performances cause the area between these two categories to blur. Because digitization converts data, including images of people and places, into flexible manipulable information, ideas and symbols which we readily associate with these two constructs can also become mixed and even made interchangeable. The conceptual space between body and place begins to shorten, becomes less stable and blurs.

Generally, the body is conceived as a whole and place exists outside that entity.[4] But this is beginning to change. Since the birth of bioengineering and computing, the terminology and conceptual frameworks for biological and computer systems are beginning to intermingle. Databases are referred to as data bodies and the body is beginning to be seen in terms of information flow (Thurtle and Mitchell 2004, pp. 1, 4).[5]

Likewise the idea of place is becoming permeable through digitization. As barriers to travel lessen and information sharing increases through internet technologies, physical and cultural borders are shifting, causing the idea of place to be reinterpreted. Telematics and video conferencing simulate a sense of "being there" or being multiply present. Some performances make visible the dissolving boundaries between the very private

realm of the body and the public world of performance, thus intermingling aspects of body and place. Scholar Baz Kershaw wrote that, "Skin was once the boundary of the self," yet these technologized performers push through this biological barrier, as their performances refuse to stop at skin-deep (Kershaw 2003, p. 592). In many of the following examples the body is a "transitional entity" in the sense of being the interface between self and the world, the "*place* of one's engagement with the world" (my emphasis, McNay 2000, p. 33). Through performance it enables crossing the liminal cusp between the internal spaces of the individual's body and the larger world outside.

Two contrasting terms which link body and place are *public* and *private*. Arendt defined the spheres of human life: public is defined in relation to the presence of others in society; public acts are those experiences connected to social interaction and a necessary mutual co-observation (Arendt 1958, p. 50). Private, on the other hand, refers to the deprivation of social or objective interaction and is linked to the safety of the domicile, to what is intimate and bodily. The place of the body, or the behaviors of the body are defined through public and private-ness; as Arendt puts it, "The distinction between things that should be shown and things that should be hidden" (Arendt 1958, p. 50). In the words of Lucy Sargisson, professor of politics and international relations at the University of Nottingham, "The body itself has long been the property of the private sphere" (Sargisson 2000, p. 153).

Theatre however, as noted by Frank Whitford, is the most public art of all (Whitford 1984, p. 83). It is a rare venue, a place where the usually private body is on public display. The strength of Theater is its ability to create a shared public experience through the co-presence of bodies, onstage and in the audience. And today public and private bodily behaviors and limits are being tested via technology. If the body represented by the performer, is a representation of our current state; if the body is experienced not as a closed entity, not irreducible, but porous and existing in direct relationship to its environment, permeable to the outside world, then what kind of actor would this be?

The digital performer's body is permeated by and extended through technology. What happens, as Kent de Spain wondered, when "…the human body meets the 'body' of technology?" (DeSpain 2001). This timely and essential question is answered in Digital Theatre performance.

Agency and the Performer's Body Extended

As we have seen, often in Digital Theatre and performance the Body is extended into its media-filled surroundings (Place) through an array of technologies placed on the performer's body or in the performance space. These technologies allow their body to interact expressively with media—including the image-body (Pearson 2003). Through the use of motion sensing technologies, the performer molds the space around them, becoming an architect of light, sound, and movement.

As discussed earlier, digital technology increases the performer's degree of expressive freedom by extending his bodily instrument into the surrounding performance space (Richardson and Harper 2002). Like Merleau-Ponty's example of a walking stick for the blind, some digital performance tools can "cease to be an object" as they are incorporated into the performer's "embodied field or corporeal schema…extending the scope and active radius of touch" of performative expression.[6] The digitally enabled performer uses interactive tools which allow media to become part of their gestural or performance vocabulary. By bending their arms or legs, this performer is able to shape the audio and video world around them and paint landscapes of sound and light that react to their whim.

Digital technology not only increases the performer's expressive degree of freedom, it also extends their agency or power to *do* something (Nealon and Giroux 2003, p. 193). This ability to act is demonstrated by the digitally wired performer's active engagement with and impact on their surroundings. The performer, and thus the human protagonist, is put in direct conversation with and control of their media partner and mediated environment. The technology allows the active body to build or rearrange our sense of place.

By allowing performers to trigger and manipulate media elements in their environment directly and to control, rather than be controlled by, media cues, the performer's sense of agency expands and they begin to play in and with the space. As a performer there is a definite sense of agency, which stems from being digitally enabled as a powerful body interacting in space. As the agency of the performer, the invisible reach in the shaping of their own environment, is extended, the audience can also see a positive interchange between human and digital; between the real and hyper-real in which the human element is still actively involved in determining its own outcome.

Varying degrees of physical freedom accompany the performer's experience of directly interacting with the digital place of performance and resulting illusionary place. The following examples move from the most physically constricting configuration of technology on the performer's body to the least. While this is not a direct statement equating physical freedom with expressive freedom, there is a relationship between the relative degree of freedom of digitally enabled/encumbered performer's body in the performance space and their agency as a "live" body. First, in *The Tempest*, the performer's body was constricted by wires which freed her avatar to manipulate an animated landscape. Then I turn to mobile systems like the Troika Ranch's MIDI Dancer, requiring wires on the body; Arizona State University's Intelligent Space, which requires no wires on the performer's body; and Mark Reaney's *The Magic Flute*, in which the body's impulses are conveyed directly into the place. Later examples examine the complete conceptual dissipation of bodies into the place of performance.

The following examples of Digital Theatre and performance collapse the subtle interface between body and place in works which challenge the notion of the body as an indivisible and sacred unit. Before introducing production examples of the performing body interacting with and becoming place in digital performance, here is a brief hypothesis. As the performer interfaces more easily with his surroundings, controlling the media of the place, and thus gains more agency, his body becomes more permeable to his environment. This in turn threatens to destabilize or invert expectations about the borders of his performing body and possibly self in terms of what is public (the performance place—the theatre) and what is private (usually the actor's bodily instrument and person). This point of saturation, this point of inversion, is the nexus between agency and perforation, the precarious balancing act of the digital performer. It is also the epitome of the neo-Bakhtinian instability and inversion possible for "live" bodily and digital performance.

Production Example: The Tempest*: Digital and "Live" Tethered Together*

As discussed earlier, in the University of Georgia's production of Shakespeare's *The Tempest* (2000, directed by David Saltz), Prospero's magic was paralleled with digital media's ability to shape reality. In the production Ariel was depicted as both a "live" actress and as her digital other, or

avatar, whose gestures she could control through motion capture. Actress Jennifer Snow's agency can be seen in her body's ability to manipulate her visual surroundings, the illusionary place, a 3D animated environment. At the same time, her body engages in a visual dialogue with her image-body, an animated digital other, to whom she is tethered.

A magnetic motion capture system collected and interpreted the actress's physical gestures, allowing the performer's body movements to shape the scenic world of the play. The actor's arms created the pitch and horizon of the animated sea, her body shaping the digital landscape as she "danced the storm," creating waves, wind, and lightning. It was Dr. Saltz's intention that the actress *plays* the sea, which became an active agent itself (Saltz 2001, p. 123). The living actor's gestures are extended through digital technology to become integrated into the animated place which surrounds her.

However, it is important to note that while the sprite had almost unlimited powers to affect the animated environment, the controlling body behind the character's actions, Jennifer Snow, had an extremely limited range of movement onstage. And while the actor had a new type of creative expression that extended her gestures beyond the immediate physical space in which she moved, throwing or projecting them across the room through the motion captured control over the digital avatar, the physically embodied character of Ariel is "strapped" into the device. She is trapped in service of digital magic (Saltz 2001, p. 118). While the animated "sprite,"[7] a female-like shape with greenish-blue tinted plastic skin and a soft-serve ice-cream swirl for hair, possessed the digital magic to control her media environment and shape shift into other forms like bees, this malleability of data directly contrasted with the solid body of Snow. Her human shape was unchanging, primarily stationary in one corner of the stage, and caged with wires, bound to the computer at the hands, arms, legs, torso, and head (Teague 2001), a prisoner of Prospero's technology; the motion capture device.[8]

While the wires that link her body to the motion capture device give her the ability to manipulate the digital puppet, visually the human Ariel appears to be the living marionette controlled by Prospero's technology. This inherent visual dialogue between the human body of the "live" actress and her ephemeral digital other was brought to a climax when Ariel was freed from her high-tech cage at the end of the show. When Prospero opened Snow's cage and removed the wires that had held her, the actress ran out of the theater, the animated character wilting and

dissolving into bits of data without the embodied human to shape and control the flow of information.[9]

In this piece of Digital Theatre, the dialogue between live body and the mediatized other, the animated image-body, resolved in a theatrical moment that can be seen as supporting the value of the bodily human as the source of creative and digital meaning. The live body finally rebels and throws off the devices, dissolving the digital other. The Digital Theatre *Tempest* reasserts the dominance of the live human actress, without whom the digital other could not have agency. Here the living body was demonstrated as the primary being. Snow's body was indeed a neo-Bakhtinian rebellious body that could both extend its reach through mediation, deftly utilizing the tools of our times, and show its inherent strength and agency by later throwing off the trap of hyperreality—the absorption into mediated fantasy as seen in Prospero's animated illusions and his ownership of her digital other.

Troika Ranch's MIDI Dancer

In the case of Troika Ranch's dance-theatre, agency can again be seen in the shaping of environment or place and digital other, created through digital media controlled by the body of the performer. But unlike the University of Georgia's *The Tempest*, the dancer wearing the MIDI Dancer is untethered to any external devices by wires (beyond the wearable) and is able to relocate in multiple venues. The MIDI dancer allows the performer's body to control their sonic and visual environment, exhibiting agency beyond that of a traditional performer. If we accept Troika Ranch's claim that "the ultimate point of using such a technology for dance is to extend the capabilities of the body in a meaningful way, in a way that allows us, the audience, and the performer to amplify the immediacy of live performance," (Stoppiello and Coniglio, Media/Technology) then it is also clearly a useful tool in live theatre and in actor training. In their dance-theatre pieces, the performer's body is truly active, and infact activates the space.

Mark Coniglio and Dawn Stoppiello have expressed that by manipulating the timing and dynamics of the media, the performer has choice, which is paramount to control or agency for the performer as his/her body extends its creative reach. According to Stoppiello, "Anybody who's ever put the MIDI Dancer suit on (has) a great feeling, because you feel that feeling of your body being bigger than your body, and that's really

an incredible thing to do" (Wilson). The sense of freedom engendered by the MIDI Dancer has been compared to the creation of improvisational jazz (deLahunta 1998).

In their performances, the agency of the performers to create and control the media is playfully present. Two challenging ideas foregrounded in their works: the body dancing with its media double or non-human other—the image-body, and the creation of place through the extension of the actor's body laterally by the extension of their limbs, culminating in the perception that their reach extends well beyond the limits of their fingertips or the arc of their gestures.

In *Future of Memory* (2003, directed by Mark Coniglio and Dawn Stoppiello), as in many of their more recent works, performers recorded dialogue and action directly into cameras placed at the edge of the stage area, which fed into the Isadora media library, making these very recent clips the material that their own bodies replayed and warped through the creative extension of the MIDI Dancer hardware they wore. The direction and speed of the playback of the mediated self, or memory, is directly controlled by the body positions of the dancers wearing the MIDI Dancer. Thus the "live" bodies control the playback of their video-mediated representations, their image-bodies. Playing with the obscure and malleable temporal nature of memories is made possible by the digitally enabled bodies of the dancers.

As discussed earlier, *The Chemical Wedding of Christian Rosenkreutz* (2000, directed by Dawn Stoppiello), is a piece of Digital Theatre also dealing with memory, a man volunteers for a lobotomy—replacing his brain with a computer network, effectively turning him into a cyborg. The use of multiple cameras which included the actor's POV, produce images of a second self, the image-body projected larger than life, and brings us inside the character's cerebral metamorphosis. The use of the MIDI Dancer to control media allows the audience to be inside the character's experience of memories that are distorted and controlled, even providing a sense of mental capacity or personality.

The center of the show lives in the lobotomy scene in which the actor uses the MIDI Dancer to dialogue with the video playback of his own image-body (see Fig. 9.1). The shaved-headed mediated self jitters on the screen, pointing at his scar, caught in a playback loop controlled by the co-present actor's body movements, at once enacting the mental fragmentation of the character and demonstrating the agency of the actor. The character is willing to sacrifice "the most delicate thing in my life…me"

Fig. 9.1 Mark Coniglio and Troika Ranch performers in *The Chemical Wedding of Christian Rosenkreutz* (*Source* Image copyright Troika Ranch, used with permission by D. Stoppiello)

for a fresh start.[10] In a sense, this is the sacrifice of the "live" body to mediation as the character becomes a cyborg, his precious self replaced by a network of technology. When Coniglio is lifted up and carried offstage, and on screen his image-body has been wiped clean, replaced by a newborn baby, it is not a clear statement of the primacy of one format or the other (biology versus technology). In this piece, again, the neo-Bakhtinian body is present in the dialogic encounter between the performer's "liveness" and the image-body's controllability. It is not the conclusion of the narrative plot that signals the fate of the body vs. the hyperreal, but that an exchange occurred that could inform the audience about the two states.

The MIDI Dancer and Isadora software utilized by Troika Ranch is a dance between the mediated and the "live," giving the performer impressive control over their performative situation in the media-drenched world that they, and by proxy we, inhabit (Stoppiello and Coniglio 1995, p. 441). Further degrees of freedom from physical constraints can be seen in intelligent performance spaces.

The Performer's Body Extended on Intelligent Stages

As discussed earlier, an Intelligent Space (or stage) is a reactive performance environment (Lovell 2000, p. 256). Through the use of multiple types of visual and pressure—or movement-detecting sensors, performance spaces can become active playing spaces directly sensitive to the physical cues of human actors, in a sense engaging in direct conversation with their bodies without the need for on-the-body triggering systems. These performance spaces are wired in such a way that data gathered by sensory devices relay positional feedback to computers, which use software like Max Jitter to translate these signals into the manipulation and playback of media (Birringer 2002, p. 88). In productions incorporating the use of motion-triggering technology, the actor's movements or sounds can activate a host of digitized media. As a result, performance spaces, like the one at Arizona State University's Dance Technology program and then partially recreated at the University of Maryland, are incredibly flexible and reactive.

The significance of this unique type of playing space is the interplay between performer and space, the developing interconnection between the body of the human performer and his physical environment or place. During performances in these active spaces, the audience is aware of the added significance of the performer's actions or gestures as they carry double meaning: that of character or illusion, and that of actual control through the actor's gestural agency. In addition, just as motion capture translates the "live" performance into something digital, motion-triggering can provide the sense of liveness or real-time interactivity and sometimes the appearance of life or personality to digital media (Sharir).

Not only does digital technology transform the performer's body into a performance place, but it can, in a sense, make a performance place into a body. Backstage technicians no longer need to act as go-betweens for the performers and the media. The wired space is relating to the body of the actor and engaging in a direct dialogue with the human body. This is a form of interactivity between the human performer and his scene partner, the non-human actor, in this case the media-ready space (Burke 2002). Here performers have begun to interface with the theater space itself, making the stage seem alive as it actively changes, making the place appear to behave as a performing body itself (Lovell 2000, p. 255).

Production Example: Synesthesia in the Magic Flute

In some cases, digital technology can free the performer's body into painting place without the performer even lifting their wrist. Like technology which allows dancers and jugglers to extend their limbs to shape the media around them, digital synesthesia—the blending of sensory, aesthetic, or perceptual modes, extends the reach of creative expression. Synesthesia extends the reach of one expressive mode of the body into the realm of another, from voice to sight, mouth to eyes, linking the expressive qualities of the performing body with its place.

