A NEW DRAMATURGY FOR DIGITAL TECHNOLOGY IN NARRATIVE THEATER

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A NEW DRAMATURGY FOR DIGITAL TECHNOLOGY IN NARRATIVE THEATER

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Many contemporary theater practitioners and scholars agree that the investigation of the relationship between digital technologies and theater is an important yet relatively unexplored topic, both in theory and practice. A debate regarding the fundamental nature of performance and more specifically the quality of liveness in the face of media has been the dominant conversation on this topic. While the liveness debate is important, it is not the only angle from which to approach questions of specific types of technology and performance. This dissertation takes a different approach, while taking the liveness debate into account. This dissertation examines relevant historical and contemporary theory and practice in the area of digital technology in theater, and then describes a new method of practice and analysis in the form of a new dramaturgy. This new dramaturgy is then applied to examples of selected work and also used hands-on to create a two-part case study to try out its usefulness in practice. The first part of the case study is a production design created with the new dramaturgy in collaboration with undergraduate students within the context of a special topics course. The second part of the case study is a full-scale production by a professional director, incorporating elements of the production design created in the first part of the case study.

CHAPTER 1

INTRODUCTION

1.1: Overview

Many contemporary performance practitioners and scholars agree that the investigation of the relationship between digital technologies and theater is an important yet relatively unexplored topic, both in theory and practice. A debate regarding the fundamental nature of performance and more specifically the quality of liveness in the face of media has been the dominant conversation on this topic. While the liveness debate is important, it is not the only angle from which to approach questions of specific types of technology and performance. This dissertation will take a different approach, while taking the liveness debate into account. This dissertation will examine relevant historical and contemporary theory and practice in the area of technology in theater, and then describe a new method of practice and analysis in the form of a new dramaturgy. This new dramaturgy will then be used hands-on to create a two-part case study to try out its usefulness in practice. The first part of the case study will be a production design created with the new dramaturgy in collaboration with undergraduate students within the context of a special topics course. The second part of the case study will be a full-scale production by a professional director, incorporating elements of the production design created in the first part of the case study.

Because dramaturgy functions both as a method for practice and critical reflection, it is an excellent choice as a tool for working both to create and understand story-based theater that incorporates digital technology in meaningful ways. Dramaturgy

is “an overarching term for the composition of a work, ‘the internal structure of a production,’ as well as [...] a word for the collaborative process of putting the work together” (Turner and Behrndt 17). This means that dramaturgy can apply to a text or script, any element of production, as well as the process of creating the production. Dramaturgy has its roots in the literary analysis of dramatic texts. The German playwright and theorist, G. E. Lessing, is considered to have founded the discipline of dramaturgy with his publication of the *Hamburg Dramaturgy* in the late 1700s. Lessing’s theoretical work drew on Aristotle’s writings on Greek Tragedy, and provided a framework for analyzing German theater of the time. Today, dramaturgy has been expanded (largely due to the influence of Bertholt Brecht) to include the whole of the theatrical experience as subject for analysis as well as support the creation of new works (Turner and Behrndt 38-69). This dissertation will focus on the development of a dramaturgy for use with pre-existing scripts. Expanding this dramaturgy to include methods for other genres of mainstream performance such as musical theatre, new works and devised works is an objective for future research.

Narrative theatre (discussed below in Section 1.3 and in Chapter 3) is the focus of this dissertation, due to the lack of work produced in this genre incorporating innovative uses of digital technologies. Theorist Arnold Aronson sounds a powerful call to action in his article “The Future of Scenography”:

> “[...] if the aesthetic and cognitive vocabularies of such [digital] technology were better understood it could be better translated to the stage in such a way as to be accessible and meaningful to the contemporary audience: the audience of the immaterial image and immanent space. Until that divide is bridged, theatrical design will remain mired in an increasingly anachronistic form” (Aronson 87).

There are many possible reasons for this void. One possibility is the primacy of the script and the ephemeral qualities of narrative theatre. Aronson suggests this type of theatre is centered on the text, and playwrights are not interested in or aware of digital technologies (Aronson *Looking* 67-80). Part of this theory makes sense; after a theatre production is over, what can be passed on to another theater artist, even one who did not see the production, to engender further creativity? The playscript is the tangible artifact. So while it may be the case that a new movement among playwrights to incorporate digital technologies in meaningful ways into narrative theater would be a solution to the lack of engagement with digital technologies we see today, this is not a particularly actionable solution. Because narrative theater is also dependent on dramaturgy, if a new dramaturgy were to exist that could provide a roadmap for the creation of narrative work with the meaningful incorporation of digital technologies, this might open the door for new types of expression within this genre of theater. While it is rare for American theaters to employ a dramaturg, the director commonly takes on dramaturgical work, with contributions from the designers and performers as well.

t is in response to Aronson's challenge that I embark on this dissertation. The task is to create a new dramaturgy that engages with our new ways of seeing, recognizing the influences of digital technology on culture, without sacrificing the rich tradition of storytelling in the theater. To some it may seem that I seek to meddle with an established genre of performance, if not destroy it. That could not be farther from my intentions. Narrative theatre, however, appears to be an enticing problem space, and therefore I aim to enrich this particular genre with the work of this study, hoping to add more tools to the creative toolbox of its practitioners and theorists.

1.2: Defining Scope: Performance Studies and Theater

The relationship between theory and practice in performance is often uneasy, and to clarify some of this tension an understanding of the development of the discipline is helpful. The academic field of performance studies had its birth in the early 1980s at two American universities, New York University and Northwestern University. These two schools represent the two major strains in performance studies in the US, described by Jon Mckenzie as “Eastern” and “Midwestern” (47). The emphasis of Eastern performance studies has been more anthropological in nature, while Midwestern performance studies has been more oriented toward communications studies. NYU’s performance studies department is within the Tisch School of the Arts and does include some theater practice in its curriculum. Northwestern’s performance studies department is within the School of Communication and is more influenced by oral interpretation than theater practice. An oversimplification, that nevertheless has some truth to it, is that NYU performance studies scholars are interested in the body, while Northwestern scholars are interested in the voice.

However, it should be noted that neither branch of American performance studies is exclusively concerned with theater practice. Performance studies is a broad field, and includes the study of all human behavior as performance, even the performance of the self for the self, with no outside audience. Theater studies, which does focus on theater practice, has been considered a separate academic discipline. Performance studies programs generally culminate in PhD degrees, while theater studies programs culminate in MFAs in acting, directing, playwriting, dramaturgy, and so forth. These differences emphasize theatre studies’ relationship to a craft, and performance studies’

relationship to a theoretical, philosophical discipline. However, it is primarily scholars in the field of performance studies who have been concerned with the liveness debate and questions of technology and performance. The lack of focus on this topic in theater studies may be a contributing factor that helps to explain the relative absence of innovative work created in mainstream, narrative theater with digital technologies.

It is important to note the focus of the performance studies field is not theatrical performance but the much larger concept of performativity, which predates the formation of performance studies departments by about twenty-five years. The term 'performative' was first used by British linguistic philosopher John L. Austin in a series of lectures given at Harvard in 1955. Austin described "performative utterances" as satisfying the following conditions:

> A. they do not 'describe' or 'report' or constate anything at all, are not 'true or false'; and
>
> B. the uttering of the sentence is, or is a part of, the doing of an action, which again would not normally be described as saying something. (Austin 5)

Austin is referring to speech acts that literally perform what they say, such as 'I pronounce you man and wife' and 'I name this ship Queen Elizabeth' or 'I bet you five dollars the Braves will win.' Austin is careful to point out that these performative utterances are usually accompanied by actions (placing the wedding ring on the finger, smashing the champagne bottle against the ship, the shake of hands that seals a bet) but that the actions alone do not make a complete performance; the performative speech act is a necessary component (Austin 5-9).

The work of Canadian sociologist Erving Goffman, and in particular his book, *The Presentation of Self in Everyday Life* (1959), is also an important influence on the field of performance studies. Goffman did not use Austin's term performativity, but instead expanded the definition of the term performance. The similarities between Goffman's meaning of performance and Austin's performativity are confusing, and the lack of clarity about where the general term performance (with all its meanings) ends and performativity begins persists today. Goffman describes performance as follows:

> A "performance" may be defined as all the activity of a given participant on a given occasion which serves to influence in any way any of the other participants. Taking a particular participant and his performance as a basic point of reference, we may refer to those who contribute the other performances as audience, observers, or co-participants. The pre-established pattern of action which is unfolded during a performance and which may be presented or played through on other occasions may be called a "part" or "routine." (15-16)

It is clear that Goffman is not referring to a theatrical performance at all, but is instead using the term performance as a metaphor for types of everyday social behaviors, to highlight the presentational quality of these behaviors. Goffman goes on to use the metaphor of the mask to describe the relationship of self and society: "[...] everyone is always and everywhere, more or less consciously, playing a role [...] this mask is our truer self, the self we would like to be" (19). This conception of self and society presupposes the existence of a "true" self that lies beneath the mask or masks, an idea that has been contested by more recent theorists such as Judith Butler. Butler's work in gender studies reveals basic elements of self, such as gender, as constituted by performance, rather than existing intrinsically outside of behavior (Butler 3). Goffman's work, however, reflects the time in which he wrote, the mid-twentieth century, in which

social roles were perhaps more rigidly defined, and truer, private desires really did lurk beneath a mask of convention and politeness.

Another important influence on the contemporary field of performance studies is the work of British cultural anthropologist Victor Turner, and in particular his book *The Ritual Process: Structure and Anti-Structure* (1969).Turner analyzed African rites and rituals to develops the concepts of liminality and communitas. Liminality is understood as "[...] neither here nor there; they are betwixt and between the positions assigned and arrayed by law, custom, convention and ceremonial" (Turner 95). Communitas is understood as a more sacred version of community, achieved when individuals shed some of the structure and hierarchy of society in particular situations, leading to a temporary leveling of status (Turner 96-97). Both liminality and communitas open up to anthropological investigation specific ephemeral experiences in cultural practice that might otherwise be closed to analysis. Like Goffmann's study of everyday life behaviors, Clifford Geertz's work provides another good example of the investigation of these types of cultural practices that might be difficult to understand without the application of a performance studies perspective.

American anthropologist Clifford Geertz's work, including *The Interpretation of Cultures* (1973), is an important influence on the field of performance studies. In Geertz's well-known thick description and analysis of a Balinese cockfight, Austin's concept of the performative utterance is applied to analyze the betting systems and cultural codes of the cockfight. Geertz develops his concept of 'deep play' to make sense of the cultural factors contributing to the participants' choice to take part in a

game of such high stakes and understand why so much would be risked over a bunch of angry roosters. Again, a behavior (the betting in the cockfight) that might have remained opaque to an outsider is understood through the use of anthropological methods and the concept of performativity.

The strong influence of anthropology and the interest in ritual and 'everyday' behavior helps to make clear why performance studies theorists like Richard Schechner, Peggy Phelan and Erika Fischer-Lichte interpret theater history as originating in rites, rituals, and festivals like ancient Greek celebrations, the Catholic mass and mystery plays. Schechner makes a similar claim:

> Ritual is one of several activities related to theater. The others are play, games, sports, dance and music. [...] Anthropologists with good reason, argue otherwise, suggesting that theater - understood as the enactment of stories by players - exists in every known culture at all times, as do the other genres. These activities are primeval, there is no reason to hunt for "origins" or "derivations" (Schechner *Performance Theory* 6).

In truth, there is very little about those primeval activities we would recognize in our theaters today, unless of course, we are really talking about performativity and not theater. It is a much sounder argument to claim that performance or performativity, and not theater, are primeval activities.

Performativity is, however, related to a specific type of performance practice, not theater but performance art. Performance art of all types (especially action art and Fluxus work) began in the 1960s and was reaching its apex by the 1980s when the performance studies departments were established. Erika-Fisher Lichte makes this connection more explicit:

> Theatre experienced a performative turn in the 1960s. In particular, it advocated a redefinition of the relationship between actors and spectators. [...] Theater was no longer conceived as a representation of a fictive world, which the audience, in turn, was expected to observe, interpret and understand. Something was to occur between the actors and the spectators and that constituted theater. It was crucial that something happened between the participants and less important exactly what this was. (20-21)

I suggest Fischer-Lichte's claim would be more accurate if were revised to read: "*Some* performance experienced a performative turn in the 1960s." The works Fischer-Lichte is referring to are not American, do not represent the majority of theater at the time, and in fact, are better described as performance art than theater. To give some context, the winners of the Tony Awards in 1960 were *The Sound of Music* and *The Miracle Worker*, both fine works of theater, yet clearly not a part of Fischer-Lichte's performative turn.

Fischer-Lichte's description of the performance art genre is otherwise valuable, pointing out the emphasis on form over content. Note also Fisher-Lichte's historicizing rhetoric - "theater was no longer" etc., implying a progression of linear development from old theater to this new content-less theater, which is presented as somehow better. So while performance studies has opened up the possibility of understanding any event "as" performance or having a performative nature, here we have the reverse - performance studies seeking to redefine theater as a performative event. Fischer-Lichte cites Max Hermann's work as an influence:

> [...] Hermann claimed to have found the "original meaning of theatre" in the "theatre-fest" which was constituted by its different participants, actors and spectators alike. All of them felt that the specific aestheticity of theatre was manifest in the nature of performance as event. (161)

Fischer-Lichte goes on to describe exactly what this event is: it is the performative interaction between performer and spectator. However, as the roles of performer and

spectator become increasingly blurred in this type of work, the “event” is really the performative behavior of participants with each other. Here we have arrived back at a definition of “performance” very close to Erving Goffman’s, and very far from theater practice indeed.

Art history, or rather, the history of the study of art can help explain some of this turn away from content in performance studies’ rhetoric regarding theater. Modernism also encouraged such types of origin stories, linear historicization, and medium-centric theories in relation to painting. The influence of modernism on both performance studies’ perspective on theater and digital media studies (which I will discuss below in Section 1.3) cannot be overstated. In artistic practice, the medium is literally the material or materials used by an artist to create a work. In art history, theory, and analysis, the concept of the medium takes on a more complex meaning. The work of art critic and historian Clement Greenberg was instrumental in defining the concept of medium specificity. Although this concept predates his work, Greenberg is responsible for bringing the ideas of medium specificity to popular consciousness with his publications on art from the 1930s-1960s in particular. Greenberg emphasized the notion that an artistic medium has unique properties and capabilities that must be investigated, developed, and exploited by artists so that the medium can eventually achieve its fullest potential. For example, Greenberg’s theories of medium specificity encouraged painters to work independently to contribute to a greater project (or grand narrative) of medium development, emphasizing the flatness of the canvas and the texture and color of paint pigments (Greenberg 3-21).

Here we see the same emphasis on form over content and the rejection of representation, which came to result in content-less abstract works like Rothko's color-blocked canvasses. According to Hans Belting in his essay *The End of the History of Art?* the modernist view of art emphasizes "The exclusive concentration on artistic form, as opposed to content or function" (Belting 15). While these same strategies of formal development have been applied to performance by Fischer-Lichte and others, there is no need to claim superiority over theatre by performance art. Audiences have become fragmented to a greater degree than ever today, and there is plenty of room on the stage for many types of theater and performance. Media theorist Henry Jenkins describes this phenomenon in his book *Convergence Culture: Where Old and New Media Collide*:

> Welcome to convergence culture, where old and new media collide, where grassroots and corporate media intersect, where the power of the media producer and the power of the media consumer interact in unpredictable ways. [...] By convergence, I mean the flow of content across multiple media platforms, the cooperation between multiple industries, and the migratory behavior of media audiences who will go almost anywhere in search of the kinds of entertainment experiences they want. [...] In the world of media convergence, every important story gets told, every brand gets sold, and every consumer gets courted across multiple platforms. (2-3)

Understanding contemporary culture through the lens of convergence allows for the acceptance of a proliferation of types of cultural expression and frees us from the limited directives of a modernist viewpoint. Additionally, I believe there may be a danger in the performance studies concepts that engage with performance art practice. These modernist concepts may carry the seeds of their own destruction within them, even as they push the medium toward eventual fulfillment:

> As [Herve] Fischer formulates it, modern painting developed an “internal critique” which ended up carrying painting to its conclusion. This began with dematerialization and the reduction to the pure idea. We are witnesses to a “death ritual.” Against a self-criticism which denounces art in its own medium, art develops an “artistic scholasticism: art as a commentary upon itself ... The commentary is valued higher than the work. (Belting 47-48)

Fortunately, as much as some performance studies scholars might like the idea of performance art wiping out theater practice, this is not likely. Schechner’s provocative statement on the future of theatre is difficult to believe: “The fact is that theatre as we have known it and practiced it - the staging of written dramas - will be the string quartet of the twenty-first century: a beloved but extremely limited genre, a subdivision of performance” (Schechner *A New Paradigm* 8). On the other hand, it is possible performance art may fall out of fashion and disappear. Much of performance art practice represents a scholarization of theater similar to the scholarization of painting discussed by Belting as a result of modernist criticism. To correctly appreciate the scholarized art form, be it performance art or modernist painting, the viewer must be versed in the accompanying theoretical ideology. This type of dependent relationship between art, theory, and academia represents a level of connoisseurship beyond what many people desire, which means these types of works are insured never to be popular. However, these works exist within a logic of avant-garde-ism or high art/low art that devalues the popular, so popularity is certainly not the aim of such work. The most important point is that despite the way in which passionate practitioners and theorists may champion one genre or mode of performance practice over another, these works are not really in competition with one another. Particularly in our current age of the proliferation of production and distribution means, and the fragmentation of audiences, it seems more than ever to be the case that there is room on the stage for everyone.

1.3: Defining Terms: Narrative Theater & Digital Technology

In this section I will define the particular type of theater I have chosen to focus on, which I term *narrative theater*. This is a vital distinction to make in order to define the scope of the dissertation, which is limited to the investigation of a particular type of theater, and not all human behavior, which does come under the purview of performance studies. I will also discuss the reasons for my choice of the phrase *digital technology*, as opposed to other possible terms such as digital media, new media, intermedia, or digital performance.

Work done by performance studies scholars to expand their scope of inquiry beyond the realm of theater can be helpful in terms of defining the precise form of performance I will focus on. In *Frame Analysis*, Erving Goffman examines the use of framing as a way to understand everyday behavior. To understand the type of everyday framing he is interested in he looks to a very particular type of framing: the framing in theater. To exclude theater from the scope of inquiry for his work (but be able to borrow some of the framing techniques as metaphors) he describes five aspects of mainstream theater that "render stage interaction systematically different from its real-life model" (144). This distinction is important to make because it draws a line between theater and performance studies. Goffman does not explicitly label these five aspects of mainstream theater, but I have named them as follows: theater architecture, set design, script, blocking, and acting style. I have summarized his descriptions of each in Figure 1.1.

Aspect	Description
Theater Architecture	The arrangement of space in a theater removes the action of the play from the everyday world, and defines the action of the play as part of a different "general order of being" (139).
Set Design	There is a common convention in mainstream theater set design to represent a room on stage with both the front wall and the ceiling missing to allow the audience access to observe the action of the play. The characters in the play, however, do not acknowledge the lack of privacy (139-140).
Script	Plays are written in such a way that it will appear to the audience they are observing private conversations, but these conversations are constructed such that an adequate amount of exposition is revealed such that the audience is able to understand what is occurring. Speech in a play tends to be more elevated and well-constructed than everyday talk. Additionally, speech in a play is economical - nothing is revealed that is extraneous to the progression of the story, unlike everyday talk which often includes information that is only incidental (142-143).
Blocking	Actors are not arranged naturally onstage but in arrangements that allow the audience easier access to observe their interactions. For example, actors rarely face each other straight on, and instead turn slightly outward at an angle toward the audience so that their faces may be seen and their voices may be easier to hear. One actor at a time generally has the focus of attention on stage, and this is usually the actor who is speaking. The other actors on stage who are not the focus of attention will be arranged in such a manner as to draw attention to the actor who is speaking (140).
Acting Style	Unlike everyday talk, actors wait for each other to finish speaking and also wait for audience responses to finish before speaking. There is often a heightened type of enunciation in the actor's style of speech and a heightened volume (140, 143).

Figure 1.1: Goffman's Five Aspects of Theater that differentiate it from everyday life, re-formatted in chart form (Frame Analysis 139-143).

Goffman identifies aspects of theater at varying levels of granularity to define the form and differentiate theater's performance from the performativity of everyday life. He begins with the architecture of the theater building, then the architecture of the play world (in other words, the set design), then the design of the language (the script), the arrangement of bodies on stage (blocking), and the manner in which those bodies on stage behave (acting style). Goffman also categorizes theater within the spectrum of all performance according to levels of purity. By purity, Goffman means the levels of "exclusiveness of the claim of the watchers on the activity they watch" (125). Goffman identifies six levels or categories of performance purity, ranging from "dramatic scriptings" as the most pure to "work performances" as examples of the least pure type of performance (125-126). I have reorganized the descriptions of these types of performances by Goffman (detailed on pages 125-126) into a chart format in Figure 1.2.

level of purity	type of performance	description
1 (most pure)	dramatic scriptings, nightclub acts, personal appearances of various sorts, the ballet, much of orchestral music	These performances are dependent on the presence of an audience. If there is no audience, the performance does not take place.
2	ad-hoc performances	Those that occur within a domestic circle (i.e., a party guest plays an instrument or tells an amusing story, a parent reads a child a bedtime story). The term "personal" is used here because the performer typically supplies his own scenery and props, and no prior agenda need be present to obligate the individual to perform.
3	contests, matches	The whole affair depends upon the contestants' acting as if the score outcome itself is what drives them. The players, then, must convincingly act as though something were at stake beyond the entertainment of those who are watching them. (Thus it is thinkable that a series match might be played for the record in the absence of any audience.) And, of course, the action will take place in a ring or grounds, not on a stage.
4	personal ceremonies	Weddings, funerals. These occasions typically contain watchers, but the latter function as witnesses and guests and usually come by invitation, not fee. Whereas the wider significance of a contest outcome is often seen as a part of recreational life and in one sense unserious, ceremonials tend to provide a ritual ratification of something that is itself defined as part of the serious world
5	lectures, talks	A variable mixture of instruction (for which the listener may be held responsible) and entertainment.
6 (least pure)	work performances	These occur, for example, at construction sites or rehearsals, where viewers openly watch persons at work who openly show no regard or concern for the dramatic elements of their labor.

Figure 1.2: Goffman's Taxonomy of Performance, which he organized by level of purity. Re-formatted in chart form (Frame Analysis 125-126).

In this taxonomy theater is referred to broadly by Goffman as “dramatic scriptings” and includes “nightclub acts, personal appearances of various sorts, the ballet, and much of orchestral music” (125). While Goffman’s descriptions are useful, It is clear that his classifications are not narrowly defined enough to give a satisfactory description of narrative theater in particular.

A more recent conceptualization of performance types that is important to acknowledge is Richard Schechner’s seven interlocking spheres of performance (see Figure 1.3). Each sphere represents a function of performance, and the spheres are arranged in an overlapping manner to emphasize the multi-functional nature of most performances.

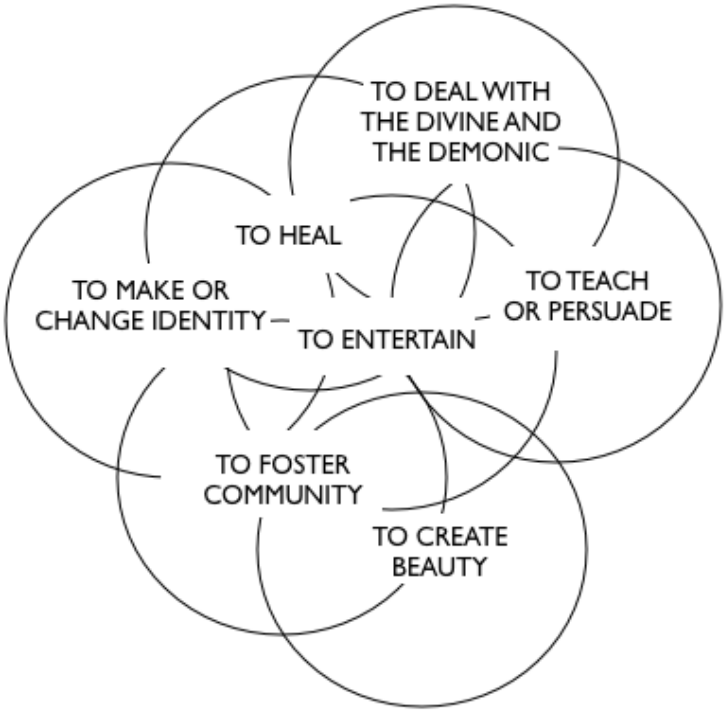


Figure 1.3: Richard Schechner’s seven interlocking spheres of performance, from Performance Studies: An Introduction (46).

While Schechner’s model is useful for understanding performance as a whole, which encompasses all behavior, it is not fine-grained enough to describe a particular type of

theater. In search of a finer-grained description of performance than found in the work of Goffman and Schechner, I have developed my own framework for describing performance that focuses less on the inclusion of everyday behaviors and instead allows for differentiation between various types of performance. I have been influenced by the work of Oscar Schlemmer, Erwin Piscator and David Saltz, all of whom are discussed in detail in Chapter 2.

The framework I suggest is structured such that different types of performance can be mapped and compared according to their dominant aspects. Providing a framework that allows for the mapping of various types of performance across several opposed aspects will allow for a more precise understanding of exactly what narrative theater is in relation to other types of theater and performance. Mapping across opposed aspects will allow for overlaps and crossings, which may be more reflective of actual practice. I have identified three sets of opposing aspects of performance illustrated in Figure 1.4. These sets of opposing aspects, and the accompanying mapping technique will be discussed in detail in Chapter 3.

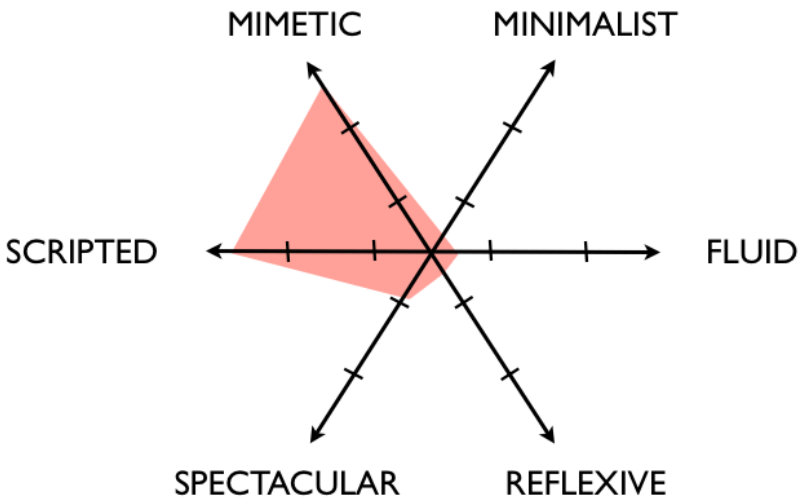


Figure 1.4: Opposing aspects of performance, with example of narrative theater mapped across opposing aspects, thus revealing the production's dominant aspect/s. The specific example presented here is the 2005 Broadway production of "Who's Afraid of Virginia Woolf?"

By comparing different types of performance as represented by this framework of dominant and opposed aspects, I can identify the specific type of performance that is the focus of this dissertation. This is mainstream, American theatre, which is most often created from the guidelines of a written script. The type of writing most often found in these scripts focuses on traditional elements such as character, plot, and dialogue. I do not mean to suggest the script is the play. The play is only realized through production, which is a complex collaboration involving many techniques, technologies, practitioners, and interpretive processes. However, according to the framework of opposed aspects I suggest, the dominant characteristic of this theatre genre is the emphasis on narrative. In successful examples of this genre, the script, techniques, technologies, and practitioners work in concert to communicate an interpretation of the story at hand.

Saltz has provided a very concise definition of this type of theatre: "[...] "theatre" here, referring to the old-fashioned, nonparticipatory Western performance genre in

which a group of live performers gathers before a group of live spectators to enact a scripted play" (Saltz 107). While it might be tempting to christen this performance type "mainstream theatre," I am wary of that description. With the advent of convergence culture (see Section 1.2 above, Jenkins) and the accompanying proliferation of production and distribution modes, we have witnessed a fragmentation of audiences, and because of this I feel it is difficult to say with certainty precisely which cultural forms are truly mainstream anymore, if any. Therefore, I am choosing to refer to this type of theatre by its dominant aspect, as revealed by the framework illustrated above, as *narrative theater*.

The terminology used to describe digital technology has become loaded as the field has grown in academic maturity. Terms such as digital media and new media are not neutral, and imply specific views of how digital technology works and should be developed. In the field of Communications Studies, which is an older field, the terms media (plural) and medium (singular) have been used to refer to the channels or tools used to store or transmit communication. In the Communications sense, this could mean a paper map, a book, a telephone, or a computer (Fiske 16-19).

Digital media scholars have shifted the meaning of the term media toward the meaning of artistic media or an artistic medium, which refers to an artist's materials. This shift has been important in gaining recognition for the computer as legitimate tool for creative expression, and has allowed cultural products created with the computer, such as video games, to enter into the realm of serious inquiry within academia. However, the move to define digital media as an artistic medium has also linked it to modernist ideas of medium centricity and a program of medium development. This

program has its uses and benefits, but is not a good fit for the investigation of story-based theater. This view of digital media is well expressed by Janet H. Murray in *Hamlet on the Holodeck* and *Inventing the Medium*, in which digital media is defined through four essential properties and three characteristic pleasures. The properties are as follows:

> -Procedural: the underlying structure of code is built on procedurality (i.e., algorithms, "if-then" statements, and so forth)
> -Participatory: the computer requires input from the user
> -Spatial: computers can be navigated as virtual spaces
> -Encyclopedic: the computer has memory and recall capabilities that surpass anything else (Murray *Hamlet* 71-90)

And the three characteristic pleasures are as follows:

> -Immersion: the feeling of being transported to another place
> -Agency: the feeling of having power over your experience
> -Transformation: the experience responds and changes according to your manipulations (Murray *Hamlet* 97-182)

Murray avoids the term new media, explaining that the emphasis on newness, or novelty, is not helpful in terms of any program of development for the medium. Lev Manovich, however, embraces the term new media, and develops the concept in his book, *The Language of New Media*, as defined by five core principles:

> -Numerical representation: new media objects are made of data
> -Modularity: the different elements of new media can exist independently
> -Automation: new media objects can be created and modified automatically
> -Variability: new media objects can exist in multiple versions
> -Transcoding: the logic of the computer has influenced how we understand and represent ourselves (Manovich 49 -65)

The strongest tension between an investigation of narrative theater and the concepts of digital media or new media lies in the mismatch between interactivity (the combination of participatory and procedural elements that results in the pleasure of agency,

according to Murray, or closed or open interaction, according to Manovich) and narrative. The type of narrative these media scholars are interested in is narrative in a very general sense, and may be better understood as story. For example, a game of *Tetris* can be understood as having a story about the player fighting against the speed of the falling blocks. This is a reflexive story, similar in some ways to the stories found in performance art and installation art, and I believe this type of story privileges reflexivity over narrative. While these theories of media from Murray and Manovich are valuable and productive in other domains, such as games, these theories are less productive in the domain of theater. Agreeing to conceptualize digital media as an artistic medium and calling for its development in directions that exploit its essential properties and pleasures, would mean that narrative theater would not be the ideal venue to pursue the development of the digital medium. This is because narrative theater will always highlight the narrative over any other aspects, including interactivity, even when interactive elements are included in a performance of narrative theater. This means the digital media and new media concepts are not helpful choices for this particular project, which is centered on narrative theater specifically.

Performance studies scholars have used the term intermedia to discuss performance work that includes media; however, it is clear that intermedia applies to work in the avant garde style, and not narrative theater. Freda Chapple and Chiel Kattenbelt define intermedia as “associated with the blurring of generic boundaries, crossover and hybrid performances, intertextuality, intermediality, hypermediality and a self-conscious reflexivity that displays the devices of performance in performance” (11).

As discussed above in defining narrative theater, my focus is not this style of avant garde performance, and therefore the intermedia concept is not a good fit.

Performance studies and digital media scholar Steve Dixon used the phrase digital performance in his book *Digital Performance: A History of New Media in Theater, Dance, Performance Art, and Installation*. Dixon defines digital performance as follows:

> We define the term “digital performance” broadly to include all performance works where computer technologies play a key role rather than a subsidiary one in content, techniques, aesthetics, or delivery forms. This includes live theater, dance, and performance art that incorporates projections that have been digitally created or manipulated; robotic and virtual reality performances; installations and theatrical works that use computer sending/activating equipment or telematic techniques; and performative works and activities that are accessed through the computer screen, including cybertheater events, MUDs, MOOs, and virtual worlds, computer games, CD-ROMs, and performative net.art works. (3)

While this intentionally broad definition serves Dixon’s purpose of archiving these types of work, a task which had never been attempted on this scale before and was sorely needed, this broad definition is too broad for my project. The dramaturgy I am interested in is specific to narrative theater, and not directly applicable to the many other possible uses of digital technologies in other types of performance and performative works. This means that the phrase digital performance is not the best choice for this project either.

Understanding the importance and impact of the concepts digital media, new media, intermedia and digital performance, I choose a different path for this project and select the more general phrase *digital technology*. Looking to the root of the word technology, the Greek word *techne* meaning art, skill, or craft, is appropriate for application to theater practice, which also identifies with craft. By digital technology, I mean any object that has a computerized component. This refers to a vast set of tools and could be anything from an infrared tracking system, to weight sensors, robotics, or

3D projection mapping. This set of tools is so large and diverse that I will not seek to define it as a single artistic medium. Each must be evaluated based on its particular capabilities and the context of its implementation.

Drawing an ideological distinction between digital technologies and other technologies may not be necessary. Digital technology is a form of technology as well, the main difference being that it includes computerized elements. Digital technology does not hold the sole claim to interactivity, a mechanical pinball machine or bowling alley is also responsive or interactive. Digital technology can also be used to create non-interactive artifacts. Common examples of fixed digital artifacts include DVDs and mp3s. Other contemporary theorists have also voiced this broader view of technology. Bruno Latour explains this viewpoint as follows:

> In the wake of pioneering work on chimpanzeean 'industry,' we now begin to discover long periods in pre-history when technical ability preceded the emergence of human language by several hundred thousand years. It increasingly seems to be the case that human self-development appeared within a nest or a niche already inhabited by abilities, by know-how and technological objects. [...] Technology is everywhere [it is] a mode of existence (248).

Latour makes the point that we cannot possibly begin to separate ourselves from technology because it is integral to our very way of being and even predates humanity. He goes on to point out that without technology, we would not be human, and that an interdependent web of technology envelopes us every day, from moment to moment, in very complex ways (Latour 252-256). James Burke describes this interdependent relationship between humans and technology in his book *Connections:*

> This interdependence is typical of almost every aspect of life in the modern world. We live surrounded by objects and systems that we take for granted, but which profoundly affect the way we behave, think, work, play, and in general

> conduct our lives and those of our children. Look, for example, at the place in which you are reading this book now, and see how much of what surrounds you is understandable, how much of it you could either build yourself or repair should it cease to function. (4)

Both Burke's and Latour's perspectives support the point that in terms of our everyday interactions with technologies both digital and non-digital, the relationship we have with our technologies is not radically different in the case of digital technology. Yes, there are important differences between digital and non-digital technologies, but they are nonetheless all part of a larger web of objects and people. The term technology, as opposed to media, fits well for a project concerned with theater, particularly given the historically inextricable relationship between technology and theater discussed many theorists and historians (Aronson; Baugh; Brockett, Huxley & Witts; Mitchell & Hardberger; Smith; Steinmeyer). With this broader view of technology in mind, it is nevertheless important to include "digital" in the phrase "digital technology," because of the specific lack of engagement with technologies in contemporary narrative theater that are digital, as opposed to pre-digital.

1.4: Understanding the Debate: Liveness, Performance and Technology

Regarding the role of digital technology in performance, some theorists, such as Philip Auslander, Peggy Phelan, Amy Petersen Jensen, Christie Carson, and others, have set up an oppositional relationship between performance and digital technology. Matthew Causey provides a concise summary of the main points of this debate:

> Peggy Phelan argues that performance is defined through its non-reproducability. The nature of performance deteriorates as it is enfolded in technological reproduction. Philip Auslander counters that the live is an artifact of recording

> media. Liveness exists not as a prior condition, but as a result of mediatization. (384)

What is important to note is that on both sides of this debate digital technology is conceptualized as an anti-theatrical force, and performance is conceptualized as somehow essentially miss-matched with technology. Neither Phelan's nor Auslander's viewpoint serves to support innovative practice with digital technologies in theater because of the oppositional way in which technology and theater are positioned.

While Causey above provides a concise summary of the debate, it is worthwhile to look deeper into each theorist's position to more fully understand each perspective. Even though both Phelan's and Auslander's work falls under the umbrella of performance studies, each write from very different perspectives and with different aims. This difference must be noted, because at times, their arguments seem to talk past one another. Phelan writes from a cultural studies perspective, developing interpretations of many types of performances with the aim of carving out the possibility of an oppositional stance within dominant culture. Auslander's writing centers on an economic model, which emphasizes the pervasive, unavoidable nature of late capitalism. His argument hinges on the belief that it is no longer possible to avoid engagement with dominant culture, which he defines as mediatized, because capitalism controls all aspects of production and reception. Auslander's project centers on a more narrow definition of performance than Phelan's, and his aim is more focused as well. He seeks to describe the economic and technological forces that define production and reception of particular types of performance, namely theater and music performances. Auslander is also focused, specifically, on challenging Phelan's claims about liveness, performance, and cultural resistance.

Phelan's project is not focused on performance, but rather performativity. She writes as a corrective to the rhetoric of identity politics of the 1990's:

> The current contradiction between "identity politics" with its accent on visibility, and the psychoanalytic/deconstructionist mistrust of visibility as the source of unity or wholeness needs to be refigured, if not resolved. [...] Visibility is a trap; it summons surveillance and the law; it provokes voyeurism, fetishism, the colonialist/imperialist appetite for possession. Yet it retains a certain political appeal. (6)

Her points about the lack of efficacy in an initiative focused on mere visibility are well-made. She wryly remarks, "If representational visibility equals power, then almost-naked young white women should be running Western culture. The ubiquity of their image, however, has hardly brought them political or economic power" (10). This is indisputable. Phelan's solution to the problem, however, is less defensible. She spends the rest of the text analyzing a variety of performative examples, including works from Adrian Piper, Robert Mapplethorpe, Cindy Sherman, the Guerrilla Girls, a reproductive rights group, and others. Through the analysis of these works and actions, Phelan claims a value in invisibility. She identifies qualities such as a lack of engagement with the art market to claim a type of agency for these practitioners and groups, and focuses on the ephemeral nature of performance (or rather, performativity) as the element that affords these practitioners and groups such agency. Phelan suggests valuing an outsider approach to subverting culture, rather than working for change from within the system.

It is important to emphasize that the type of performance Phelan is discussing is not theater. In fact, most theater is squarely outside Phelan's realm of inquiry:

> Much Western theatre evokes desire based upon and simulated by the inequality between performer and spectator - and by the (potential) domination of the silent spectator. That this model of desire is apparently so compatible with (traditional accounts of) “male” desire is no accident. (163)

Phelan is claiming here that mainstream theater spectatorship creates a scopophilic, misogynistic relationship between performer and spectator similar to the spectator-performer relationship presented by Laura Mulvey in her well-known analysis of Hollywood film. Instead of theater, Phelan is interested in performance as a much larger category - the type of performativity that encompasses all human behavior. She does focus on performance art, as this type of performance embodies a self-reflexive embrace of ephemerality. For example, performers today may attempt to re-stage Allen Kaprow’s happenings, or re-mount Marina Abramowic’s pieces from the 1960’s (as was recently done so controversially at MOMA), but try as they might, these works can never really be the same, because they were so context dependent. This connects with the concept of performativity as discussed by Judith Butler with regards to gender. Gender does not exist intrinsically on its own; it comes into being only as it is performed, and is socially (or contextually) constructed.

It is late in the text of Phelan’s *Unmarked*, after the analysis of many examples, including Cindy Sherman’s photographs and film stills, which certainly are not live but obviously mediated (albeit performative) that Phelan addresses the ontology of performance directly. Phelan is not, as she is often characterized by others, against mediation - otherwise she would not include examples such as Sherman, Mapplethorpe, and the Guerilla Girls. However in characterizing the essential nature of performance, Phelan states:

> Performance clogs the smooth machinery of reproductive representation necessary to the circulation of capital. [...] Performance implicates the real through the presence of living bodies. In performance art spectatorship there is an element of consumption: there are no left-overs, the gazing spectator must try to take everything in. Without a copy, live performance plunges into visibility - in a maniacally charged present - and disappears into memory, into the realm of invisibility and the unconscious where it eludes regulation and control. (148)

It becomes clear here that Phelan is most interested in the quality of performativity, and within this context the focus on performance art makes sense as it is an ideal vehicle for the explicit, reflexive display of performativity. There is some contradiction here as well - the photographic works she analyzes are obviously not "without a copy." Phelan does cite other ways in which these works "elude regulation and control," pointing out for example, Sherman's refusal to title her works as an example of Sherman's refutation of the capitalist forces of the art market. Additionally, the photographs produced by Sherman interest Phelan as only a *record* of the performance Sherman executed originally. The performance itself is what Phelan is really interested in.

Phelan has a phenomenological perspective on performativity: "Performance occurs over a time which will not be repeated. It can be performed again, but this repetition itself marks it as "different." The document of a performance then is only a spur to memory, an encouragement of memory to become present" (146). This point is well-made - the document of performance is not the same as the performance itself, which can never be completely repeated. And while Phelan's critique of 1990's identity politics' focus on visibility is sound, her suggestion for a solution is less so. Surely the result of all disenfranchised groups becoming producers of performative works disengaged from capitalist systems will not result in a better, more equitable existence for all. There seems to be a view of the lifestyle of a starving artist in this argument that

is a bit romantic, if not hypocritical - Phelan herself, after all is engaging with capitalist forces by publishing her book (rather than making it available for free) and working as a university professor. While the weaknesses in Phelan's arguments are very astutely addressed by Auslander, it is important to note that he offers no alternative solutions, because he does not address the question of social justice at all. He is not engaged in the same project as Phelan, on a basic level.

While part of Auslander's project is to specifically debunk Phelan's claims about the ontology of performance, his larger aim is to detail the relationship between performance and media on an economic and cultural level:

> [...] at the level of cultural economy, theatre (and live performance generally) and the mass media are rivals, not partners. [...] There is no question that live performance and mediatized forms compete for audiences in the cultural marketplace, and that mediatized forms have gained the advantage in that competition. (1-6)

At first glance, it appears Auslander's analysis reinforces Phelan's claim that performance is a de-valued, subaltern cultural and economic form. Auslander goes on, however to claim that *all* performance has become mediatized, because this is the nature of culture today. He argues that traditional forms that pre-date recording media, such as theater, have responded to media by trying to incorporate media (literally, and by the adoption of techniques as well) into their own genres:

> To put it bluntly, the general response of live performance to the oppression and economic superiority of mediatized forms has been to become as much like them as possible. From ball games that incorporate instant-replay screens, to rock concerts that recreate the images of music videos, to live stage versions of television shows and movies, to dance and performance art's incorporation of video, evidence of the incursion of mediatization into the live event is available across the entire spectrum of performance genres. (7)

Here Auslander has successfully disputed Phelan's claims that performance can exist outside the system, beyond the reach of mediatization and the forces of capital. He cites many examples of corporate performance franchises such as *Cirque du Soleil*, *Blue Man Group* and *Disney Theatrical Productions* that are obviously aggressively engaged with dominant cultural and economic systems. (Notably, he doesn't return to any of the examples Phelan had chosen for analysis.) What follows in Auslander's arguments, however is less convincing.

Auslander moves on to focus specifically on theater, and claim that the integration of media in stage work has been a misguided attempt to extend theater's cultural relevance in mediatized society. Referring to Robert Edmond Jones' 1941 expression of eagerness to combine film and stage work, as well as Steve Dixon's contemporary work, Auslander comments:

> Implicit in Jones's call for this form of mixed-media performance is the assumption that live and filmed representations can be combined as complementary and equally compelling languages. [...] The possibility that audience perception may inevitably be drawn to a screen even when there are human beings also present, for instance, is not usually considered as part of the equation. [...] I am skeptical of discussions of work based on the interaction of live and mediatized performance that do not factor in such considerations. As Robert Wechsler points out, one reason why technical media compel attention is quite simply the "how'd-they-do-it?" factor. [...] Although some performance makers seek transparency in their uses of technology or to demystify the apparatus, it is not at all clear that such tactics derail an audience's fascination with technological spectacle and novelty. (40-41)

Auslander's exclusive focus on unsuccessful, unimaginative uses of media on stage is troubling. It is additionally frustrating that while this failing is pointed out, no alternative is suggested. It is important to acknowledge that some forms of theater (narrative theater, in particular) have not yet engaged with digital technology in innovative ways, but there

have been notable exceptions. Firstly, other genres of performance have engaged with digital technology in complex, valid, thoughtful and artistic ways, such as music, dance, and performance art. Steve Dixon's book, *Digital Performance*, discusses many of these important examples. Secondly, there are historical examples of a handful of works in theatre that have created successful and interesting work with a variety of media. Auslander unfortunately chooses not to discuss any of these examples, and instead rather dismissively makes a passing reference to only Erwin Piscator, Wooster Group, Builder's Association, Cyburbia Productions "and many others", saying:

> [...] it is clear there are ways of asserting the presence of a human body over that of a projection, for instance, or vice versa, and that screened images may integrate seamlessly with live ones, or may be used to comment on the other, and so on. However, none of this changes the fact that such performances occur now in a cultural context in which the projection is more closely related to the dominant media than is the live body, a fact that undoubtedly has implications for how the audience perceives the whole performance. (43)

Here Auslander seems to suggest that hybridity or intermediality are suspect, and this may be a reflection of Modernist sensibilities on his part. It is the final statement, however, that is the most disturbing, suggesting that because performances occur in a cultural context in which they are not the dominant form, there is little worth in creating performances at all. In short, this view does not support practice. Auslander is claiming here that theater and media are simply a bad fit, not because of ontological reasons, but because of cultural and economic reasons. It is important to emphasize: Auslander does not cite a single example of media use in theater that he feels is successful, innovative, or interesting. Every performance that is described sounds disappointing.

Perhaps this lack of successful examples is why Auslander fails to address why anyone would continue to go to theater. A main reason the theater continues to exist is

the stories, the content - and the masterful ways in which they are told. Like some other media theorists, Auslander's disconnect between mode of delivery (or medium) and content shows a lack of engagement with the genre, and a basic misunderstanding of what makes it enjoyable and worthwhile. The qualities he identifies relating to theater could be found in a church service, at a restaurant, in a classroom - they apply to many forms of everyday performances, or performativity. Performativity is simply not why people attend theater. Audiences attend for countless reasons that are impossible to enumerate, including the fun of a social outing, entertainment, and storytelling. It is worth noting Auslander shifts his focus from theatre to rock music for his more in-depth analysis. This is because his ideas fit within that context brilliantly - and not quite so well in theater.

Noël Carroll's response to the liveness debate presents an interesting, comparatively centrist position. Carroll agrees with Auslander's disputation of Phelan's claims that the ephemerality of performance (or performativity) results in political enfranchisement. Carroll disagrees, however with Auslander's characterization of theater as ontologically identical to mediatized forms. Carroll points out, "We do not applaud the projectionist as we do a pianist at the end of a successful performance [...] the token performance of a mass-mediatized artwork is not an appropriate object of artistic evaluation, whereas the token performance of a dramatic performance is" (116). Carroll explains that a theater actor's performance could improve from one night to the next, while a film actor's performance remains fixed. This point of view brings to mind Walter Benjamin's discussion of aura, and opens up conversations about the status of the copy versus the original.

Carroll also calls our attention to the intention of the live performer, which remains activated in live performances, unlike forms such as photography and film which record (and automatically replay) only one performance. It is the interpretive power of the performer that sets live performance apart. There are limits to this interpretive power as well, for example, the actor playing Hamlet cannot suddenly decide to play Willy Loman one night (if he wishes to keep his job.) But the interpretive work, within constraints, along with the variability of performance is what Carroll argues sets theater apart from mass-mediatized forms:

> [...] just as a culinary recipe calls for the cook to interpret how much vinegar a "dash" is, so the executors of the play text must exercise judgement in arriving at, for example, the precise tempo of performance. However, this does not allow the executors of the play text to do anything they wish with the text, just as the cook cannot legitimately "interpret" a "dash" of vinegar as an instruction to add a pint of cream. (108-9)

The process Carroll outlines is essentially dramaturgical - this is the work of creating a production that will be accessible to audiences because it adheres to the most central expectation of the genre, cohesion, while at the same time, crafting a production that offers something fresh and new. This continual process of creative interpretation, within constraints, is ignored by Auslander, who chooses to cite only examples of mechanistic performances of actors in franchised touring companies. In these specific instances actors are rewarded for their ability to replicate a broadway performance (often originated by another actor) at touring houses across the country. Carroll counters that what Auslander cites as evidence of the mediatization or mechanization of theater actors here is actually just an example of bad theater:

> Auslander may think that many of the actors' interpretations in the *Tamara* franchise are *mechanical*, but surely "mechanical" in such a context would probably mean something like "uninspired" or "unimaginative." It cannot literally pertain to the decision making and judgements of the performers in question. (118-119)

Again, as I have pointed out above, the lack of examples of good performances in Auslander's text is troubling, and certainly not productive for practitioners who read his work.

Commentary by Steve Dixon also provides a tempered perspective on the liveness debate. Dixon is able to see the value in Phelan's project, while also acknowledging the arguments' shortcomings:

> It [the liveness debate] is a highly complex and difficult debate, which has many parallels with the wider philosophical and ideological battleground of humans versus machines. Phelan's discourse is humanist, political, emotive, and uplifting, and the incisiveness and performativity of her writing inspires like a call to the barricades of here-and-now ephemerality. [...] But we should also recognize that the poor theater position sets up a peculiar, dialectic dynamic that celebrates the heroic radicalism of live performance's resistance to hegemonic media, yet simultaneously retains a deep conservatism through its fierce resistance to change from its traditional theatrical, historical past. (125)

Dixon makes the incisive point here that privileging one philosophy of theater, such as the poor theater (which is historically identified as radical/progressive) over any other philosophy of theater is actually a conservative stance. I would go further to suggest that the insistence on valuing any one philosophy of theater above all others actually impoverishes the entire field. One of the important qualities of theater is the wide variety within the form, which can engender further creativity. Dixon also draws our attention to the fact that just because theater is a form including live performers, that mere liveness alone is not enough to ensure success:

> Finally, it must be remembered within the liveness debate that mere corporeal liveness is no guarantee of presence. We have all experienced nights of crushing, excruciating boredom at the theater, where despite the live presence of a dozen gesticulating bodies on stage, we discern no interesting presence at all and pray for the thing to end. (133)

So it must be factors beyond the medium itself, beyond the mode of delivery, that contribute to theater's continuing relevance and (sometimes) success. The Sondheim lyric from "Putting it Together" in *Sunday in the Park with George* comes to mind: "Art isn't easy" (39). In the context of the musical, these words are sung by a new media artist who creates "chromalumes," which seem to be kinetic light sculptures, similar to Maholy-Nagy's works. Dixon reminds us:

> When the initial fervor about a new technology or a new type of image subsides, once again it becomes the *content* and *meaning* that matters, just as in the 1910s it was the *consequences* of flight, speed, and explosion that brought the daily destruction of the First World War into sharp relief. Both futurism and digital technologies initially presented themselves as *philosophies* of life only for it to be realized a little later that they were merely technical developments that would rapidly become dated and demand further enhancement to avoid becoming cyclically entrenched in their own tropes and limitations. (652)

Particularly in the case of narrative theater, the importance of content and meaning cannot be overstated. The work of dramaturgy is the development of content and meaning in production, and characterizing technology as an anti-theatrical force, for whatever reasons, shuts down potential innovation and ignores the long, inextricable history of performance and technology, both digital and mechanical.

Performance theorist Christie Carson's writing is a good example of this extremely limited, anti-historical type of thinking. She writes: "This movement as a whole towards the use of technology to enable the theatre to mimic film characters and conventions must be seen to be a threat to creativity in the theatre" (130). Carson goes

on to suggest uses of digital technology in theater should be limited to upgrading pre-digital systems backstage, documenting productions for archives, and diegetic uses on stage, such as using a mobile phone on stage when a character receives a call as indicated in the script (130-131). Carson identifies the ultimate fear of the impact of technology in theater as the potential replacement of the flesh-and-blood actor with digital imagery (133). What Carson (along with Auslander and Phelan) fails to note is the long history of theater and technology. Arnold Arnoson's statement in his book *Looking into the Abyss: Essays on Scenography* is a good corrective: "From its very beginnings in ancient Greece, theater has been fascinated with technology. [...] The history of scenography is, at least in part, a history of exploitation of new technologies for the purpose of creating scenic wonder and amazement" (86). And while the spectacular is not always employed in service of the support of narrative, it certainly can be. Works providing examples of this are discussed in Chapter 2.

Despite the debate over liveness and technology in performance studies, the tradition in theater practice described by Aronson of exploiting new technologies continues. Thankfully, practitioners of many forms of performance have taken little notice of this academic debate and have forged ahead creating work with integral and innovative uses of digital technologies. These practitioners seem unconcerned with the question of whether or not the work they make constitutes performance or something else entirely. There is an obvious disconnect here between theory and practice, with many theorists not engaged in practice (or engaged in only a very limited type of academic practice) and practitioners not engaged in complementary theoretical work.

In an interview published in the PAJ journal of performance and art, Steve Luber spoke with three New York theater directors who regularly use digital technologies in their work. The type of work these directors make is usually devised, meaning it does not have a traditional script to work from, has much in common with performance art, and is usually performed in off-off Broadway venues with a strong tradition of experimental or non-mainstream work. The comments of the directors illustrates the gulf between current theorists and practitioners in this area. Eric Dyer, co-founder of the performance group *Radiohole*, addressed the notion of an ontologically pure conception of performance as a misunderstanding of the meaning of mediation:

> I think people are not really looking at how much things are already mediated. They're mistaking an actor standing there in light as unmediated but they don't actually know that there's this thing going on up there in the tech booth that nobody knows about if you go to what is called a straight play, but it's mediated. At the very least an example of mediation would be by the medium of light. They look a certain way because the light has been crafted to give them that certain look. So I don't think people are really looking at that fully, what it really means. I think it's a very reactionary stance and not a very well thought out position. (Dyer in Luber, 16)

For practitioners like Dyer, there is no conflict in using technology, digital or otherwise, to create performance, because nearly all performance always already involves some form of technology. However, while digital technology has been successfully integrated into many types of performance, including dance, music, performance art, musical theater, and spectacle, at least one genre of performance has not followed in this path. Narrative theater in the U.S. has largely not embraced integral uses of digital technology on stage. The question of how best to use digital technology in these types of productions is the focus of this dissertation. There are, however, a small number of important and innovative works that have embraced the exploration of technology in

theater in explicit and innovative ways. These examples span both pre-digital and contemporary times, and will be examined in the following chapter to lay the foundation for the development of a new dramaturgy.

CHAPTER 2

RELEVANT HISTORICAL AND CONTEMPORARY DRAMATURGIES

2.1: Overview

A trajectory of relevant dramaturgical work (both practical and theoretical) that has explicitly embraced innovative uses of new technologies will be described. This history of work provides an important alternative to methods of practice and types of performance commonly discussed within the liveness debate. Reflecting on this alternative tradition of work will support the development of a new dramaturgy for digital technologies in narrative theater.

Dramaturgy can be either theoretical or practical, but is most often some kind of synthesis of both. Work that has a significant influence on this dissertation is that which has embraced innovative uses of technology on stage. While there are not many examples in current practice of digital technology in narrative theater, there are a precious handful which must be discussed, as well as relevant historical examples using pre-digital technologies. This work will be discussed chronologically, beginning with the Bauhaus theater experiments in the 1920s, Erwin Piscator's related work in the 1920s and 1930s, then Josef Svoboda's work from 1943-1992, David Saltz's work in the Interactive Performance Lab at UGA from 1997 to the present, and concluding with the contemporary work of William Dudley from 1970 to the present.

Examining these historical works will demonstrate the long-standing precedent for the integration of technologies in narrative theater and help provide foundations for a new dramaturgy relating specifically to digital technologies. Highlighting work that has

embraced technical innovation in meaningful ways while remaining true to theatrical tradition provides an alternative narrative of theater history that runs counter to the histories cited in the liveness debate articulated by Auslander, Phelan, and others. Christopher Baugh opens his book on the history of twentieth century scenography with a well-stated summary of the historical relationship of theater and technology:

> Stage technology, machinery and special effects have always been a part of the experience of theatre and performance. Often they have been used as a means to an end: to shift and illuminate scenery, or to simulate events and actions that could not easily be presented in performance - explosions, catastrophes and meteorology for example. But also technologies have frequently been used as ends in themselves, where the gasp of awe and amazement at their operation has been a significant aspect of the experience of performance. [...] Dramaturgical power and efficacy may also reside in technology [...] (1)

It is this use of technology to achieve “dramaturgical power and efficacy” that is most intriguing. In other words, it is the history of the use of technology in the service of story-telling, and not the mere stimulation of novelty or technical display that will be examined.

2.2: The Bauhaus Theater Experiments

The Bauhaus was an interdisciplinary school in Germany during the years between the first and second World Wars. This time period is known as the Weimar Era, and was remarkable for its spirit of experimentation (Friedrich). The architect Walter Gropius founded and directed the Bauhaus from 1919 to 1928. The objective of the school was to reinvigorate the arts, and through this renewal in art, to rejuvenate society. Even though the Bauhaus did not generate works of narrative theater, the examination of their theatrical experiments is relevant because of their ability to

combine both the spectacle of technology on stage with reflexive qualities, as well as the theoretical work they produced on the topic of theater and technology. Gropius articulated the mission of the Bauhaus theatrical work in *The Theatre of the Bauhaus* as follows: “The aim of the Bauhaus was to find a new and powerful working correlation of all the processes of artistic creation to culminate finally in a new cultural equilibrium of our visual environment. [...] seeking a new synthesis of art and modern technology” (7). The historical and cultural context of post-World War I Germany is also relevant to the school’s aims and methods. The war had been a traumatic experience and the efficiency of new military technologies had played a significant role in the brutality of warfare. In the aftermath of the war, the punishing Versailles Treaty contributed to severely depress the German economy, leaving the country to struggle not only in the wake of the bloodiest war the world had yet seen, but also with extreme currency inflation and poverty (Mütter, Pingel, Zwölfer & Hoffmann.) Society was perceived as gravely fractured and technology was partly to blame for inflicting these wounds.

Within this context, it is easy to understand the Bauhaus program to create a new, total art that would not only improve the state of art but also heal humanity. What is surprising is the school’s enthusiastic embrace of new technologies as tools to foster humanity and wholeness. Instead of rejecting the mechanical, as one might expect after a devastating war of machines, the artists of the Bauhaus reveled in technological innovation. They developed theories that located humanity in the mechanistic, and viewed the mechanical as a potential savior for humankind. Oskar Schlemmer articulated this optimism regarding technology in his essay “Man and Art Figure”:

> Possibilities are extraordinary in light of today's technological advancements: precision machinery, scientific apparatus of glass and metal, the artificial limbs developed by surgery, the fantastic costumes of the deep-sea diver and the modern soldier, and so forth. [...] Wondrous figures of this new sort, personifications of the loftiest concepts and ideas, made of the most exquisite material, will be capable also of embodying symbolically a new faith. (28-9)

Despite these philosophic beginnings, the Bauhaus is best known today in popular consciousness for its streamlined, utilitarian consumer products and architecture, as well as its pedagogy in design. These aspects were largely developed in the later years of the Bauhaus, after Walter Gropius had left in 1928. In the earlier years, particularly from 1923 to 1928, the school had not yet begun a true architecture or building program and had not yet become as overtly political or industry-focused as it would in later years. During this early period, theater emerged as an area of interest to the architects at the Bauhaus because theater as an art form is characterized by temporary construction. Full-scale utilitarian building projects were not available to the Bauhaus architects during these years, but they could exercise their expressive building talents on the stage. Oskar Schlemmer and Lazlo Moholy-Nagy joined the school's faculty in 1923, and along with Walter Gropius, they pursued this interest in the theater. The stage was seen as a place of culmination for interdisciplinary work, combining architecture, graphic design, costume, music, lighting and dance.

The Bauhaus artists called their work "Total Theater," but their particular type of emphasis on technology separates their work from Wagner's *Gesamtkunstwerk* project. Unlike Wagner's work, Bauhaus Total Theater embraced a reflexive use of technology. Gropius wrote about his frustration with the emphasis placed on mimesis in the proscenium model of theater perfected by Wagner:

> The spectator now gazes from his own profane setting on one side of the curtain through a framed window - like an opening beyond, to the shifting scenes of a world of make-believe which the curtain unveils. The plasticity of the third dimension is now reduced to the flatness of a picture on a photographic focusing screen, and the spectator is no longer physically involved in the vibrations and gyrations of the play. Banned beyond the footlights, his active participation shrinks with the loss of being spatially included in the play; he stands now beside the drama, not within it. This spatial separation of the world of the viewer from that of the actor - no matter how much technical perfection it may have brought - has unfortunately limited the spectator to experiencing the play on an intellectual level only. (Gropius 158)

Gropius laments the separation of audience from action, even though this model of theater with large, back-stage areas masked from the spectator's view had led to major technological innovations in stage design. While different from Wagner's work, the Bauhaus theater experiments were not quite Wagner's opposite. Bertholt Brecht's work, which created a critical distance from the action on stage via his use of the *Verfremdungseffekt* can be considered the antithesis of the *Gesamtkunstwerk.* The Bauhaus Total Theater, however, was somewhere in between these two types of theater. The Bauhaus did not focus on creating a critical distance from the action onstage, but rather an immersive experience of total sensation that was made possible by the reflexive use of technology. In other words, the Bauhaus theater experiments used technology to foster human feeling, but in such a way that the workings of the technology were often exposed, in open acknowledgment of the performativity of the technology, balancing aspects of spectacle and reflexivity. In *The Theater of the Bauhaus*, Oskar Schlemmer quotes Heinz Loew, a Bauhaus colleague, to further explain this fascination with technology on the stage:

> A word in general about stage mechanics. In compliance with a curious and misleading "instinct," there is a feeling today that every technical stage effect should be scrupulously hidden from audience view. Paradoxically, this often

> results in backstage activities becoming the more interesting aspect of the theater. This is especially true in this age of technology and the machine. Most stages posses a vast technical apparatus, representing a great deal of energy and work, of which, however, the audience has hardly an inkling. It would seem that a task for the future would be to develop a technical personnel as important as the actors, one whose job it would be to bring this apparatus into view in its peculiar and novel beauty, undisguised and as an end in itself. (Loew in Schlemmer, 84)

Lowe's opinion that back-stage technology should be made visible to the audience may reflect the increasing mechanization of everyday life during the Weimar Era, and the public's general fascination and enthusiasm for mechanical things (Wilson, Pilgrim & Tashjian). In an earlier age, before mass familiarity with machines from Brownie cameras to subways had become common, back-stage technology may have been unintelligible to most spectators. Perhaps Loew is suggesting that because of increasing familiarity with the mechanical, exposing the workings of a machine may no longer have the effect of spoiling an illusion to the same degree that such exposure may have spoiled illusion in the golden age of stage magicians in the nineteenth century. In the mechanical age, exposing the workings of the machine may have the inverse effect, increasing the audience's pleasure, wonder, and engagement by exposing the mechanisms involved in creating mimetic effects.

Schlemmer, Moholy-Nagy and Gropius each brought different abilities and ideas to the Bauhaus theater experiments, and each produced written work about his vision for a total theater of the future. Schlemmer was most interested in the body, Moholy-Nagy in light, and Gropius in space. In line with much of Modernism, all three men were interested in material essences and valorized the primitive, seeking to contribute to the larger project of rebuilding art (and by extension, society) by reducing art to its purest,

simplest elements. Additionally, all three men shared a common interest in dynamism or kineticism.