As discussed earlier, Mark Reaney's *The Magic Flute* (2003, directed by Delbert Unruh) when princess Pamina sings to Tamino, the volume and pitch of the voice of a performer created a fluid, swirling, and ever-changing animated visual landscape of sound (see Fig. 9.2). By

Fig. 9.2 Greer Davis as Pamina sings, painting the scene with her voice, in *The Magic Flute* (*Source* Image copyright Stephen Hudsen-Mairet [used with permission by M. Reaney])

using visualization software to convert volume and pitch into animated responses, he created a kaleidoscope of colored shapes and painted the stage with the breath of the actors, allowing them to exhale both music and art. The undulating shapes were beautiful and playfully responsive, much like earlier filmic animations *Fantasia* (1940, directed by Samuel Armstrong et al.) or *The Dot and the Line* (1965, directed by Chuck Jones and Maurice Noble). The whole scene looked like being inside of a sock weaving itself from the inside out. The performer floated inside images made of her own voice, her character's inner state both lost in and expressed as undulating spirals of visual sound.

This theatrical moment showed the possibility of perfect harmony between the human body and the flexible digital impulse, as it painted the playing space creating the visual environment. Here the actor is completely untethered as their inner impulse or emotive energy makes itself known in the form of pure expression and agency.

The Nexus of Body and Place

There is a relationship between the agency of the digital performer's body and that performer's position as a controlling agent of the media-rich place. This relationship allows for the transformation of the performer's body into the place of performance through digital technology. With the body of the performer's very breath manifested by media, and the performer's body in dialogue with the body of the media in intelligent performance places, we are at the critical point: the balancing point or equilibrium between body and place. This liminal nexus between body and place is also the point of inversion between the performer's agency and perforation. It exemplifies the precarious balancing act of the digital performer, and the epitome of the neo-Bakhtinian; the dialogic contestation of roles and boundaries in "live" bodily and digitally enhanced performance.

The next set of performances problematize the binaries of the body (of the actor) and the place (of performance) in theatre. In *Minimally Invasive*, *Holoman: Digital Cadaver*, and the performances of Stelarc, the body becomes place.

Production Example: Inside Minimally Invasive

In *Minimally Invasive* (1998, directed by Paulo Henrique), Paulo Henrique brings the audience into his body in performance through digital technology. His performance follows the tradition of anatomical theatre. Both England and France have a history of practicing "doubly useful" executions, in which criminals were given over by the state to physicians for public dissection and possibly vivisection, with the idea that the suffering of one would assist the many as they were considered both scientifically educational and punitive (Steintrager 2004, p. 118). These punishments physically opened the private self (the body) before the public, and rivaled theatre as a form of popular entertainment (Schechter 2005, p. 107).

The anatomical *theatre* was a "special place" in which the body with its internal mysteries was the central player (French 1999, p. 78). By using a cross-like scaffold for posing the body, they made the body at once both the main attraction and the playing space for those acting upon it. Thus, the usually private and hidden workings of the body, publicly displayed, became the subject of semi-theatrical events with actors, directors, a script, and stage spectacle.[11] When this now public and externalized biological body was displayed it became the site of action, more set than player, more place than person. Similarly, digital performances which open the body to the audience allow the body to become the sites of public spectacle.

Today, digital performers like Paulo Henrique continue this instinct to explore private spaces within the body through digital technology.[12] Today's performative vivisections are not fatal; thus the body on display remains capable of performing even as it is performed upon. This digitally breached body can still behave as an actor with agency; the body can be at once both place and player without the loss of life.

In *Minimally Invasive*, this biological intimacy is achieved through the use of a surgical camera which broadcasts live video of Henrique's internal organs onto screens above the table or the dais upon which Henrique lies. Unlike the historical precursor, this actor is alive and open at once. As he is visually opened, he is conscious, speaking and narrating his ongoing experience along with other reflections with his public audience. As the audience watches, listens, and observes, they are aware of the innermost functioning of the artist.

Unlike the bodies at the center of historical anatomical theatre, he is not merely a body acted upon, but a body in action, interacting with and possibly directing the position of the camera, an indication of agency through the ownership of his process and medium. His body, doubly active and performed, becomes not only the distinctive outline of a trained instrument of the actor upon the stage creating character and expressions of illusion, but has become the very space of action, the setting itself. Through the use of projections, his body and the immensity of his fleshy caverns; becomes the set, spectacle, and in a sense, the place or setting which the audience visually enters during the time of the performance. We are transported inside the deep private recesses, beyond the intimacy of lovers, into the realm of surgeons. The result of this spectacle is that it is not an illusionary landscape of fiction; it is real as well as theatrical. *For what could be more real than flesh and blood, bone and breath?*

He is at once both actor and character in a public dialogue with his own private, biological organism. Much like Annie Sprinkle and her speculum, Henrique is playing with—and against—himself and his body. He is his own content, scene partner, and spectacle. This duality of simultaneously observing both the internal (wet, secret, vulnerable) private aspect of the man, and his public shell (skin, clothes, performance persona) in performance in a public place, challenges us to reevaluate the thresholds of the body as a private entity versus the public space between inner/outer, self/other, and social/biological.

Production Example: Theatricalized Digital Body in Holoman: Digital Cadaver

Another compelling example of the private made public through the digital performance of the body as place, is the play *Holoman: Digital Cadaver* (1997, directed by Mike Tyler). *Holoman: Digital Cadaver* tells the story of a Frankenstein-esque revivification of a very public corpse. The story gives voice to the story of convict J.P. Jernigan, in the character of J.P. Holoman, whose body was donated to science after his execution for murder(s) and used in the "Visible Human Project" conducted by the National Library of Medicine, following in the tradition of dissection of criminals in Europe mentioned earlier. Post mortem, his body was frozen and sliced into thin sheets, digitally photographed and used for public display and the collective understanding of the biology of mankind.

The man's most private physical intimacies have become public property. And in his death, this infamous murderer, a body controlled by the state, became a tool of learning and a famous and officially sanctioned property of value. In Tyler's words, "When digitally reassembled, he became the 'universal human meat:' his digitalization resulted in a bloodless, dissectible cadaver for anatomy students, and perhaps the first immortal man, reborn in the ghost-like form of Holoman" (Tyler).

As the actual J. P.'s private body is laid bare, flayed before the camera, projected on the walls of the screens onstage, and thus made public in the truest sense of the word, he is now public property as Frank Shepard, the actor playing the man gives voice to the demon inside. He verbally dances with the images of his "own" flesh, between this newly condoned self, the officially sanctioned body which is to be the model of human corporality, and his own persona-filled body, which sinned the ultimate bodily sin, murder. He is presented as both dead and alive at once, condemned and immortal, living on as a psychic trace, a malevolent ghost within the digital machine. In the performance, the character of J. P. says: "Where you going to go when you die? I mean where you gonna be? … Everywhere" (Tyler). The actor onstage is an animated corpse—frightening, powerful, chalky, sickly, menacing—and the projections of the convict's biological legacy are all light and color, orderly, contained and yet revealing all. This piece provokes questions about the value of a body in society, between the controllable substance and the unmanageable spirit. It is a conversation between the ideal of the digitized biological and the actual corporal individual. The bodily form of the individual confronts his value as a mass of internal organs in a public space; thus issues of power, identity, and socialization are provoked through images, words, and taunting song. Again, the private body has become the theatrical set, and therefore, a public place for the performance. The historical person's body, now virtual, becomes an internal landscape for the character's public haunting of the stage embodied by the nude actor.

This piece of Digital Theatre, problematizes the expectations that to be more digital, to become a place or involved with place, through the performing, or in this case performed, body, is to increase that body's agency. In *Holoman: Digital Cadaver*, the actor's body is bare, and he portrays the sentience behind the body, which has become his bodily set. Although *Holoman: Digital Cadaver* does not directly show the same actor in control over his own organism-scenery, as in *Minimally Invasive*, it supports the argument that the digitized body in dialogue with its

mediated self or image-body, projected as the illusionary place or place of action, problematizes the supposition of a clear ontological understanding of body and place as distinct theatrical categories. It also draws us closer to the other polarity of the digital body/place interaction illustrating that the performing digital body loses agency as it becomes infused with, and consumed by, being translated into digital place. Because *Holoman*, the character/place depicted in this piece of Digital Theater, is the creation of the state through the public disenfranchisement of his body, as a character, he is eternally at war between a state of agency and visual potency/immortality on one hand and on the other a complete lack thereof. He is caught between public place and person through the digitization of his body. In the next example, it is the performer, not the character, who sacrifices his body to the public and allows it to become a digital place.

Stelarc—The Place

Today the body stands not only between inside and outside, between person and place, but also on the cusp between organic and machine, as technology begins to seep in making permeable the borders between self and other.[13] Performance artist Stelarc, a self-proclaimed cyborg, has achieved great notoriety for his internal explorations of his body. His performances destabilize conceptions of human physical boundaries (Stelarc and Smith 2005, p. 222) creating a strong sense of permeability, forgoing individual sovereignty for group agency. His cyborg-self is the antithesis of the media-controlling body of the agency-filled digital performer such as Jennifer Snow's Ariel. At the same time as he is bringing cyberpunk fiction to life, as an artist Stelarc is cleverly prodding us to reevaluate choices, demanding that we confront our decisions face-on rather than quietly sliding into our futuristic fantasies. He is thus acting as a neo-Bakhtinian instigator of upheaval, reversal, and bodily intervention of norms.

Stelarc directly challenges our understanding of the body as a self-contained entity. His new body with muscle joined to wires is no longer private. Its impulses are carried beyond its skin; its membranes are stimulated to action from outside its immediate casing. The skin and the silhouette no longer define the whole; public and private spaces of this new body are one. Authors Phillip Thurtle and Robert Mitchell wrote, "An organism bounded by flesh is a body. The time flesh continuum of

my extended kinship network…is a body. Finally, and most intriguingly, the database of sequenced genetic material is also a body" (Thurtle and Mitchell 2004, p. 4). Stelarc's internet-wired body is no longer the body as a closed unit but a data-body and an every-place body. He opens the body to information and interaction from others. In Stelarc's words, the internet:

> may now allow unexpected ways of accessing, interfacing and uploading the body itself…It offers…powerful individual and collective strategies for projecting body presence and extruding body awareness. The internet does not hasten the disappearance of the body and the dissolution of the self…What becomes important is not merely the body's identity, but its connectivity. (Stelarc)

In *Ping Body* (1995), Stelarc connected his body's muscles directly to the internet and allowed other online users to control his muscles. Stelarc commented on his experience: "Your body is moving, and you've neither initiated that movement nor are you yourself contracting your muscles to produce it. You realize because of your software program and your connection on the net, that you're manifesting the behavior of another body elsewhere, and that's a strange situation" (Stelarc 1996, 399). Here the performer has given up control of his body which becomes the tool for the agency of others. In another of his performances, *Fractal Flesh* (1995), remote audiences could see a "map of Stelarc's body over the net, and by pressing certain spots on the map, can cause a low voltage to stimulate one of his muscles, forcing him to move involuntarily" (Stelarc). One could imagine online audiences chatting: "*Hey, let's go meet up at Stelarc, and move his arm around*." He is mapped out like a location, geography, or meeting place.

Consider Bakhtin's words: "Bodies could not be considered for themselves; they represent a material bodily whole and therefore transgressed the limits of their isolation. The private and the universal were still blended" (Bakhtin 1984, p. 24). Stelarc's sharing control of his body with his internet and co-present audience is an act of transgression mixing public and private, internal and external places.[14] The individual bodies of his audience members, some in public and others in private, transgress the limits of their isolation, communicating through internet connections their desires and acting through the conduit of Stelarc's formerly

private body. In this sense Stelarc's wired body is a new form of Bakhtin's liberating grotesque body, the neo-Bakhtinian body.

According to Stelarc, *Ping Body* was like being a host for multiple entities sharing a group body, a "…more complex…body—not simply a single entity with one agency but…a host for a multiplicity of remote and alien agents" (Stelarc). The internet thus becomes an external nervous system for a multiplicity of bodies in different places; human awareness and agency can be shifted and shared in a space of distributed intelligence, scaling up the subtlety, speed, and complexity of human activity (Stelarc 1996, pp. 392–395). Stelarc's body is no longer an individual unit bound by skin, but extends through space and time as part of information flow, an updated model of Bahktin's body of the folk. This body, found in his discussion of crowds and the ancestral body, is extended both physically and temporally, "not separated from the rest of the world… going beyond its own limits, allowing the world to enter the body" (Bakhtin 1984, p. 26). This could be a direct description of Stelarc's performance of *Ping Body* or other performances where his body's muscles are directly connected to the internet—a conduit for the communication of multiple entities, "the body of technology." One could substitute the word "technology" for "folk."

Stelarc's sharing control of his body with his audience is an act of transgression, mixing public and private, internal and external places. But for all this, Stelarc's body is no longer his own. The performer's body becomes the puppet or agent for the ideas of multiple distant human bodies, a living, hard-wired marionette. He has donated his body to our collective enjoyment and becomes the plaything of the audience, controlled by the internet, and by public forces of information beyond his individual control.[15] This is a frightening vision of the possibilities of the technologized body, the technology controlled self (Kroker and Kroeker 2005, p. 65). It is the body devoid of agency, fully a public place.

When the body of the performer thus becomes a conduit for collective impulses to be embodied or find expression, it becomes a *Place* for public inter-action. A truly wired performer like Stelarc allows their body to become a conduit for collective impulses to be embodied or find expression. Thus, the totally digitally connected body of the performer becomes a *Place* for public inter-action; like a theatre. Agency has disappeared as the body became place.

Conclusion

From these examples, we can see a correlation between the agency of the performer, seen in their ability to shape their digital environment or place, and their becoming the place of the performance through digital means. As body becomes the place of action, it loses agency. Still, the digitized performer is an embodiment of the rebellious neo-Bakhtinian spirit, through its very act of inversion and questioning of boundaries and roles.

The neo-Bakhtinian unbound body reaches beyond the bounds of public and private, and in some cases becomes a playing space itself. Through the simultaneously "live" and mediated nature of Digital Theatre, the performer's rebellious body onstage engages in dialogue with its image-body, contesting the societal dominance of the image over the real.

Digital Theatre facilitates both a visual and experiential conversation between technology and humanity that is reflective of social development of contemporary society. The body of the actor seen in contrast with digital technology is neither made a puppet of technology nor consumed by mediatization, but is liberated and given agency through interactivity and other digital means of expressive flexibility. Should the actor's body, or character, appear dehumanized by technology, this too gives rise to a dialectic tension and can provoke an *experiential shift* and awareness of the technologized body, demonstrated by or on the actor.

The performer's body as seen in Digital Theatre and performance gives rise to the figure of the neo-Bakhtinian body, a rebellious body full of strength and agency created through the direct conversation between our developing technology and our biological selves. The neo-Bakhtinian body of the digitally enhanced performer is a body of agency through the virtue of its direct conversation with its media environment. With its permeable and perhaps mutable edges, it is an embodied sign of the conflict between who we *were* and who/what we are *becoming* as people and as a species.

Notes

1. Many of Grotowski's practices came out of a disregard of spectacle external to the body, represented at that time by traditional technical spectacle artists like Svoboda, who was using filmic technology onstage. The

body was seen by Grotowski as its own force, or technology, which could create sets, spectacle and sound through its own plastic, gymnastic, and somatic means.