Gropius was most interested in the design of theater spaces, and created many experimental theater designs, in particular the “Synthetic Total Theater” (1926) for director Erwin Piscator, whose work outside the Bauhaus will be discussed in Section 2.3. Even though Gropius’ theaters were never built, the designs were well documented and had a strong influence on mid-century theater architecture (Baugh, 159-161). The theater building envisioned by Gropius for Piscator’s work would have had modular stages, rotating seating, and nearly all surfaces equipped for rear projection, including the ceiling. The building was intended for multiple uses, including drama, opera, film, dance, choral and instrumental music, conventions, and sporting events. Gropius explained his motivations for this design as follows:

> I view the task of the contemporary theater architect as that of creating a great keyboard for light and space for such a universal director. This should be so impersonal and variable that it will not restrict him in the least, but will respond to any vision of his imagination - a flexible building, capable of transforming and refreshing the mind by its spatial impact alone. (Gropius 155)

While some theaters have since been built with adaptable, multi-functional architecture and technological systems that support immersive, cinematic effects, it is more common to see these kinds of building strategies in theme parks, or current experimental work in robotic architecture (Weller & Do).

Gropius had a particular interest in the use of film projections in theater, and expressed his hope that this technique would overtake the use of painted, representational backgrounds in favor of more abstracted or expressionist scenery. Unfortunately the pace of innovation in this area has been much slower than Gropius

and others had hoped, and this limited, representational use of projection in theater to replace traditional backdrops is easily the most common use of projection on stage in narrative theater today. As Baugh explains: “Notwithstanding the radical and experimental nature of the Bauhaus theater work, the use of light and projected image as a representational alternative to traditional scene painting was to remain a frequent priority” (Baugh 127).

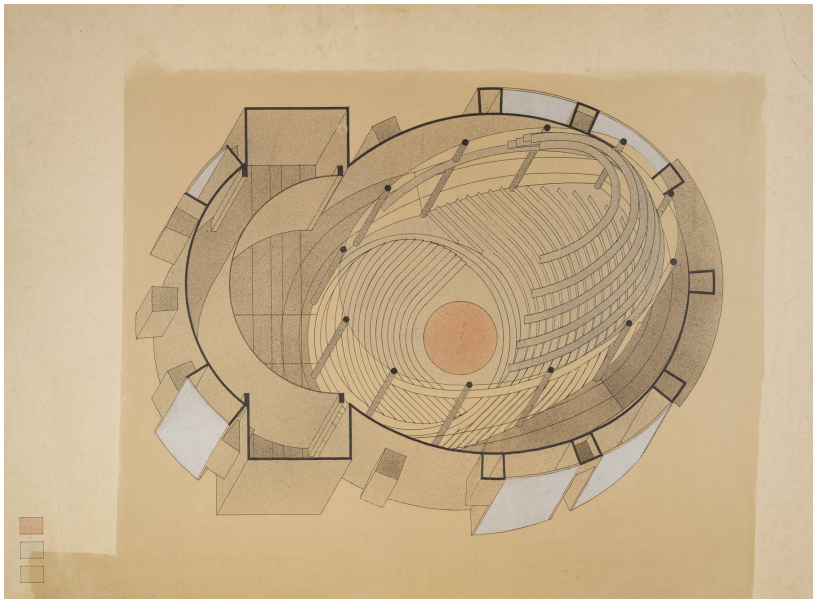


Figure 2.1: Gropius’ design for Synthetic Total Theatre, unbuilt.

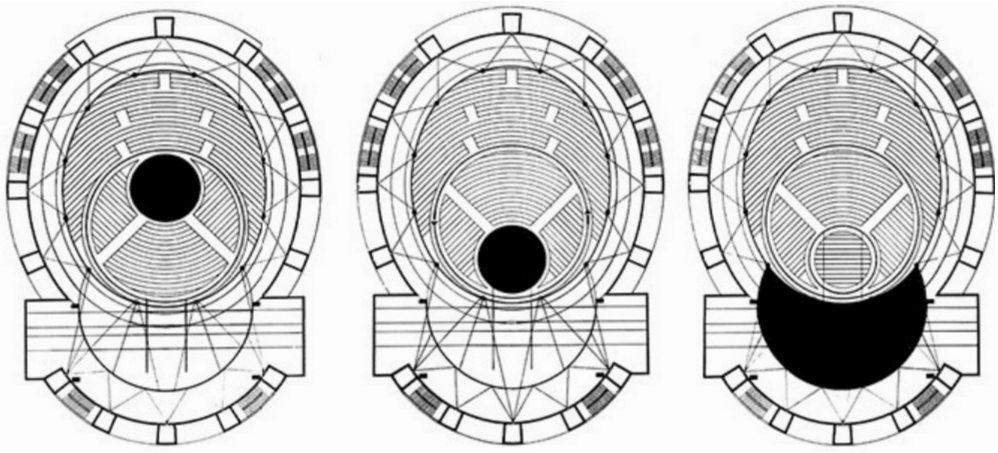


Figure 2.2: each stage configuration possible in Gropius’ Synthetic Total Theatre, from left to right: in the round, three quarter thrust, and proscenium.

Interest in non-representational dynamic projections in space was also a focus of Laszlo Moholy-Nagy's. While Schlemmer and Gropius were more active in the theater experiments produced at the Bauhaus than Moholy-Nagy, his writing, photography, and sculptures influenced the work produced. Moholy-Nagy's *The New Vision: From Material to Architecture* manifesto outlines a theory of art using light, mechanics, and photography to reshape ways of seeing. The refraction of light through the eye is the essential element necessary for sight, which explains Moholy-Nagy's emphasis on light. Of particular relevance to theater is a mechanical light sculpture, *Light Display Machine*, that Moholy-Nagy worked on for eight years, from 1922 to 1930. In *The New Vision*, Moholy-Nagy described the sculpture as follows:

> This kinetic sculpture was designed for automatic projection of changing chiaroscuro and luminous effects. It produces a great range of shadow interpenetrations and simultaneously intercepting patterns in a sequence of slow flickering rhythm. The reflecting surfaces of the apparatus are discs made of polished metal slotted with regularly spaced perforations, and sheets of glass, celluloid and screens of different media. It seems easy to prophesy that such types of constructions in many cases will take the place of static works of art. (141)

Light Display Machine can be seen in action in videos online, and what appears most interesting is the illusion of space created by the contraption in motion. The blank space of the gallery room is transformed into a series of spaces, at once both cinematic and physical. What is interesting about Moholy-Nagy's description of his own work is his puritanical adherence to Modernist principles of constructivism. He seems to view the sculpture as a machine alone - not a work made for a human audience. He describes only the materials and functions of the sculpture and makes no mention of its audience.

One can imagine the added interest of being in the same space with the sculpture, because the spectator's body would be incorporated into the effect as the spectator moved around the sculpture, in and out of positions occluding the light projections. The experience might be imagined as a kind of dance between the spectator, the machine, and the shifting, kinetic spaces created by this performance.

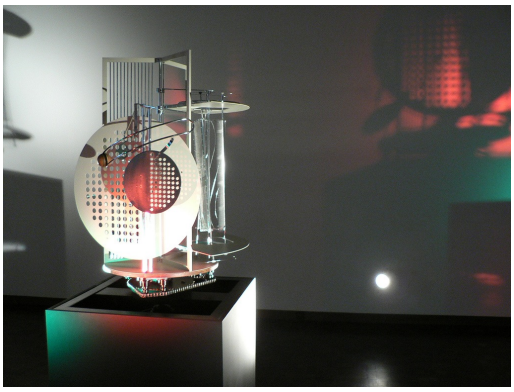


Figure 2.3: Laszlo Moholy-Nagy's Light Display Machine

The relationship between the body and space was the primary focus of Oskar Schlemmer, who was less strictly Modernist in his approach than either Moholy-Nagy or Gropius. Schlemmer outlines his theoretical framework for the development of theater in his essays, "Man and Art Figure" and "Theater" in *The Theater of the Bauhaus*. Like Gropius and Moholy-Nagy, Schlemmer felt a new Total Theater needed to be created from the ground up, beginning with the most basic elements such as light, color, sound, the geometry of space, technology, and the human body. Text and narrative were seen as more refined elements, not to be tackled until the basics were mastered. However, unlike Gropius and Moholy-Nagy, Schlemmer did intend to integrate text and narrative eventually into his work: "We confess that up to now we have cautiously avoided experimenting with this element of language, not in order to de-emphasize it but, conscious of its significance, to master it slowly" (Schlemmer 91).

Influenced by Kleist's and Craig's ideas about the performer as marionette and *Über-marionette* respectively, Schlemmer sought to identify an abstracted human form or set of forms that would serve as a higher ideal human form. Schlemmer used the word *Vordruck*, which means a blank form to be filled in, such as a paper form, or a standardized impression or type. He created four of these forms to represent four aspects of the human body (ambulant architecture, the marionette, a technical organism, and dematerialization) and referred to them as *Kunstfiguren*, which is a compound word open to a variety of shades of meaning. *Kunst* can mean art or artificial, and *Figur* can mean man, physique, representation, figurine, or even character.

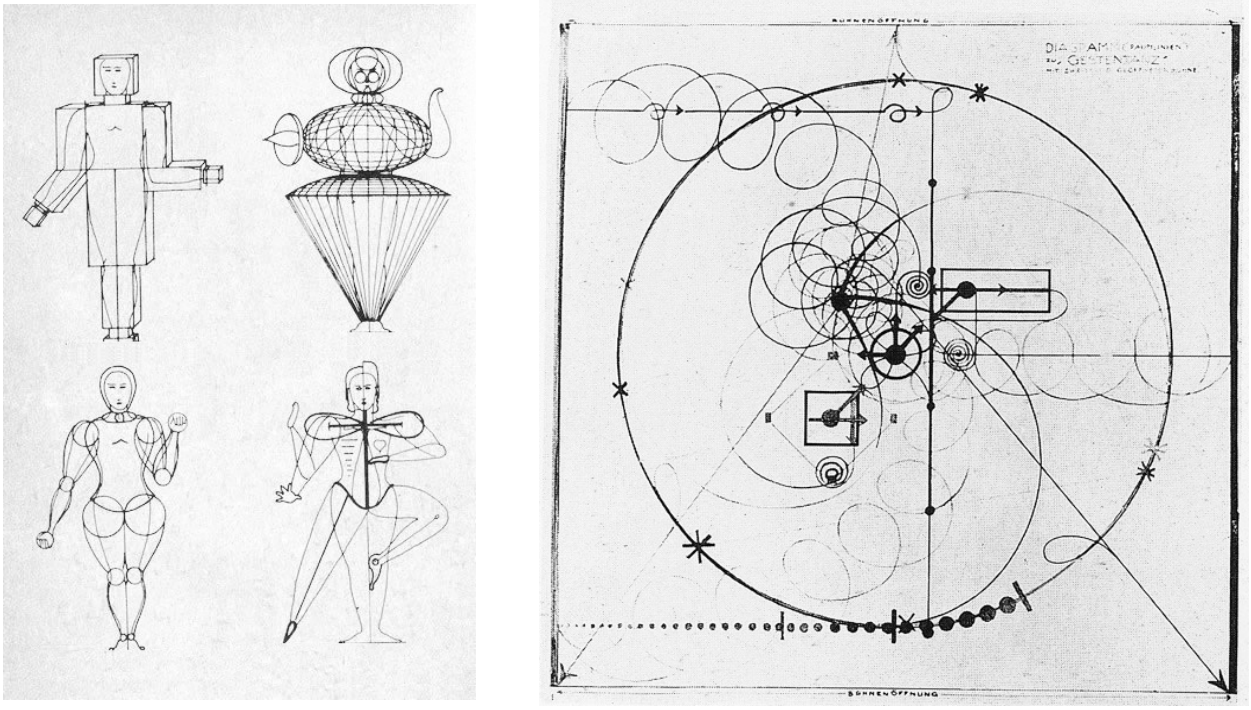


Figure 2.4: Schelmmer's designs for four foundational Kunstfiguren (left), one of Schlemmer's choreographic notation systems, representing movement trajectories as seen from above the stage (right)

Each *Kunstfigur* was costumed in a unique way and given specific choreography derived organically from the movements that were possible, given the nature of each

costume. Despite the organic derivation of the choreography, it was incredibly precise and complex. Schlemmer experimented with types of written notation for choreography, none of which were completely successful, and finally developed a method using a grid on the floor of the stage. The grid is a hallmark of modernism and continues to be influential today (Krauss 8-22), but its role in Schlemmer's work moved beyond the theoretical to the practical, enabling the dancers to memorize and execute complex choreography with as much precision as possible. The use of a non-representational, gridded stage with such specific choreography allowed movement to take on a spatial role. The lack of scenery highlighted the relationship between the moving body and space, allowing the motion of the *Kunstfigur* to take on the production of space: "Each of Schlemmer's theoretical body-costumes resulted in a perceivable space that was constructed by virtue of the moving costume. The four bodies replicated (rather than imitated) these body-based forces as space-making types" (Feuerstein 232).

As Matthew Wilson Smith points out, the irony of Schlemmer's approach was that while it was intended to magnify the human within the machine (the flesh-and-blood dancer inside the built costume), it may have led to the inverse effect, instead highlighting the dominance of the mechanical over the human. Smith goes on to clarify this interpretation of Schlemmer's work: "In a peculiar twist of logic, humanity's liberation comes in the form of its elimination, or precisely in the form of its replacement by the puppet-machine. Puppets and automata dominate Schlemmer's theatrical imagination" (Smith 57). Schlemmer's performance experiments with the *Kunstfiguren* relate to the much larger debate about the relationship between human and machine, and play on fears that persist even today (expressed most stridently by theorists such

as Carson, discussed in Section 1.4) about the replacement of the human performer by a synthetic being.

In addition to these experiments in practice, Schlemmer was also engaged in theory. He created a taxonomy of performance types, which he entitled a “Scheme for Stage, Cult, and Popular Entertainment” (19). This taxonomy is organized around six categories: Place, Person, Genre, Speech, Music, and Dance. Schlemmer works from a broad, progressive understanding of the term “Stage” to identify a framework for understanding any type of performance: “*Stage (Bühne)*, taken in its general sense, is what we may call the entire realm lying between religious cult and naive popular entertainment.” Schlemmer goes on to explain that the concept of Stage is larger than any particular performance genre: “Stage is a representation abstracted from the natural and directing its effect at the human being” (18.) Schlemmer goes on to identify three main stage types: “The oral or sound stage *(Sprech-oder Tonbühne)* of a literary or musical event; the play stage *(Spielbühne)* of a physical-mimetic event; the visual stage *(Schaubühne)* of an optical event.”

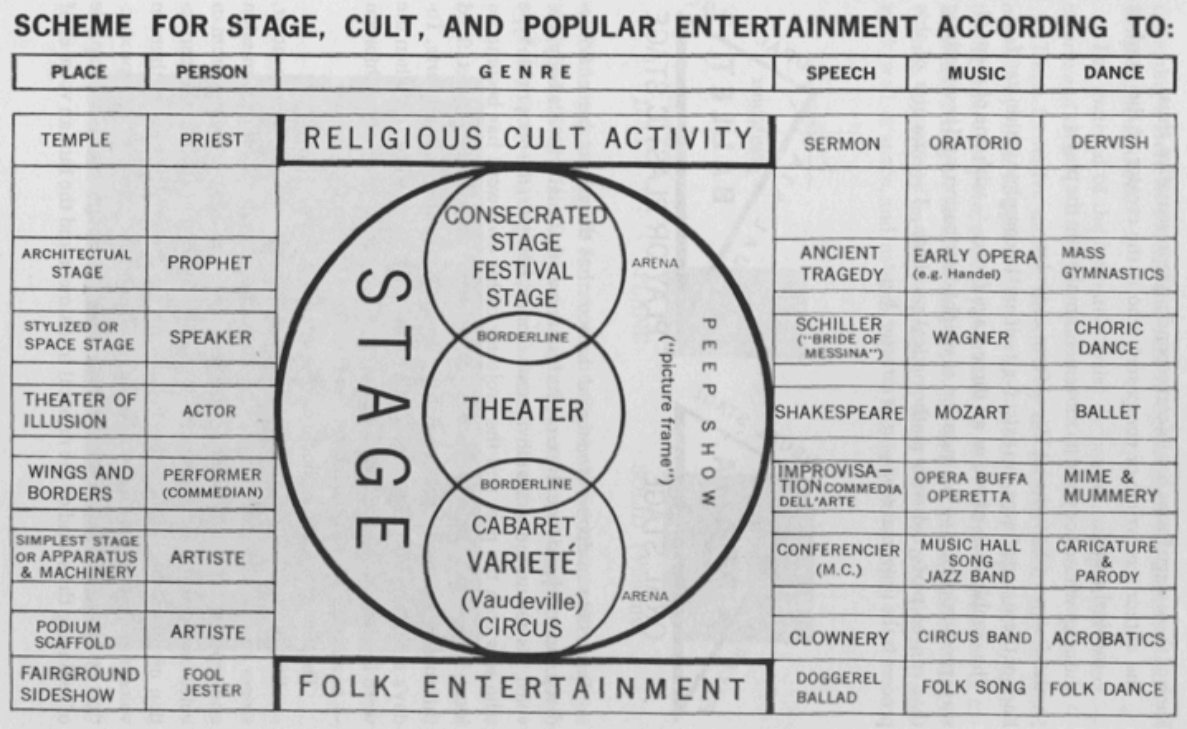


Figure 2.5: Taxonomy of Performance. From Schlemmer (19)

Schlemmer identifies each stage type as having its own particular dominant figure: the author, who is the dominant figure of the oral stage; the actor, who is the dominant figure of the play stage; and the designer, who is the dominant figure of the visual stage. The director, who is not tied to any particular type of stage, is understood as a figure who may combine elements across types of stage to generate genres of performance. Schlemmer suggests: “The combination of two or all three stage forms - with one of them always predominating - is a question of weight distribution, and is something that can be perfected with mathematical precision” (20). Schlemmer does not specifically outline how the balance between stage and performance types may be achieved, but does offer a suggestion for the beginnings of a way to visualize these elements, their relationships to one another, and relative weights:

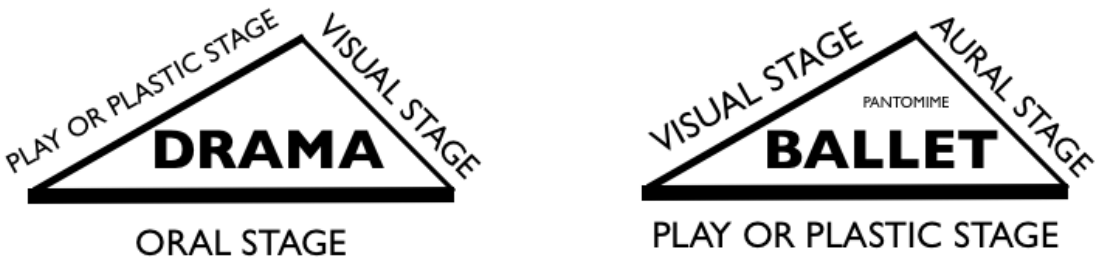


Figure 2.6: Visualizing genres that combine stage types. Schlemmer (20)

The theoretical writings by Schlemmer on performance are tantalizing in that they hint at conclusions well ahead of Schlemmer's time in terms of conceptions of performance, genre, and an innovative methodology for mapping performances visually according to their dominant characteristics. Ultimately, the Bauhaus group was never able to bring its work in theater to completion, as the school was shut down by the Nazis and the artists exiled in many different countries. Schlemmer, in particular, never recovered from the strain of exile and did no further theater work after 1928 until his death in 1943. The Bauhaus theater experiments were a project begun only to be stamped out in its infancy, although the aims and ideas remain relevant today.

In particular, the Bauhaus group's breadth of experimentation with technology on stage, across projection, architecture and space, light, costume and movement reveal a remarkable openness and inclusivity. These theorist-practitioners were unafraid to let rigorous experimentation drive their work across and between performance genres, while at the same time, especially in the case of Schlemmer, there was an engagement with critical theory about the bounds of types of performances. Schlemmer's project to develop visualizations of performance genres based on the weighting of their dominant aspects is a major inspiration for my work, and will be revisited in Chapter 3.

2.3: Erwin Piscator

It was out of this environment of rigorous experimentation at the Bauhaus that Erwin Piscator's dynamically integrated work with film in narrative theater emerged. The most common example today, by far, of digital technology in narrative theater is the use of projected backgrounds to replace physical backdrops. In fact, productions with projected backgrounds are sometimes still referred to colloquially as experimental, when in fact this experiment has been going on in theater for nearly a century. In Greg Giesekam's book, *Staging the Screen: The Use of Film and Video in Theatre*, many compelling historical examples are given, and the work of director Erwin Piscator is highlighted in particular. Piscator experimented with film onstage during his time at the *Volksbühne* in the early 1920s and went on to work extensively with film on stage in several productions between 1927 and 1931:

> Piscator combined increasingly complex sets and stage machinery, which allowed for multiple sets of action and film projection, along with increasingly varied types of film and interaction between film and stage, so much so that these productions effectively fused theatre and film. (44)

Piscator's ability to create an effective fusion of film and theater is remarkable, especially considering it is not often achieved today. As Arnold Aronson points out:

> [...] the successful examples [of digital technology in theater] that I know of are surprisingly few. Too often the theater creators are more concerned with the technology and the momentary theatricality of the filmic or digital image that with understanding and exploring the way in which two vocabulary systems interact. Or they fail to acknowledge that there are multiple visual vocabularies. At least within Western society, our modes of perception and our modes of thinking are undergoing a radical change for perhaps the first time in some five hundred years. The new technologies cannot simply be placed upon the stage without acknowledging and understanding this fact. (Aronson, *Looking* 95-6)

Piscator's productions were examples of narrative theater in which the dramaturgical impact of technology was thoughtfully considered, and the technology was implemented in highly integrated ways. His productions were well-received at the time and his designs are considered influential in the development of scenography in Europe and the US. Michael Huxley and Noel Witts write of Piscator: "The work of Piscator contains the most consistent set of experiments in staging, using all the possibilities that early twentieth-century stage technology allowed" (325).

However, despite Piscator's embrace of technology on stage, his main objective was always the development of a political theater, not technical display. In other words, his main project was to create theater that told stories that convinced or persuaded audiences. Technology was a means to that end, if carefully employed. Gerhard Probst explains: "The guiding principle of all these Piscator productions was political agitation and leftist propaganda (agitprop). He could not - and never did - see the theatre as anything but a forum for political debate. [...] But Piscator became better known for his technical innovations [...]" (51). Theater journals provided descriptions of Piscator's creative uses of technologies, not his synthesis of art and politics.

For example, when faced with the challenge of adapting Jaroslav Hasek's novel *The Good Soldier Svejk* for the stage in 1928, Piscator at first tried to create a dramatization counter to the book's episodic structure, only to find it dissatisfactory. He began again, this time structuring his adaptation in an episodic manner that was true to the book and giving the plot forward motion by moving the main character from scene to scene on a conveyor belt (Huxley and Witts, 320-324). While this conveyor belt technique may have been one of the most-copied theatrical devices of Piscator's

invention - Brecht used it in his staging of Mother Courage and her Children in 1949 (Probst 52) - upon closer examination of his work, it is Piscator's use of film projections on stage that is most interesting.

The description of Piscator's 1927 production of *Hoppla, Wir Leben* (translated as *Hoopla! We're Alive*) is tantalizing and suggests his facility with the integration of theater and film vocabularies surpasses most multimedia productions seen today. *Hoppla, Wir Leben* is described by Giesekam as follows:

> The set for *Hoopla! We're Alive* was a huge multi-storied scaffolding structure on a revolve, with a large transparent frontcloth onto which the opening film was projected.[...] The cloth was then raised to reveal Thomas and the other condemned revolutionaries in prison cells, with the tall central section of the set showing film of a sentry patrolling, magnifying the Expressionist effect. [...] film, projected onto individual screens behind the scenic units as well as onto the central scrim, was used extensively to locate action, carry the narrative forward, and heighten the audience's perception of onstage action. [...] After Thomas was thrown back into prison, the prisoners began knocking on the walls of their cells, passing messages along; this was accompanied by a running display of the text on the central gauze. (44-45)

Piscator's production of *Hoopla!* is particularly notable for its multiple types of uses of film, which Piscator himself theorized as Didactic, Dramatic, and Commentary uses of film. Piscator described these three categories of uses of film on stage:

> *Didactic film* presents the objective facts, up-to-the-minute facts as well as historical ones. It gives the spectator information about the subject. [...] the spectator must have [the facts] at his fingertips if he wants to understand the play. [...] The didactic film broadens the subject in terms of time and space.
>
> *Dramatic film* plays a part in the development of the action and is a "substitute" for the live scene. But where live scenes waste time with explanations, dialogues, action, film can illuminate the situation in the play with a few quick shots [...] inserted between scenes or imposed on scenes (simultaneously) using gauze suspended between stage and audience.

> *Film commentary* accompanies the action in the manner of a chorus. [...] It addresses itself directly to the audience, speaks to it. [...] It draws the audience's attention to important developments in the action. [...] It levels criticisms, makes accusations, provides important facts, indeed, at times it carries out direct agitation. (Piscator 237-239)

In the case of *Hoopla!*, the opening film functioned didactically, combining documentary footage of World War I with staged footage of the play's main character, and providing the informational background needed by the audience to understand the context of the play. At later points in the play, the film was used dramatically, for example, showing the main character walking the streets of Berlin looking for work, and visualizing the prisoners' tapping communications as projected texts.

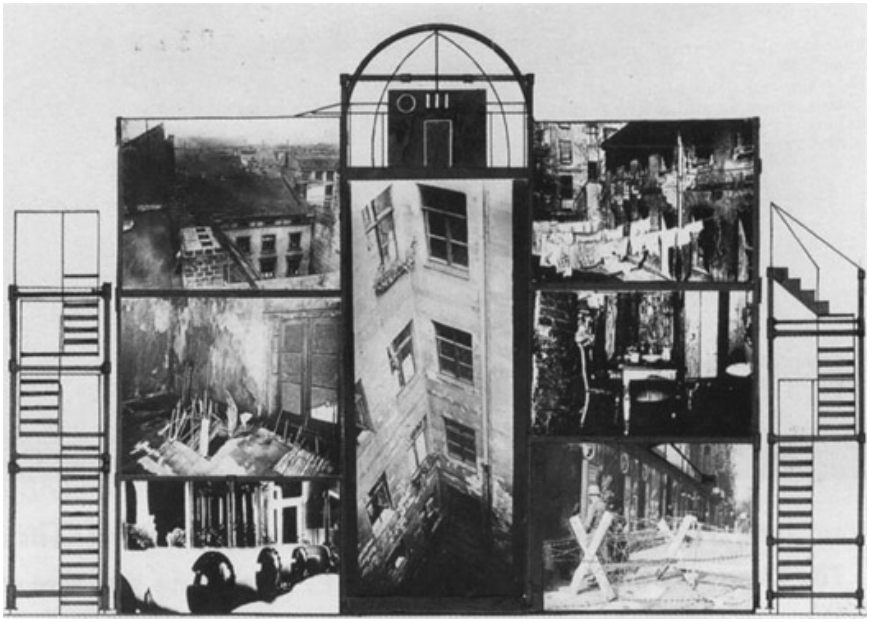


Figure 2.7: Set design for Piscator's production of Hoolpa, Wir Leben

While Piscator's career as a director was extensive, his later work never achieved the acclaim or level of creativity he had achieved during the Weimar Era. With the rise of National Socialism, Piscator exiled first in 1931 to Moscow, then Paris, and finally to the United States from 1939 - 1951. He directed productions in Washington, DC as well as New York City, where he also established an acting school called the

Dramatic Workshop, which was affiliated with the New School. However with the exception of two notable productions of Jean-Paul Sartre's *The Flies* (1947) and Robert Penn Warren's *All the King's Men* (1948) which were well-received, Piscator was never able to create as much success for himself as in Europe in the 1920s. Gerhard Probst suggests:

> An answer to this seeming contradiction may be found when one considers the social changes that occurred in the United States between 1933 and Piscator's exile years there. With Roosevelt's New Deal social conditions had improved and interest in plays portraying poverty, exploitation of workers, class struggle and similar issues began to fade. Above all, American theatre-goers - but this may be true of theatre audiences everywhere - never liked any teaching from the stage, political or otherwise. And the didactical is at the core of Piscator's theatre concept. (65)

Whatever the reasons, social or personal or a combination thereof, the trajectory of Piscator's work, like that of the theater artists of the Bauhaus, was gravely interrupted by the Second World War. Nevertheless, Piscator continues to be cited today as a landmark creator of unique theater-technology integrations. Despite Piscator's dedication to political, persuasive story-telling it seems his legacy remains his innovative uses of technology on stage. This legacy must have proved frustrating to Piscator himself, who continually insisted the use of technology on stage was only a means for communicating the message of the play (Probst 96).

Reflecting on Piscator's categorization for uses of film on stage, (Didactic, Dramatic, Commentary) it is interesting to note that Piscator did not identify a scenic function for film. This is particularly ironic given that scenic uses are the mode in which projections are most often employed in narrative theater today. Perhaps Piscator felt this type of use was inferior and did not merit mentioning. According to Giesekam, the

scenic uses of film on stage, while wide-spread, are least interesting: “Much contemporary mainstream multimedia use in opera and drama [...] is perhaps at its weakest when it simply substitutes three-dimensional settings or painted backdrops with film and relies on the dynamism of editing alone to inject something dynamic into the production” (246). This weaker use of film or video projections on stage may be less dramaturgically sound than more involved and integrated uses. It is difficult to justify the dramaturgical necessity of bringing digital technology into a production when its function is limited to a one-for-one replacement of older forms.

As with the work of the Bauhaus artists, Piscator is notable for not only his innovative work in practice but his accompanying engagement with critical theory. Piscator’s focus on the functions of film in performance, as well as the visionary quality of his early works which reflect a deep integration of film technology in narrative theater, are both important influences on the development of my new dramaturgy, and will be revisited in Chapter 3.

2.4: Josef Svoboda

From the 1950s through the early 1990s, scenographer Josef Svoboda was the principle artistic designer at the National Theatre in Prague, and from the 1970s until his death in 2002 he was the artistic director of Laterna Magika, “[...] a production organization devoted to the creative interplay of live and filmed action - the “dialogue between projection screen and actor,” as [Svoboda] has put it” (Burian, *The Secret* 6). Svoboda’s primary interest was developing scenography as a dynamic element of performance. Baugh explains that “[Svoboda’s] kinetic scenography converted the box

of the proscenium arch stage into an architectonic structure that was fitting and apt for the presentation of the play, and that kinetically reflected the emotional movement of the drama - what he termed a 'psycho-plastic space'" (87).

Svoboda achieved this 'psycho-plasticity' not only by mechanizing set pieces but by employing various uses of light on stage, ranging from works with traditional lighting technologies, to projection, to unusual and unique uses, such as his development of projected light into dispersed, aerosolized particles, rendering the light nearly tangible, and work with large reflective surfaces. His unique position in a state-funded theatre system as well as the length of his career, spanning over six decades, afforded him the opportunity to forge collaborations with colleagues in science and industry, allowing for the development of new technologies specifically for the purpose of increasing the dynamism of scenography:

> The scenic department of the National Theatre in Prague was organized as a collection of research laboratories that examined optical and electrical qualities of stage equipment, and the material qualities of fabrics and plastics in Svoboda's ceaseless experiment with surfaces for receiving, reflecting and transmitting light. When the theatre could not provide the expertise, Svoboda developed relationships with academic and commercial scientific research - for example, in 1970 he worked with Siemens to develop what they called *Lasergrafie*. (Baugh 137)

What is remarkable is not only Svoboda's achievements in terms of technical and artistic innovation, but also his ability to collaborate and work productively across genre and disciplinary boundaries. In particular, Svoboda is also known for his work in installations for World's Fairs and Expositions. Working across the genres of theater and exposition allowed Svoboda flexibility for trying out new things in each that he could then bring to the other, effectively pushing the boundaries of both types of performance.