2. His writing on his neologism enacts a slippage between states (meanings); différance is a word that connotes itself being formed, and meaning (and complication of meaning) in process and in negotiation. This "irreducibly nonsimple" term is demonstrated by playing with the "a" in difference—the interplay between meanings, the creation of meaning, the links or traces between words/ideas/thoughts and their opposites (Derrida 2004, p. 387). Différance deals with the *traces* (overlaps, confrontations, and inconsistencies) between words and meanings.
3. Exposed "'screened' bodies in the public media (billboards, magazines, films, television in the US)…The screen itself is exposed as a method of surveillance, control, and isolation" (Parker-Starbuck 2011, p. 121).
4. The OED defines place as "a particular position or location" also "a portion of space occupied by or set aside for someone or something"—indicating the importance between the place and persons, that place exists outside of the human individual and through observation, apart from what is immediately part of the body, our environment.
5. "…body conceived as pure information" (Thomas 1995, p. 38).
6. "In Merleau-Ponty's model of embodiment relations, tools are not conceived of as merely perceptual attachments or extensions, but rather are incorporated into our embodied field or corporeal schema" (Richardson and Harper 2002).
7. It is interesting to note that "sprite" was also a multimedia term for an instance or active agent in the program Director by Adobe.
8. "The actor playing Ariel will be trapped in a small cage in full view of the audience, with sensors strapped to her head, wrist, elbows, hands, waist, knees and ankles" (University Theatre Production Office, University of Georgia 2000).
9. "In the closing moments, Prospero freed Ariel: Marden suddenly bounded across the stage and worked with Snow to undo all the sensors and get her out of the motion-capture suit. Snow then ran off the stage and up the aisle out of the theatre" (Teague 2001).
10. Text transcribed from archival footage of performance. Mark Coniglio, and Dawn Stoppiello, *The Chemical Wedding of Christian Rosenkreutz* DVD recording.
11. Author Roger French describes public anatomy dissections as a form of entertainment with a sense of spectacle utilizing many terms and elements borrowed from theatre, including: ushers, audience seating, the use of a stage platform, lighting, and set. The term "actors" was used to describe the dissectors who were directed in their exploration of the body by a

physician or anatomist using a text to guide the unfolding of the action (French 1999, p. 80).

12. See also Yacov Sharir's *Virtual Dervish*. In a similar piece by Stelarc, *The Stomach Sculpture* (in which a miniature sculpture was inserted into his body and viewed via camera from within), the artist remarked that "the body is experienced as hollow with no meaningful distinctions between public, and private." Stelarc, "Stelarc," http://www.stelarc.va.com.au/.
13. The "cyborg… At the point at which the body is… a boundary concept, we witness an ideological tug-of-war between competing systems of meaning which include and in part define the material struggles of physical bodies" (Dyens 2001, p. 215).
14. Stelarc sees the networked body is demonstrating the blending of the private and the universal: "The internet as external nervous system for a multiplicity of bodies in different places" (Stelarc 1996, pp. 392–395).
15. His works may not be Digital Theatre since the level of interactivity is high if the audience is truly controlling the majority of the movements of the performance, but it is a provocative example of digital performance.

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CHAPTER 10

Theorizing Place/Community: Issues of Access and Performativity

In the previous chapter we talked about what happens when bodies and places merge in Digital Theatre. Let us conjecture on the liminal jointure between place and community present in shared virtual performance places, when interest-based communities form where multiple geographical places meet.

Perhaps one of the most exciting uses of digital technology in theatre and performance is the use of internet broadcasting, or video-conferencing to expand both the playing space—linking performers in multiple locations possibly anywhere on the globe into close visual and auditory proximity, and audience spaces which allows for numerous online viewers and multiple co-present audiences to be joined into one event.

Recent scholarly interest in *Place* is a natural response to globalization: interactions between world markets, the permeability of borders, mobility of bodies, immigration and the interchange of culture and ideas through media and internet reveal that we are living in a global world in which media saturation, travel and information exchange are "shrinking the globe," which both allows cultural cross-pollination and at the same time overwhelms individuals with an unending glut of information (Janelle and Hodge 2000, p. 6).

In 2000 professors Donald G. Janelle and David C. Hodge wrote, "The information age is bringing about the end of geographical distance as a significant barrier of human interaction" (Janelle and Hodge 2000,

N. Masura, *Digital Theatre*, Palgrave Studies in Performance and Technology,
https://doi.org/10.1007/978-3-030-55628-0_10

p. 1). Today this is even more so, as video-chat becomes more available and portable via smart phones, it seems as if the world is growing smaller, as distinct places come together and overlap. Within the span of a single lifetime, the experience of global travel has become possible for millions, when, as bioethics professor Peter Singer puts it, for most of human existence, people living only a short distance apart were separated as if by worlds (Singer 2002, p. 10). Now we are experiencing a sense of the world shrinking Baz Kershaw called "The compression of global space and time" due to instant communication.

Years ago, the relevance of the overlap between multimedia and theatre, peaked this author's interest in audience expansion through technology. In some ways that goal, which has existed since the telegraph relays conducted in 1844, has been achieved by projects such as "National Theatre Live," which now broadcasts performances like the production of *No Man's Land* by Harold Pinter in 2016, directed by Sean Mathias with Sir Ian McKellen and Sir Patrick Stewart it was broadcast into our local movie theatres, where dozens of productions have been shown in 380 venues in twenty countries in a loose sense joining local audiences with those in London. The experience of watching great actors in their craft was exhilarating, as was the talk-back afterwards.

Although there were moments where the primary originating audience in London was featured on screen which *almost* gave a sense of being there, and the multitude of secondary audiences shuffled and rustled as audiences do, because there was no possibility that the multiple secondary audiences could interact, interrupt, or interject in any way with the performance, through a real-time recording, it was not a true theatre audience expanded across space; but a cloned audience, a sealed cinema crowd with one-way access to rare foreign goodies. The significance of the audience to live performance, giving energetic/emotional feedback to the actors in a reciprocal, though often subtle exchange, is simply and practically demonstrated by the common talk backstage between actors "how is the audience tonight?" In a sense they both were and were not an audience, just as driving to the cinema in your home town and buying popcorn is not the same experience as flying to London and sitting in that grand theatre auditorium, then walking across the beautifully lit bridge into the summer evening. Ridiculously, but simply put, no matter how hard an audience member may throw their popcorn at the screen, Sir Patrick Stewart will never feel it.

Having said this, there are some theatre experiences where multiple places really *do* seem to merge in an impactful way through digital technology, these tend to occur primarily in the blending of performance spaces and may be most directly felt by performers or through post-show forums or built-in audience feedback. Art interactions and performances of a Telematic nature, combining data from multiple geographically dispersed sources, directly encourage audience participation.

Today, theatre and performance are entering a world with a whole new concept of community, a community not meeting in or constituted one place, but in several. Through digital media, settings can shift in a moment, and distant but real places are brought together onstage, and prompting new ways of looking at place. By linking performers in distant places, not only is the group of performers potentially expanded, as their cumulative playing space grows, it becomes place-rich or a multi-layered place. In a sense, multiple site or multi-site performances are actualizing the multilayered place suggested in *Alladeen's* scenic depiction of cyberspace. After a brief look at audience expansion and telematics, the focus will be on extended playing spaces where production examples include: the works of GRST, *World Wide Simultaneous Dance*, and praxis or the author's experience of collaborating within the ArtGrid community.

On Community/Place

Generally, place is conceptualized as stable (as opposed to space). Place is the *where*, the *location*, the physical *environment* in which humans existence plays out. Place is deeply embedded in the human psyche.[1] Place is the location of our experiences of birth, life, and death; the setting of the human drama. In her book, *Lure of the Local* in which she explores place-specific art, activist and art critic Lucy Lippard writes about the pull of place. "Place is latitudinal and longitudinal within the map of a person's life. It is temporal and spatial, personal and political" (Lippard 1997, p. 7). As many scholars have noted, place (and landscape) have the ability to "give shape to and locate human communities, by providing cultural memory and a sense of belonging."[2] Each of us forms a relationship to the place where we were raised, react to the physical circumstances which surround us, and envision alternate imaginary landscapes.

In the spirit of excitement of discovering new places we reach out to see images of our distant neighbors and at the same time we withdraw to

familiar places which offer that fixity or solidity of stability, soil, memory, and native culture. We do both of these things at once, stretching out for the "other," while claiming our place in the world by identifying with our origins or native soil as "placed persons."[3] Thus, place is doubly on our minds.

Add technology to place and things become less firm, less geographical, less bedrock, and more muddy. Recall that the internet, often referred to as cyberspace, is defined by Alice Rayner, as placeless.[4] Because each experience online is shifting and directly determined by the users' actions, it follows that an imaged landscape, constructed as a metaphor for information exchange, is based on motion and lacks geographical stability. Given her description, it makes sense therefore, that it is called cyber-*space*, rather than cyber-*place* (Knott 2001, p. 11). However the internet directly shapes our experience of place as expanded by technology and creates a sense of perceived place. Though data is transitory, the effect of a meeting of people in a cumulative place is real. A cyberspace meeting-place composed of multiple video transmissions of different inhabited places may have a cumulative sense of place. Members of the Downstream performance art company even go so far as to suggest that, in a sense, the technology not only frames the actor's body and the performance space, but actually *creates* the space (Farman 2005, p. 98).

Community is the place where people, and their ideas, meet. In a sense, Place is a natural construct (a given), while Community is a social construct. Community is that which joins the individual and society.[5] Community is often referred to in terms of commonality of place (physical geographical location) or *gemeinschaft* (Tonnies 2017, pp. 223–231). Another way to create community is through common interest or concerns, or *gesellschaft* (Tonnies 2017, pp. 223–231). Community is defined as either based on "common needs, interests, activities, or desires" or based on "a specific population, place or location" (Nellhaus and Haedicke 2001, p. 12). Thus as half of what is considered community is dependent on place, the two are deeply linked. Place provides the site of gathering in Community.

Scholar Linda Stoneall writes, "Community as a concept has a definite center without a well-defined periphery…" the core which is centered around people, "…interacting in specific space and time" (Stoneall 1983, p. 5). Community is a perceived connection between individuals living in a group, interacting regularly, or interfacing for mutual gain or benefit of connection. By invoking the word community, it is often materialized,

and thus has the characteristics of a speech-act. When "community" is invoked, it can be a powerful organizing term, a call to action, used to rally participation around collective ideals, teach values or lessons, honor members and places valued by the community, or mark a specific event.

When you add technology to the mix, the two determining components, place and interest, can merge. In addition to community based on place or interest, in the case of cyber-communities, community is formed in a third intersecting space where interest and location meet, when the ability to meet in a shared space composed of multiple places is itself the shared interest of the members of the group. In many ways the cyber or virtual community is a logical extension of the "imagined community." Benedict Anderson's term identifying the formation of the internalized concept of nation and national identity through advancements in print, map-making and other *technologies*, is taken to the next logical extension by globally networked communities in Computer Mediated Communication (CMC) and cybersocieties found on the internet. According to author and information activist Anna Couey,

> Communication networks form an invisible geography that intersects the geography of physical place. The interconnections between communication networks and places enable a kind of conceptual weaving—the opportunity to map the world according to different sensibilities. (Couey 2003, p. 64)

Online cyberspace communities evidence both of Anderson's principles that there is "no there there" (Anderson 1991, p. 5). Just as internet communication and connectivity is a modern-day extension of analog communication tools used to create a sense of a conversation and nationhood, internet communication is largely responsible for a developing sense of global connection (Castells 1996, p. 2). According to Bruce McConachie, "…as real communities (face-to-face)…dwindle in significance in people's everyday lives, the imaginative construction of community assumes a greater importance" (McConachie 2001, p. 38).

Internet video-conferencing technologies are linking individuals into new communities based on shared interest, *gesellschaft*, creating a liberating space for interaction shaped[6] by their participants, thus forming a cumulative sense of place.

With the advent of the internet, the latest in a line of place-spanning communications technologies which include satellite, television, telegraph, and telephone, real-time communication with people in distant

places has become a vital performance possibility. Telematics is defined by leading theorist Roy Ascott as "computer-mediated communications networking between geographically dispersed individuals and institutions" (Shanken 2003, p. 232). This can include such media as video, fax, teleconferencing, e-mail, file exchange, virtual space, and other technologies.

Both the terms telematic and telepresent have been used as general terms to describe those performances and interactive artworks which occur in multiple linked locations via distributed authorship. Several years ago, the author spoke at the Planetary Collegium, where Ascott explained how he continues to explore alternative forms of collaboration and data-rich knowing. His writing explains the inherent value in these collaborative art forums:

> When people interact…sensibilities from diverse cultures from all parts of the globe interweave, collaborate, conjoin, and become restructured, new cultural forms emerge, new potentials for meaning and experience are brought forth. This is the scope and ambition of networking. (Ascott 2003, p. 223)

The same can be said of performances created using similar place-spanning collaborative technologies as they both create a sense of community based in the interaction of diverse places. These performances exhibit Telepresence, put simply, "the ability to be in more than one place at one time," or in the use of "computers, telecommunications and robotics to conjoin two or more real-world locations" (Zapp 2002, p. 79). At the core of Telematic and Telepresent art and performance is the sharing of creative space across multiple places and the building of community through this common interest.

Ascott continues, "Telepresence is the province of the distributed self, of remote meetings in cyberspace, of on-line living" (Ascott 2003, p. 326). Andrea Zapp refers to telepresense in terms of the idea of teleportation, and of the shared zone of activity created by the interface of the screen or projected image of the distanced other or video-self other. Author Julie Glesner does an excellent job of sketching out these types of performances which utilize internet connections and computer software to network together streaming video from video cameras and projection systems in distant locations. She writes:

> Telematic and distributed performances dissolve the spatial (but not the temporal) unity between performers and spectators and distribute the scenic space into diverse remote sites…The remote sites are linked via diverse internet services…Here the performers' corporeality and the scenic space are mediated via telematic media such as video-conferencing systems and web cams. The three-dimensionality of the performers' bodies and of space are represented two-dimensionally on the PC or a surface serving as projecting screen…This telematically mediated status of the performers' corporeality is called "telepresence". (Glesner 2002)

Multi-site performances can create a liminal interstitial shared space between all of the performance sites involved. Kent de Spain indicates that the place of performance is complicated by video-conferencing and telematic performance techniques, which create an "abstract 'communicative' space" (deSpain 2001) between participants interacting from distant places. In video-conferencing environments it is possible to achieve a sense of multiple places existing at once, to as Alice Rayner says, "…collapse distances and throw distant spaces into the temporal dimensions of now" (Rayner 2002, p. 351). The product of these places layered, through visual proximity via projection, becomes a new perception of place which is multilayered, existing in the present, through technology. This sense of a perceived hyper-place is commonly referred to a sense of "being there" by many internet performers and community members.[7] This is the power and appeal of telematic performance, it is also fertile ground for growing a sense of community (Bhabha 1994, p. 2).

Production Example: Layering Places on the Body, GSRT's UBU Project

One example of multiple performance places allowing performers to share a composite performance place can be seen in GSRT's use of bodies as the site for multiple places. Working hand in hand with Lucent's Montage in the mid 1990s, the Gertrude Stein Repertory Theatre led the way in testing early multiple-stream video transmissions for use in the arts both for pedagogy and performance. Among their distance performance projects were: the *Inspector General* (1997, directed by Peter Sellars), with online rehearsals between Yale and St. Petersburg; and the *Crucible Project* (2001)—which involved playwright Arthur Miller and students in Russia; which led up to their *UBU Project* (1998), involving performers

in the US, Japan, and Russia, and *Making of Americans* (2002, directed by Cheryl Faver).