Burian notes that Svoboda's work continues the legacy of technological experimentation begun at the Bauhaus and by Erwin Piscator (Burian, *The Scenography* xix-xx). Baugh also comments on the relationship between Svoboda and the Bauhaus theater artists: "Like the Bauhaus artists, [Svoboda] believed that science and technology were an inescapable condition of modern living that must be reflected in both the process and the end product of art" (142). Connections can be seen between Gropius' unrealized design for the Total Theatre, a dynamic, mechanized space equipped for many types of projection, Piscator's work with various modes of projection, and Svoboda's work. Despite Svoboda's focus on new technologies he remained fairly traditionalist as a storyteller. He was interested in the technologies on stage only insofar as they aided the narrative at hand:

> "[...] [Svoboda] always conceives of such elements as *instruments*, as means to an end, not as ends in themselves. Moreover, he always conceives of them as organically related to the total production, as dramatically integral elements. [...] Those productions [of Svoboda's] that do employ a heavy component of the technical usually manage to hide the fact, and even when they don't, their underlying intention is not to provide technical spectacle but to serve the production, to provide maximum expressiveness for the production concept." (Burian, *The Scenography* 25-26)

For Svoboda, scenography is like another performer onstage, albeit a non-human one, and there is no risk of injury to the ontology of theater by using technology to achieve the best performance possible from the scenography. That is, there is no risk as long as the technology is carefully considered for its dramaturgical effects, and doesn't overtake the rest of the production by taking center stage. The narrative of the play itself was always central in Svoboda's theater work, and this dedication to the play meant there was no easy answer to what sort of design methods to use:

> Whether or not technology belongs in theatre isn't an issue at all - there can be no doubt that it does - but what function does it have in it, and how does it function in the dramatic work? And you can't answer that with a formula. (Svoboda in Burian, *The Secret* 17-18)

If Svoboda can be said to have worked according to any method, it was constant, rigorous experimentation. With a particularly long and prolific career, including designs for over 700 productions, Svoboda's body of work is difficult to summarize. However, several of his major works bear mention as emblematic of his portfolio, representing each of the major scenographic approaches he is most recognized for having pioneered: mechanized sets, reflective materials, and projections. These three works are the *Polyekran* installation from the Brussels World's Fair in 1958, the 1965 Czech National Theatre production of the Capek brothers' *The Insect Comedy*, and the Laterna Magika media dance piece *Graffiti* from 2001, which was the final production of Svoboda's career.

Polyekran was an installation piece created for the 1958 Brussels World's Fair, Expo 58. *Polyekran* included no physical performers and consisted entirely of projected film and slides. Another work created by Svoboda for Expo 58, *Laterna Magika*, did include physical performers as well, but this work was developed after *Polyekran* and is considered a variation on *Polyekran,* according to Svoboda himself (Burian *Svoboda* 133). *Polyekran* was a part of the Czechoslovak pavilion at the Expo and represented the annual Prague Spring International Music Festival. Seven film projectors and eight slide projectors, all controlled by a pre-programmed magnetic tape system, displayed images from the festival on seven screens of various sizes which were hung at different angles against a black backdrop. The filmed and still images were accompanied by a

music soundtrack, and the performance had a duration of ten minutes (Burian *Svoboda* 133). Svoboda scholar Jarka M. Burian describes the impetus for Polyekran as follows:

> [Polyekran was] Svoboda's response to the development of various wide-screen techniques of the 1950's; in contrast to such techniques, all of which attempted to eliminate the impression of a screen and to give the spectator the sensation of being part of the picture, Polyekran deliberately emphasizes the presence of the screen, or, rather screens. (Burian *Svoboda* 133)

Instead of trying to create a seamless, mimetic representation as did cinemascope and other widescreen film technologies of the time, Svoboda found a more dynamic expression by reflexively highlighting the constructed nature of the screen in *Polyekran*. This type of dynamism was calculated to elicit a more critical engagement from the spectators, somewhat reminiscent of Brecht's strategy of *verfremdungseffekt* or defamiliarization.

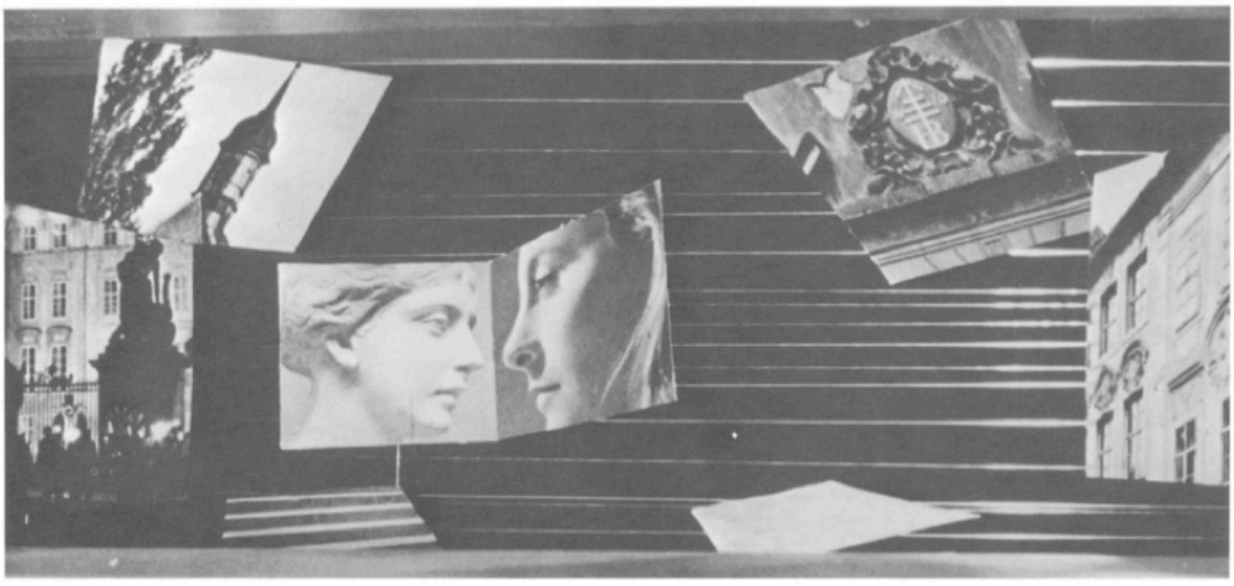


Figure 2.8: Svoboda's Polyekran from the Brussels Expo in 1958

Svoboda's other installation at Expo 58, *Laterna Magika,* combined physical performers with a similar technical setup as *Polyekran*, which led to mixed results. The

main problem with this conception was the inflexibility the film imposed on the actors. The actors responded by adapting their performances to fit the requirements of the film, which resulted in a fairly wooden performance overall. Svoboda did experiment in later years with replacing the films with closed circuit television projections, but the form never achieved artistic success (Burian *Svoboda* 138). Svoboda himself noted: "It means that Laterna Magika is to a certain extent deprived of that which is beautiful about theatre: that each performance can have a completely different rhythm, that the quality of the performance can be better or worse, that a production can expand its limits" (Burian *Svoboda* 138). However, the early work completed in *Polyekran* and *Laterna Magika* is important not only because of its unique contribution at the time but also because of its later culmination in *Graffiti* (2001), in which Svoboda finally achieved a more fluid integration of actor and projection.

Svoboda's 1965 Czech National Theatre production of the Capek brothers' *The Insect Comedy* was notable for his pioneering use of large mirrors on stage, a technique he would continue to develop throughout his career. *The Insect Comedy* presents a satirical look at humanity, with various aspects of human nature represented by insects. The central image of the play, according to Svoboda, was "the sheer multitudinousness of man, the sheer numbers that make one question the difference between insects and people" (Burian *Svoboda* 130). This presented a unique design challenge for the staging of the play. One could easily imagine how to present such an image in film, with high crane shots or using montage, but creating the impression of "sheer multitudinousness" on stage is more difficult.

The solution was two large mirrors, each made up of hexagonal segments, suspended over the stage at angles. This allowed the mirrors to not only reflect the action on the stage, but also multiply the reflections by reflecting each other as well. A new technology recently developed for the application of reflective coating on a light plastic material made the 25-foot by 25-foot mirrors physically possible. The stage itself was augmented with a rotating turntable. Svoboda described the design as follows:

> No flats or scenic decor were used, but the floor of the rotating turntable became a positive motif when covered with vari-colored carpets, a different one for each scene. Only the floor was lit: we thereby gained light via reflection and also avoided the technical problems of directly lighting the mirrors. [...] It was an example of scenography precisely expressing the play, of a design hitting the nail of the head one-hundred percent; there being no holes in the conception or execution. It was also an example of the technical being absolutely in the service of the total production, and not obtrusive. (Burian *Svoboda* 130)

In this example we can see Svoboda's insistence on the primacy of the play over technology, which is employed only insofar as it advances the aims of the narrative. Svoboda would later return again to this large mirror technique for other productions, including *Hamlet* in 1965 in Brussles, and *La Traviata* in 1992 in Florence.

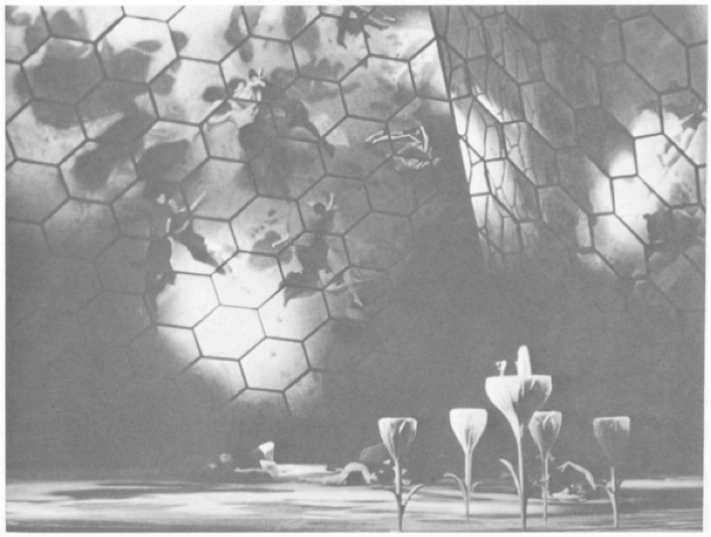


Figure 2.9: Svoboda's set for production of The Insect Comedy in 1965

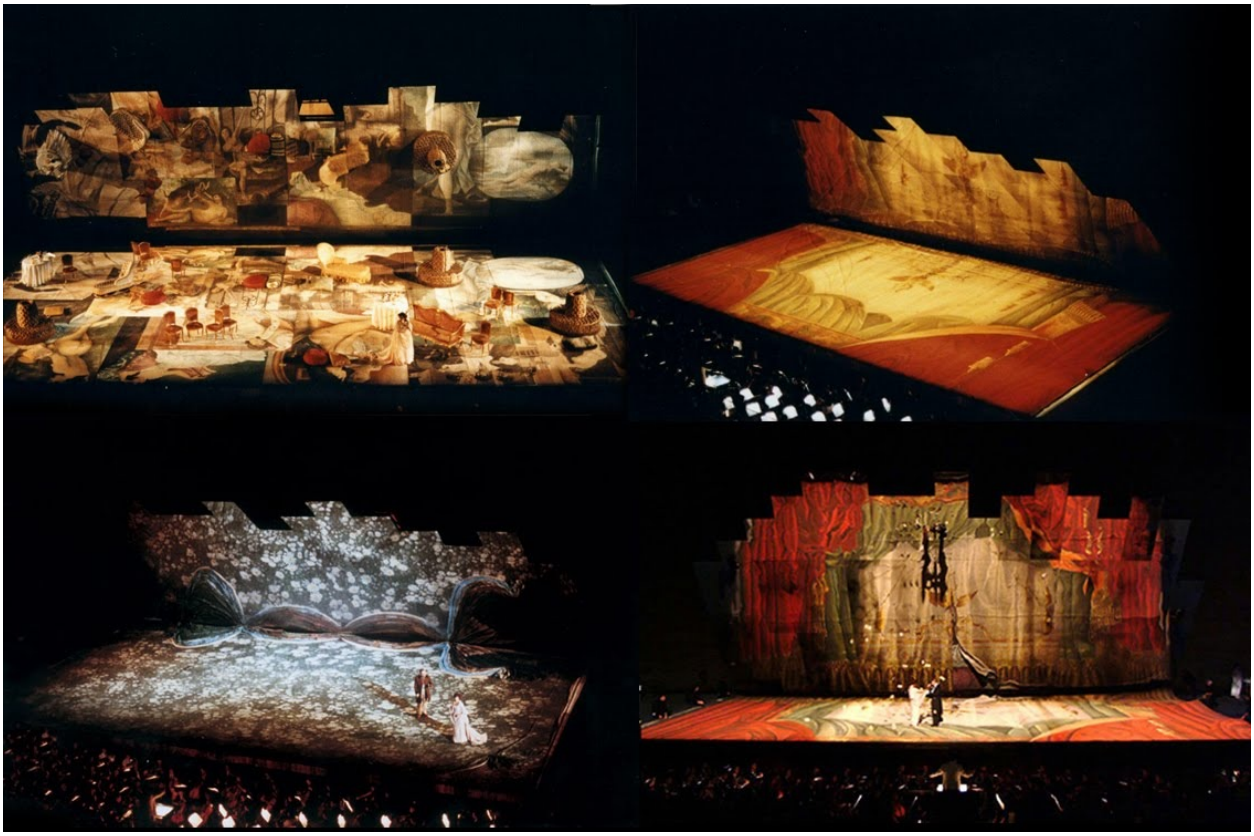


Figure 2.10: Svoboda's continued use of large, angled mirrors for La Traviata in 1992.

A final example from Svoboda's body of work that must be discussed is *Graffiti*, a contemporary media dance piece, which was first created in 2001 and was the last piece Svoboda designed before his death in 2002. *Graffiti* is still in production, as of this writing in 2012, by the Laterna Magika company in Prague. The piece has four movements, each choreographed by a different contemporary Czech choreographer, with music by Peter Gabriel, Michael Nyman and Philip Glass (Giesekam 67). There is no distinct narrative in the sense that a play tells a story, instead various relationships between the dancers are explored, as are waking and dream states. The scenography created by Svoboda presents a uniquely fluid synthesis of physical performers and digital elements, with the dancers and projected images appearing in the same visual

plane. Interestingly, this illusion is achieved by means of a variation on a 19th century illusion known as Pepper's Ghost illusion.

Pepper's Ghost illusion was invented in 1860s London by Henry Dircks, a civil engineer and inventor, although credit is commonly given to the showman who popularized the technique in the Victorian theatre, John Henry Pepper (Steinmeyer 25-29). The technique invented by Dircks allows for a semi-transparent image to appear on stage, creating the illusion of a ghost in the same visual plane of live actors, when viewed from the viewpoint of the audience in a traditional proscenium theater setting. The illusion is achieved as follows: a perfectly transparent sheet of glass covers the front of the stage. The glass leans at an angle toward the audience, but is not visible from the audience because of the manner in which it is lit. Below the front of the stage, in a deep orchestra pit, an actor is propped at an angle complementary to the angle of the glass. The actor below stage is surrounded by black fabric, and lit from below by a bright light. This light reflects off the actor below stage and onto the tilted sheet of glass. From the audience, however, this does not appear as a reflection - it appears that a ghostly figure inhabits the same visual plane of the stage as other actors situated on the stage itself. Steinmeyer explains: "When you look through a window into a dark night, you can see your hazy image reflected in the glass and superimposed on the setting just outside. The figure staring back at you is Pepper's Ghost. The window is transparent, but with proper lighting it can also reflect as a mirror" (32-33).

Figure 2.11: Images of various configurations of Pepper's ghost illusion

Svoboda built on Pepper's technique for *Graffiti*, creating a unique fusion of dancer and projection by removing the 'screen' from the stage. Svoboda placed a large sheet of polycarbonate material across the front of the stage, set at an angle such that the material could not be seen by the audience. This polycarbonate surface, like glass, was both transparent and reflective. Instead of placing the "real" actors below stage in the orchestra pit as in Pepper's version, Svoboda suspended a mirrored surface in the fly system above the stage, and pointed a projector at the mirrored surface. The polycarbonate picked up the reflection of the projected pre-recorded footage from the mirrored surface above the stage, and created the illusion of the video footage existing in the same visual plane as the dancers on stage (Giesekam 68).

This variation on Pepper's Ghost allowed *Graffiti* to achieve a tighter integration of video and choreography than has been seen in most work combining performance and projection. For example, one section of *Graffiti* involved the projection of "[...] CGI in the style of drip paintings, creating an abstract impression of roots or tendrils that seem to entwine a male dancer who performs a solo amidst them" (Giesekam 69). At other points, the projections magnify dancers' facial expressions, replay the performance of a

dancer who has left the stage, or create scenic elements such as “A swirling pillar of light [...] forming a virtual barrier between a male and female dancer. Each is joined in turn by video doubles of the other, creating the effect of each in isolation dancing with the other” (Giesekam 69.) Drawing a connection with the work of Piscator as discussed in Section 2.3, it can be said Svoboda is employing projection in Graffiti in both the dramatic mode and film commentary mode, as well as a scenic mode, a possibility not outlined by Piscator. While *Graffiti* presents a unique case of creative and dynamic uses of projection in performance, the problem of performers having to adjust to the rigidity of pre-recorded media still exists to some extent. This is a challenge directly addressed by the work of David Saltz, which is examined in Section 2.5.

Reflecting on Svoboda’s extensive body of work, his ability to collaborate and work across disciplines stands out, as does as his ethic of rigorous experimentation. In these regards, Svoboda shares similarities with the artists and designers of the Bauhaus. Svoboda’s talent for cross-pollination and innovations across domains (theater, opera, dance, expositions, even scientific patents) was remarkable. One lesson to draw from his example is the emphasis on a process focused on engaging with multiple communities, creating work that bridges gaps between each, rather than developing work in silos. Another aspect of Svoboda’s work that stands out with regard to the works of narrative theater he designed is his insistence on strong textual justification for his technological choices. In the case of Svoboda’s narrative theater work in particular, the narrative, and not technological whiz-bang, drove his design.

Figure 2.12: Svoboda's Graffiti, created in 2001 and still in performance today at the Laterna Magika theatre company in Prague

2.5: David Z. Saltz

David Z. Saltz's work bears a notable difference from the other examples discussed in this chapter in that his productions are created within a university lab, the Interactive Performance Lab (IPL) at the University of Georgia. As Josef Svoboda noted, there can be advantages to working outside the theater: "Theatre, of course, is not always the most ideal place for experiment. It's confined by the straitjacket of the repertoire and fixed limits of time" (Svoboda in Burian, *The Secret* 60). While Saltz's work is not a part of commercial theater, his aims and methods are directly relevant, and he has created productions with technologies such as voice- and motion-activated projections, live motion-capture generated computer animation, and robotics. In describing the goals of the IPL, Saltz states:

> The IPL has two primary objectives for its theatre experiments: 1) to incorporate digital media into theatre without compromising the spontaneity of live

> performance and 2) to make the media dramaturgically meaningful - in other words, to use the media only insofar as they enhance the meaning of dramatic texts. Key to this second objective is selecting texts for which the technology is integral to a compelling directorial interpretation rather than using the production as a pretext for showing off the technology. (Saltz, *Live Media* 110)

Saltz is explicitly focused on integrating technologies in performance with strong dramaturgical justification, stemming from an understanding of the text. Working to preserve the "spontaneity of live performance" has spurred Saltz to look to technologies beyond pre-recorded projections. In several of his productions he has worked with responsive technologies which directly rely on the physical performer for input in real time. To date of this writing, Saltz's work with audience interaction has been within the context of an installation setting, and not the theatrical setting. Restricting interaction with technologies to the actors within the theatrical setting may be a strategy employed in response to difficulties regarding interactivity and narrative:

> [...] the relevance of interactive technology to scripted theatre is less obvious. After all, in a scripted and rehearsed performance, the sequence of events is predetermined. One might suppose that interactive media would be unnecessary, and even downright dangerous, adding a needless element of risk to the endeavor. (Saltz 109)

Figure 2.13: Saltz's production of Kaspar (1999)

Saltz goes on to explain that variability in theater performance is desirable, even essential, and that to preserve this balance between scripting and variation he has chosen to focus on responsive technologies in interaction with actors. For Saltz's 1999 production of Peter Handke's *Kaspar*, he employed a variety of sensors onstage that allowed performers to control projections and sound. The narrative themes of *Kaspar* are linguistic torture and conformity, and using this variety of sensors allowed Saltz to create a technologically rich environment on stage enhancing these themes. Saltz described the production as follows:

> The IPL production expanded on the notion of technologized space implicit in Handke's text. A pair of Macintosh computers generated sounds and projected images, controlled LED lights planted in the actors' costumes, and tracked sensors built into furniture. This use of technology was integral to the production's interpretation of Handke's play [...] The production portrayed the dystopic potential of the very technologies it employed, in effect using the technology against itself. (Saltz 114-115)

During a scene in which Kaspar meticulously examines the furniture on stage, embedded sensors were used to detect motion and pressure and then trigger the appropriate audio. In another scene, the performer playing Kaspar could shut off distressing audio by speaking with his own voice. The responsive technologies used in *Kaspar* are described by Saltz as "the live actor's acting partners" (117), requiring just as much rehearsal time as the actors themselves. This is quite unlike traditional theatre technologies, such as pre-programmed lighting and sound, which is most commonly implemented only in the final week of rehearsals before the play is performed in front of an audience.

For Saltz's 2000 production of Shakespeare's *The Tempest*, the otherworldly spirit, Ariel, was depicted by the projection of an animated computer generated 3D

figure. This figure was projected on a large rear-projection screen spanning the width of the stage, which served not only to display the Ariel figure but also to create the backdrop scenery for the play. The Ariel figure was not pre-recorded, but was instead controlled in real time by an actor outfitted with motion capture sensors. Both the 3D figure and the physical actor were on stage and visible to the audience, however the other performers only acknowledged and interacted with the 3D figure on the screen.

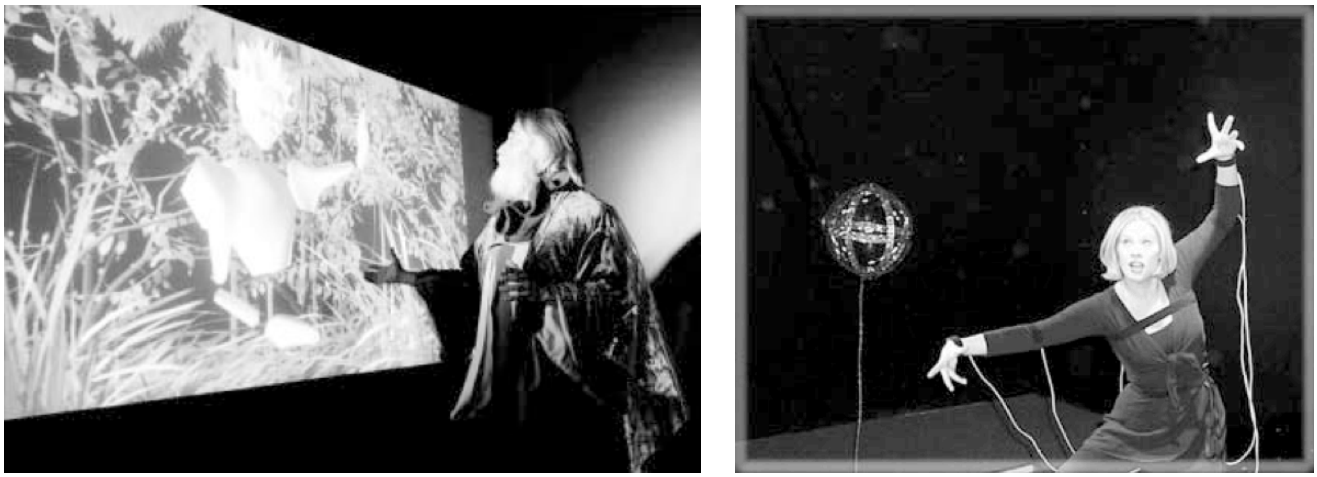


Figure 2.14: Saltz's production of The Tempest (2000) showing the actor playing Prospero interacting with the 3D animation of Ariel (left) and the actor playing Ariel creating live motion capture to animate the 3D character (right)

Saltz's directorial concept for this production was that the character Prospero's magic was media, and the setting of the play, the island, was a digital illusion conjured by him. This concept becomes clear at the end of the play during the scene in which Ariel is freed from servitude to Prospero: "Prospero liberated Ariel by opening her cage and removing the sensors from her body, at which point the actress ran through the audience and out of the theatre, leaving Prospero alone in an empty, media-free world, his "magic" gone" (Saltz 121). Dramaturgically, the use of media was justified as a method to enhance the depiction of magic in the narrative of the play.

Currently, Saltz is at work on a *commedia dell'arte* project involving robotic and human performers. *Commedia* is a 16th Century Italian performance form comprised of semi-improvisatory plots and stock characters. In a *New York Times* article by Alex Wright reporting on Saltz's project, Saltz explained: "Robots have limited expressive capabilities. So instead of trying to replicate human beings, you embrace those limitations" (Wright 3). The robot Saltz is working with can be programmed to perform various sets of gestures and postures, corresponding to stock *commedia* characters. Wright clarifies: "The purpose of such an exercise is not to replace human actors, but rather to explore the mechanics of how movement evokes emotional responses" (3). Saltz's use of an expressionless puppet to evoke emotion through movement is reminiscent of both Kleist's essay on the marionette and Craig's concept of the *über-marionette*, as well as Schlemmer's work with *Kunstfiguren*.

In addition to creating innovative productions with technology in theater, Saltz has developed a taxonomy of media in performance: "[...] I have become impressed with the variety of roles they [interactive media] can play within a performance event. In my own productions, I have distinguished between at least twelve ways of defining the relationship between performance and media" (Saltz 124). Saltz goes on to describe these twelve roles:

Role	Description
Virtual Scenery	The media provide a backdrop depicting the environment within which the staged action takes place. This virtual scenery can either be static or animated. (124)
Interactive Costumes	Interactive costumes invert the relationship established by virtual scenery [...] [they] use the body of the live performer as a canvas for the media. (124)
Alternate Perspective	The media depict the events enacted onstage from another visual perspective. (124)
Subjective Perspective	The media depict the thoughts, fantasies, dreams or sensations of some or all of the characters onstage. (124)
Illustration	The media illustrate the performer's words. A common impulse, this use of media can in certain instances be effective. Too often, however, it is merely redundant. (125)
Commentary	The media have a dialectical relationship with the stage action or serve as epic commentary on it. (125)
Diagetic Media	Diagetic media exist as media within the world of the narrative. (125)
Affective Media	The media produce an emotional effect on an audience. Affective media are nondiagetic; they do not exist within the character's world. (125)
Synesthesia	Synesthetic media are similar to affective media, but do not serve so much to tell the audience how to ffeel about the events onstage as to mirror the performance in a different sense modality [...] for example, a person might "hear" colors or "see" temperature. (125-126)
Instrumental Media	Interactive technology is used to create new kinds of instruments. [...] This use of media is similar to synesthesia in that it can track the performer's actions very closely. However, in semiotic terms, synesthesia is iconic, while a virtual instrument is symbolic: the relationship between action and effect can be entirely arbitrary, as long as it is predictable. (126)
Virtual Puppetry	The media create a performer's double. [...] Just as synesthesia blurs into instrumental media, instrumental media blur into virtual puppetry. The difference is that while an instrument is an extension of a performer, a kind of expressive prosthesis, a virtual puppet functions as the performer's double. (126)
Dramatic Media	This type of media representation functions dramatically by interacting with the performers as a character in the narrative. (126)

Figure 2.15: Twelve Ways of Defining the Relationship of Media and Performance. From Saltz (124-126), arranged in chart format

It is notable that both Saltz and Piscator identify dramatic and commentary roles for technology on stage. Saltz goes much further than Piscator, however, in terms of outlining a variety of possible roles for technology in performance. Saltz's categories have many areas of overlap, some self-acknowledged as with Affective Media, Synesthesia, Instrumental Media, and Virtual Puppetry. There is additional overlap between the categories of Alternate Perspective and Commentary, and between Diegetic Media and Virtual Scenery and Interactive Costumes.

What must be emphasized as the strength of Saltz's taxonomy is that his conceptualization of uses of media in performance moves far beyond the typical, thoughtless and tired uses of projections on stage. Saltz's perspective provides another counterpoint to those expressed in the liveness debate: "As media becomes truly interactive [...] it no longer stands in opposition to live performance. For better or for worse, the age of frozen media is coming to an end. An age of interactive, live media is upon us" (Saltz 127).

2.6: William Dudley

Another contemporary practitioner working with a diverse range of technologies is William Dudley, a professional scenographer in commercial theatre. Theatre historian Oscar Brockett compares Dudley's work to Renaissance and Baroque theatre:

> The work of British designer William Dudley exemplifies the impact of the use of multimedia imaging as scenery. [...] Dudley's designs incorporate various technological applications while maintaining the integrity of the text and storytelling. [...] Large, technically complex environmental spectacles, like much of Dudley's work, are not produced regularly due to expense. These productions may be analogous to the Renaissance and baroque spectacles in their size and scope" (Brockett 334- 336).

Like Saltz, Dudley has worked with a variety of technologies, including mechanized seating platforms, a fog screen projection display, and 360-degree panoramic projection surfaces. Like Svoboda, Dudley's career thus far has been long and prolific, making his body of work challenging to summarize. Since designing his first production in 1970, Dudley has designed over seventy-five productions. He has described his main objective as a designer to give scenography a dynamism and achieve illusions of limitless depth on stage:

> I'd always found there was a deadness using still photographs in theatre. I felt it turned into a dry sort of lecture - it felt inanimate. [...] What Disney and his animators found was that by using a multi-plane camera, and changing the speed of which these glass panes passed by the lens, you got an undeniable sense of depth, which was exactly what would have interested the renaissance painters. [...] I decided to work on curved and angled screens, and juxtaposed screens so that there was a real depth change to confuse the eye. Not to try and be cruel to the eye but to allow the eye to be seduced, much like good acting seduces the audience to suspend disbelief. (Dudley in Johnson, 1-2)

Dudley's interest in creating illusions of depth and animation on stage can be traced back to traditional forms of stagecraft, the difference being Dudley's use of contemporary digital tools to achieve such effects. Dudley is open about his use of techniques from film on stage: "I'm trying to cinematize theatre. Cinema owes a tremendous debt to theatre. They've borrowed our actors, our writers, even our designers, and ... it's payback time!" (Dudley in Wengrow, 1). This provides an interesting counterpoint to Auslander's model of economic dominance in which film (the dominant form) infiltrates theater (the lesser form.) Dudley's position is that cinematic techniques can be brought into the theater in such a way that they do not diminish the theatrical form, but rather strengthen and enhance it.

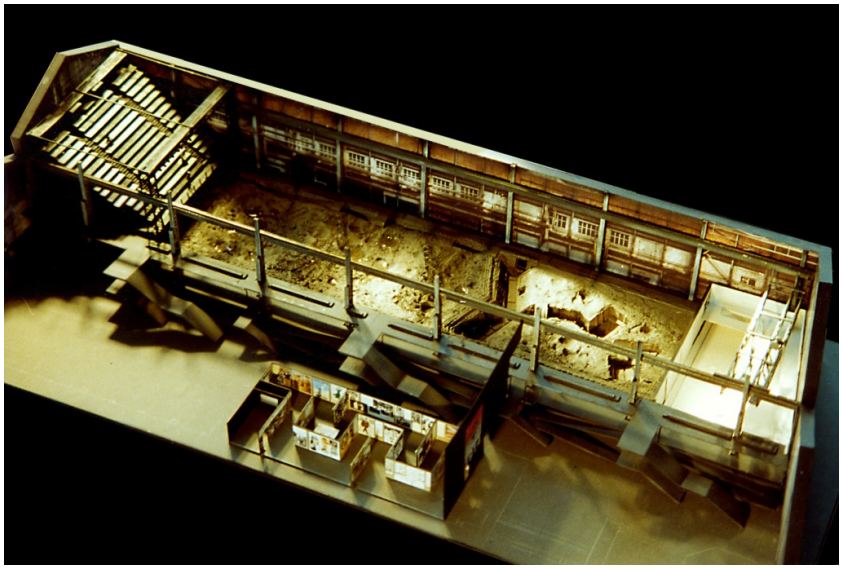


Figure 2.16 Maquette of Dudley's design for The Big Picnic (1994)

While Dudley's current work focuses on the uses of CGI imagery and projections on stage, he also continues to design many shows without these technologies, and has worked with other technologies in design as well. For his design of Billy Bryden's *The Big Picnic* (1994) he used mechanical technology in unconventional ways to enhance the themes of the story, which centers on a battalion of Scottish soldiers fighting in World War I trenches. Audience members had the choice to either locate themselves in the performance space, which was the size of a European football pitch, and walk along with the performers as the play progressed, or sit on platforms that were mechanized to move forward incrementally across the performance space, simulating the progress of trench warfare, and eventually bringing the audience into the line of fire, literally. Pulsed lasers were used to help create the impression of machine gun fire. The use of technology in the design received mixed reviews:

> At first, there's a perfect match between the kinesthetic thrills imparted by the show's technology and the naive elation of these youths eager to prove their manhood. [...] As the war proceeds, though, you may worry that the show's anti-Brechtian efforts to include you in the experience merely highlight the privileged luxury of your position. [...] Technically, the show is a marvel. Who could forget the moment when the red-maned Angel of Mons, the Fate figure who twirls suspended from the gantry, sweeps forward to pick up one of the slain warriors in an arial pieta. (Taylor, 1)

It is clear from this reviewer's perspective the multiple dramaturgical effects of the technology in the performance had not been carefully enough considered. The impact of presenting such sensitive, historical subject matter, the lives of young men at war, was at odds with the spectacular nature of the technology at some points in the story. At early points in the play, before the characters go to war, the technology and narrative seemed well-aligned. However, as the play progressed, the pleasure of the

thrill of the spectacle was ethically mis-matched with the gravity of the narrative, highlighting the privileged position of the performers and audience members, who were not really involved in combat at all, but surrounded by simulation.