UBU, like all of these performances, connected actors in diverse locations into a single ensemble—a single acting body. In some cases it even allowed multiple performers to share one place onstage as composite characters. The local performers were both live and co-present with the audience and lent their bodies to become the mobile canvas for the image-bodies projected on to them from distant performers. Not only is a collage of character achieved, but in a sense, the bodies of two actors are sharing or inhabiting one exact physical performance place. They are sharing a location and a performing body.

This desire to join casts is compelling. Consider a distance cast of Romeo and Juliet. What would the implications be of two actresses for example sharing one body? What would it say about presence and absence or telepresence if the disputes between the two houses were distance and presence rather than, say, simply costuming with contrasting colors? What would this same technique lend to a discussion of cloning or identity?

Beyond the aesthetic possibilities, what does it do for actors to work with a geographically dispersed ensemble, especially when they get to know each others bodies or physical styles intimately through shadowing movement? In some cases many performers were used to create one character, and recall that in one instance composite characters contained multiple actors. In one case, Faver says, "…four performers create one character through digital videoconferencing and projection. One local actor [dressed in white] is the 'receiver' of the image, and the other helps to manipulated the drapery that serves as a projection surface. One remote actor is the face and body; another the legs" (Faver 2003).

GSRT continued to refine their digital puppetry or layered characters with more advanced projection systems such as robotic mirrors to position projections and wearable projection surface costumes in *Making of Americans*. In this production much of the spoken dialogue came from actors outside the immediate performance venue in Ohio, some as far away as New York City. Consider how it might add greatly to a cast's richness if the voices involved in weaving the tapestry of performance came from different geographically separated cultures with a variety of accents or languages.

In addition to playing with the idea of self and layering identity, GSRT's work challenges notions of place and body. By projecting an actor's video image on top of another actor's costume, they are

compositing bodies in different places; playing with our natural assumption of bodies existing in one place at a time, thus simultaneously complicating the stability of place and the singularity and wholeness of the body. They are exemplifying a form of layered place located on the site of the body. Both the neo-Bakhtinian body, expressed in the crowd spilling over and mixing with the individual, and the lack of individual bodily boundaries—along with a new sense of computer-mediated multilayered place, are manifest on the "live" actor's form.

In this next work, bodies are not layered but Place is multiplied many times over, and through computer mediation, a new sense of Place emerges.

Production Example: World Wide Simultaneous Dance

Perhaps one of the clearest examples about the tremendous reach of digital performance and the possibility for place expansion in creating a community of performers and extended cast, can be seen in *World Wide Simultaneous Dance* (1998), conceived and directed by Laura Knott. Although this is not strictly a piece of Digital Theater, as the emphasis was placed on dance rather than the spoken word, it is a valuable example for the range and scope of what is possible with multi-site or networked performance which can include theatre, and demonstrates the creation of a dispersed shared place of performance. This digital performance was staged globally and included sixty dancers in a dozen countries.[8] The performance was both "live" with co-present audience and performers in many of the locations, and a real-time distributed event. Place, as expanded by digital technology, was the subject and essence of the performance. The dancers performed Place, both by locating their dance within their actual physical surroundings, as one would relate actions to place in site-specific performance, and creating a sense of shared place as they demonstrated the Internet-enabled multilayered place as the site of performance.[9]

A patchwork of local places were brought together into one virtual global performance place. The significance of the piece was not just the linking and expansion of performance space, but the emergence of a new place from the many. Through the creation of cyberplace from these interconnected local spaces, the performance began to form a sense of the global, a sense of community becoming manifest, a community of shared interest in creating cyberplace.

Thus, Community formed through the overlap and intersection of both the differences and similarities present and by the extended cast's shared joy of performing in very diverse physical locations. Knott saw "an opportunity to construct—for a brief period of time—a collective 'based upon the mutual acknowledgement of difference" (Knott 2001, p. 11). This is a proof for Homi K. Bhabha's idea of the increased importance of interstices and areas of overlap while working from places of difference in our global world. "It is in the emergence of the interstices—the overlap and displacement of domains of difference—that the intersubjective and collective experiences of *nationness*, community interest, or cultural value are negotiated" (Bhabha 1994, p. 2). In this and similar collaborative multi-site performances, Community is formed by using *gesellschaft*, interest in both dancing and diverse place to form *gemeinschaft*, a shared place. This new appreciation of place would not be possible without both performance and technology.

Experiencing the Online Performance Community ArtGrid

InterPlay and some of the group's other performances contain elements of improvisation, the layering or mixing of real-time video and images of actor's bodies, allowing multiple places to seemingly co-exist to form a cumulative sense of a multilayered or cyberplace. The nature of technology performance is interdisciplinary; due to movement-based, visual and auditory information being relayed via video-conferencing. These performances exist through the mixing of mediums. In multi-site performances when all performers are collaborating, there are potentially as many means and styles of expression as there are participating sites contributing performance content.

ArtGrid is an excellent example of an *online performance community*. It is a community existing through performance and formed by the shared interest in performing and making art together in the Access Grid environment. It is through the members' continued interest and participation that community where cyber-places are formed. The author participated in the performance community for four years and found that it creates avenues for open collaboration and a strong sense of community based on innovation and serious play. Through years of observation, content and idea-creation, and performance, which composed membership in the performance community, I experienced a sense of something uniquely

meaningful. Richard L. Barr writes that performance communities help "represent the theatre as a place where 'imaginary communities' help us to imagine alternative communal forums" (Barr 1998, p. 16). If imagined communities, now manifested by computer-mediated communities, are becoming increasingly important, then performative online communities like ArtGrid serve a special purpose in fleshing out the evolving nature of Community (McConachie 2001, p. 38). "Virtual communities are social aggregations that emerge from the Net when enough people carry on (electronically mediated) public discussions long enough, with sufficient human feeling, to form webs of personal relationships in cyberspace" (Rheingold 1994, p. 5). These social webs of community were experienced first hand. We built art together and we also built a sense of collegiality, mutual respect, and even friendship.

ArtGrid (formerly Art on the Grid) was and is an online community composed of a loose collection of artists/computer scientists from disparate locations primarily in North America who meet virtually via the Access Grid video-conferencing network and form a performative community. The group was not the first, nor hopefully the last, virtual community to explore the idea of collaborative art and performance over the internet. The author's experience with ArtGrid offers insight into the open-source collaborative spirit of online performance communities. In fall of 2003 she was genially introduced to the online community of artist/technicians who explored collaborative art-making on the Access Grid at a Art on The Grid monthly meeting and quickly entered a community with an open, flexible dynamic based on cooperation, willingness to share information, inclusiveness, and an egalitarian balance between members.

Membership was independent of sex/gender or scholarly background, including local status or technical/artistic interests. It was much like Susan Bennett described: "Its present goal is to put on work from within its own community—a priority not as cliqueish as it may sound since anyone who hangs around is absorbed into that community" (Bennett 1990, p. 123). As a participant-observer, the author was integrated dozens of meetings and a half a dozen or more community performances, including the *InterPlay* series which began with Jimmy and Beth Miklavcic's single site online performance *Interplay*: *Intransitive Senses*. Once performances opened up to include other universities, the author was the local coordinator for University of Maryland's participation in *Interplay: Hallucinations*, *Loose Minds In A Box*, *Dancing on the Banks of Packet*

Creek, and *Nel Tempo di Sogno*, which included performing, writing, technology wrangling, creating media, and advocating locally for digital performance.

Within the Access Grid's institutional venue lies pockets of independent communication. Virtual communities form in which individuals relate to each other in terms of common interests. The ArtGrid group was self-defined online as:

> An ensemble of resources including multimedia large-format displays, presentation and interactive environments, and interfaces to Grid middleware and to visualization environments…These resources are used to support group-to-group interactions across the Grid…The Access Grid is now used at over 150 institutions world wide (Access Grid Project).[10]

The first ArtGrid meeting was held in 2002.[11] At the time, the majority of Access Grid users were scientists. In 2003, the arts were relatively new to the scene. There was a commonly acknowledged sense of being among a small group of artist/technologists who had gained early access to the Grid and were working together to bring art and performance into the developing 'Virtual Wild West.'

The ArtGrid list-serve connected individuals interested in showing graphics and utilizing the Access Grid to make art, later including performance. The ArtGrid list-serve was essential in the formation and maintenance of the group by allowing users to initiate meetings, reach new members, and send out calls for participation. In 2003, Jimmy Miklavcic, at the Center for High Performance Computing at the University of Utah, created a venue that was modeled after a Theater building. It contained meeting "rooms" including a dressing room, backstage, black-box, greenroom, and a café, so that multiple performances/rehearsals could occur at the same time, and as a nod to the continued goal of creating online performance.[12]

The community manifested through e-mail communication, monthly online meetings, and additional collaborative groupings which met to rehearse and perform together. The community changes over the years, fluctuating in membership as well as scale and frequency of community activities. Members of the ArtGrid consortium are from multiple universities and research institutions, over ten including but not limited to the Universities of Boston, Utah, Alaska, Maryland, and Chicago. Below you can see the group gathered in a rehearsal (the author and Paul Jackson

in Maryland, William Scott Deal at Alaska, Beth & Jimmy Miklavcic and staff at Utah, Perdu's Envision Center faculty and staff, Junko Simons and Robert Putnam at Boston). The meeting of these sites and their collective art events constitute and create the sense of community (see Fig. 10.1).

Each site ran Access Grid video-conferencing software on its own equipment configuration. Typically using Mac and PC platforms with peripherals such as web cameras, and audio pickups including echo-cancellation equipment, projectors, display monitors and more connected through a high-speed Internet 2 connection. A variety of different technology configurations is possible. From nodes with high-end conference rooms and CAVE environments with multiple seamless floor to ceiling projection screens, to the use of mobile nodes and Personal Interface to the Grids (PIGs) running in offices utilizing computer monitors as the main display, or off of laptops in makeshift networked performance spaces projecting on bare walls. Events and meetings occur within the frameset of art-technology-play created in a specific virtual room and time once the technology is working harmoniously.

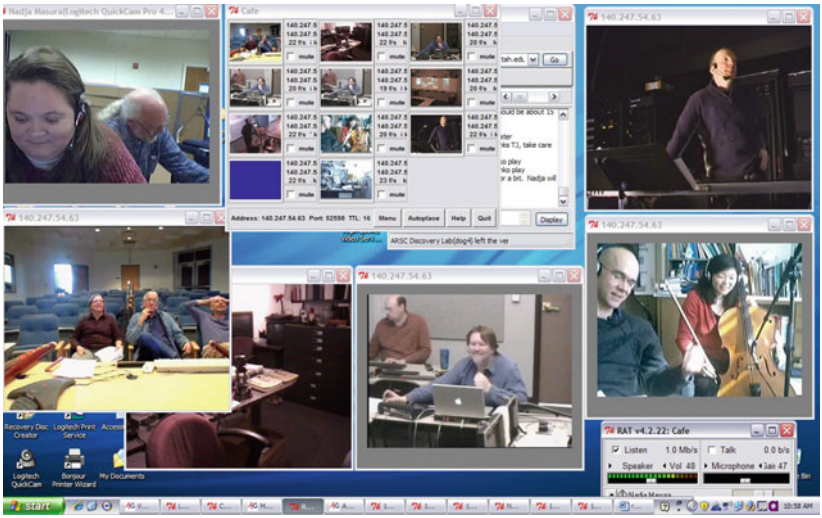

Fig. 10.1 ArtGrid members meeting on the Access Grid (*Source* Screenshot by author)

The experience of an Access Grid/ArtGrid meeting is one of multiple windows. Baz Kershaw's comment that, "every entry is an exit somewhere else" (Kershaw 1999, p. 143) directly relates to the experience of being in an Access Grid meeting. His idea of the "compression of global space" (Kershaw 1999, p. 193) is overtly present in these meetings. There are a multiplicity of places shown in Grid windows from potentially all corners of the globe in real-time. The real-time response through audio, visual, text, and shared data fosters a sense of "being there" (Kershaw 1999, p. 150). The technology patches together places forming a creative community undeterred by borders and oceans.

ArtGrid is a time-based community. The shared environment that creates and facilitates the community is spatially unique in that it exists through technology and inhabits a layered space. Constructing a sense of place is determined by both time and data rather than physical place. ArtGrid group is constructed around time. The interactions in the liminal space of the tech-joined community, were determined across time zones, by times set for both the group meetings (which constitute the community) and the events that the community creates. The call to meet "at the usual time" became a point of stabilization in the culture of the meetings. Although this may seem facile, it was not since access to the community was limited. Access to the community was limited to the availability of the technology and time for connection.

It is this gaining of *access* to the Access Grid which set this virtual community apart from the normative world because access to performance spaces, technology, and to the community itself were all tied together. Successful entrance to a community event was not guaranteed. Depending on the institution's logistical and bureaucratic setup, gaining access to Access Grid enabled facilities and equipment could be quite challenging. At the time, multiple-stream video-conferencing via the Access Grid was not available to all universities. Those that did have nodes also had significant resource restrictions which limited physical room access to the technology and therefore to the community itself.

These limitations bring to mind questions of access to technology as an indication of power. As Deirdre Heddon, and Jane Milling observed, "…the use of technology within devised performance inevitably prompts questions about the power of technology — who designs it, who owns it, for what purpose, what is it capable of, how might its uses be recontextualized, adapted and redeployed?" (Heddon 2006, p. 212). Lacking direct access to the technology means being outside that creative community.

Each entrance into the community was also bounded by the necessity of testing the equipment and software. In order to gain access to the community meeting, one had to engage in the repeated behavior of opening/closing/testing programs and equipment as one navigated to the predetermined virtual/temporal coordinates. Sometimes this repetitive behavior felt like a trial, even ritualistic, as if one were praying to the fickle ghosts in the machine, a passage into a special in-between place. The same framing phrases invoked the opening and closing of each session, marked the time of connections such as: "Can you hear me?" and, "Ok see you later."

Within this in-between or liminal space, group members took on a playful, egalitarian attitude aimed at open exploration of mutual interests in the technology and in art. It created a perceived shared environment. Local participants were talking to a woman hundreds of miles away who was responding as if we were sharing the space with her rather than just a video feed and likeness as projected together on a blank wall. The mutual awareness is immediate and compelling.

ArtGrid creates both community and place through process, creating a sense of communitas in performance and in the collaborative process.[13] Like Jill Dolan's examples of radical theatre creating moments of communitas experienced by the temporary community of the receptive audience, ArtGrid and its performances are both actual and liminal.[14] As a community manifesting through performance and the performance process in cyberspace, it is doubly situated between states of being and becoming, imaginary and real, virtual data and real bodies/places.

The ArtGrid group is a performative community in which open, enthusiastic, and creative collaboration exists in an environment that exhibits the characteristics of play and communitas; "a liberation from normative constraints…and being acutely conscious of membership in some corporate group such as a family…clan…tribe" (Turner 1982, p. 44). While (at the time) there was no set ideology, each participant brought with them an enthusiasm for collaboration, some form of aesthetic skill or enjoyment, as well as genuine interest and variable abilities for working with the developing technology. Communitas is also an instant of pure potentiality that accurately describes the sense of shared energy and the creative impulses of a virtual community in performance (Turner 1982, p. 44). ArtGrid performances can be likened to grassroots and community theatre practices in that they are of a specific place, "the Access Grid," and they are created within the community.

The positive collaborative model of the ArtGrid community offers participants a sense of communitas, or peer bonding within the shared virtual space outside of normal life. In general, despite the time spent focused on testing the technology; the energy, attitude and language used by the group reflected a candor and a playful openness demonstrating enthusiasm and camaraderie. Playfulness and play were a large part of the community and its artistic processes, but it was also serious play.

Jimmy Miklavcic's *InterPlay* series title combines the ideas of "play" and the "internet." As a nested community, or substrata of the larger Access Grid system, playful work is part of a larger plan to obtain user/developer input and is key to continued artistic and technical development. Collaborator Scott Deal explained, "Art on the Grid is an organization of visual, media, and musical artists who are developing productions on the Grid in order to explore its strengths, weaknesses, and inherent potential." In casual conversation after technical testing, Miklavcic remarked casually after technical testing on the importance of artistic or deep play: "Who defines the technology? We do. Pushing ourselves, we force the technology forward into the future." Yet, despite the serious intent, the language used by the group reflects a candor and playful openness demonstrating their enthusiasm, good will, and camaraderie. Many online performers have noted a feeling of what Roy Ascott refers to as a sense of "connection and…close community, almost intimacy…quite unlike…face-to-face meetings" (Ascott 2003, p. 6).

The ArtGrid community itself was composed of "a village of chiefs" where every member was an essential part of their local technology unit which monitored their local Grid node (or PIG). Ideally within this environment, each member was equal and given the same opportunity to present materials and agenda items for meetings as well as to assume a position of prominence by heading/coordinating collaborations which they proposed. Because the technology was relatively new, it was new to everyone thus creating a feeling of communitas based on the voluntary exploration of a technological art frontier. Within the community, the role of the presenter/project-leader was respected, and the efforts of the Utah group in establishing meeting times and agendas created additional feelings of warmth and respect for them as leaders.

At the core of ArtGrid is the process of creating collaborative performances. These online performances are best viewed in terms of collaboration and can also be discussed in terms of the practice of devising.

The core idea of devising or creative collaborating is a range of practices centered on the communal creation of a performance text as part of the group process. It is a, "…mode of work in which no script — neither written play-text nor performance score — exists prior to the work's creation by the company" (Heddon and Milling 2006, p. 3). The importance of devising is not only the performance of original material, but the very process of its formation.

> Devising is variously: a model of cooperative and nonhierarchical collaboration…a means of taking control of work and operating autonomously… a commitment to total community… the negating of the gap between art and life… the erasure of the gap between spectator and performer… an escape from theatrical conventions… an expressive, creative language; innovative; risky; inventive; spontaneous; experimental. (Heddon and Milling 2006, p. 5)

The cumulative accretion process that constitutes each performance product was mostly nonhierarchical and emanated from multiple directions. In many ways, it demonstrates a new and continually developing model of creating performance and being in community. *InterPlay* and other ArtGrid performances are often risky, innovative, and spontaneous. They aesthetically and conceptually mixed literary, musical, visual, and spatial elements. The experience is like being inside an ever-evolving process of creating theatre.

The openness in which creative ideas were exchanged and performances could be built by ideas, thoughts, words, music, images, and conversations occurring between members is impressive. Everything is built on something else. The interplay of color and sound, and of course performers and video technicians alike were continuously make staging adjustments in response to visually layered performance space and each other.

Each participant adds, responds, and creates in direct response to the inquiries and contributions of others despite, and sometimes because, of the physical distance between them.[15]

In a sense online communities such as ArtGrid can be seen as utopias. The term utopia means "no place" (Dolan 2005, p. 7), and cyber-space or virtual communities exist as perceived place, a virtual nowhere consisting of data and interaction where there is no actual "there, there." The Access Grid video-conferencing tool creates a liminal place existing on the

threshold of multiple locations. Like a utopia, this place exists because we both perceive and mutually desire it to. Like an optical illusion or synchronicity, cyber-place (as termed by Knott) is perceived, and therefore exists—through doing, participation, and process.

In her book, *Utopia In Performance*, Jill Dolan likens utopia to process, or making theatre performance, and the experience of communitas in the temporary community formed with an audience. Dolan's use of Victor Turner's, "social world is a world in becoming," directly relates to the experience of participating in ArtGrid as a nascent evolving tech-art-performance community. This idea of equating the process with the representation, formation, and even materialization of a positive fictional place (or utopia), is essentially what is in play within the process of cumulatively and simultaneously creating performances and perceived place through ArtGrid.

These concepts of utopia, community, and place materialize through actions which support the combined interests of the individual members. InterPlay was more than an increased or geographically diverse cast. It was a dispersed creative pool including set, directors, musicians, artists, actors, writers, technicians, and more all working as equals toward a unified goal. In a very real sense, Digital Theatre as seen in this online performance community, modeled positive approaches for building community through shared interest-place.

From the digital puppetry of GSRT mixing performers from different locations onto one body silhouette, to the global networked choreography of *World Wide Simultaneous Dance* and the multi-site collaborations of the ArtGrid community it is evident that distant places can be linked into one performance place, cyber-place. "Cyberplace possesses…strengths 'real' places do not possess…its nature is to connect people…" (Knott 2001, p. 15). These cyber-places that materialize through shared interest also form community around and through the process and experience of building performance.

These and similar works of Digital Theatre demonstrate the sense of presence inherent in linked casts and creative teams, and the value of multi-site productions and cyber-place-communities. They offer models for collaboration across the globe, mapping out possible utopias, or happy no-places. Through these unique unbound places imaginative new ways of working together are born as ideas and become the foundation for community actions. Networked performance creates a sense of Place and a potential model for positive societal change.

Notes

1. "The search for homeplace is the mythical search for the axis mundi, for a center, for some place to stand, for something to hang on to" (Lippard 1997, p. 27).
2. "Landscape has provided a basis for locating new communities of nationhood in a kind of collective cultural memory of belonging" (Pearson and Shanks 2001, p. 39). This is Pearson and Shanks' rephrasing of a statement by Thomas (1994, p. 143), cited earlier in their book on page 11.
3. "Someone belonging to an area, emotionally or physically tied to their homeland" (Lippard 1997, p. 33).
4. Cyberspace is actually composed of other digital environments including VR experiences. "One speaks of worlds, rooms, domains, fields, environments, architectures: words that help to conceive computational reality in the familiar terms for definable spaces" (Rayner 2002, p. 351).
5. Anthony P. Cohen writes, "Community is that entity to which one belongs, greater than kinship but more immediately than the abstraction we call 'society.' It is the arena in which people acquire their most fundamental and most substantial experience of social life outside the confines of the home" (Cohen 1985, p. 15).
6. "CMC may also provide an environment for individuals to shape the community to which they choose to belong. Networks such as the internet provide an environment for such a social construction…" (McIsaac et al. 2000, p. 154).
7. "As internet enthusiasts unceasingly observe, the on-line environment creates a new option for 'being there' in the accomplishment of many tasks" (Knott 2001, p. 15).
8. "Approximately 60 dancers in 12 countries participated in World Wide Simultaneous Dance …The countries represented were Argentina, Australia, Canada, China (i.e. Hong Kong), Germany, India, Israel, Italy, Kenya, Slovenia, South Africa and the United States. In the United States, dancers participated in numerous states, including California, Connecticut, Florida, Massachusetts, New Mexico, New York, North Carolina and Virginia" (Knott 2001, p. 12).
9. "*World Wide Simultaneous Dance* used the internet as a site" (Glesner 2002).
10. While the technology exists in many countries (especially the United Kingdom, Japan, Canada Germany, and Australia), the dozen or so active members of the group are primarily located in North America (including the notable participation of Boston, Utah, Ottawa, Alaska, and Maryland).
11. Initially, the group may have developed out of or in relation to the ADaPT (or Association for Dance and Performance Telematics) begun in 2001

which involved the universities of Ohio State, Arizona State, Wisconsin, Utah, and California at Irvine. (Association for Dance and Performance Telematics) (see also Bromberg and Birringer).

12. As far as I know, thus far, the *InterPlay* group is the primary user of the Access Grid Theatre venue (despite encouragement from Miklavcic that others should use the space.
13. "Such work speaks directly to the creation of community via CMC [computer mediated communication], as the development of standards of conduct is in a sense the development of a moral code, a system of values, akin to the ones that arise and are revised in most social formations…" (Jones 1995a, p. 6).
14. The sense of community, of belonging, was a utopia summoned by theatre: The "performance's effect on the audience as a temporary community, perhaps inspired by communitas to feel themselves citizens of a no-place that's a better place…" (Dolan 2005, p. 15).
15. For example on how ideas traveled between sites, germinated, married, and mutated; in *Loose Minds in a Box*, the title was the seed for contributions. Among other things volunteered, I contributed a poem written some time ago which read: "Once there was a girl, she left, taking with her a small, blue box, in it, was the world." The poem inspired visual ideas contributed by multiple sites, which lead to dance, blocking, and other performance staging including physical and virtual boxes, all of it—the total performance including original music and dance—was bound by boxes or frames.

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CHAPTER 11

Digital Theatre in Action: The Builder's Association

The work of the Builder's Association stands as an exemplar of what Theatre can become in the twenty-first century, both aware of its times and allowing each member to have a voice. Their work eloquently expresses the feeling of being immersed in a continually developing structure within which technology is the major conduit for interaction. Technology is both the message and the means for expressing their understanding of the human condition and crafting that understanding into the fully realized theatre. Harry Sinclair, Builder's Association collaborator writes:

> Theater began to make sense again for me. Now that so much of our lives is spent using technology to connect to people who are physically distant, it feels like there can be a new kind of validity to live performance, a form that's about being in the same space. It feels more and more rare and special to gather together, audience and performers, in one room to share a story. Marianne's work gives her and her collaborators the context in which to discuss the meaning and the feeling of living with digital technology…. (Sinclair in Jackson and Weems 2015, pp. 329–330)

Dramaturgy and shared information are matters which shape both the performance and the production process of an actively engaged performance community. It is the integrated use of digital technology in

N. Masura, *Digital Theatre*, Palgrave Studies in Performance and Technology,
https://doi.org/10.1007/978-3-030-55628-0_11

the production that makes this possible. Their work exists at the intersection between a collaborative dramaturgical process and a thorough understanding and implementation of technology.

Backstage at *Elements of Oz* (2016, directed by Marianne Weems) the author sat down with the Builders, including director/dramaturg Marianne Weems, visual dramaturg, designer James Gibbs, and assistant director Sarah Krohn, and later via e-mail actor/writer/dramaturg Moe Collins. This chapter will draw a clarified picture of The Builder's understanding of dramaturgy, their collective process, and the timeliness and living value they instill in their productions through their innovative approach to theatre which combines technology, dramaturgy, and collaboration.

Staging Technology

The Builders' productions give the sense of seamless integration of thinking and experiencing life and human interactions through technology. Audience members experience an uncanny accuracy in their recreation of technological experiences embodied onstage. As a subject, technology becomes something that can be viscerally sensed as both an element of uncertainty and a modern necessary, a force that shapes who we are and who we are becoming. It is not exactly a character, but a condition of being in which every character and situation is immersed and occasionally struggles against. Krohn said, "The Builders' overall work is very Humanist. I always take away a real interest in the human. And in some ways, technology (or the institution of technology) is the antagonist—not to say the villain, but to say the force against which or through which the conflict is delivered."

The Builders use theatre as a testing-ground, a laboratory to explore the current stage of the human experience. According to Sinclair, they "…describe the experience of modern lives mediated by technology" (Jackson and Weems 2015, p. 312). In Weem's words, they explore and manifest the "…grey area between 'real' reality and mediated reality… Theatre is actually a great place to experiment with that—we have the live bodies, and we can create the mediated world around them—how do they bleed into each other?" (Marranca 2009, p. 178). Within their theatrical testing-ground there is a commitment to relevance and social practice, but also a prescience and connection to real-world technological innovation.

Weems asserted that an awareness of our own cultural moment is the impetus for integrating technology in their productions, "…our stories are inevitably bound up with some kind of network. Technology comes as part of the story-telling package because people's lives are complicated by it, and because those are the tools we use" (Patel 2009, p. 53). This awareness of our cultural moment extends into sensing and questioning rather than offering a clear moral. She self-identified their work as belonging in Social Practice or "staging the relationship with technology."

Issues emerging out of their ongoing conversation with the nature of technology-mediated living include power, place, and connection. Gibbs explains:

> We have this love-hate relationship to it. We can't really live without it, and we don't want to! …Technology does so much for us in our lives, and it is so pleasurable, and yet we still struggle with it being this huge conduit; the arena through which we transact our supposedly human lives, it's a huge tension.

This tension expresses itself in terms of power. According to Gibbs, "Power is interesting…it's an interesting thing for stories to adhere to." As an outcome of technology, within the depiction of power *place* slides into *placeless-ness*. Weems said that, "communication has been mediated in many, many ways in the last twenty to fifty years and that sense of place and placeless-ness." "…What we were looking at in *Continuous City* was whether people could have a virtual hearth…connecting virtually to a place that they could virtually come home to."

In *Continuous City* (2007, directed by Marianne Weems), Weems also introduced an idea which has been associated with the Builders' work, a sense of prescience (Jackson and Weems 2015, p. 232). In *Continuous City*, the videophones depict connecting the main character, a global traveler seen through video projection with his daughter, locally onstage. This illustrates the idea of prescience that Weems associates with the Builders' work. Weems talked about how the experience they created onstage through the use of multiple prerecorded videos became what we now take for granted in daily life. She said the group is often being accused of, "seeing five minutes into the future." She answered this point by saying: "I don't think it's like we are sitting around looking at a crystal ball. I think… [you just need to be] awake and aware, you know, watching…what's coming."

Clearly, the Builders are awake and aware. They continue to be actively engaged as savvy tech users, engaged in conversation with tech innovators, like the founders of Twitter. They even craft their own "artisanal technology"[1] to fulfill technical production needs. All of this is in the service of answering the question, "How do we stage what's happening now?"

Staging *with* Technology

Staging an idea that renders the experience of our mediated lives is achieved through all of the visual, dramaturgical, and performative elements working together to create a sort of super-stage-picture, which extends the playing space. For the Builders the technology *is* the show. As a reflection of the tech-savvy world in which we live, their productions are saturated with technology. Designer Gibbs defended their approach to including technology onstage saying, "There is hardly any more tech on that stage than there is in my apartment."

Their form of theatre making is fully tech-integrated. Weems said, "I have no interest in talking about technology separate from the projects, because the technology is our tool to make the show… It's something that is always there at the most basic level of DNA." Sarah Krohn jumped into explain the extent to which digital technology is central to their staging. "It's our scenery. It's our costumes. It's our lighting." Moe Angelos later explained that technology is present in the very beginning and throughout the rehearsal process. "This helps integrate media into the live performance. Of course, it can be just plain beautiful and that is legitimate. But it is so much more satisfying when the tech is necessary to tell the story."

Production Example: *Elements of Oz*

At the premier of *Elements of Oz*, the difference of a Builders show became immediately apparent when a company member came downstage to make the preshow announcement, "Please leave your phones on! In fact, take out your phones and turn your ringer up." Audience members tested the "Ozvision" app necessary to watch the Augmented Reality (AR) effect. This consisted of checking for an animated tornado appearing on/over the illustration from the original Frank M. Baum book

the Wizard of Oz reproduced in the playbill. The production demonstrated not only the integration of new technologies into theatre and our modern lives, it also made visible the frames and processes we use to create our entertainments. It was a production about process.