For the production of Terry Johnson's *Hitchcock Blonde* (2003), Dudley used both large-scale rear projections to allow for quick changes in locale as well as a CGI projection of a blonde woman on a water curtain, referencing not only Janet Leigh's character in *Psycho*, but the ubiquitous, illusive blonde that appears in many of Hitchcock's films. Johnson's play weaves together two stories, one about a Media Studies lecturer engaged in research on Hitchcock while pursuing his younger, female student, and the other about Hitchcock himself. Dudley's designs were well-received in reviews: "The stage design by William Dudley is a masterpiece of video technology. Images of a Greek villa and a trailer home, to name a few, are projected on to white screens to create great visual effects. There is also the use of a projector to cast an image of a naked woman onto a flow of water from a shower, capturing the transient nature of the sexual longing that runs throughout this play" (Bird 1). The use of projection technologies seems a good fit for this script, given that it was written in a cinematic manner, interweaving two stories neither co-located in time or place, and the subject matter of the play is a filmmaker and a scholar studying his films.

Figure 2.17: Concept art of Dudley's design for Hitchcock Blonde (2003)

While nothing in particular in the story of Andrew Lloyd Webber's *The Woman in White* (2004) calls for the use of video projection technologies, the large-scale semi-panoramic mobile projection system created by Dudley for the production worked well with the spectacular nature of the West End / Broadway musical genre. *The Woman in White* was based on the Victorian mystery novel of the same name by Wilkie Collins, and received tepid reviews for its libretto and score, but quite positive reviews regarding Dudley's designs:

> William Dudley's set design (or should I say video design) is magnificent; the opening projection of a foggy station in which the woman in white first makes her ghostly appearance is spine tingling. Similarly the projections whisk us from rail station, to manor house to open fields and the streets of London in a far more realistic manner than any physical set design could possibly achieve. (Bird 1)

Another reviewer commented: "Dudley's transitions from baronial interiors to sunlit cornfields are impressive and open up new possibilities in the marriage of theatre and cinema" (Billington 2). This appears to reflect one of Dudley's main objectives as a

theater designer - to bring cinema into the theater, and gain from the cinematic medium's capabilities on stage.

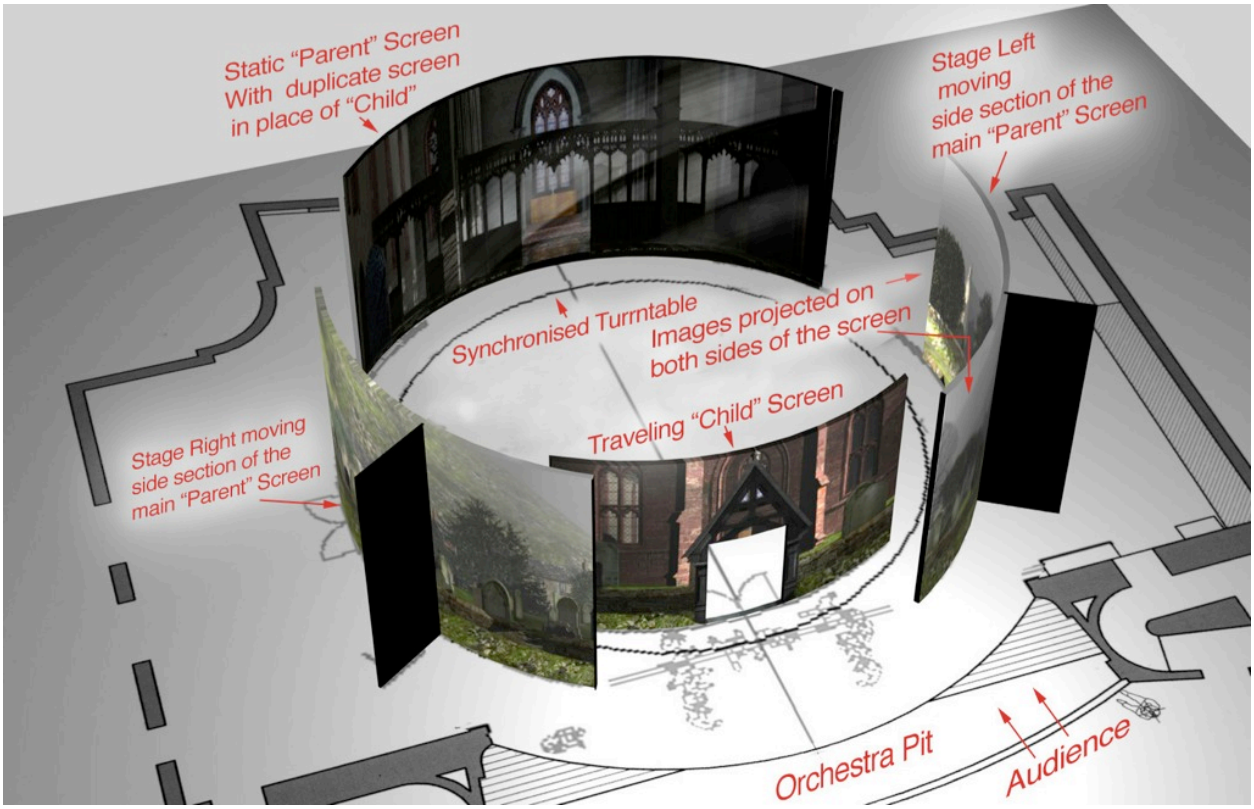


Figure 2.18: Diagram of Dudley's design for The Woman in White (2004)

Dudley utilized even more ambitious projection technologies for a production of J. M. Barrie's *Peter Pan in Kensington Gardens 360* (2009). In this production a 360-degree panoramic screen surrounded the audience with animated CGI settings to simulate the feeling of flight for the audience. Actors were suspended from wires during flying sequences, and a variety of other traditional stagecraft technologies were used as well. While using projection technology to enhance the magic of flight in the *Peter Pan* story seems dramaturgically sound, apparently the production as a whole was a failure for a variety of reasons. Reviewers cite the age of the cast (adults were used to portray the child characters), the direction (reviewers note a lack of subtlety, and an odd

interpretation of the Tinkerbell character as angry as opposed to ethereal), as well as the adaptation of the script which apparently fell short of expectation as well (Hitchings, Stayton.) Dudley's designs were both praised and noted as obstacles to the production's success, because they "overwhelmed" the production: "The undeniably impressive technical achievements drown out what's left of the story's poignancy" (Hitchings, 1). However, in what was clearly an underwhelming production for a whole host of reasons, none of which had to do with design, it seems inappropriate to fault Dudley's work in this case.

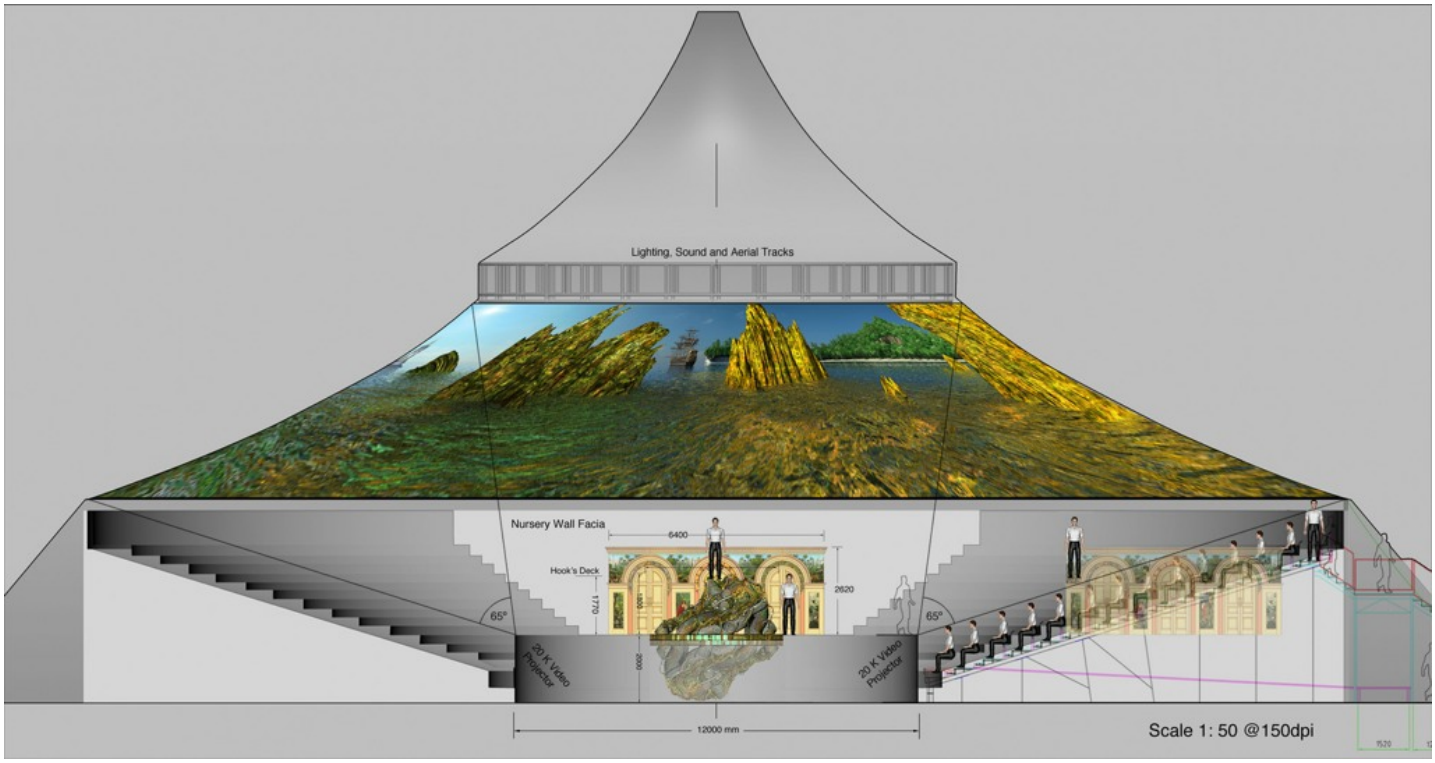


Figure 2.19: Elevation plan of Dudley's design for Peter Pan in Kensington Gardens 360 (2009)

Taken as a whole, Dudley's work seems to reflect a contemporary neo-baroque aesthetic. Dudley's ambition to cinematize theater, and his larger project of bringing a dynamism to scenography, is similar to Svoboda's focus on dynamism on stage.

Dudley's work, however, pushes further than Svoboda's in the direction of the neo-baroque as defined by Angela Ndalianis:

> The neo-baroque shares a baroque delight in spectacle and sensory experiences. [...] The neo-baroque combines the visual, the auditory, and the textual in ways that parallel the dynamism of the seventeenth-century baroque form, but that dynamism is expressed in the late twentieth and early twenty-first centuries in technologically and culturally different ways. (Ndalianis 5)

Certainly Dudley's designs as discussed can be said to reflect this "delight in spectacle and sensory experiences." However, Dudley is wary of the term spectacle, and sees himself as firmly rooted in a theater tradition: "I always wince when people say that what I do is mere spectacle" (Dudley in Shaw, 2). Dudley's work can be further understood by situating it within the context of Ndalianis' concept of the neo-baroque. The main feature of the baroque embodied in the neo-baroque aesthetic is "[...] the lack of respect for the limits of the frame" (25). This is particularly evident in Dudley's work. The frame in theater is traditionally the proscenium arch, which serves to demarcate the location of stage action and define the audience-actor relationship. Dudley's set for *The Big Picnic* included both spectators located in the performance space as well as mechanized audience seating, thus blurring the traditional framing of theatrical space. His productions of both *Hitchcock Blonde* and *The Woman in White* can be seen as transitional, with their large-scale curved projections culminating in the fully panoramic projections of *Peter Pan in Kensington Gardens 360*.

Ndalianis explains this use of large screen projections "[...] seek[s] to collapse the representational frame perceptually. Unlike their small-screen companions, however, the sheer size of the cinema screen and theme park attraction invites the dual sensation of the audience's immersion *into* the alternate world and the impression of the entry of

this world into the space of the audience" (Ndalianis 151). This description of large screen functionality as both inviting audience in and reaching out to meet the audience in its own space nicely mirrors Dudley's dual goals of integrating filmic technologies in to theater and preserving theater as its own genre. It seems that while this play with theatrical and filmic frames has been productive in Dudley's work, it is not always successful. Revisiting the discussion of *The Big Picnic*, it seems that in some cases, technology has trumped narrative in Dudley's work. This may indicate a need for careful consideration of the textual justification for the uses of technology in those instances, if "mere spectacle" is to be avoided.

In summary, the group of practitioners reviewed in this chapter present nearly a century of innovative work on stage with technology, both pre-digital and digital, integrated in narrative theater as well as other performance types. It is important to understand this legacy of work exists to counter anti-historical arguments about the ontology of performance and that describe an oppositional relationship to technology, as discussed in Section 1.4. Each group or individual described in this chapter developed (or is continuing to develop) a dramaturgy spanning both theory and practice, to differing degrees, that is centered on the integration of technology and theater. Each dramaturgy has different elements that are emphasized, and each is important to consider for the development of a new dramaturgy in the following chapter.

From the collaborative work of Walter Gropius, Laszlo Moholy-Nagy, and Oskar Schlemmer at the Bauhaus, the importance of interdisciplinary exploration of formal characteristics across projection, architecture and space, light, and body and movement is stressed. Schlemmer's theoretical work grew out of these practical experiments, and

presented a taxonomy of performance and the beginnings of method for visualizing performance types based on weighted representations of their dominant aspects. From Erwin Piscator, the deep integration of film with narrative theater is striking, as is his insistence on textual justification for his uses of various technologies on stage. Additionally, Piscator's identification of the functions of film on stage are helpful. Josef Svoboda's interdisciplinary mode of working, like the Bauhaus artists, stands out, as does his emphasis on textual justification for uses of technology in designs for narrative theater. David Saltz's work provides an innovative focus on the use of responsive or live technologies in theater, as well as an emphasis on the consideration of how digital technologies impact the human performer. And finally, William Dudley brings a playful interrogation of the boundaries of the frame to the forefront, as well as an interest in borrowing strategies and elements from cinema for the stage. In the following chapter, the dramaturgies discussed above are used to inspire foundational elements in the development of a new dramaturgy for digital technology in narrative theater.

CHAPTER 3

A NEW DRAMATURGY

3.1: Taxonomy of Performance

One objective of the new dramaturgy for digital technology in narrative theater is to enable practitioners to include digital technologies on stage in narrative theater work, in deeply integrated and creative ways, while respecting the integrity of the genre. As noted in Chapter 1, other genres of performance already successfully use digital technology on stage in innovative ways (dance, music, performance art, installation art, etc.). The goal of this new dramaturgy is to apply digital technologies in ways that support the central aims of the genre and maintain its recognizability as narrative theater, instead of simply turning narrative theater pieces into other genres of performance that have already developed strategies of their own for digital technology integration.

In order to be able to know if the genre of narrative theater is preserved or how it is impacted by the implementation of digital technologies, it is necessary to develop an understanding of the genre in relation to other performance types: in other words, a taxonomy of performance is needed. As discussed in Section 1.3, while other models of performance exist, they do not allow for fine-grained enough description and analysis of performance genres as is needed for this project. Inspired by Oskar Schlemmer's work in diagramming performance types according to weighted representations of their dominant aspects, I suggest a model of performance based on three sets of opposing aspects. These three sets of opposing aspects are as follows: mimetic - reflexive,

spectacular - minimalist, and scripted - fluid. These three sets of opposing aspects construct three spectrums, along which points or degrees are defined (see Figure 3.1).

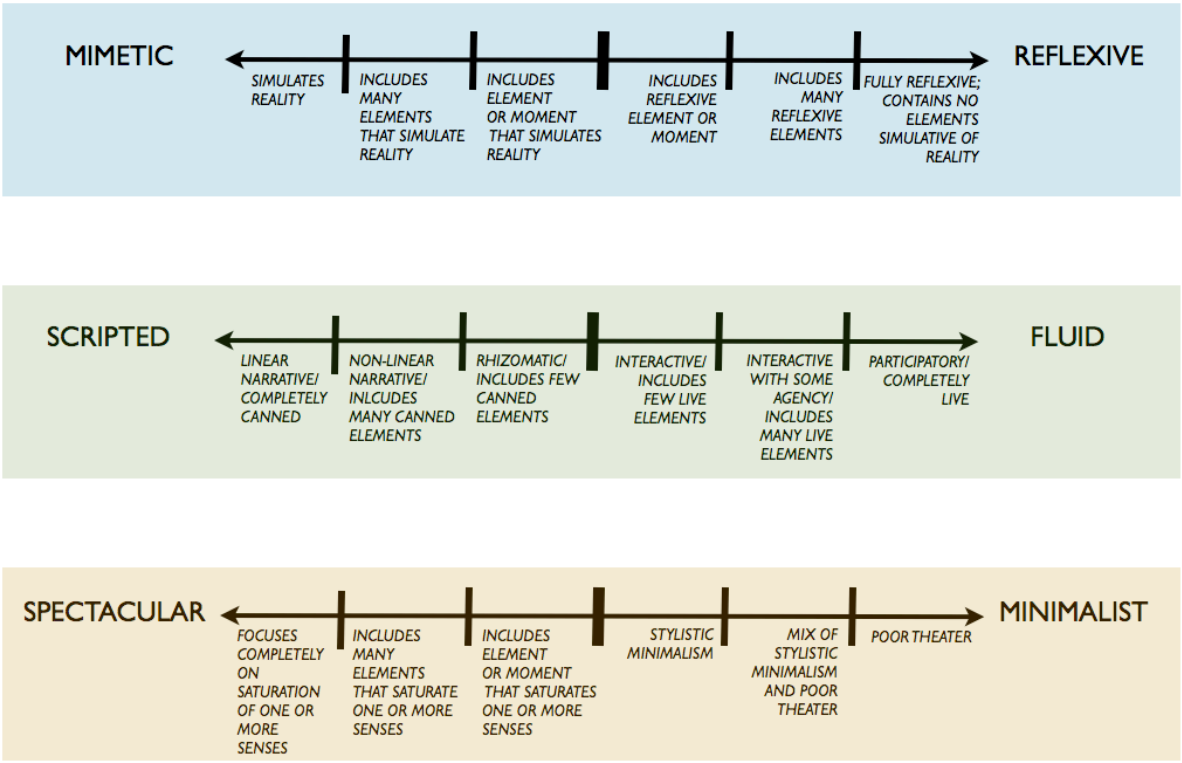


Figure 3.1: Three sets of opposing aspects used to create three spectrums, along which points or degrees are defined.

These three sets of opposing aspects were arrived at after much revision, with the aim of developing a model capable of encompassing all types of performances, while at the same time allowing for representation of a specific production. Moving across each spectrum, segments are defined. This means that the way a performance is categorized according to these spectrums is subjective but not random. Each aspect is considered in relation to the performance in question, and the decision is made about where on the spectrum each performance falls in relation to the definitions provided for each segment of each spectrum.

For the ***mimetic - reflexive spectrum***, at the mimetic end, performances simulate reality. The degree to which reality is simulated decreases moving toward the center of the spectrum, while the quality of reflexivity increases moving toward the other end of the spectrum. Reflexive performances are not concerned with simulating reality but rather with drawing attention to their own form. Mimetic works encourage the spectator to look through the form and focus on the content of what is being represented, while reflexive works encourage the spectator to focus instead on the mode of representation itself (Carroll *Anti-Illusionism*). If paintings were to be placed along this spectrum, examples of *trompe l'oeil* would be placed at the mimetic end of the spectrum, whereas non-representational examples of high modernism such as works by Rothko would be placed at the reflexive end of the spectrum.

In cases of performance, narrative theater is often highly mimetic, while forms such as installation art tend to include more reflexivity and less mimesis. An example of a mimetic performance design is one in which the stage resembles a literal living room, with a sofa, armchairs, coffee table, and so forth, with backstage areas masked from view. An example of a reflexive stage design is one in which the mechanisms of action are exposed - the audience can see backstage areas, stagehands are visible creating transitions, and so forth, such that audience members are constantly reminded that they are watching a construction. For some performance types, mimesis is less important or even undesirable. For example, some works of music or dance turn purposefully away from mimesis, in favor of exploration of other formal characteristics of sound, motion or the body. Other performance forms, such as sport, do not include either element of this spectrum.

On the ***scripted - fluid spectrum***, scripted performances are dominated by elements that are predetermined, while the dominant elements in fluid performances are improvisatory or designed to change with each instance of performance. At the scripted end we find performances that are completely scripted with linear narrative or completely canned. Moving toward the center of the spectrum, performances have non-linear narrative, or rhizomatic narrative. Linear narratives proceed in causal and logical order, and in the genres of fiction and drama most commonly include a beginning, middle and end, presented in that order. Non-linear narrative can be understood at a point along the middle of the scripted side of this spectrum, in which case the order of events may be presented differently. The common practice of beginning a narrative *in medias res*, then providing exposition, then proceeding with action and resolution can be understood as a form of non-linear narrative.

Moving toward the center of this spectrum, we find works with rhizomatic narrative structure. The rhizome is a philosophical concept originally developed by Gilles Deleuze and Félix Guattari. Media and literary theorist Marie-Laure Ryan explains how the concept of the rhizome applies in literary contexts:

> In a rhizomatic organization, in opposition to the hierarchical tree structures of rhetorical argumentation, the imagination is not constrained by the need to prove a point or to progress toward a goal, and the writer never needs to sacrifice those bursts of inspiration that cannot be integrated into a linear argument (8).

While rhizomatic structures have the potential to be scripted to some degree, they are organized differently from either linear or non-linear narrative, and open up possibilities for more associative, juxtaposed, or random relationships.

Examining two contrasting works will help illustrate the difference between narrative and rhizomatic structures in performance. Both Robert Wilson's *Einstein on the Beach* and Arthur Miller's *The Crucible* are scripted, but Wilson's piece creates a rhizomatic structure, while Miller's is a linear narrative. Linear narrative is a more tightly structured form, while rhizomatic narratives are less structured. Dominant interpretations emerge from linear narrative, while rhizomatic narratives are more difficult to pin down in terms of meaning. After seeing *The Crucible,* most audience members can discuss who the characters in the story were, what happened, and who did or did not change. Audience members discussing *Einstein on the Beach,* however, could reasonably come up with any number of wildly divergent interpretations. Wilson himself has said that when asked what his works mean, he answers:

> I don't know. And I don't think it's the responsibility of an artist to necessarily understand what it is that he does. I talk a lot about the structure and the ideas and how it's put together, but ultimately that's not important to appreciate it. If I see a Balanchine ballet, or if I see a Japanese garden, I can appreciate it simply as I like it, and I think this piece [*Einstein on the Beach*] is like that. (Wilson in Obenhaus)

Einstein on the Beach is not, strictly speaking, about anything. The figure of Albert Einstein is central, as are the cultural and historical concepts surrounding him. But there is no plot, no causal or logical sequence of events, no goal toward which action moves. The entire production was based on a series of storyboards sketched by Wilson, and is representative of Wilson's focus on exploration of formal characteristics, and rejection of mimesis (Fishaut). While Wilson's work is highly scripted, and not only in terms of written text but also with regards to tightly choreographed movement, *Einstein on the Beach* presents a less tightly structured type of narrative while Miller's

work, on the other hand, provides a traditional linear narrative. In a 1996 *New Yorker* editorial reflecting on his reasons for writing the play, Miller states:

> [...] by 1950 when I began to think of writing about the hunt for Reds in America, I was motivated in some great part by the paralysis that had set in among many liberals who, despite their discomfort with the inquisitors' violation of civil rights, were fearful, and with good reason, of being identified as covert Communists if they should protest too strongly. (Miller 159)

While audiences of *The Crucible* will still come up with their own individual interpretations of the play, it can be agreed upon that the play is the story of the Salem witch trials of the 1690s, presented in such a way as to draw parallels to the McCarthy-era Communist 'witch-hunt,' which was contemporary when Miller was writing the play. Innocent characters are accused of witchcraft and hanged, and the play can be seen as a warning about the dangers of paranoia.

Reflecting on the first spectrum discussed (mimetic - reflexive), whereas Miller is concerned with telling a realistic story (mimesis), Wilson is interested in the exploration of formalist characteristics (reflexivity). The manner in which Miller's play is most often performed allows for some fluidity on the part of the actors. They may choose to alter slightly the tone or tempo of their performance during each instance of the production. A hallmark of Wilson's work, on the other hand, is a complete lack of fluidity. Wilson is well-known for directing his performers down to the smallest angle of a wrist or neck, the precise number and size of steps to be taken, and even the exact tone of voice.

Moving across the spectrum into fluidity, performances closest to the center include interactive elements. Interactivity refers to a base-level form of engagement that can, in terms of spectatorship, be as simple as laughing in response to comic acts on stage or clapping at the end of a performance to express appreciation. Participation, on

the other hand, refers to a responsive form of engagement that requires a significant effort on the part of the participant and has consequences. Interaction, however, does not result in the same level of consequences as participation. For example, the clapping traditionally performed by the audience during J. M. Barrie's *Peter Pan* can be understood as interactivity. If the audience does not clap when prompted by the actors, one can assume the show will continue regardless, Tinkerbell will not really perform a death scene.

At the end of the fluidity spectrum are performances that are participatory. Participation refers to a deeply involved type of interactivity that includes a great deal of agency and complex decision-making on the part of the participant. Examples of this type of performance are works that are frameworks for participants to create performances themselves, sometimes with no external audience other than the self. Blast Theory's *Rider Spoke* presents a good example of this type of participatory work: the audience members bicycle through a city with a handheld computer mounted on the handlebars of their bikes. They are instructed to search for audio files tied to GPS locations left for them to discover by previous audience members. Then, audience members are instructed to find a hiding place to record and deposit their own audio for other audience members to find. If the audience members do not record any audio, the consequences are real - there will be no audio for the next audience members to find. It takes a significant effort for the audience members to find others' audio recordings and to create their own. It is this difference between real and non-consequences, as well as the difference between trivial and significant effort, that separates interactivity from participation.

Finally, along the ***spectacular - minimalist spectrum***, performances that are most spectacular focus on the saturation of one or more senses. An example here is the contemporary commercial circus genre, which aims to saturate the visual and aural sense simultaneously. Moving toward the center of the spectrum away from the spectacular, performances emphasize this saturation of the senses to lesser degrees. Moving across the spectrum in the direction of minimalism, theatrical minimalism is the form of minimalism that is closest to spectacle. This is the type of minimalism seen in performance designs by practitioners such as Edward Gordon Craig and Robert Wilson. This style is minimalism on a grand scale, done in an explicitly presentational manner. Moving to the end of the minimalist side of the spectrum, we find performances in the traditions of Jerzy Grotowski, Augusto Boal and others, which focus on the blurring of lines between spectator and performer, as well as blurring of the frames that demarcate spaces of everyday life from spaces of performance.

By rearranging these three spectrums (mimetic - reflexive, scripted - fluid, spectacular - minimalist) so that they cross one another (see Figure 3.2), it is possible to map any performance across this form according to the ways in which it falls across each spectrum.

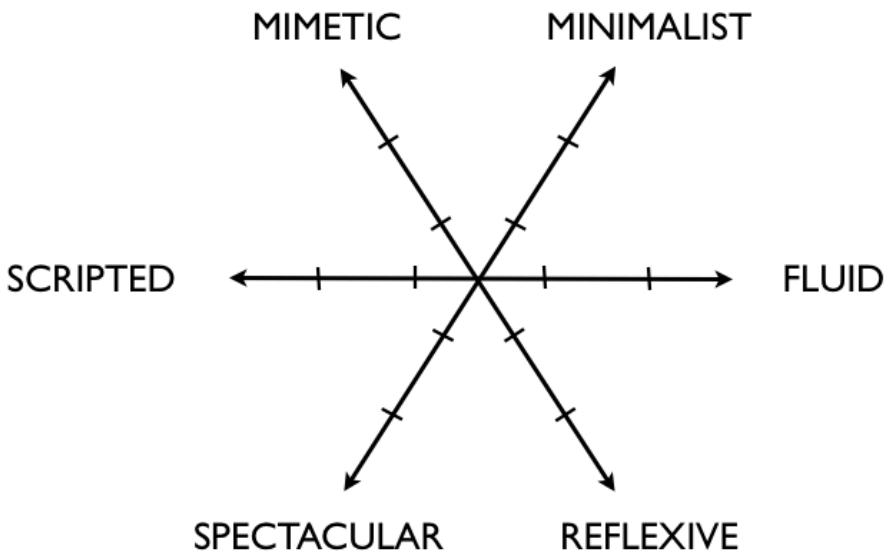


Figure 3.2: The three spectrums arranged to form a map, allowing for the visual representation of a performance.

Regarding the map in Figure 3.2, it is important to clarify this does not represent a mathematical graph, but a two-dimensional map. Possibilities for further research include the exploration of three-dimensional or animated representations to express additional elements such as chronology (i.e., to show change in a genre form over time, or change within a specific production at different moments) and are discussed in Section 6.5. It must also be emphasized that understanding performance through this type of mapping representation is not an exact science. The benefit of this visualization is that it allows for the differentiation and comparison of different types of performance.

3.2: Mapping Examples

To better understand how to use this taxonomy of performance to map and categorize performances, I will describe and map several examples from different genres of performance: circus, installation art, environmental performance, professional sports, and narrative theater. The first example is Cirque Du Soliel's *Ovo* (2010) (see Figure 3.3). This performance represents a twist on the traditional circus genre. *Ovo*

includes over-the-top physical feats by the performers and impressive visual design and effects, from the large brightly-colored circus tent that houses the production to the sets and costumes used on stage. Unlike a traditional circus, there are no animals, there is only one stage (as opposed to the usual three rings) and there is a minimal narrative threaded through the production. It is not necessary, however, to be aware of this narrative to enjoy the performance. The narrative is the story of a bug in search of a lost egg. This narrative is eclipsed by a rhizomatic quality, with scenes progressing from one to the next in a loosely associative fashion that does not really drive toward an ultimate goal.

Taking a look at the representation of *Ovo* on the map in Figure 3.3 provides a visualization of the dominant aspect of the performance: spectacle. It must be noted that the resulting shape is not meant to include the attributes attached to the interior segments. Instead, the shape represents the qualities of the outermost segments. in the case of *Ovo*, spectacle has been emphasized most strongly, with some mimetic and fluid qualities appearing as well. It is clear the performers are working within a set structure, yet have freedom to impact this structure. Indeed, some of the essential tension of the circus performance stems from this fluidity. The conceit as the audience understands it is that the performers will attempt wild physical feats of high stakes, meaning that if they are not achieved there is a very real chance of serious injury. The performance also contains some mimetic qualities, with costumes that resemble insects.The aspect of *Ovo* that remains most strongly with the spectator after the performance is over is the spectacle, the stunning, large-scale visual images created in the performance by the set, costumes and bodies of the acrobats.