The central concept was the process of making movies, magic, and story. In a sense, the narrative of *Wizard of Oz* was a familiar container for the examination of the necessary dividing line between the machinery of entertainment and the very real human need for fantasy and escape into a place of belonging. Throughout the production, multiple technologies of movie-making met with Internet and social media (the selfie-stick became Glenda's wand). The stage picture was layered, where cameras/cameramen and actors had equal weight in the stage composition, and this was split again with screens. Overall of this, Augmented Reality animations occasionally appeared via audience members' phones.

Like filmmaking, the stage action occurred out of narrative order. It was choreography of screens, people, cameras, and plastic flowers. The audience saw the actors in their places on a gurney that appeared to be nothing more than Dorothy's bed through the camera as they watched the cinematographer composing the shot. In the musical number "Somewhere Over the Rainbow," a male Dorothy sang against a sepia-toned filmic backdrop of the farm and a cacophony of voices (choirs, lounge singers, and even the film) joined in from the audience's cell-phones, filling the theatre space with sound. Later, phones show the tornado move across the blended virtual and real theater space. The same technology later brought snowfall to the poppy fields and filled the proscenium and beyond with flying monkeys. In these augmented theatre moments, everyone was looking everywhere. Then, as the animations end, the audience's arms with phones in-hand came down in unison.

The movie-making process was always present. The actors in the play depicted movie-actors, playing the beloved Oz characters Dorothy, Tin Man, Scarecrow, and the Cowardly Lion. Instead of these characters being primary elements of a cohesive narrative arc, working actors were shown as significant in themselves. One convention of the production was that there are only three "actors." These played multiple Dorothys and all of the other characters almost interchangeably. The audience watched the actors wait. Technicians called out "Hold, sorry." Glenda smoked onstage (off camera) while the male Dorothy is in front of the screen recording his action. Phones giggle; it's the munchkins. On screen Mike Wallace transformed into the Wicked Witch. An actor put striped sox on her arms,

curling her hands to create the witch's toes curling under the house. Someone calls, "Mark stage," and, "Roll playback," and the audience watched playback footage.

The "Door to Oz" scene was a stunning, technical staging feat. There was a transition between actors playing the same part as the audience moves between the world of movie-making and pure cinematic fantasy. They staged the moment of movie's transition between grayscale and full color (from Kansas to Oz). Here they see one female Dorothy dressed in grey gingham, inside the grey farmhouse. She is swapped out for the male Dorothy costumed in bright blue gingham. He opened the door and walked out among the chromatic explosion of bright plastic flowers, taking the audience with him/her via all the entertainment framing mechanisms of doorways, flats, screens, cameras, and devices.

The audience moved with the actors between the worlds of movie-making and the purely created product of that making.

In addition to depicting the filmmaking process, the other major shaping element of the production was the collective dramaturgy of the cultural significance and interpretation of *The Wizard of Oz*, via the heteroglossia of the Internet. Connections were made between the film and economic policies, and also the gay culture that has self-identified as "Friends of Dorothy." This was seen most strikingly when Dorothy first turned around and had a mustache. The choice of using a male actor was a reference both to Judy Garland's actual occasional male stand-in and her status as a gay icon. She was, "transported to a place with diverse people, making a new family from unusual dancing men" as illustrated by the tin-man grinding with his axe in a gay dance club.

There was also social concern for the health and welfare of the bodies of movie-actors. We saw them as real people who needed to rest, and learned about the accidents on set such as facial burns caused by the green copper-oxide makeup, broom-flying accidents, Garland's drugged state, and asbestos snow. In the end we reached the Emerald City to find a tender consideration of what it means to long for a place called home. For the Builders home is New York, "…the end of a thousand yellow brick roads," a place where you make a family for yourself (Weems et al. 2015).

Oz's face was two screens tall and imposing, until replaced by the human form of a "good man, but a bad wizard." It was made clear that Hollywood is the best wizard of all. And just like that, the show ends,

and the Builders Association ensemble stepped out for their curtain call revealing their own form of magic to the audience in the talk-back.

Audiences were fascinated with the Builders' process. Participants in the open discussion noted that the Augmented Reality animations allowed the audience to balance the theatrical space, allowing for performance on both sides of the proscenium. It was suggested that the audience was given a degree of agency in creating the stage picture.

This Oz was technologically fantastical, but was it escapist? The show dwelt in the unmaking and making of things; the staged deconstruction of the finished art forms of Film and Theatre. There was a certain fluidity of both movement and meaning; a staging of absence indicated by the interchangeability of the actors at the cost of character and story. These familiar elements of entertainment are replaced by information into which *self* cannot as easily dissolve. By deconstructing theatre and movie-making into their components, it becomes difficult to dissolve one's self into story. Here information is seen as valuable and having meaning, only through connection. Empty references found on the net, which may or may not have intrinsic meaning, are woven together and this process of searching and collecting, forming a new dramaturgy of everyday life and the current culture. Reflective of our times, everyone was actively involved in the creation of meaning; the audience was choosing points of view and the cast was gathering information and shooting video.

As impressive as the production was, the team's collaborative process is even more compelling. It was organic, complex, and nuanced.[2] The uniqueness of the Builders Association's collaborative approach can be seen throughout in this technician-integrated staging, and it carried over into the curtain call when the whole ensemble of nine technicians, two directors, and three actors took a curtain call together. Every one of the members contributed to making art for the present, essentially making a model of theatre performance and pedagogy. What is striking as essential about the Builders Association is their process of making meaning together by creating an intense sense of a collaborative ensemble. They are building their own tech Oz, or utopia, and at the same time demonstrated that there is no place like their own creative home (Fig. 11.1).

Dramaturgy (Re)Defined

Most of the tasks of the classical dramaturg deal with the interpretation of a text for a particular performance. The role encompasses acting as a thinker and advocate (Cattaneo 1997, pp. 13–14). Dramaturgical tasks

Fig. 11.1 Stepping through the door to Oz. Rehearsal image of *Elements of Oz* (*Source* Photo by Marina Levitskaya, copyright The Builder's Association [used with permission by M. Weems])

often relate to script analysis, script research, translation, and selection, but also looking for emerging patterns, finding similarities, recording the journey, and bridging the mediums within the theatre (Chemers 2010, p. 136).

Clearly the practice centers on the script. As Joseph Danan notes, the shift between preexisting scripts created by playwrights and the creation of devised performance texts alters the nature of dramaturgy. In practicing the art of constructing a show (Danan 2014, p. 6), *dramaturgy* now becomes a hub and connector for multiple ideas, themes, roles, and mediums. Dramaturgs are a bridge between the ideal and the real, and delight in the unending process of exploration which is at the core of everything; the search which is our purpose and our passion.

This sense of dramaturgy involves making sense of disparate materials. According to David Williams in his piece on dramaturgy in Collaborative Devising:

> [The dramaturg] is a co-deviser centrally implicated in the process of shaping and sculpting a compositional poetics of performance. [The

> dramaturg] …draws attention to the different elements in circulation and at play…is involved in the mapping of evolving relations between form and content. (Williams 2010, pp. 197–198)

Here the concept of dramaturgy exists as a facilitator to the voices sharing information and the ideas that are being assembled between them in mid-air. Dramaturgs Katalin Trencsényi and Bernadette Cochrane wrote that, "Dramaturgy is now considered to be the inner flow of a dynamic system" (Trencsényi and Cochrane 2014, p. xi). It is a very open-source, or networked way of looking at making theatre. In the context of the Builder's Association that is immersed and enmeshed in technology, this makes absolute sense. The Builders Association's work satisfies the conditions of *New Dramaturgy* as it is:

- **Post-mimetic**—as seen in their approach to acting and open-set staging,
- **Intercultural**—in their choice of intercultural subjects such as international call centers in *Aladeen* and mega-cities in *Continuous City* and
- **Process-conscious**—demonstrated in their collective dramaturgy (Trencsényi and Cochrane 2014, p. xii).

The new interpretation of the role of dramaturge makes her central to the creation of a production (Trencsényi and Cochrane 2014, p. xiii). The role is now the gravitational center around which the work and the ensemble cohere.

There are three key ideas about New Dramaturgy which are included in the Builders' process:

- **Making Connections:** Dramaturgy is multifaceted and requires attention to an imaginative complexity, "involving processes of connectivity—between materials, words, bodies, sounds, spaces, times, concepts…" (Eckersall et al. 2014, p. 21) according to scholars Peter Eckersall, and Paul Monaghan.
- **Demanding Flexibility:** Dramaturgy is, "critically creative, always working itself out, always being redefined by the dynamic connections and exchanges" (Eckersall et al. 2014, pp. 19–20) according to Eckersall, Monaghan, and Beddie.

- **Providing Structure**: Dramaturgs, "help develop the architecture and aesthetics of the work unique to the given production" (Trencsényi and Cochrane 2014, p. xiii) according to scholars Katalin, Trencseny, and Bernadette Cochran.

Mediaturgy

Because The Builder's work is so intensively visual and technologized (Eckersall et al. 2014, p. 21) and the ideas they are staging are so continually nascent, their praxis is a dramaturgy of technology, or *mediaturgy* (Marranca 2009, p. 179) explicated by Weems as "…the idea of design as dramaturgy…how we stage media to create meaning and vice versa" (Jackson and Weems 2015, p. xii). In their book, Weems further explains mediaturgy:

> The design springs directly from the idea and expresses it in a way that is different from a lot of other theater because what's onstage is the idea embodied in many different forms—video, sound, architecture, staging, etc.…the screens, the network, the space…is both the material and the metaphor in each production. (Jackson and Weems 2015, p. 384)

Weems and Gibbs both act as what she calls "outside eyes" to the formation of the production. Gibbs acts as visual intelligence, translating technology into stage-able components. As they tackle each new digital metaphor and meme, they ask "…how can we stage what is living inside this idea?" (Jackson and Weems 2015, p. 395). Bonnie Marranca's term *mediaturgy* also applies to process. "What you describe is a concept of dramaturgy that moves beyond the play into an entire construct of research [and] collaboration…" (Marranca 2009, p. 180).

Weems made it clear she loves doing dramaturgy, claiming that as *her* role—that love is what she took from her experience at Wooster Group into creating The Builders Association. Dramaturgy "…helps inform where I think the project should go." The greatest physical proof of Weems' and The Builders' love of the dramaturgical process can be seen in their book *The Builders Association: Performance and Media in Contemporary Theater*, co-authored with Shannon Jackson, which gives the reader a window into the messy, beautiful complexity of collaborative dramaturgy, and devising with technology. Through it, we see their complex processes in action. Perhaps one of the most useful elements, in addition to archival

sketches and writings, showing ideas evolving is the listing of the multiple ways Builders participated in each production and a sampling of the research materials collected for each show.

The Builders practice collaborative dramaturgy (Eckersall et al. 2014, p. 23), with Weems in the leadership position as the master dramaturg, The Builders' organic and iterative process renders both the written performance text and the design components of each production. The performance text emerges from the research, sifting process, and sorting work of dramaturgy. In this form of directing and theatre making, dramaturgy does everything. Weems said, "In our work, the concept behind each production informs each part of it, so the content drives the form. The content is often drawn from a current cultural or political moment… The concept is developed through research and then ripples out to include more and more collaborators."

Words and Images

Traditionally, the script lays down the bones for a performance. For the Builders, the story is conveyed by multiple means, writing is only one of the framing elements (Danan 2014, p. 3). The performance text, both verbal and visual, is "crafted during rehearsals" (Jackson and Weems 2015, p. 361). Writing co-exists with story boarding in creating a shaping structure.

No longer the primary source of inspiration, the text is engaged in the same active process of iteration, or "building and unbuilding" as the other elements in the production process.[3] They found they needed, "…a writer who was really a team player and who understood that their work was just going to be one track in the entire project and that we really needed text to get from A to B. We weren't there to serve the play."[4] Angelos and Gibbs have emerged as core writers from within the company who were, in Weems' words, "…able to produce text that more or less fit exactly what it needed to do." Gibbs said, "Whatever the text is in these shows is what emerges from this process, and some of the process is just Moe and Marianne and myself working on it. And some of it is with everyone in the room and it's going back and forth."

Because the Builders Association's dramaturgy encompasses design, the visual designer has a special role as co-dramaturg or translator, which could be likened to co-director. Weems has spoken about Gibbs' ability to, "Articulate and make the concepts behind the shows."[5] The visual

dramaturg is able to stage "The idea inside this complex arrangement" (Jackson and Weems 2015, p. 384).

Angelos gives us further insight into the collaborative dramaturgical/writing process as she discussed how the seeds of the performance text are assembled. Discoveries of raw text are considered for their possible use as performance source material. In addition, they make use of experts and onsite field trips such as visiting homeless encampments for the production of *House/Divided*. Angelos said, "Internet research definitely ends up in the shows…like in *Oz* when I was nattering on about the [*Wizard of Oz*] facts in the selfie-cam." In some cases, internet videos were justified even they appeared "crack pot" opinions. One other major shaping element of the productions was the inclusion of research findings of the ensemble on the *Oz* movie's cultural significance and interpretation as discussed on the internet (Fig. 11.2).

Fig. 11.2 Gibbs and Weems assist in staging Dorothy's bed (Angelos). Rehearsal image of Elements of Oz (*Source* Photo by Kay Alexander, copyright The Builder's Association [used with permission by M. Weems])

Collaboration and Process

The final area of innovation of the Builders' process is their approach to collaboration where technology and dramaturgy merge. Theatre writer Robert Viagas suggests there are three types of collaboration: Partnership, Leadership, and Collegial. In a sense, The Builders Association's works are a marriage between Leadership and Collegial forms. They are both "web of relationships among artists of roughly equal status, who pool their knowledge and creativity" and yet are still "organized and commanded" (Viagas 2006, p. 2), in this case by the outside eye of Weems, the director and fellow collaborator/dramaturg. The Builders Association continually creates the incredibly difficult to achieve egalitarian situation of *Collegial Leadership*.

In their process there is no need for clarity about order or the overt hierarchical structure of elements, "What came first—actor, design, script, sound, or stage set? By having all of these dimensions interact during daily tech rehearsals, ideas from one domain triggered ideas in another" (Jackson and Weems 2015, p. 270). This way of making media-integrated new works is intensely creative and intellectually stimulating as all roles and mediums work together.

The uniqueness of the Builders Association's collaborative approach can be seen throughout the productions, from the technician-integrated staging to the curtain call when the whole ensemble of nine technicians, two directors, and three actors appear together. What is striking about the Builders Association is their process of making meaning together. In this process they create an intense sense of ensemble observable in how they interview and speak as a group. Perhaps this is because their creative and technical roles overlap leading to the joy of contributing one's whole creative self.