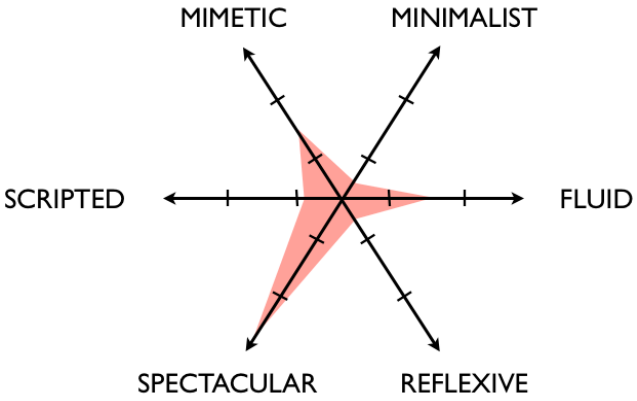


Figure 3.3: (left) Image from Cirque du Soleil's Ovo (2010); (right) mapping of Ovo, an example of circus.

An example of installation art demonstrates a different shape of performance when mapped in this manner. *Screen*, an installation from 2003 in the Brown University VR CAVE is represented in Figure 3.4. Similar to video installation art such as Camille Utterback and Romy Achituv's *Text Rain* (2000), *Screen* allows a user to interact with animated, projected text. *Screen* differs from other video installations in that it was mounted in a VR CAVE system, allowing the user to be surrounded by the projections on all sides. This particular system allowed for a gestural interface and no head-mounted display. The reading experience navigated by the user of *Screen* is rhizomatic, and emphasizes a sense of play. Additionally, the experience is highly reflexive. It is not a story that is being communicated, but ideas about reading, play, and interaction. The aesthetic is minimalist, and somewhat tied to the everyday, due it its location in a university lab, which like any other room at a university is littered with the detritus of the everyday and subject to the comings and goings of students, staff, and professors involved in the several projects underway, of which *Screen* is only one. However there may be some element of spectacle as well, mainly due to the cave technology's saturation of the visual sense. The dominant qualities are reflexivity, fluidity (at a degree

between interactivity and participation, as the main experience is one of navigation, which is required to continue the experience, but there is no opportunity for the user to become a writer at any point), and minimalism.

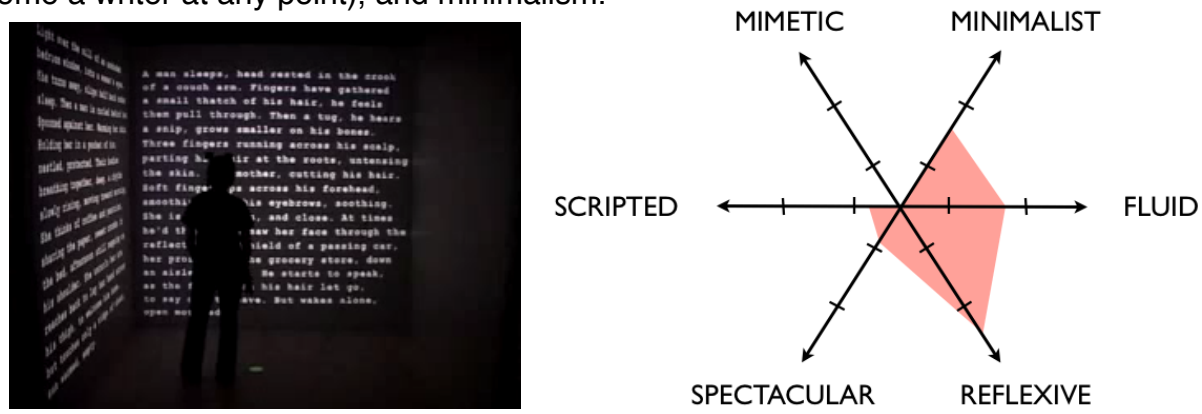


Figure 3.4: (left): Image of user interacting with Screen (2003); (right) mapping of Screen, an example of installation art.

The next example is best described as environmental performance. This piece is called *Ulrike/Eamon Compliant* and was created by the performance art group Blast Theory for the Venice Biennale in 2009. *Ulrike/Eamon* turns the concept of a city walking tour on its head. The basic interaction is receiving instructions over a cell phone while walking through the city, however a rhizomatic story layer adds to the complexity. The work is based on the lives of two historical terrorists: Ulrike Meinhof, of the Red Army Faction, and Eamon Collins, of the Irish Republican Army. Having chosen the role of either Eamon or Ulrike, the participant walks through the city while receiving calls over a cell phone with instructions and basic branching script possibilities. The experience is designed to bring up ideas about subjectivity and politics, and ends with the participants in an interrogation room with the artists from Blast Theory. The main objective of *Urike/Eamon* is to have an experience, in other words, to participate. There is a rhizomatic story structure with characters, with documentary and fictional aspects are blended, but the actions of the participant are dominant. The quality of the everyday

is essential to the experience, as the participant looks to anyone else like an average person on a cell phone walking in the city. So the minimalist quality of the experience is emphasized and there is no use of spectacle in this case. Reflexivity is also emphasized, bringing attention to the form of the walking tour in order to subvert it. There are some mimetic elements, however, such as the portrayal of characters by voice actors over the cell phone. See figure 3.5.

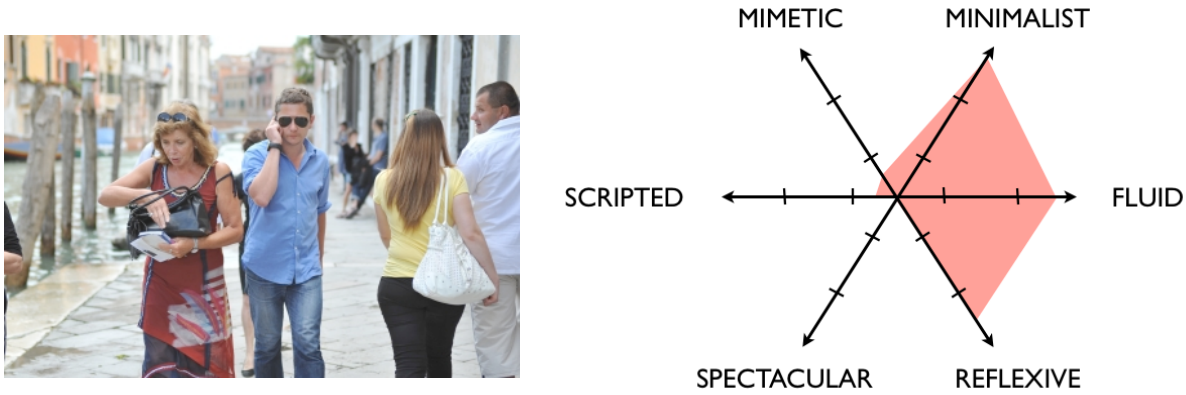


Figure 3.5: (left) Participant on cell phone in Ulrike/Eamon Compliant (2009); (right) mapping of Ulrike/Eamon Compliant, example of environmental art.

The next example comes from professional sports. In a WNBA 2012 season home-opener basketball game between the Atlanta Dream and the New York Liberty the event begins with the announcement of the home team's final roster, accompanied by indoor fireworks above the basketball court. The home team's championship banner from the previous season is revealed and hung in the rafters of the arena, alongside the other championship banners. A few words of enthusiasm are said by the home team coach and one of the star players on the team. Then the basketball game begins. Fans become involved in the game by cheering, shouting and so forth. Interaction is also

solicited by entertainment personnel associated with the home team, such as cheerleaders, the team mascot, the announcer, and people who invite fans onto the court during breaks in the game to participate in contests, which are often silly and comical. Fans may come and go from the game, arriving late, leaving early, exiting temporarily from the seating area to use the restrooms or buy food or drink in the arena. Fans talk to each other and use their cell phones during the game as well. Fans may stand or sit, or even dance, especially when prompted by the closed circuit television screens suspended above the court. After the game is over, the coach says a few words to thank the fans for attending the game, and there are occasionally opportunities for fans to meet the players in autograph sessions.

Spectacle is emphasized at this event with the size of the arena, the size of the closed-circuit screens that display not only the action of the players but also the fans themselves, special effects such as indoor fireworks, and physical feats of the players. There is also some emphasis on interaction, although the actions of the fans can't actually impact the game, with the exception of fans who disrupt a game by running onto the court. As with the circus example, however, a major point of tension comes from the participation of the players in the event, which has real consequences. There are some minimalist qualities that bring to mind the everyday as well, even though the experience emphasizes spectacle. The spectacle is largely confined to the court and the screens, while the fans' behaviors emphasize qualities of the everyday. There is nothing mimetic about the game, it is a direct experience and not a representation, and nothing particularly reflexive either. There is no meditation on the form of the game during the

game. There is some sort of scripted narrative, which is crafted and interpreted by the commentators and fans. See Figure 3.6.

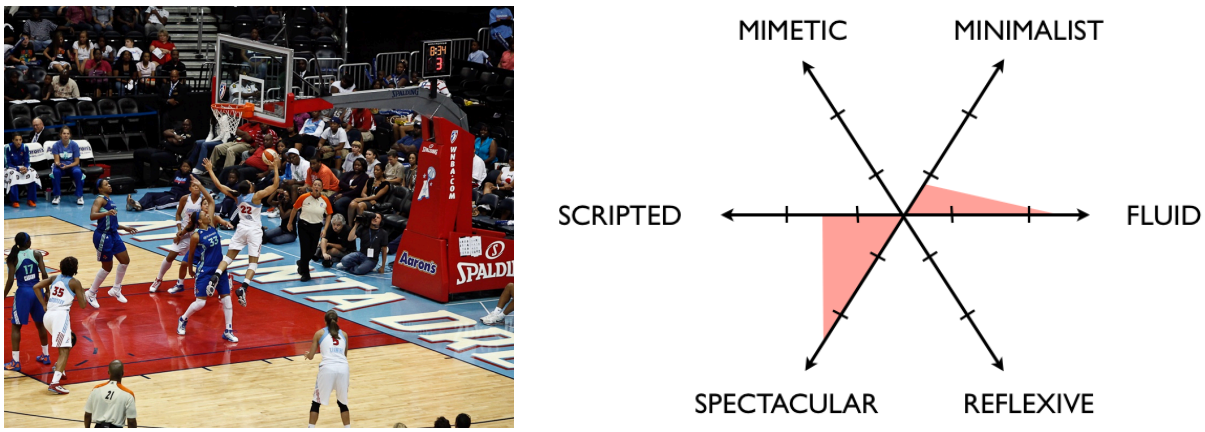


Figure 3.6: (left) Image from WNBA game, Atlanta Dream versus the New York Liberty, Philips Arena (2012); (right): mapping of WNBA Atlanta Dream Game, example of sport performance.

The final example comes from narrative theater, the 2005 Broadway production of Edward Albee's *Who's Afraid of Virginia Woolf?* starring Bill Irwin and Kathleen Turner. The major element of this performance is its scripted quality, and more specifically, the performance's linear narrative. There is no significant audience participation and no grand visual spectacle. The production is highly mimetic, inviting the audience member to look past the mechanism of representation to the narrative being represented. Very little is reflexive, although there is likely an opening house manager speech or recording that acknowledges the construction of the production in a theater, as well as architectural structures that embody a basic type of reflexivity such as the proscenium arch. Additionally, there is little minimalism in this example. The set and costumes include many detailed elements, and the experience of attending the performance is clearly removed from the everyday. The theater architecture, set design, script, blocking and acting style all differentiate this experience from everyday life. The most dominant element in this example is the linear narrative, making this a good

example of narrative theater. The most memorable and dominant aspect of this performance is who the characters are, what happens between the characters, and who and what does and does not change. See Figure 3.7.

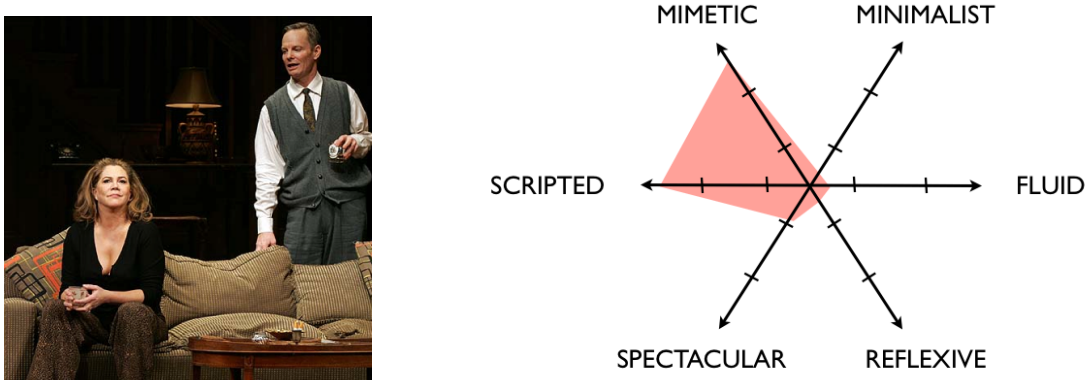


Figure 3.7: (left) Who's Afraid of Virginia Woolf, Broadway (2005); (right) mapping of Who's Afraid of Virginia Woolf?, example of narrative theater.

Notably, I did not choose an example of a musical from mainstream theater to illustrate a case of narrative theater. The musical is a different form with its own conventions and qualities. In *Frame Analysis*, Goffman elaborates on the qualities particular to the musical form, specifically with regard to the "immense flexibility of framing practices" employed by the musical:

> A character may not only enact a performance of song or music (this having the same realm status as background music, merely a more prominent place), but may also "break into" musical expression as though this could be interposed into the flow of action without requiring a formal shift into the performer role. The lyrics and especially the mood of these songs will have something to do with the drama in progress, but how much is an awesomely open question. What the remaining characters do during these musical flights is itself complex and no less departure from dramatic action than the offering itself. (148)

Musicals make use of both diegetic and non-diegetic music, different techniques of incorporating song into story, and different levels of integration of song and story. Conversely, every piece of music in Sondheim's *Sweeney Todd* advances the story. On the other hand, the songs in Rodgers' and Hart's *Babes in Arms* only sometimes

advance the story and more often add entertainment values and provide a break from the story. The role of dance and movement in a musical also must be considered, as well as orchestration and the role of instrumental music. For these reasons and others the musical should be considered a special case not included in this dissertation. Along with other types of performance, investigating the musical is an objective for further research.

To reflect on the above examples presented from circus, installation art, environmental performance, sport, and narrative theater, mapping of each performance is presented together for comparison in Figure 3.8.

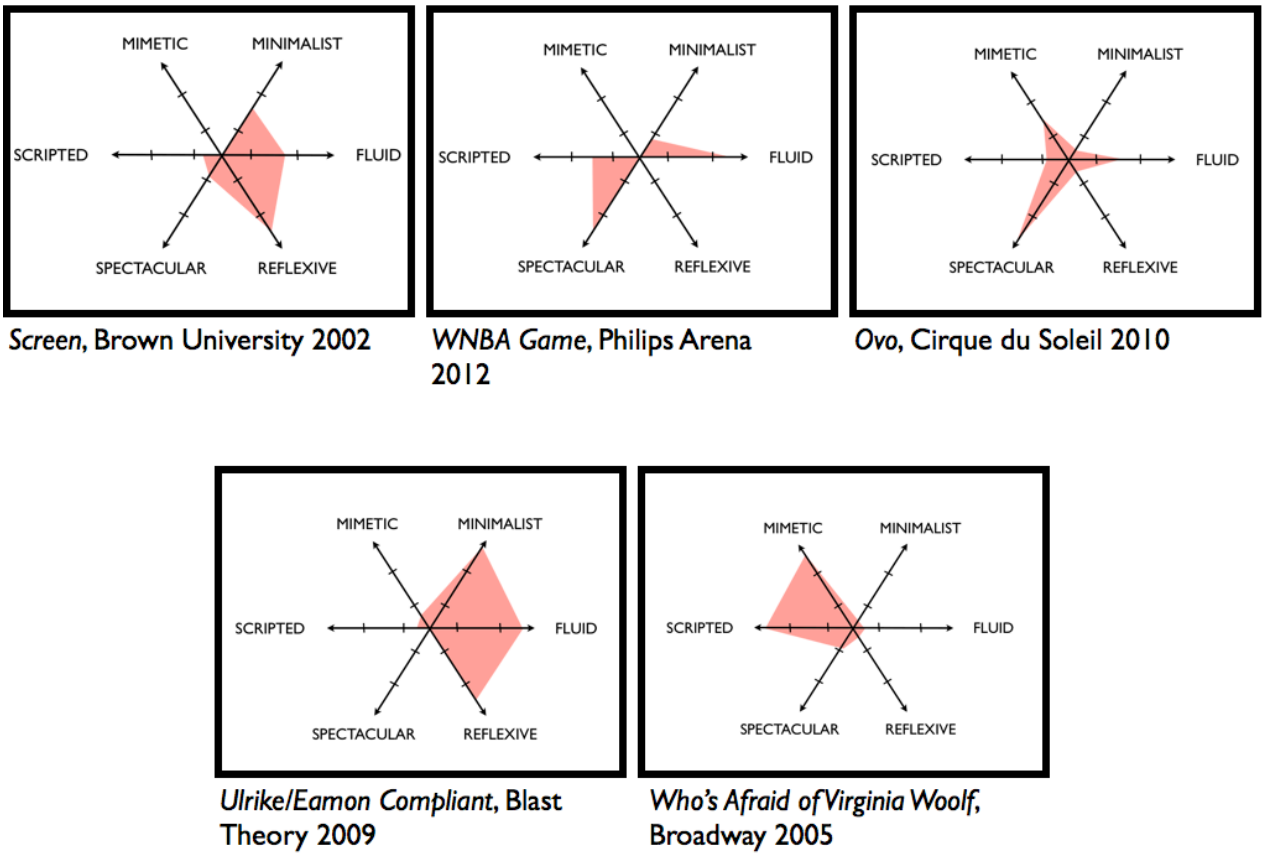


Figure 3.8: Comparison of mapped examples.

Looking at the comparison of mapped examples, it is clear that each type of performance has its own shape when represented according to its opposing aspects. By looking at multiple examples from each genre, generalized genre shapes emerge reflecting the common conventions of each genre. These generalized genre shapes are presented in Figure 3.9. It is important to emphasize this representation is a generalization, and there will be examples of hybrid performances that exist in the in-between spaces or combinations of shapes. Hybridity should not be understood as suspect or negative, and examples of this type of work are discussed in Chapter 4. The reason these generalized genre shapes are helpful is because they provide standards against with to push and pull. They are not necessarily prescriptive or a call to conformity.

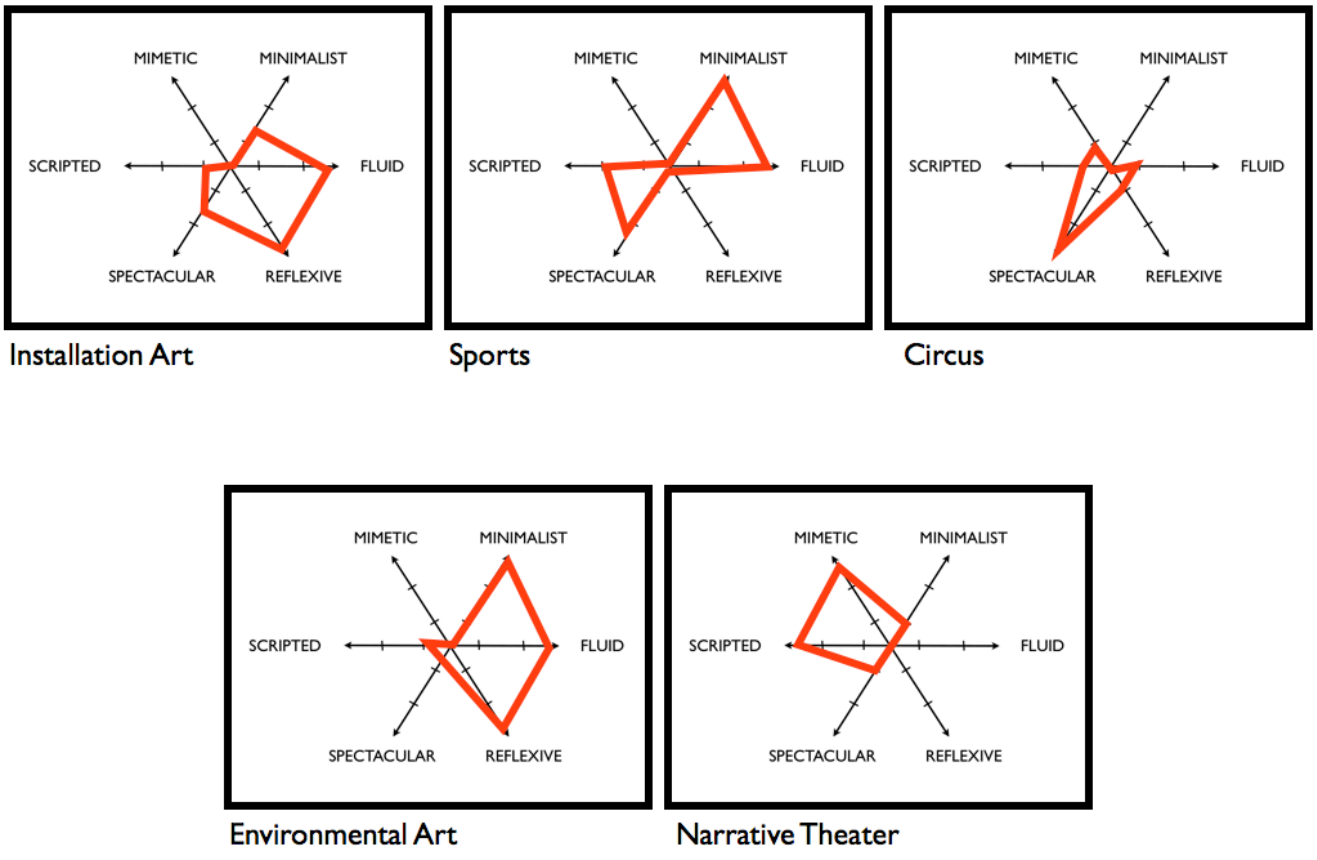


Figure 3.9: Generalized genre forms for installation art, sports, circus, environmental art, and narrative theater.

Narrative theater emerges as the form of performance which most emphasizes a linear narrative and mimesis. The challenge in terms of integrating digital technology into this particular type of theater is to do so in such a way that supports the primary objectives of the genre, and does not transform the shape of the performance to such a degree that is becomes unrecognizable, or another type of performance altogether.

3.3: Integration of Digital Technology on Stage

Moving on from defining distinctions between different types of performance, it is important to establish a framework for analyzing the integration (or lack thereof) of digital technology on stage. The works discussed in Chapter 2 all presented examples of highly integrated uses of digital technology on stage. As this is a quality missing in narrative theater for the most part, it is helpful to develop a model for thinking about and differentiating between different levels of technological integration on stage. Museum studies scholars, Ross Parry and Andrew Sawyer, offer an interesting model for representing the integration of digital technology, or as they term it, information and communication technology (ICT), in the museum. See Figure 3.10.

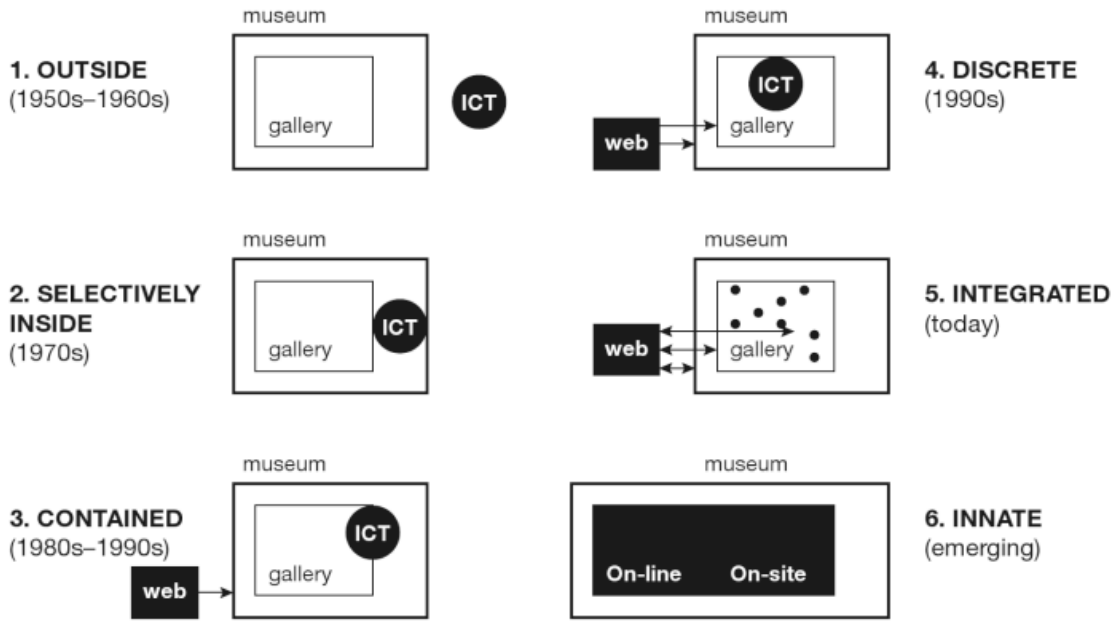


Figure 3.10: Ross Parry and Andrew Sawyer's representation of "an evolution of in-gallery digital interactivity" (45)

Parry and Sawyer use this graphic representation to chart the progression of uses of digital technologies in museum spaces from the 1950s to the current day. The authors outline three basic premises on which they base their analysis of digital technologies in museums:

> Here it is suggested that, first, the museum is an adaptive medium that has throughout its histories responded to change; second, that there is a long history of museums being shaped by information and communication technologies; and third, that there is presently a complex and reciprocal relationship between digital media and building space. (39)

Parry and Sawyer look at the evolution of uses of digital technologies in museums to argue that "these technologies are becoming ever more pervasive and embedded within the exhibition environment" (39). Connections are made between the ways in which the museum has changed over time, and "changes in ways of seeing and ways of knowing" (39), some of which have been strongly influenced by technological

changes. Parry and Sawyer take a broad view of the meaning of ICT, including pre-digital technologies in their historical analysis as well: “From the studiolo to the Exploratorium (from drawers to dioramas, hooks and wire to hands-on interactives) museum spaces have continued to be shaped by their display technologies” (41). Parry and Sawyer also point out that these technologies of display have “aligned the museum to discourses of theatricality” (42). Indeed, valuable parallels can be drawn between Parry and Sawyer’s analysis of technology in the museum and an understanding of technology on stage. There are, of course, important distinctions to keep in mind that separate the museum from the theater, and in particular from narrative theater. For example, the emphasis in a museum is on a descriptive and fluid experience, while narrative theater emphasizes the scripted, fictional quality and reduces fluidity. Nevertheless, there are many similarities to note between the museum and theater regarding the integration of technology.

Like Parry and Sawyer’s characterization of the museum, theater can also be understood as an “adaptive medium” that has changed throughout history in response to “new ways of seeing and knowing” (39). Marvin Carlson’s *Theories of the Theatre: A Historical and Critical Survey, from the Greeks to the Present* outlines a comprehensive review of the major changes throughout history in terms of conceptions of theater. From the influences of Aristotle’s *Poetics* to feminist theory, it is clear that theater, like the museum, is not a static form. Theater also shares with the museum a long history of negotiations with technology. Just as in the museum, the process of introducing new technologies in the theater is fraught for many reasons, including difficulties regarding access, the instability of emerging technologies themselves, as well as the adjustments

that may be necessary to standard practices in order to accommodate the new technology.

Theater historians Oscar G. Brockett, Margaret Mitchell and Linda Hardberger's *Making the Scene: A History of Stage Design and Technology in Europe and the United States* provides many valuable examples. The evolution of lighting technologies is an excellent case. By the 1850s most American theaters had gas lighting systems, which was an innovation but also brought a host of new problems. In some cases, city-wide gas systems had not yet been established, so in order to gain access to the new technology theaters were faced with installing custom systems. Other problems included not only the dangers of the new gas systems themselves, such as inhalation risks, heat and flammability issues, but also the impact on theatrical traditions that were centuries old:

> Stage design changed noticeably after gaslights replaced candles and oil lamps. The brighter light illuminated flaws in scenic construction and called attention to the fact that most of the scenic details, such as moldings, doors, furniture, and accessories, were painted rather than three-dimensional. Actors began to sit on real furniture, rather than stand, as had been the practice. [...] Advances in stage lighting promoted realistic movement and settings, which would become increasingly common after 1850. (184)

The attention called to shortcomings in stage design by the implementation of gas lighting brings to mind Arnold Aronson's discussion of naturalistic uses of technology on stage:

> [...] how can a pathetic bank of monitors on a theatrical stage do anything except remind an audience of what it -- the stage -- is not. At best it is an example of "gee whiz naturalism," as when an actor turns the faucet on the onstage kitchen sink and water comes out and we are somehow awestruck. We are amazed at the banality. Technology on stage is actually an enactment of absence - it

> reminds us of the unseen world that now comprises our everyday existence. (Aronson *Looking* 47)

Aronson points out the doomed outcomes of thoughtless or frivolous placement of technology on stage. Technology staged in this manner becomes "an enactment of absence," at odds with the traditional staging of presence. From this perspective, the bank of monitors, or projected backdrop for that matter, just does not seem to fit with traditional stage design. Today, seventeen years after Aronson's essay was written, while monitors are a less common occurrence on stage, the projector has become fairly standard theater equipment, used in ways that produce much the same effect.

More interesting, perhaps, than the changes in set design brought about by the introduction of the new lighting technology is the change in acting styles that resulted. Acting became less stylized or exaggerated, and more realistic. This type of change in practice seems to be more difficult to anticipate than the material changes, such as the need for increased realism in set design as a result of better illumination. Another example of a new technology significantly impacting theatrical traditions is the addition of sound amplification technology, which has notably changed the sound of musical theater. Whereas the lung power of performers like Ethel Merman used to be a necessary prerequisite to success, wireless body mics now allow even the most delicate voice to be heard clearly by patrons in the third balcony.

It seems to be these changes, the changes that impact traditions of practice, that most threaten some theorists' conceptions of theater. What is important to keep in mind is the process of the introduction of new technologies and impacts on traditional practices is never clean, and old practices do not always disappear. Indeed, some traditions endure for a surprisingly long time. Think for example of the use of historically

accurate reproductions of musical instruments used in contemporary performances of Medieval music. Media theorists David Thorburn and Henry Jenkins describe this often unexpected and messy mixing of old and new:

> Some contemporary doomsayers warn that the digital revolution signals the death of the book and the end of cinema. In such simplified models of media in transition, the new system essentially obliterates it predecessors [...] As many studies of older and recent periods attest, the emergence of new media sets in motion a complicated, unpredictable process in which established and infant systems may co-exist for an extended period or in which older media may develop new functions and find new audiences [...] Moreover, in many cases apparently competing media may strengthen or reinforce one another [...] As these instances suggest, to focus exclusively on competition or tension between media systems may impair our recognition of significant hybrid or collaborative forms that often emerge during times of media transition. (2-3)

So while some fears may be valid regarding impending change in theater practices in response to new technologies, it is worth remembering that the theater (as Parry and Sawyer term the museum) is an "adaptive medium" and has endured a long history of change successfully. Additionally, the transitions between old and new technologies, techniques, and practices are rarely clear-cut or definitive.