Many of the roles in the ensemble become hybridized such as writer/actor, dramaturge/designer, etc. This multiplicity is not due to scarcity, but is an open-minded form of collaboration, one which allows for the wholeness of individual artists who have multiple skills. This is natural, as many theatre artists are both visual, literary, and increasingly research and technology literate. It seems a natural choice for current theatre making. David Williams describes this sense of open contribution which goes beyond traditional roles, titles, and hierarchies:

> Performers in devising contexts are active makers, composers. So they need to be engaged physically, imaginatively, intellectually, in thinking through processes of exploring and translating ideas, materials, scores, structures, images, rhythms, and relations. In other words, they are doing ongoing dramaturgical work. (Williams 2010, p. 198)

Their book documents the production process and makes it evident how much work is interdisciplinary and crosses roles (Jackson and Weems 2015, p. 368). "Just as actors had to learn the skills of operational coordination, the technical operators and designers cultivated the sensibility of actors" (Jackson and Weems 2015, p. 93). Actor Angelos confirmed this, saying: "Sometimes I am also made to be a technician…In *Oz* for instance…I had a selfie stick with a live-feed camera stuck on it and this functioned as a narrator voice… In pretty much every [Builders] show, there is some part that has been devised by the performers and whole characters have been developed in this way." Technician Gibbs' gives the flip-side of this perspective, "From the start of the collaboration… there were no issues around what the role of an architect or a designer was. We were all collaborators. We were each using our skills in the strongest way" (Jackson and Weems 2015, p. 148). Sarah Krohn added,

> As someone who spends a lot of time in the regular *Theatre* world, I've observed that there is a lot more transparency in this process and a certain egalitarianism that isn't standard in theatre. The actors receive the rehearsal reports… They attend the tech meetings, so…it's really a company. The rewards for a sometimes slightly tedious process, are that you do get your voice heard and you do get to be treated meaningfully in the thing that's being done…

The name "Builders Association" has grown to encompass its whole approach and technique. They are building together as equals.[6] There is a sense of openness and exploration in the process which allows for growth and blending across the mediums. "That's what was so great about the collaboration; we didn't know the boundaries of what we did know how to do and what we didn't know how to do. We crashed in certain ways and found that we were able to contribute in bigger ways than we originally had thought we would do" (Jackson and Weems 2015, p. 148). It is a living, breathing process of building not only the work, but the skills that it takes to discover and implement the ideas and format of each work as it arises. Constructing from within.

The Building Process

The Builders' Process has been described as organic, collaborative, iterative, and, according to Jackson and Weems, "incessant conversation" (Jackson and Weems 2015, p. xi) which is space and information rich. "In the process of creating intermedia performance, there was no clarity (and no perceived need for clarity) about what came first – actor, design, script, sound or stage set. By having all of these dimensions interact during daily tech rehearsals, ideas from one domain triggered ideas in another" (Jackson and Weems 2015, p. 270). Each part moves forward in context with those around it from within the process of discovering the whole.

In an interview early in The Builders history, Weems said of her collaborative approach, "I basically try to set where we're going, and then I invite the company to bring in whatever they think might be appropriate, and most of it isn't, but I also see that as part of building an ensemble. If you throw your net wide, somebody's bound to bring in something that will spark the next idea" (Frisch and Weems 1997, pp. 501–502).

Audiences and scholars alike are fascinated by their process which is often obscured by its living, shifting nature. What follows is a breakdown of the Builder's production process based on conversations, previous interviews, and their book. (Each stage may be repeated or the order altered, and it should give a sense of the flow freely adapted for each production.)

Building a Show

0. **What Came Before**.

In response to the analogy of the Builders process being akin to a plant growing, Weems laughed and suggested that the first stage was "the compost." "A lot of it, weirdly, comes from the project before."

Example: When asked Why Oz? Why now? Weems responded:

> "The way we came to that is that we were talking about Depression Era entertainment and how the *Grapes of Wrath* was like this kind of Social Realism that could not be more harsh, so what was the other kind of Depression era entertainment? Escapism. And what was the most powerful example of that, *The Wizard of Oz*." To which Gibbs added, "And I think that, after *House Divided* [2011, directed by Marianne Weems], we were

ready to play a little bit more. It's like Oz is an opportunity to play… the Oz story has the history of being produced with whatever the current high tech is. L Frank Baum put on a show with tinted slides. And the movie is Technicolor, so it's kind of a natural place to play.

1. **Gathering the Team:** Weems said: "The bottom line is that the work is done well when every collaborator commits to being in the room and in the conversation for as long as it takes to make the show" (Jackson and Weems 2015, p. xi). A great deal of emphasis is placed on finding writers, digital artists, and actors who could work collaboratively.
2. **Conceptual Phase:** Weems said, "I bring an idea to the table, and discuss it with James." Ideas are open to debate; everyone coheres around an idea or concept. Weems said, "The way the pieces come together is I come up with a central idea, often drawn from a contemporary issue or topic, and I bring it to my core collaborators to kick around. Then additional new collaborators are found depending on what the idea requires."
3. **Gathering:** They hold a retreat, and workshop for ten days at Garage. Within this meeting stage there is a constant discussion between elements including[7]:

    - Dramaturgy research[8]: Gibbs: "We come in with a lot of ideas of things that might work" Everybody contributes information and researches.
    - Tech: Visuals begin with designers sketching on their feet: "Set-building was not an autonomous process…with a tech week," but integrated into rehearsal (and research, composition phases), "every week is tech week" (Jackson and Weems 2015, p. 46). Weems:

> It all happens at the same time. Really we get into a room with all the equipment and the performers and the writer and manager and the dramaturges and try to just sort of get an idea on its feet so it really is sort of a group, you know a surgical process where everybody tries to go here around one small idea and see if we can find some kind of language for it. It's often a very specific moment.

5. **Finding the one (theatrical) moment**. An essential stage of the process is identifying the essential moment. Gibbs said, "The rest of the show gets built out from a moment that works. It seems like the process is to sketch, find some little thing and then build out from that."

   Example: Weems: Well for Aladeen it was when I was doing the research in Bangalore. I walked up and down the isles and I heard the operators doing their job. When I got into the control room and heard both sides of the conversation it was like, "That is the show!"
6. **Asset Accumulation** includes research, media, text, staging, and testing.
7. **Culling and Shaping (By the Master Dramaturg/Director and her Visual Dramaturg/Set Designer):** Gibbs describes the process: "The process is trying something, seeing it, and then retreating, regrouping, trying it again" (Schechner 2012, p. 56).

   When asked about discovering what materials are of value in the research process Angelos replied:

> Oh, if only all of it was gold! But much starts in the panning process and falls away. At the beginning, anything that catches my attention I would consider valuable. In the end, Marianne is the "decider" and is in the position to put things on the chopping block. The rule I follow is to just say yes until it becomes clear that something is not working. Many times, we sketch ideas in rehearsal and they fall away because they might not work as well in real life as they do in our heads. The opposite can also be true, that what seems dodgy on the drawing board comes to life with much greater dimension once it is made.

When asked about the process of thinning content she added that it is:

> Lot of intuition and a lot of trial and error. We keep sketching the ideas and then going back to the script or structure and rearranging or amplifying or cutting to try and make sense of the narrative. James is particularly skilled at this and since I am often on stage, it is harder for me to also wear the structural hat from there. It is a good position for composition (improvising dialog) but lousy for seeing the bigger picture.

Regarding the writing and framing process, Angelos stated,"At some points [Weems] was listening from the outside and I was listening from the inside, a performer writing for performers. She would take that material and tailor it to the larger vision. Gibbs, working with Weems in rehearsals, remained on the outside advocating for what parts of the text were critical, what needed to stay in order to keep the structure afloat" (Jackson and Weems 2015, p. 361). Her aesthetic sensitivity and acumen as a dramaturge is translated into a pervasive sense of leadership toward the running of the ensemble as its director.

8. **Final Staging and Tech Fixes:** In the post-show talkback, Gibbs indicated that a major portion of tech/visual work happens at up to 80% of the production process.
9. **Reception and Outreach:** This consists of a test audience and performance, touring, and ongoing fundraising for the non-profit.
10. **Compost:** Begin again.

The Builders' vision of Oz in *Elements of Oz* inhabited and epitomized their process. *Elements* presented the unmaking and making of things. They staged the deconstruction of the art forms of film and theatre. This led to a certain fluidity of both movement and meaning. This included the interchangeability of actors, using three Dorothys (including a male) by which we saw that the characters were not primary, while the working cinema actors, and actors in general, were elevated as significant in themselves. This Oz was fantastical and overtly visual, but not escapist. As in our current reality, it's difficult to escape without a story to lull us into an acceptance of fantasy. By deconstructing theatre, and movie-making in this case, into its components, it becomes difficult as an audience member to dissolve one's self into story. Perhaps that's the point.

Here the audience is involved in creating points of view via Augmented Reality, which allows animations to appear if by magic over the set and actors. The cast is gathering information and producing new visual angles by controlling projected video via selfie cams. Everything is multivalent and multidirectional, and although the audience watches with the safety of knowing that the pieces will eventually come together into the movie we all know and love, at times it feels as if we are bathed in a sea of information and made captains of our own meaning.

In addition to staging the entertainment process, there seemed to be a staging of absence. Instead of familiar elements of character, story, and seamlessly cohesive set, these standard elements of entertainment had been replaced with Information. Information that exists as disassociated empty references found on the internet, that may or may not have meaning in themselves and only gain meaning through connection and context; gathering them together is the enactment of dramaturgy. It is the process of searching for and collecting information, which now forms the new dramaturgy of everyday life in current culture. As a model of digitally integrated theatre, the Builder's work is authentic, constantly evolving, and culturally on-target.

There is genius at work. Weems' aesthetic sensitivity and acumen as a dramaturg is not only able to link concept, process, and production, but it translates into a pervasive sense of leadership. As the ensembles' director Joe Melillo said, "Marianne Weems' leadership balances these developmental sensitivities while fearlessly challenging and editing herself and her colleagues to get the right artistic balance" (Jackson and Weems 2015, p. 331). She is a primary example of the new Director Dramaturg.

The Builders' collaborative dramaturgy process welcomes multiple forms of contribution and questioning of our context in the world. It allows room for intellectual, aesthetic, and possibly personal growth of her colleagues. Weems both demonstrates and fosters dramaturgical intelligence. There could be a great pedagogical benefit in looking at the Builders' process as a model for multidisciplinary cross-media experiential learning. There is a strong parallel between the value of the Builders' model of collaborative devising and many of the ideas proposed in Nancy Kindelan's inspirated work *Artistic Literacy*.[9] There is also a strong overlap between *the active construction of knowledge* expressed as the ability to, as Kindelan says, "…innovate, and think creatively… creative projects that often address society's big question. The inquiry process is complex, multidimensional, and involves the continual evolution of ideas" (Kindelan 2012, p. 136) and the dramaturgical process (Eckersall, Monaghan, and Beddie in Trencsényi and Cochrane 2014, p. 30).[10]

A dramaturg at heart, Weems continues to learn and to teach those around her. Weems embodies the collaborative dramaturgical ethos. When asked what gives her joy, she replied,

> The process of working with this group of collaborators is central to my work as an artist. I am not the kind of person who can sit down alone and

> bang out a script or a painting. The opportunity to play with others and with the material makes this work what it is, and makes it all worth it.

This is Digital Theatre making at it's best on multiple levels, including pedagogically and as an incubator of new artistic ideas, modes, and expressions of being human in this moment of time.

Notes

1. "Any time anyone said the word seamlessly, technical whiz Joe Silovsky knew that he had a new design challenge. He removed himself to another part of the warehouse and, within several hours, returned with a handmade prototype…" (Jackson and Weems 2015, p. 32).
2. "In the process of creating intermedia performance, there was no clarity (and no perceived need for clarity) about what came first – actor, design, script, sound or stage set. By having all of these dimensions interact during daily tech rehearsals, ideas from one domain triggered ideas in another" (Jackson and Weems 2015, p. 270). "No one element stands in isolation…to create this type of work requires moving each part of the piece together" (Jackson and Weems 2015, p. 279). This way of making media-integrated new works is intensely creative and intellectually stimulating as all roles and mediums work together.
3. "…does not follow the tradition of playwright as primary author" but instead creating "textual material" (Jackson and Weems 2015, p. 209).
4. They also found that playwrights would become too attached to "every word."
5. Marianne Weems in Richard Schechner, "Building the Builders Association," 41. "The designers have a very immediate and lively conversation with what is happening in the world. It's a very specific kind of dramaturgy because we are reaching into a digital realm and then staging it" (Jackson and Weems 2015, p. 393).
6. "I mean, that's why we called it 'The Builders Association;' because that's how *The Master Builder* was created…was in this idiom. So there was this architect there who was there, and had a hammer and build the house from scratch over six months and Dan Dobson our sound designer was there and he lined the house with sound triggers and you know it was a very organic, iterative process and so there doesn't seem to be any reason to move away from that. I don't even know how else people do it! [All laugh.]".
7. Elsewhere their process has been described as "different circles of collaboration" a "set of inter-articulating groups, working loosely in small

cells towards the realisation of an overarching vision," necessitating a "committed process of ongoing communication" (Lavender 2010, p. 9).

8. In conversation, Weems said there is an "…unspoken agreement…that dramaturgs are around to be the smart ones. They're the ones who carry all the arcane knowledge of text analysis and theatre history and contemporary performance practice and theory, stuff that's seen somehow as beyond the ken and purview of actors and directors and playwrights and designers…This is insulting and unfair to everyone involved for obvious reasons."
9. Ideas like: integrated media performance, social responsibility and global awareness, theatre as a tool to understand self and others, mapping new methods of applied learning, increased adaptability in ambiguity, and teamwork (Kindelan 2012, pp. 64, 139).
10. "…promotes the kind of agile creative negotiation increasingly required of an effective dramaturgical intelligence. There is a key role to be played here by training institutions, where embodied, multi-stranded and interdisciplinary learning…" (Eckersall, Monaghan, and Beddie in Trencsényi and Cochrane 2014, p. 30).

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CHAPTER 12

Conclusion

In these productions, visual and perceptual boundaries blur between illusion and reality in compelling new ways. Digital Theatre gives us the ability to stir the space of spectacle, extend, illusion and merge the body of the performer into the playing space and set. It creates interplay between theatrical roles, and between performers and audience. It offers a sense of a networked global place and creates new connections between people. As a theatrical form, developing in a liminal creative space between disciplines and techniques, Digital Theatre offers us a new way to embody the theoretical and social concerns of our world. Through aesthetically incorporating digital media in the processes of artistic questioning, we can take moral ownership of the technology that shapes our mediated lives.

Digital Theatre is a hybrid art form of great potential, gaining strength from theatre's ability to facilitate imagination and create human connections and the ability of digital technology to extend the reach of communication and visualization. The dual presence of the "live" actor and mediated digital elements creates performance events that allow us to better understand, respond to, and shape our changing world. Digital Theatre shows us the mutability of our world by joining together multiple places as stage-worlds shift, dissolve, and animate in ways which alter the setting and our perception of the theater place itself.

In this work, we explored the actor performing beside their digital other, the nonhuman actor. The similarity and contrasts between the

N. Masura, *Digital Theatre*, Palgrave Studies
in Performance and Technology,
https://doi.org/10.1007/978-3-030-55628-0_12

nature of the living human actor and various digital "others" (media images, avatars, Artificial Intelligence, or robots) allows the audience to meditate on how these relationships are developing in our society. Through sharing the stage with video, animation, and robot performers, the human actor plays "the other" to the digital, swimming against the current of technologic consumerism's pull. This dual presence of body and digital information helps us to examine our mutual interdependence and development.

In theatre involving robots, the metal stands in direct contrast with the flesh. By showing the body and its other, Digital Theatre expands our awareness of our bodies in relation to the hyper-real. In *Jet Lag*, we can see the media in the act of creating hyper-real fantasies of the body's location. In *The Tempest*, *Dinosaurus*, and *The Skriker*, digital puppets extended the size and shape of the actor's body, allowing the characters to bend and morph in nonhuman ways.

This relationship between the human body and digital other is continued and complicated by the interplay between the actors and screens which create layered and screen-characters through the use of hand-held screens and projectionist costumes. These Digital Theatre works transform the body's silhouette and visual image, merging and transforming the body into something other than purely human or purely digital. Not only is the actor's body transformed or adjusted by the digital. Possibly so are our conceptions of character. In *The Magic Flute*, hand-held screens were playgrounds for lively digital puppets. Working within the screen frame of the physical world as carried by pages, they became characters made up of light, flesh, and screen. In GSRT's *Making of Americans*, digital technology blurred the lines between body and screen, creating projectionist costumes which in some cases mute (or even erase) the forms of onstage actors in favor of the characters projected on to them.