Returning to examine Parry and Sawyer's diagram representing the evolution of the integration of ICT in the museum, it is helpful to present this excerpt from their chapter with detailed descriptions of each phase of this history:

> **Phase 1:**
> "[...] it is clear that in the earliest phase, in about the middle of the twentieth century, ICT sits outside not only the space of the gallery, but also the museum."
>
> **Phase 2:**
> "It is in the second phase that it enters the museum, but at first only in relation to certain practices such as collections management, documentation and research."
>
> **Phase 3:**

> "Only in the third phase (in the last two decades of the century) does ICT begin to infiltrate the space of gallery on a large scale. But significantly, this infiltration is only partial. In some cases it is only through so-called "hived-off" galleries - separate spaces that keep the technology apart from the museum's collections."
>
> **Phase 4:**
> "By the fourth phase, ICT has become something of a mainstay of exhibitions. But even though its presence is perhaps more familiar on the gallery floor, its integration with the rest of the exhibit is not always as close as it could be. As "stand-alone" interactives, the 'kiosks' that characterized this phase of development could be both physically and conceptually disconnected from their surrounds."
>
> **Phase 5:**
> "[...] In recent years, which we might call a fifth phase, the web presence as become more sophisticated and dialogic - with the on-line provision potentially feeding back to the on-site museum, to exhibitions, and even to specific interactives within those exhibitions."
>
> **Phase 6:**
> "[...] The next phase of the digital-supported gallery is that in which ICT becomes *innate* within the exhibition space. It is here that digital ICT is less an afterthought, or something adjunct to exhibition, but is instead conceived as another quality of the gallery. In this phase digital ICT is (when applicable) integrated so deeply into the practices of curators and designers, harmonized so thoughtfully and appropriately into the interpretive strategy of the exhibit, and embedded so seamlessly into the fabric of the gallery, that is becomes an integral and ambient component of the exhibit [...] assimilated as simply another property of what an exhibition is." (46)

Useful parallels can be drawn between some elements of these phases of digital technology integration in the museum and the integration of digital technology in narrative theater. Phase 1 has a clear analog for narrative theatre; this represents the complete absence of digital technology both in the theater and on stage. Phases 2 and 3 can be connected to ancillary uses of digital technology in narrative theatre. Ancillary uses are those championed by theorists such as Christie Carson (see Chapter 1), and include the use of digital technology to support documentation, archival work, and backstage uses to support the design process and upgrade analog tools. Examples

include video and audio documentation of performances, the use of digital tools by designers to aid the design process, such as CAD drafting tools and technologies that are upgrades of analog versions, such as digital sound mixing and amplification technologies, computer lights, and control boards. While these digital technologies have a significant impact on the designer and his or her process, their perceived impact for the audience is limited. Other examples include video “trailers” of plays used for promotional purposes on theater websites and computer kiosks in theater lobbies providing access to background information about the play. In these instances, digital technology is used in a subservient support role, which may be productive and beneficial but results in little or no dramaturgical impact on stage.

Phase 4 corresponds with the most common contemporary use of digital technology on stage in narrative theater - the projected backdrop. As in the museum example, this is a case in which digital technology has become a “mainstay,” or a “familiar presence,” but “its integration with the rest of the exhibit [i.e., the theater production] is not always as close as it could be.” This type of use of digital technology in narrative theatre is contained, and has little significant dramaturgical impact. Phases 5 and 6 look ahead to a type of integration of digital technology we do not yet see in common practice in narrative theater (See descriptions of notable exceptions in Chapter 2).

To aid this discussion of models of integration of digital technology in narrative theater, I have created an adaptation of the Parry and Sawyer diagram specifically applicable to narrative theater. See Figure 3.11.

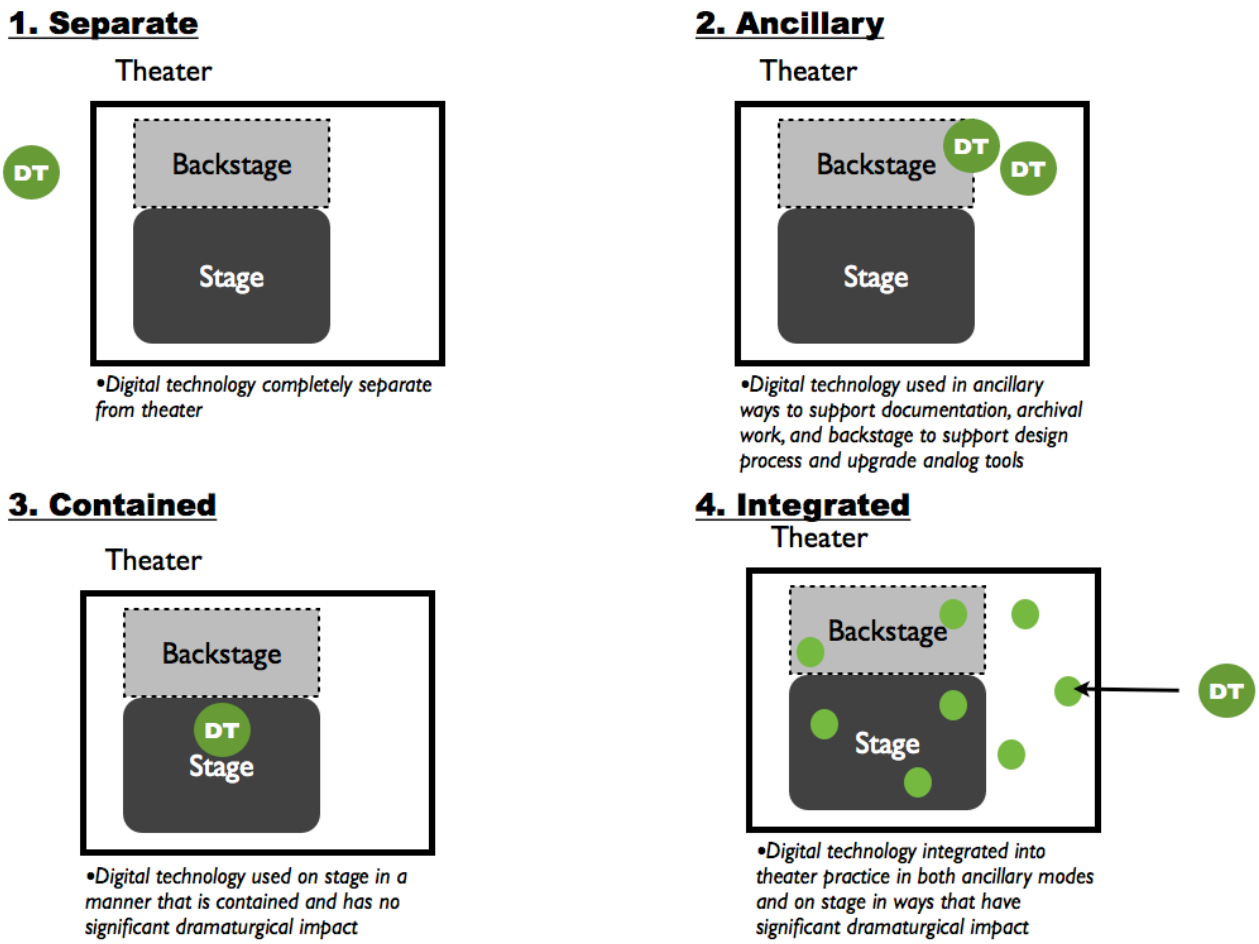


Figure 3.11: Model of phases of integration of digital technology (DT) in story-based theater, based on Parry and Sawyer's model of integration of ICT in the museum

Parry and Sawyer conclude by identifying three qualities that tend to emerge from exhibits during the sixth or currently emerging phase of ICT integration in museums. These exhibits are immersive, intuitive, and seamless (47). Parry and Sawyer discuss examples such as an exhibit with a screen that fills the viewer's field of view, a museum building constructed with the intention in mind of using exterior walls as projection surfaces, exhibits in which "the computers disappear" (48), thus allowing for more intuitive interactions with interfaces, and exhibits that that include both analog and digital technologies of display, with ever-more fluid boundaries between the varying display strategies. Parry and Sawyer do point out "There will always be exhibitions that choose not to use (or are not in a position to choose) digital ICT," but predict that in

general we can expect that “Digital ICT will be used more and more in the space of the museum, but we will just notice it less and less” (49).

Like Parry and Sawyer, I also believe that many performance practitioners will choose not to use digital technologies, for various reasons including lack of access but also judgements about what constitutes appropriate use. Parry and Sawyer briefly refer to the relative absence of ICT in art museums, as opposed to museums of history, science, and others (46). This may be an analogous situation to the presence of digital technology integration in many performance forms and the relative dearth of instances of integrated uses in narrative theater.

In terms of integrated uses of digital technology in narrative theater, the diffusion of dots in the “#4 Integrated” section in Figure 3.11 reflects the increasingly integrated, seamless nature of technologies available to practitioners. Much in the same way that Parry and Sawyer envision increasingly fluid boundaries between various strategies of display in the museum space, I too am suggesting with this model adapted from their work that we can work toward a similar blurring of boundaries regarding strategies of design on stage in narrative theater. Whereas contained uses (see Figure 3.11) have been up to this point the most common uses of digital technology in narrative theater, (usually projected backdrops or screens), integrated uses will draw on other technologies that are more responsive, intuitive and hybrid, or may even draw on older screen-based technologies but use these older forms in new ways or in combination with new technologies and techniques.

In addition, a more deeply integrated use of digital technology in narrative theater means the use of the technology results in dramaturgical impacts on the production.

This means that the technology has an effect on the story, in the case of narrative theater. With a contained use of digital technology, the feeling is that a projected backdrop could just have easily have been replaced with a painted backdrop - the experience would not be significantly different. With an integrated use of digital technology on stage, for example, the projection of the blonde character on a stream of water in Dudley's design for *Hitchcock Blonde* (Section 2.6), we can see that the choice of a water curtain and projected image is powerful because this references the famous scene of Janet Leigh in the shower in Hitchcock's film Psycho. Without the water curtain, a projection alone would be less evocative. Without a projection, with a still image or a live actress, we would lose the connection to Hitchcock's medium. This example from Dudley provides not only an illustration of use of digital technology on stage in narrative theater in such a way that the central characteristic of this type of theater is augmented (the narrative) but also provides an example of the use of an older, screen-based (projection) technology combined and used in a new way (on a water curtain), in a manner that is particularly relevant for the subject matter of the script.

3.4: Integrated Functions of Digital Technology in Narrative Theater

Building on Erwin Piscator's theoretical analysis of film in performance, technologies can be understood to function in the following four modes in theater when employed in an integrated manner: dramatically, didactically, as commentary, and as scenery/costume/prop. These functions can relate to technologies both digital and pre-digital, and are helpful for understanding the role a technology plays on stage. None of

these functions of technology are inherently better or worse; each must be evaluated in relation to the particular qualities and objectives of the performance in question.

Integrated Functions of Technology in Performance

- ***Dramatic***: The technology is an actor in the scene and moves the action forward.
- ***Didactic:*** The technology provides expository material relevant to the scene.
- ***As Commentary***: The technology addresses the audience directly to comment on the scene.
- ***As Scenery/Costume/Prop***: The technology is used to set the scene, dress a character, or as a prop.

Ancillary modes of use are not included in this set of functions. This is not to say that ancillary uses are not important, only that this type of use is well-practiced and not in need of scrutiny. The focus of these four functions are uses of technology that are explicit on stage, advance the narrative, and have significant dramaturgical impacts. The importance of narrative, however, cannot be overstated. The narrative theater tradition is text-based, with most aspects of production stemming from the play script. The most successful works of this type of theatre that integrate digital technology well are those with strong textual and conceptual justifications for the uses and implementations of technologies on stage. These textual and conceptual justifications are necessary to maintain aesthetic cohesion, a quality that is a central expectation of this genre of theater.

3.5: Central Questions & Process for Production

The works of narrative theater discussed in Chapter 2 that were well-received or considered successful share common strategies for maintaining emphasis on narrative while integrating digital technologies on stage: strong textual justification, aesthetic cohesion, and use of technology that is truly functional, and not a distraction from the production (by breaking down, for example) or a hinderance to actors (by limiting them with overly procedural structures or physical constraints). These best-practices point to a set of central questions to be considered when producing work with digital technology used in integrated functions in narrative theater:

Central Questions Regarding Digital Technology in Narrative Theater

- ***Addressing Textual Justification***: What in the narrative calls for the use of this particular technology? How does the use of this technology help to tell or expand the story?

- ***Addressing Aesthetic Cohesion:*** How does the use of this technology fit with the rest of the design elements?

- ***Addressing Functionality***: How does the use of this technology impact the actor? Does the technology assert overly procedural structures or hinder the actor physically? Does the technology function reliably?

The emphasis on narrative reflected in these questions (derived from best practices in the genre) is present because narrative is the central aim of this type of theater. If the narrative is overshadowed by other elements, such as the technology, the performance drifts toward other genres. This is not necessarily a negative outcome, and may in fact be specifically desired in some cases. However, if the objective for a production is to produce narrative theater with digital technology, these central questions are designed to maintain genre expectation, while allowing for the introduction of digital technologies

at the same time. These questions are important in terms of guidance for design with digital technologies within the narrative theater genre, because they can help produce work that refutes the claim that narrative theater and digital technology simply cannot mix (Petersen Jensen, Carson, Phelan).

The process of production is another important aspect to discuss. Constraints imposed by ways of working can greatly influence the outcomes of a production. In terms of production process, a striking similarity in examples from Chapter 2 is the use of a “laboratory” model for developing this type of work. The Bauhaus theater work was produced in this manner, Josef Svoboda created this type of atmosphere at the National Theater in Prague, and David Saltz’s work is produced through the Interactive Performance Laboratory at the University of Georgia. Josef Svoboda stands out as a unique case here - he was working in commercial theater (albeit supported by a socialist government) and nevertheless managed to create this laboratory atmosphere as well. In the case of the Bauhaus and David Saltz, work is produced in a school or university setting. Svoboda presents a unique ideal for this type of work, mixing the long-term collaborations possible in the university lab setting with the broad exposure of commercial theater in terms of presentation.

The advantages of the university lab are many, including access to new technology and long-term collaborations, but most importantly, time. When working with emerging technologies the importance of this element cannot be overstated. Using established, older technologies means methods are clearer for integration and use, and timelines can be much easier to anticipate, based on previous experience. Working with emerging technology necessitates experimentation, which involves trial and error, which

takes time. This is significant, because commercial theater production schedules are compressed to three to five weeks for economic reasons. However, the lab or university environment has significant detractions as well - most notably the lack of exposure for the final production. This type of work is most commonly seen by smaller audiences representative of a more limited demographic, which can result in work that is insular or inaccessible to many.

These questions of time and resources are significant. It is important to remember that in addition to all the factors discussed above relating to digital technology, there is all the "normal" work of producing narrative theater to be done as well. This includes the design process, construction and implementation, and rehearsal with actors, focusing on *mise-en-scène* or the placement of all elements on stage, character development including vocal and physical work, and the shaping of larger elements such as tempo and story arc. Looking at the customary brief production schedule for commercial theater, it seems there is only enough time to accomplish the traditional work (it is a significant task) and nothing else. To work successfully with digital technology in new and innovative ways on stage requires more time, with the presence of all stakeholders as early in the process as possible. There will be feedback loops in development between traditional designers, digital designers, director, and performers that are valuable and necessitate time. Additional discussion of how to structure this type of process can be found in Chapter 5.

A final similarity between the examples from Chapter 2 is a complete lack of audience interactivity. It is easy to find examples from other performance genres, such as installation art and environmental art, that successfully incorporate audience

interactivity using digital technologies. It may be that audience interaction is an element in conflict with central expectations of the narrative theater genre, however I do not wish to close the door on this possibility. It may be possible that hybrid performance forms, something between narrative theater and installation or environmental art, can be a site for exploration of audience interaction in combination with emphasis on a scripted story. In the following chapter, I will describe and analyze four productions selected from my own work, two of which represent narrative theater, and two of which may represent hybrid forms, combining audience interactivity with narrative, and falling in between genres.

3.6: Example Analysis

Gathering together the model of performance, integration model, functions of technology in performance, and set of central questions for digital technology in narrative theater, we have a new dramaturgy or toolkit capable of providing a detailed analysis of productions of narrative theater (see Figure 3.12)

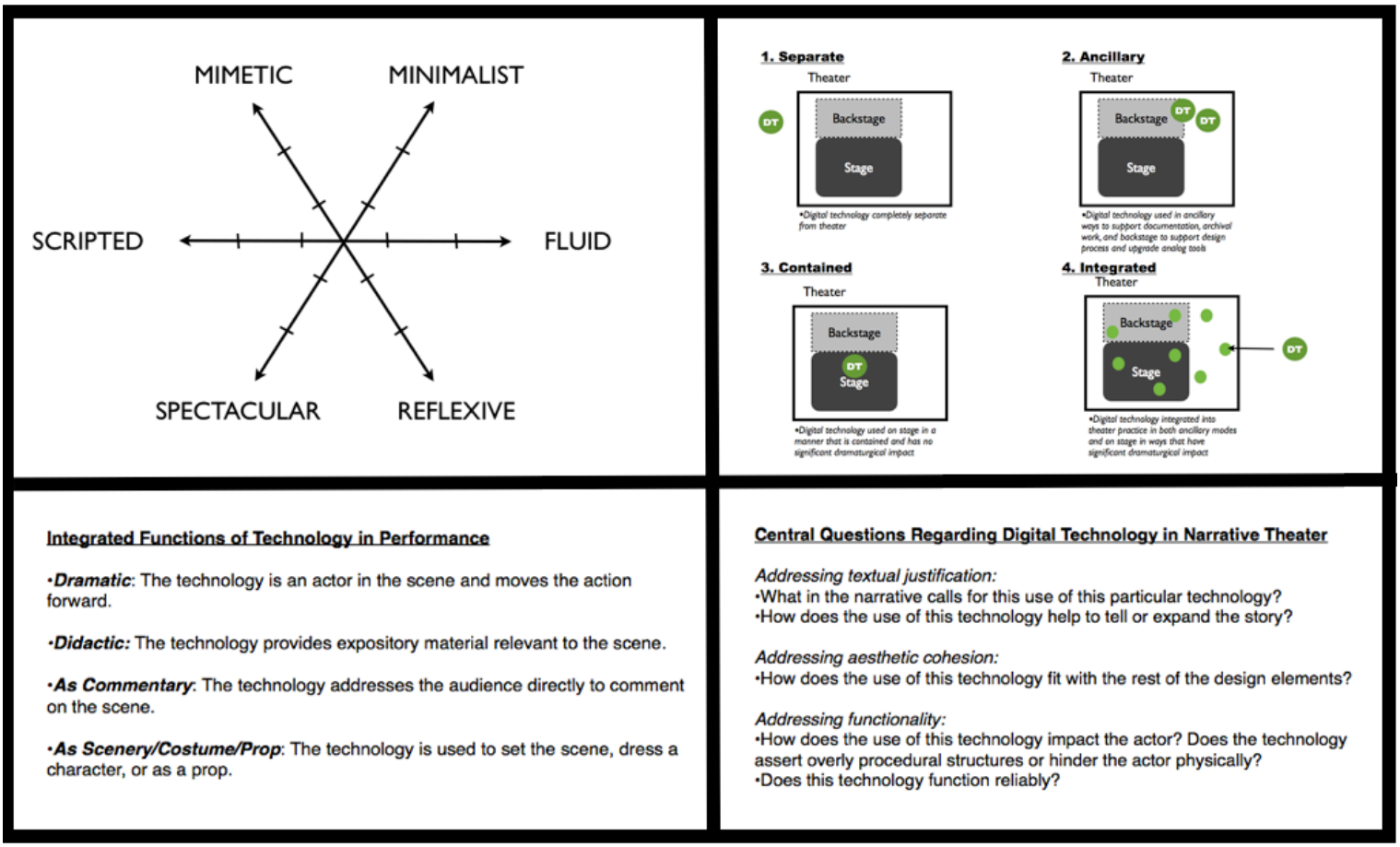


Figure 3.12: The new dramaturgy for digital technology in narrative theater.

Using this new dramaturgy, it is possible to revisit examples of successful work from Chapter 2 that use digital technology in narrative theater and provide additional analysis. Looking again at Saltz's production of *The Tempest* (2000), the production can be mapped as follows: while the performance includes a highly integrated use of digital technology, the performance remains strongly scripted. The interactors are the actors, not audience members or others, and the interaction (and resulting technology responses) have been rehearsed, and along with all the other elements of the production that are capable of variability, can fall within a pre-determined range of agreed upon outcomes, as deemed appropriate by the actors, director, and design team. The use of the technology likely lends the production elements of spectacle, and

at the same time, the motion capture mechanism is somewhat exposed to the audience, resulting in an element of reflexivity as well. The production is not particularly minimalist or fluid, but it is mimetic, with realistic representations of an island location and naturalistic costumes, and a naturalistic acting style. So despite the use of digital technologies, the production can still be said to fall within the genre of narrative theater. The most dominant element remaining with audience members after the show is the content of the narrative, who the characters were, what happened, and who or what changed. While the technology itself is sure to make an impression, it has done so in a manner supportive of the storytelling. See figure 3.13.

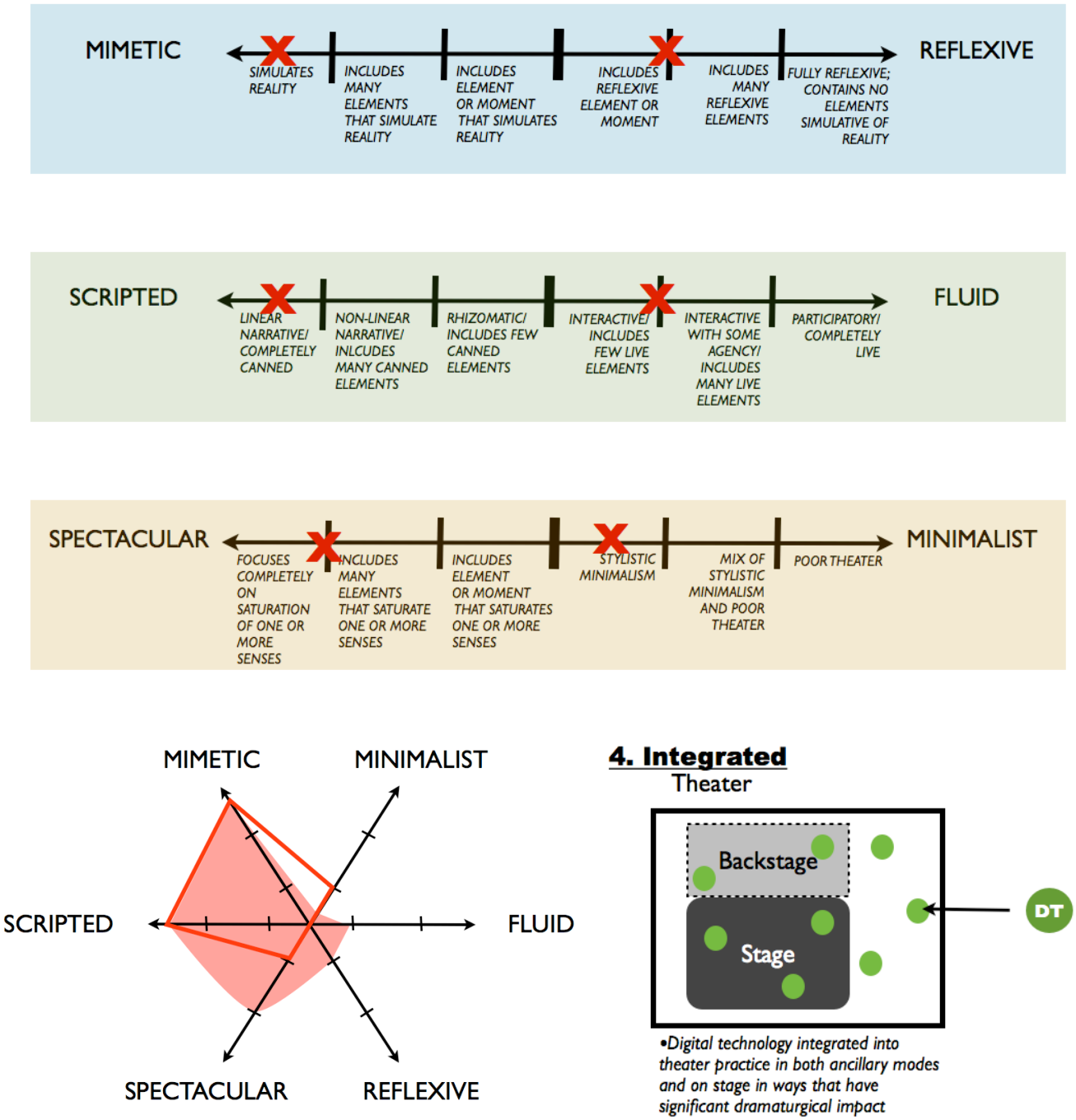


Figure 3.13: Analysis of The Tempest, 2000, University of Georgia. Mapping includes overlay of narrative theater genre shape in red outline.

The dominance of narrative over technology in this production of *The Tempest* is achieved by three main strategies. First, the use of the technology has strong textual justification (the technology emphasizes the magical nature of Ariel as well as Prospero's powers as a magician). Second, the aesthetics of the technological elements

fit with the rest of the design elements in the production. And third, the technology functions well enough in concert with the physical performers so that it does not become a distraction from the production itself, or so procedurally or literally (ie., physically) constrictive that the actor is hindered.

As for the level of integration of the digital technology in this production of *The Tempest*, it appears the motion capture and projection system is used in a way that is integrated and therefore significantly impacts the dramaturgy of the production. The magical powers of Prospero are emphasized, as is the captive nature of Ariel, who appears doubly enmeshed in the technology - both as a physical actor attached to wires, and as a digital avatar restricted to a projection surface.

In terms of the functions of the integrated digital technology in *The Tempest*, the motion-capture and projection system has two main functions: *dramatic* and *as scenery/ costume/prop*. The Ariel avatar is an actor in the play, similar to a puppet, and moves the story forward. The avatar is also a sort of costume for the character, providing a second visual representation of Ariel, in combination with the physical actor. The projection itself displays not only Ariel but also the surrounding environment, and functions as scenery as well.

Textual justification and conceptual unity are present as well in *The Tempest*. In terms of textual justification, Prospero is a magician in Shakespeare's script, and Ariel is a magical spirit under his control. In terms of conceptual unity, Saltz's directorial concept for the production was that Prospero's magic was media, and the setting of the play, the island, was a digital illusion, conjured by him. This is made clear to the audience at the end of the play when Prospero frees Ariel (disconnecting the actor from the motion-

capture system, and shutting off the projection system.) Prospero is then left “alone in an empty, media-free world, his “magic” gone” (Saltz 121).

In summary, this dramaturgical analysis allows us to conclude the shape of this production of *The Tempest* differed in some aspects from the generalized shape of narrative theater, but was still recognizable as closely related to narrative theater. The digital technology used was employed in an integrated manner, and made use of dramatic, costume and scenery functions. The use of the digital technology was textually justified, the design was aesthetically cohesive, and the technology functioned well.

Terry Johnson’s *Hitchcock Blonde* (2003), designed by William Dudley, provides another example for closer analysis. This production also uses digital technology in an integrated, yet highly scripted, manner. In this case, none of the technology was responsive, unlike the motion-capture and projection system used by Saltz. Dudley’s design included fairly traditional background projection surfaces as well as a more innovative water curtain projection system. The production retains an emphasis on scripted qualities, and gains elements of spectacle and mimesis with the uses of digital technologies. The production is not particularly minimalist, fluid, or reflexive. Like *The Tempest*, this production of *Hitchcock Blonde* retains the central qualities of narrative theatre and includes integration of digital technology as well. See figure 3.14.

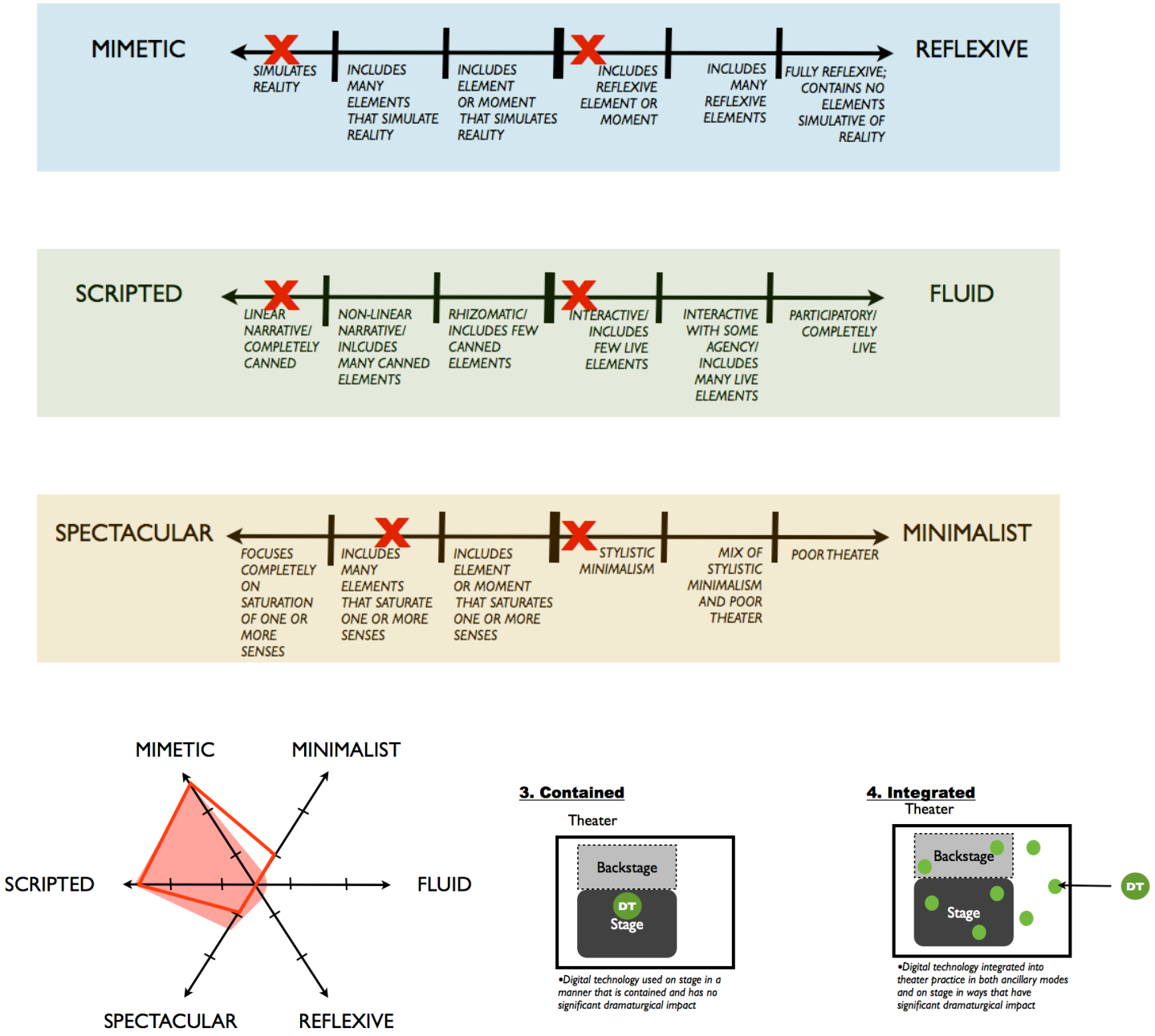


Figure 3.14: Analysis of Hitchcock Blonde, 2003, Royal Court Theatre. Mapping Mapping includes overlay of narrative theater genre shape in red outline.

As with Saltz's production of *The Tempest*, William Dudley's design for *Hitchcock Blonde* supports an emphasis on storytelling by using similar strategies. There are strong textual justifications for the use of the projections - the narrative centers on a filmmaker (Hitchcock) and a university professor studying Hitchcock's films. Additionally, the script was written in a cinematic style, shifting quickly between two stories neither

co-located in time or place. The projection of a blond woman on the water curtain in the set serves to reference not only the female student character in the script, but also Janet Leigh in the famous *Psycho* shower scene, as well as the ubiquitous, illusive blonde who haunts so many of Hitchcock's films. The technology functioned well enough so that it was not a distraction from the production or a hindrance to the physical actors, and the aesthetics of the technological elements fit with the rest of the elements of the production.

In terms of the manner in which the digital technology is used in this production of *Hitchcock Blonde*, (as either separate from the production, ancillary to the production, in a contained or in an integrated manner), it seems to be used in ways that are both contained (and do not significantly impact the dramaturgy of the production) and integrated, having important dramaturgical impacts. The use of projected backgrounds to move the story quickly between time periods and settings is a contained use of digital technology. Imagine a mechanical system had been rigged to allow for swift switching between physical backdrops - this would achieve much the same effect. The water curtain character, however, presents a use of digital technology that is more integrated. The presence of this projected character and the manner in which she appears (projected on a flow of water) emphasizes the cinematic themes in the play and intertextual connections with Hitchcock's body of work. As for the functions of the integrated digital technology in *Hitchcock Blonde*, the water curtain character has a dramatic function. She is an actor in the play, albeit cinematic and canned, and moves the story forward. The other projections, displaying the various locations of each scene, function as scenery.