There is another element that is implicit in this arrangement of digital and human in bodies in place evidenced in Digital Theatre. Imagination is the creative spark of innovation utilizing whatever physical or conceptual tools are available to the artist(s) creative impulse to create something new. As New York theatre critic Michael Billington said, "For theatre to turn its back on new technology would be as if it had rejected electrically controlled lighting when it came into play in the 1880s" (Billington in Shaw 2012). Theatre facilitates the human need to communicate what we

see and know in the world around us, and to open up to new possibilities created by the active thought process. Theatre fulfills the impulse to imagine our futures and things yet unverbalized, unseen, or unformed.

Theatre remains a powerful vehicle through which new thoughts germinate, bloom, and are released into the audience's shared consciousness. This is the core reason for Digital Theatre: to express what could not be expressed before, in a continuing spirit of conceptual, communicative innovation that is implicit in Theater itself.

A spark cannot be dissected. The synergy of all the art forms possible in Theatre is a truly beautiful thing. The digital element in production is not secondary, but integrated in the very matter—it is an actor. It is not the frosting on a cake, but the batter, the mixer, and oven that forms it. As flexible tools of human expression, digital formats can potentially facilitate combining all the elements essential to the art form of synthesis. Brenda Laurel once wrote of Theatre as a metaphor for creating Multimedia. Now it is more appropriate to think of the two art forms as siblings working in parallel and occasionally combining in a synthesis of great works which multiply their shared potential.

Do I think all Theatre should be digital? *No.* Nor do I think all Theatre should be Realism, or about cats, celebrate love songs, or contain heavy use of the color burgundy. Theatre is about the act of expressed creation; it is life lived, and imagination enacted. The artist should use whatever tools are available to the work of art they envision, and re-envision as it unfolds before them. To ignore a whole set of creative tools is to impoverish yourself, the audience, and the artwork itself. Personally, I would rather see a production, especially in a learning environment, fail partially for the use of technology, than know that it was never considered as an option. The core of theatre is imagination. Paint with whatever brushes, whatever colors speak to you and your audience.

Today Digital Theatre techniques have become more commonly integrated into theatre-making in many venues. Locally, I saw the world premiere of *One Stone* (2017, by Trevor Allen, directed by Elizabeth Craven) about the life and thoughts of Albert Einstein. It contained filmic and limited computer-generated projections. It also contained a live actor, video, a violinist, and puppetry.The inclusion of each of these types of mediums, allowed them to shine through the contrast with each other. The low-tech, low articulation, even tactile nature of the puppetry came to the forefront in contrast to the living human body and the slick filmic

projections. This delivered a beautiful sense of the poetic and a sense of the universal human experience.

Digital projection of WWII footage was used to give historical context and demonstrate scientific concepts such as space-time. Although technology itself was not a key character in the sense of most of the examples listed in this book, and it was the puppetry which captured this audience member's imagination primarily through contrast with media and human elements, it demonstrates that even in community theatres the desire to communicate through all our available tools is a strong impulse; a creative instinct that should not be ignored.

Concluding Thoughts

Writing a history of the present for print is like chasing fireflies, their nature is to be in motion. Digital Theatre is a moving target. It is the future and present continually disappearing into the past. Yet there is value in tracing the glowing trajectories of Digital Theatre productions, because there is something brilliant in the recognizable desire of practitioners to create something new that speaks of this moment. Theater itself is always evolving, and with the introduction of digital technology the pace is exponential.

There are many things left unexplored in this book, but each ending is another beginning. There are many worthy entrees that did not make it into this book, because it is a paper object which exists at one point in time and I am just one researcher, whereas the field is vast and ever-expanding.

There can be no conclusion for an evolving art form. This is only a brief stopping place. However, there are three key words I would like to share with the reader. Access, Participation, and Context are words which directly relate to the relationship between Digital Theatre and the world today as we further integrate technology, performance, and communication into living.

Theatre explores what it means to be human, both universally and specifically. It asks us to consider who we are and what we are becoming. Likewise, technology challenges our ways of thinking about what has inherent value and what makes a good human. Given this book's discussion of these two conjoined elements, I have often wondered what does a human being need to thrive intellectually, socially, and culturally today?

We need Access, Participation, and Context. These three unifying core ideas keep recurring, again and again, and have made themselves apparent.

Access: We need equal access to the technology through which communication and knowledge sharing/storing and physical construction can occur. People without the tools and connectivity lag behind, and economic class disparities between the makers and users of software are vast. If we want to create equality among peoples, everyone should have access to this technology.

Participation: The tremendous impact of social media, gaming, interactive public events together with the relative drop in live theatre attendance indicate this era's need for performativity and participation. Performance is now embedded in our culture. Social media as a cultural force, is a tremendous tool for expression and invention of the self. It shows our deep desire for involvement and participation in a global culture of identity through contributing, collaborating, and performing self in front of others. Sitting in the audience is no longer our collective style; we want to get up onstage and perform too. Perhaps this should be incorporated into existing and new theatre models or into new model collectives based on "pay to play" shared participation/audience membership. Experiments in effective audience engagement, often seen in interactive art events, that interweave these inclinations to exhibit and experience self through participation, are one way to move forward.

Context: Context is necessary to view one's self in perspective so that one's actions can matter. It engenders greater integration of the individual with society. The Internet is a valuable democratic, and sometimes random tool. Its algorithmic search is appropriately paired with university and educational processes that exist due to the human desire to organize information through differentiating disciplines. These processes allow us to better understand who we are, who and what structures and systems are around us, and who we as individuals can become.

These three essential ideals combine to create an agency for creative innovators, students, and people in general. These are the shared goals of both Theatre and human life. In valuing the living performer and acknowledging our interdependence with the communication tools we create, we embrace our past, present, and future together.

Epilogue: Future Forward

Let me leave you with some brief thoughts on technology, theatre and being human, and education.

Technology

Technology continues to move forward at an ever-increasing pace, galloping ceaselessly into the future it is becoming/generating. Consumer products continually bring new entertainment and communication advances to the masses, this also brings expanded performance technologies and creative possibilities to practitioners without access to University or Corporate resources. In 2003, I visited my first VR lab at the University of Maryland, it was funded by Naval testing of sonics on torpedoes. In May of 2011, I attended the first group viewing of Stanford's VR Lab and watched Jeremy Bailenson demonstrate his work on VR, haptics, and how virtual reality experiences can alter real-world behavior.

In the demonstration of the lab, several participants were given the first-hand VR experience of walking over a simulation of a deep pit on a narrow plank and those were asked to jump in, experienced real anxiety. Here high-tech-visuals and vibrating floors, mixed with low-tech aids (a cardboard tube served as a pointer) and "get it done" attitude. His experiments show how real-world human behavior and attitudes can be influenced by VR experiences, such as: using less paper after using a VR chainsaw to cut down trees, increasing attractiveness increases friendliness, and how mimicking and swapping faces similar to theatrical masks makes the other more likeable, and, as Bailenson said in conversation, "…makes him look more like you, which is a powerful personal and social tool." Apparently, increased confidence in the VR world carries over or as Bailenson said, "…increases confidence in the real world." It is evident that avatars could be intensely powerful tools for expressing self and encountering the world and others in new ways, without physical limits and social stigmas.

Bailenson also said, "Everything is on two years lab time, next year it's going to be in your living room"; meaning that the rate of progress is so fast, that cutting-edge labs like theirs are seemingly only two years ahead of the consumer marketplace. People are beginning to experiment with Wii and Kinect for interactivity (motion sensing and tracking) for performance and art-making. At the Maker Faire (May, 2013) I met a man

who had repurposed a consumer gaming system to create interactive art, allowing participants to paint with light and sound. Intelligent phones are being to create augmented performance in which data is layered on top of localized settings. Everyday there is more tech being made, adapted, and repurposed.

Theatre and Being Human

Pope Benedict XVI said that, "New technologies and the progress they bring can make it impossible to distinguish truth from illusion and can lead to a confusion between reality and virtual reality…and risk indifference toward real life" (Pope Benedict XVI in Blascovich and Bailenson 2011, p. 241). Because the pace of digital evolution is ceaseless, it is our job as technologically enabled creatives and educators to document, try to understand, and positively influence the path(s) it takes, by honoring the human element throughout this evolution. So that whether our *Midsummer's* sprites are played by animations, holograms, or robots, we are still aware of the human value of live people enacting the bard's (ultimately) humanistic words.

The reason for creating Digital Theatre is as plain as the plays which are being written today to explain our human situation. Digital dramaturgy, distributed authorship, and devised works created around relevant places, people, and ideas continue to grow as ways of forming plays and performance texts. Well-recognized plays like *Water by the Spoonful* (set in a chatroom support group), and Broadway hit *Dear Evan Hansen* by Steven Levenson (enmeshed in the world of social media), demonstrate our cultural shift toward tech-integrated living and necessitate technology integrated into production. Also, the issues explored in Digital Theatre are becoming real-life.

In June 2014, I met John Denning whose Princeton AI team had just received news that they had beaten the Turing Test measuring an Artificial Intelligence's ability to fool a human user into thinking it was human 30% of the time. By posing as a thirteen-year-old Ukrainian boy, "Eugene Goostman," the computer program was able to convince users that he was a "real boy" and therefore, by the rules of the test, like a code Pinocchio, he became real. The importance of this historic moment, the first passing of this Artificial Intelligence test, was flavored by the programmer's candid statement that it was *not* as much to do with the program's improvement (it had been running for years before it passed), but that

the human users whom the bot was mimicking getting dumber, which allowed the program to pass the test.

A few factors were at play: creating a believable character, as well as changes in online behavior and access. Denning said, "Yes we made changes to the bot…knowledge base, new extensions to engine, discourse analyzer, etc., but my hunch is that our bot's personal/character, a zany, thirteen-year-old boy who lives in Odessa, Ukraine, became far more believable over the years." According to Denning, the team's approach to passing the test was to create a bot with a strong personality (characteristic discourse) rather than an extensive knowledge base (scope of information).

The bot appeared more human because the world had changed around it. Denning said, "the expectations of the world had changed…interacting with others from around the world had become commonplace." It was not thinking more like a human, but acting like one, imperfect.

The bot's language was written down to the level of an average user, dumbing down of language. Denning sees a direct connection between Improvisational Theatre and AI, as it was building a character which made the bot more acceptable to humans (and able to pass). Denning said, "Acting is like AI. Convincing the audience is not a trick. It is the Suspension of Disbelief. (Both are in an) agreeable mode. There is an agreement between the audience, director, and actors. Ours was theatre."

Education

There are two keys to our current state of human development Access (to information) and Context (to understand ourselves in relationship to the world, or active knowledge). When we speak of technology, we speak of access, of information, of speed. These are great things, it is true. But when we follow Google's almighty Algorithm's authoritative reach,[1] we surrender depth, we give over (and devalue) the process of scholarship: the time and the patience required to do real research through deliberate choices, via paths down dusty corridors of books, and to process that research through languid deep reading, and silent contemplation followed structuring and restructuring of elements into a symphony of thought.

Theatre and the humanities give us context. The Liberal Arts approach is described as a framework which teaches us how to learn, by extension, Theatre could be seen as an ultimate example of multiple modes

of learning and disciplines combined. If a liberal arts education "…increases our capacity to understand the world, contribute to it, and reshape ourselves" (Stross 2009, p. 195), then it follows that we should look to Theatre. At the ATHE (Association of Theatre in Higher Education) 2013 conference, "Theatre as a Liberal Art" panel, Thomas Gressler called Theatre "all the liberal arts combined" as an exemplar of the liberal arts. Nancy Kindelan's *Artistic Literacy* points out that Theatre requires and encourages the development of a complex and flexible mindset which is analytical, creative, and highly communicative. In conversation, Gressler said that Theatre people, "work with complex ideas, and through multiple systems of knowing." Theater learning is hands on, immediate, collaborative, interdisciplinary and takes place in an active learning environment.

Theatre be positioned at the hub of these disciplines as a connector and conduit for idea exchange between them with digital technology as a facilitator, tracker, output mechanism, a container for deep play. Digital Theatre departments on a college campus can act as a hub, or framework for constructing meaning exchange and engagement, across campus, and across disciplines.

Digital Theatre can be a placeholder for STEAM projects which might occur as learning tools for audiences and participants. It can act as an incubator, a staging ground, a magical "(what) if?" and a four-dimensional tool for white-boarding for visualizing and verbalizing what is not yet formed.

One such example is *The Tree of Life* (project/performance), at University of Kansas. This has been described as a "dialogue between artists and scholars" (Reaney, "*The Tree of Life–Origins and Evolution*). The first year took the form of a semester-long faculty colloquium focusing on interdisciplinary research, and the second part took the form of an original collaborative performance: *Tree of Life–Origins and Evolution* (April 24–25, 2009) (Lied Center of Kansas). The performance itself was in three acts devoted to cultural, scientific, and artistic themes.

The goal of their process was to create a roundtable of sorts, an egalitarian collaboration between disciplines. In addition to the sciences, the project involved dancers, the KU Wind Ensemble, actors, and the Turtle Island String Quartet. Participants talked about the project (a devised performance) as "evolving." One can see the rich palette of the arts at the service of important scientific and ecological ideas. Theatre artist/technologist Mark Reaney was among the collaborators from the

performing arts. In a video interview on the site he talked about bringing together the cultural tree of life and the scientific tree of life in this project (so that culture can succeed). In addition, he also talked about using Quest3d to create "more detailed and dynamic" VR scenic elements than in previous productions, and using new projection screen techniques. Through his informed view as both a technologist and an artist, we can see how science and art merge and complex ideas are given form via the tree metaphor.

There are benefits from a science or STEM point of view. When you add the Arts to make STEAM, there are significant benefits to the project or learning endeavor, including increased public acceptance of science, cross-pollination of ideas between scientific and creative knowledgebases and also new potentialities of thought enlivened by the contact between the modes of thinking. Consider the potential strength of any learning or other product born of the creative drive found in making Theatre with the Humanity's gift of creating active learners, and the Science's knowledge and the reach of digital tools. It is a time to rethink education, multiple systems, and priorities.

The idea that science, humanities, and arts could be joined through discussion and performance of a central unifying concept, serving as a conceptual test or thought incubator is compelling. One might even liken this theatrical or performative output to a 3D printer of ideas. The entire process of whole brain integrated type of thinking across disciplines could be imagined as a living mechanism for conceptualizing, growing, and manifesting the new. With this, we could collectively explore and create a better, more sustainable, and humane future.

More than ever, as we contemplate a return to normal and as mediated interactions like teleconferencing and VR conferences become the new normal, we need to strengthen our commitment to giving everyone Access to knowledge and the tools of survival, provide Context so that we can gain wisdom about the how self and whole function together, and value Performativity, or involvement and the drive to live and express our human gifts of emotion and imagination. As we refocus and rethink audiences, we need to also give thought to how we want to rebuild community. The Arts can help.

Note

1. *Planet Google* by Randall Stross talks of the almost divinely revered Algorithm at the center of Google's quest to make everything known. It is a seemingly humanitarian mission: "Do no evil." But knowing that a computer algorithm and not human scholars are at their core of ravenous hunger for data (taking picture of every street corner, and digitizing every book, collecting photos, accessing business documents, emails) can cause a creeping sense of the computer other (Stross 2009). Apparently, this is no longer their motto.

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