To summarize, the dramaturgy allowed us to see that the shape of this production of *Hitchcock Blonde* was very close to the general shape of narrative theater, and digital technologies were used in both a contained and integrated manner. The technologies used functioned dramatically and as scenery. The use of digital technology was textually justified, the design was aesthetically cohesive, and the technology functioned well. Analysis of The Tempest and Hitchcock Blonde have provided examples of productions using digital technologies on stage in narrative theater with largely successful outcomes. An example of a narrative theater production using digital technology with more problematic outcomes will be discussed in depth in Chapter 4.

3.7: Impact

In 1938 Brecht wrote: “New problems appear and demand new methods. Reality changes; in order to represent it, new modes of representation must also change” (107). The implementation of new, diverse modes of representation in theater are what lends the theater its vibrancy, and helps to maintain its relevance for new audiences. The dialog between modes of representation at odds with one another helps to produce this vibrant quality in theater. Part of theater’s great strength lies in its diversity, and its ability to adapt.

It has been recognized by many genres of performance that today’s digital technologies have great worth for practitioners, and can be useful implements in telling many types of stories and creating many types of experiences. To name only a few examples, digital technology can allow for new levels of dynamism in scenography, immersion, responsive effects, and the portrayal of multiple perspectives. By suggesting

a strategy for the inclusion of digital technology on stage in narrative theater in such a way that the technology becomes integral to the form of the theater itself, I am advocating the technology be used as more than a problem-solving tool. By implementing digital technologies in ways more thoughtful than they has been commonly used in narrative theater, as “tacked on” or incidental, it may be possible to expand or advance the form of narrative theater. It may even become possible for integrated uses of digital technologies to become a part of the playwriting process for the genre. In much the same way that Tennessee Williams’ meticulous stage directions reflect a deep integration of naturalist staging in the genre of narrative theater, perhaps playwrights might start to think in the terms discussed above when writing a script intended for staging with digital technologies.

Generally speaking, however, the use of digital technology on stage in narrative theater today is done poorly, if at all. This chapter has presented a framework and method for both thinking about and creating narrative theater with integrated uses of digital technology that preserves the central expectations of the genre as it stands today: unity, cohesion, and narrative. The analytic functions of the dramaturgy have been demonstrated in this chapter, and Chapters 4 and 5 will provide demonstrations of the dramaturgy in production as well as analysis.

CHAPTER 4

DIGITAL PERFORMERS AND PERFORMING AUDIENCES

This chapter will demonstrate how application of the dramaturgical framework outlined in Chapter 3 can help illuminate the reasons behind successes and failures of selected previous works, as well as suggest alternative approaches. *Machinal* and *Club Verona* provide two examples of narrative theater productions that included digital performers. *Woyzeck* and *[inbox]* are both examples of performances more difficult to categorize, with digital performers as well as performing audiences.

4.1: *Machinal*

Machinal was written by Sophie Treadwell in 1928, and tells a fictionalized story of the first woman to be sentenced to death by electric chair in America. Loosely based on the Snyder-Gray murder trial, the play tells the story of a young woman oppressed by a mechanistic society, insensitive mother and misogynistic work environment. Forced to marry her insufferable boss and endure an unwanted pregnancy, the young woman finds temporary relief in a brief love affair. However, she is eventually driven to the brink of mental collapse and murders her husband, after which she is tried, sentenced to death, and executed.

The larger theme of the play hinges on the relationship between humankind and technology, and suggests that in a post-industrial society we are not only the inventors and masters of our machines, instead these same machines also use and shape us. Treadwell sees society as a web of people and machines, each acting on the other in complex ways: “This machine is not only in machines themselves, but in what they have

done to all living beings" (Treadwell in Dickey). The script is written in a stylized, rhythmic form and the play is considered one of the finest examples of American expressionism in theater, ahead of its time in anticipation of later minimalist, absurdist work by playwrights such as Samuel Beckett.

I directed a production of *Machinal* in 2004 at Brown University's main-stage Leeds Theater. For this production, in collaboration with choreographer Kyle Shepard, a highly stylized movement form was developed for the actors. The script of the play is written in nine episodes, with the main character appearing in each. The main character is rarely named, and most often referred to as 'young woman,' emphasizing her ability to stand for any young woman, or young person. For this production, nine actors were cast, and each (both men and women) took a turn portraying the part of the young woman in each episode. This decision was made to bring the story into our post-women's liberation society, making the young woman character more relevant to audience members of any gender. One character, however, was not played by a person at all, but a machine. The character of the prison priest was portrayed by a robot (See Figure 4.1).

In the final scene, after the young woman has been tried and awaits her execution in prison, the actors were joined by a simple robot playing the part of the prison priest. The robot was co-designed by the set designer, Adam Griska, and the assistant technical director, Alex Wolenski, and was made out of modified remote control toy car parts, a speaker, lights, and the same grey PVC piping that was used to create the set. The robot had an abstract triangular form, created with three pipes coming together, suggestive of the holy trinity. The voice for the robot was pre-recorded,

and was made by having every cast member read the priest's lines and then mixing the recordings together digitally. The result was an other-worldly voice, indiscriminately gendered, and cyborg. Additionally, a light mounted on the robot was synced with the audio to flash when the robot was speaking.

Figure 4.1: Close-up view of the robot playing the part of the prison priest in Machinal (left); robot within the context of the final scene of the play (right)

Each line for the robot to speak was programmed as a separate sound cue, and operated from offstage through the central board controlling the show. The robot's movements were also controlled from offstage, with a wireless remote used by a crew member located above the stage in the catwalk.

Representing this production of *Machinal* according to opposing aspects, it is clear that it is an example of narrative theater. (See Figure 4.2) The shape is similar to other examples of narrative theater that have been diagrammed in Chapter 3, as well as the generalized shape of narrative theater as discussed in Chapter 3. This production of *Machinal* has a shape reflecting the emphasis on scripted narrative that is a hallmark of

the genre. *Machinal* is traditionally scripted with an episodic but still linear narrative. The movements of the actors were also highly scripted or choreographed, but as with many traditional theater productions, there was some quality of basic fluidity; the actors had leeway to tweak each performance. The production was partly mimetic in that people and settings were represented in a naturalistic way. The use of a rotating small ensemble cast to represent the young woman, however brought a reflexive quality to the performance. Shifting different actors in and out of the main characters' role emphasized the presentational quality of the production. While the set and costumes were minimalist in style, uses of technology brought a spectacular quality to the design. In addition to the robot discussed above, the main set element was a large wall and roof built of the same PVC piping that was mechanized, allowing roof sections to be lowered after the verdict was read in the courtroom scene, creating the feeling of a prison on stage. The roof was large and extended over the audience, meaning that its trajectory when moving came close to the audience members, serving to heighten the sense of fear developed in the courtroom and prison scenes.

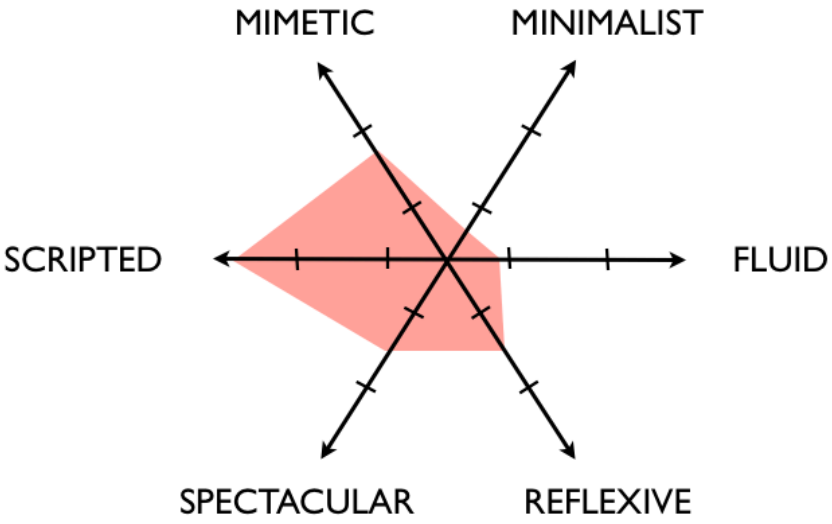


Figure 4.2: Mapping of Machinal (2004, Brown University)

Discussing the nature of the integration of the technology in this production, both the robot and mechanized roof were used in an integrated manner (as opposed to separate, ancillary, or contained uses), had significant dramaturgical impact, and could not have been easily replaced by analog counterparts. The integrated functions of the technological elements were both dramatic and as scenery - the robot functioned as a dramatic element, as an actor in the scene moving the action forward, and the mechanized roof served as scenery.

In terms of the production's strategies regarding the central questions identified in Chapter 3, the production made use of the common best practices for successful integration of digital technology in narrative theater. In terms of textual justification, the narrative of the play does in fact call for technology to be used in explicit ways on stage, given the themes about mechanization and society. The use of the robot in particular expands or helps to tell the story by making more explicit this connection between mechanization and a lack of empathy. As the figure in the story who should embody an unconditional empathy and compassion for the main character at the moment penultimate to her execution, the priest instead lacks these and in fact all human qualities - and is not human at all, but pure machine.

The design of the robot was aesthetically cohesive with the rest of the production design; minimalist and using the same materials. Additionally, the robot's mechanistic style of movement fit with the choreographed, stylized movement that had been designed for the human actors. As for functionality, the technology did function reliably, but did have some potential negative impacts on the actor. The robot's lines were pre-recorded, offering no variation or response to the physical actor's performance. The

movements of the robot, however, were controlled in real time and could respond to accommodate variations in the physical actor's performance.

As for process, this production was developed in a traditional university theater department setting with a time frame of five weeks. The process was rigorous and compressed, as is usual. The technology in use was not new or emerging, and it was not difficult to include it in this traditional production process. The final production of *Machinal* was considered successful and was awarded the 2004 Weston Fine Arts award for its achievements. The production integrated digital technologies in meaningful ways with dramaturgical impact that supported central aims and characteristics of the narrative theater genre: story, cohesion, and themes specific to the particular play.

Comparing the mapping of this production of *Machinal* with the generalized shape of narrative theater (see Figure 4.3), there is considerable overlap with the generalized shape. We can also see that the use of technology and the technique of having each actor play the young woman from scene to scene has pulled the shape towards spectacle and reflexivity. The production's scripted quality, however, remains the most dominant aspect on the map.

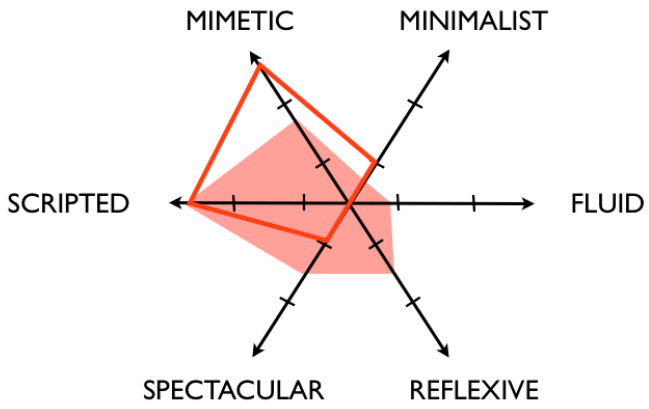


Figure 4.3: Mapping of Machinal compared with general shape of narrative theater (red outline).

4.2: *Club Verona*

Club Verona, as opposed to *Machinal*, provides an interesting, and perhaps more complicated, counter-example of a less successful use of digital performers in narrative theater. At the conclusion of this project, it was the team's consensus the work had not been as successful as had been hoped, but the reasons for the work's shortcomings were not altogether clear. Using the framework for analysis outlined in Chapter 3, however, it is possible to illuminate the reasons behind the project's shortcomings and suggest alternative approaches.

Club Verona was a project led by Georgia Tech Digital Media masters student Jenifer Vandagriff, produced by the Digital Performance Initiative, DramaTech, and the TekStyles breakdance group. *Club Verona* was performed for the Digital Media Program demo day in April 2009 in DramaTech Theatre. As a member of the Digital Performance Initiative, I contributed to the project during the ideation phase and as a production manager during the production phase. *Club Verona* was a hip-hop style adaptation of *Romeo and Juliet*, reconceptualizing the fight scenes as breakdance battles, with the Montague characters played by members of the TekStyles dance group (a student break-dance club), and the Capulet characters played by SecondLife avatars controlled in real time from off stage. One character, Romeo, crossed the divide between physical and digital representation, entering the screen at one point to become a SecondLife avatar.

The performance was approximately thirty minutes, and was introduced by an Emcee character portrayed by a physical actor reciting the traditional prologue. The prologue was followed by a the first fight scene between the Capulets and Montagues, which was a breakdance battle. The Emcee intervened to stop the fight, and introduced

Mercutio, who was also portrayed by a physical actor. Mercutio performed the Queen Mab speech in the style of spoken word poetry, accompanied by a SecondLife machinima projection of Juliet as Queen Mab, dancing provocatively in an abstract space interspersed with text.This was followed by a mashup of the party and balcony scene, and then the fight between Romeo and Tybalt, which was also portrayed as a breakdance battle. The final moment portrayed Romeo entering SecondLife to be with Juliet as an avatar on the run from their families, with narration by the Emcee from the final verses of the play. The main characters' death scenes were not portrayed.

The physical set for the production consisted of flats painted with graffiti-style decorations and tags for "Romeo." The SecondLife set was designed with a similar aesthetic, and also included graffiti-style painting and a street atmosphere. All characters, physical and digital, were costumed in a similar manner, in hip-hop style street clothes. (See Figure 4.4)

The SecondLife avatars had many limitations. The configuration of the SecondLife client used for the production did not allow for audio speech, meaning anything "spoken" by the avatars would appear as text. Instead of having the avatars' speech appear as projected text, their lines were done away with, and the Emcee character narrated their scenes in an improvised manner. While some of the avatar movement could be controlled in real time, this was also limited. The breakdance moves performed by the avatars consisted of strings of pre-programmed movement combinations, reducing the possibility for creative improvisation. These movement loops were repetitive enough to be noticeable to the audience, and led to a perceivable inequity between the virtual and physical performers. It was clear that the virtual

performers did not have to exert real effort to perform their dance moves, while the physical performers' exertion was palpable.

Figure 4.4: Images and poster from Club Verona.

While there is some textual justification for the choices made, these justifications were not always clear-cut or followed through completely. The story of the play is indeed quite violent (as opposed to romantic, as is commonly assumed) and therefore focusing on the fight scenes could be a strong choice, but this was done at the expense of many important plot-points, such as the main characters' deaths. The connection between fighting and dancing was already famously made with Jerome Robbins' legendary choreography of *West Side Story,* however, for *Club Verona,* the project team chose to use Shakespeare's text and not *West Side Story* as the source text. Given the breakdance genre's emphasis on dance competitions in the form of dance-offs or

battles, it may have been a stronger choice to work with *West Side Story* rather than *Romeo and Juliet*.

Playing into the hip-hop theme, the Juliet avatar design was inspired by pop singer Beyoncé. The avatar body and costume were both designed in a highly sexualized and stereotypically heterocentrist manner. This choice seemed somehow arbitrary and less well thought out, particularly given the young age of the character, who is commonly portrayed as fifteen or sixteen years old. Juliet's avatar was also designed as African American, while the physical actor portraying Romeo was Caucasian, however racial difference was not pulled through the production as a thread or emphasized in a thoughtful way. Again, there may have been better opportunities for making thoughtful choices with regard to race if the source material had been *West Side Story*, which, unlike the Shakespearian play, does include themes about racial difference between Tony's Italian community and Maria's Puerto Rican community. Additionally, the decision to make Juliet's community digital and Romeo's community physical was arbitrary, and not tied to any specific distinctions in the text.

In terms of the production process, the project was created over the course of two semesters. An early version of the project was first presented with no story as a straightforward breakdance battle between SecondLife avatars and physical performers for a demo day, and then presented as *Club Verona* in DramaTech Theatre as described above four months later. However, leading up to this final performance, there was a lack of rehearsal despite the timeframe available. In the end, the cast of physical performers had roughly five rehearsals together, and one or two dress rehearsals during which the SecondLife avatars were integrated. Leaving the integration of the avatars until the final

week of the process meant that the interaction between the physical actors and avatars was not smoothly done. There were lags between the action on stage and the action on screen, further emphasizing the canned nature of much of the digital elements. This made it difficult for the physical and digital performers to meaningfully engage one another, and underscored a lack of presence or responsiveness in the digital technology.

Even when using canned technology on stage, it is possible to create the illusion of presence or responsiveness, but this takes rehearsal time with both physical actors and digital elements present to work out. It seems when one character is separated from the other by the frame of the screen, there may be a particularly difficult challenge in terms of creating this sense of integration and presence. Rigorously rehearsed work, can however, overcome this challenge. (See sections 2.3 and 2.4 for discussions of Pisctor's and Svoboda's work in this manner). In the case of *Club Verona*, the lack of rehearsal not only led to this lack of presence but also left little opportunity for the usual process of reflection and adjustment, and was another factor contributing to the shortcomings of the final performance.

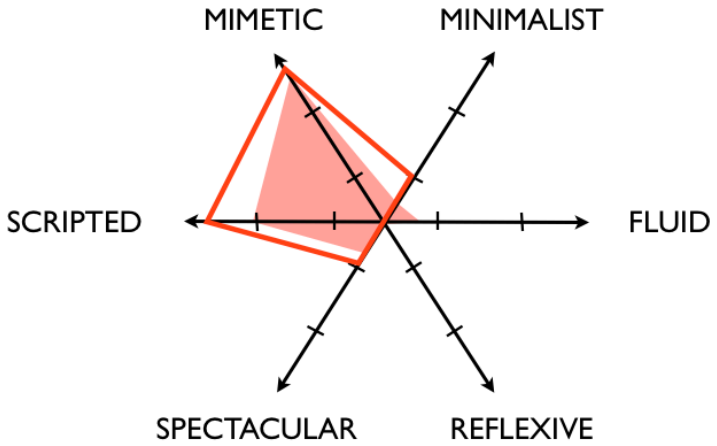


Figure 4.5: Mapping of Club Verona with generalized narrative theater shape in red outline

Based on the mapping of *Club Verona* in Figure 4.5 and the comparison with the generalized narrative theater shape, it is apparent that while the production was less successful, it still maintained an emphasis on the scripted and mimetic qualities common to narrative theatre. After analyzing the production above, however, it is possible to make suggestions for ways to improve the production. Simple adjustments such as increasing rigorous rehearsal time would help, but also re-designing the project for more textual cohesion, and perhaps even choosing a different text (*West Side Story* instead of the Shakespeare play) could make a significant impact.

In terms of the technology, there was a significant challenge with the lack of flexibility with the SecondLife avatars. Solutions to this could include locating the avatar operators in plain view on stage, which would give the production a more reflexive quality, highlighting its process, but could also have practical benefits such as allowing the avatars to speak for themselves, instead of relying on narration. The avatar operators could be staged in such a way that they have a clear view of both the screen with the projected avatars as well as they physical characters, allowing them to respond with more immediacy, increasing the responsiveness of the system. Additionally, working to create dance moves for the avatars made up of smaller elements, rather than the longer pre-determined movement sequences that were used, could allow for more improvisatory and creative control of the avatars. This could bring the creative capabilities of the avatars somewhat closer to those of the physical break-dancers.

Ironically, this exposure of the avatar operators could then result in a more spectacular performance overall. Increasing the improvisatory abilities of the avatars' dance controls as well as adding in vocal capabilities for the avatars could result in

creating a more convincing sense of presence for the digital characters. Based on these suggestions, a revised production of *Club Verona* could be mapped across opposing aspects, resulting in a performance that fits less well within the narrative theater genre, but may be stronger overall. The form of such a performance can be understood as a hybrid performance form, falling between genres or mixing elements of multiple genres (See Figure 4.6).

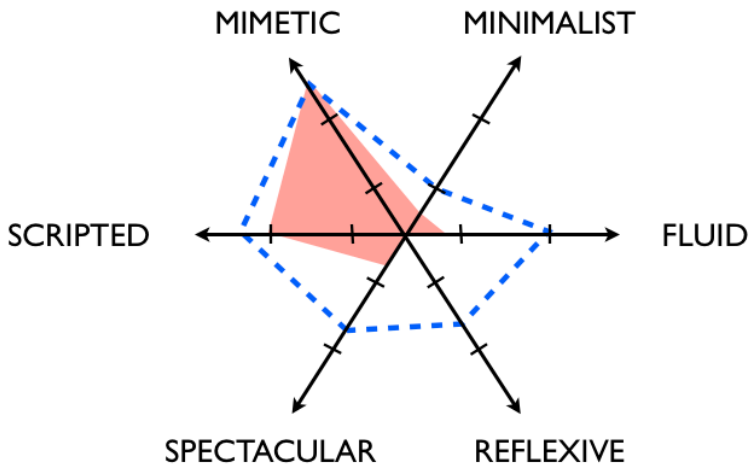


Figure 4.6: Re-mapping of Club Verona based on suggestions for revision, resulting in a performance that fits less well within narrative theater genre. Original Club Verona production map appears in pink; design for a performance based on suggested revisions appears in blue dashed line.

4.3: *Woyzeck*

Woyzeck was developed over two years at York University's Augmented Reality Lab, directed by myself and supervised by Dr. Caitlin Fisher. *Woyzeck* was written in 1836 by German playwright Georg Büchner, and is the story of a poor soldier so oppressed by society he is driven to madness, murder, and suicide. *Woyzeck* was an ideal candidate for staging as an interactive AR experience because of the incomplete nature of the original playscript. Because Büchner died before he ordered the scenes in the play, the order of scenes is debated to this day among theatre scholars and

translators. In a traditional production of *Woyzeck*, the translator or director has determined the order of scenes presented to the audience. In an AR version, however, it becomes possible for audience members to create this order on their own.

The project began with my original English language translation of the German text. Then I collaborated with composer Brendan Padgett to write the lyrics and script for a musical adaptation of the play. The music was inspired by impressionistic, classical works, such as Satie's *Trois Gymnopedies*, as well as classical-meets-jazz musical theater styles, as is found in works by Marc Blizstein and Kurt Weil. In the style of Wagner, each character was given a recognizable leifmotif. The aim was not to create a traditional musical theater or opera version of *Woyzeck*, but instead to use music to enhance the emotion of the piece and help communicate the story to the audience. The majority of the music was instrumental accompaniment to spoken scenes, with specific lines of text sung with the music to heighten their impact and encourage associations. Some sections were entirely sung-through.

The final script was considerably shorter than the original, and included only thirteen scenes instead of the original twenty-four. The decision to cut the script was made to help tighten the story but also to limit the scope of the project. Many supporting characters were cut, both to further center the story on the character of Woyzeck and to allow for the project to be created with a smaller cast. This was necessary because of the difficult nature of working with the emergent AR technology, the resources available, and the need to complete the project in a timely manner. The character of the grandmother, however, was somewhat expanded and developed as a Greek chorus of three identical grandmothers, who commented on the story. (See Figure 4.7).

Figure 4.7: View of the grandmothers from inside the audience member's head mounted display (photo by Tannis Tooney, The Toronto Star).

The decision to use dance was made because it was important to enlist the help of the body to tell the story of *Woyzeck*. There is much that goes unexpressed in words in the play as language consistently fails the characters. In collaboration with choreographer Kyle Shepard, a movement style was created that included very little contact, emphasizing the impersonal and alienating nature of Woyzeck's world, while creating dramatic tension through close proximity. Narrative tension was created and driven through movement without resorting to pantomime.

Because bodies in *Woyzeck* are often written upon or acted upon in an oppressive manner, it was important to consider the agency of the performers' bodies when developing the choreography. Fortunately, making dance can be highly collaborative. Even if the choreographer has set detailed movements beforehand, he must eventually work with bodies other than his own, unless he is creating a solo piece. During the rehearsal process, the performers became choreographers as well, creating improvisatory phrases from a basic movement vocabulary introduced by Shepard and

myself. This method allowed performers more agency over their own representations. Post-production editing techniques also allowed for experimentation with choreography, specifically relating to scale, repetition, doublings, and tempo.

Two casts of performers were used to create the content for the experience, video of dancers was produced in a chromakey studio, while audio of singers was recorded separately. Editing played a large role in developing the content, allowing for video background subtraction, layering, special effects, and audio mixing as well. The final result was a set of digital video scenes with accompanying audio, played through an optical see-through head mounted display (HMD) and earphones. Using a system of sensors, it was possible for the video characters to appear to the audience member as if they were in the same space as the viewer. A system of head and hand-tracking sensors allowed the audience member to activate these video clips, based on head and hand positions.

The performance space was minimalist in style, and laid out like a small town, with map elements represented with tape on the floor of the space. The space was lined with black felt curtains, and white tangible interfaces were scattered throughout, suspended between the ceiling and floor on transparent wires. These tangible interfaces included a set of seven dolls with severed heads, each floating above its corresponding body, a dollhouse, a life-sized faceless mannequin with black-and-white bullseye targets affixed at various points on the body and a prop knife suspended nearby, a t-shirt, a bible, and a cross.

By touching and interacting with these objects, audience members could activate corresponding video clips. Other clips were invisibly located throughout the space and

activated by the audience member's presence. The movement of the audience member's body resulted in editing capabilities; moving closer to the coordinate location of a clip created the effect of zooming in, leaning away created a zoom out, and moving away created a cut. An Intersense ceiling tracking grid was used in conjunction with hand and head sensors placed on the audience member to track movements. Tangible interfaces and invisible scenes were programmed as "hot zones" which functioned like toggle switches, sensing the audience member's head direction, presence, and hand presence (or absence) to activate (or turn off) each scene.

In collaboration with programmer Michelle Moon Lee, code for the experience was created using DART (The Designer's Augmented Reality Toolkit). DART is a software plugin for Macromedia Director and was developed at the Graphics, Visualization and Usability (GVU) Center at the Georgia Institute of Technology by Blair MacIntyre, Jay David Bolter, Maribeth Gandy, and Steven Dow. DART was used to communicate with the Intersense hardware (the inertial ultrasonic ceiling grid and the audience member's head and hand sensors). An extensive process of testing and revision of DART programming code and hardware calibration was necessary to create a functioning AR environment for the experience.

Woyzeck was presented to approximately fifty audience members over the course of one week in 2007. Audience members were admitted one at a time, and as they entered the space, they were outfitted with the HMD, as well as head and hand sensors. The battery packs for these sensors were large, and therefore the audience member was also given a white lab coat to wear, so that the batteries could be placed in the pockets of the coat (See Figure 4.8).Costuming the audience member in a lab coat

also served to emphasize the experience's removal from the everyday, as well as the themes of medicalization that run throughout the play. Once costumed and hooked up to the system, audience members were free to begin and end the experience wherever they chose, and spend as much or as little time as they liked. The average amount of time spent in the experience for each audience member was roughly forty-five minutes.

Figure 4.8: Woyzeck audience member interacting with tangible interface.

Mapping *Woyzeck*, it becomes clear it does not fit into the narrative theater genre, and instead represents a form less easily categorized (see Figure 4.9). The experience was scripted but in a non-linear manner. In terms of fluidity, there was interactivity with some degree of agency. The audience member could navigate the narrative and play with the imagery displayed in the HMD, but could not directly participate by writing their own scenes, for example. The production was mimetic but also included some reflexive qualities. The cumbersome nature of the technology, with its heavy cords and weight of the HMD, could not help but draw attention to the constructed nature of the experience. Additionally, while attempts were made to mask the lab space with black felt, it was still perceivable as a university lab room. The production was minimalist in style, with all black-and-white physical elements and black-and-white video footage, and had an element of poor theater in the sense that without

the audience member's interaction, the experience would not take place. On the other hand, the experience also contained spectacular elements, due to the wizardry of the augmented reality technology.

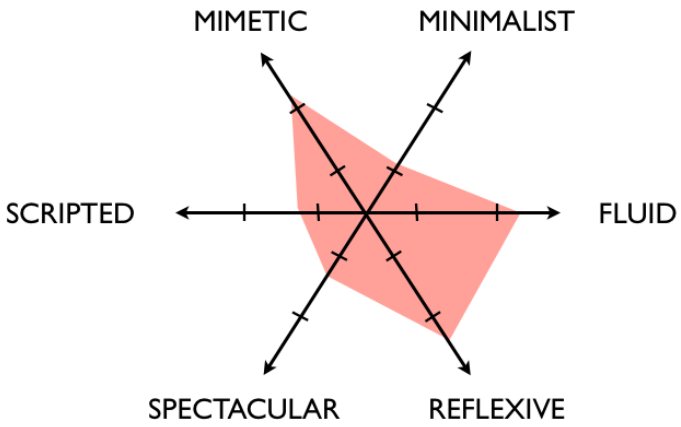


Figure 4.9: Mapping of Wozyeck resulting in a form that is not easily categorized.

Because *Woyzeck* was not an example of narrative theater, it is more difficult to apply the other elements of the framework for analysis in ways that are relevant, as they specifically pertain to narrative theater. While it is clear that the digital technology in *Woyzeck* is used in an integrated manner, and it less clear how the technology functions in this case. The categories of functions (dramatic, didactic, as commentary, as scenery/ costume/prop) may not apply in the same way as they do in the case of narrative theater. Additionally, the set of central questions developed for narrative theater are more difficult to answer in this case.

We can see the textual justification of the use of the technology in the concept that this technology allows the audience member the change to order the scenes of the play, but on the other hand, the text was adapted specifically for the implementation of this concept. This is a different situation than the common context of narrative theater, in which a director creates a production with a pre-written script. In terms of aesthetic

cohesion, it does seem that most elements in *Woyzeck* had a minimalistic style, but the technology itself was excessive in many ways - overly heavy, bundled with many cords, and cumbersome - decidedly not stylistically minimalist. This brings us to the last set of questions about functionality. The question of basic functionality is easily answered - the technology functioned well and reliably. However, because there were no live performers in the experience (only the audience member) it is less relevant to ask how the technology impacted the performers. Instead, it would be important to investigate how the technology impacted the audience member.

4.4: *[inbox]*

Like *Woyzeck*, *[inbox]* is another example of a performance that is difficult to categorize. *[inbox]* was created over the course of four months in 2009 in collaboration with Evan Barba, a fellow PhD student at The Georgia Institute of Technology in Human-Centered Computing. The project was supported by the Augmented Environments Lab, which is co-directed by Blair MacIntyre and Jay David Bolter. Barba and I shared an interest in the history and impact of the modern shipping container system, and wanted to create an experience to reveal the ambiguities and implications of this largely hidden system to audience members. We were also fascinated by the personality of the man credited with the invention of the system, Malcom McLean, who had grown up the son of a tobacco farmer in Shoe Heel, North Carolina, and ended his life as a modern innovator and shipping magnate.

Inspired by Marc Levinson's book, *The Box: How the Shipping Container Made the World Smaller and the World Economy Bigger*, we wanted to capture and

communicate the decentralized, borderless, and ubiquitous aspects of the container system. The system is complex because of the number of components and processes that constitute it and the multitude of uses and meanings attached to it. We wanted audience members to come away from *[inbox]* with an appreciation of not just the scale and number of components, but also the history and cultural effects of the system. In order to capture this complexity, we modeled the experience on the shipping container system itself.

Just as the container system operates as a network with many nodes and connections between those nodes, we designed the *[inbox]* experience with multiple interactive nodes and scripted actions for the audience members to perform in-between those points. Using a combination of explicit communication (representations of artifacts) and embodied communication (actions performed on those artifacts), we attempted to engage audience members on multiple cognitive levels. The goal of this mixed approach was to allow each audience member to create his or her own conception of the container system and gain an understanding of both its physical structures and the dynamics that govern its behavior.

The main digital technology used to create the experience were Gizmondos, mobile handheld gaming devices. The Gizmondo is an older but stable mobile device and allows for simultaneous multiple users to have individual experiences because the program and media assets are stored on the device itself, making every session self-contained. Each Gizmondo includes a 0.3 megapixel camera and enough processing power to allow for identification of augmented reality fiducial markers. The software we used was capable of identifying 225 unique markers, more than enough for our design,

which included 42 unique elements. In addition to digital technology, older technologies were also employed such as AR-enabled 35mm slide projections, and ancient practices such as paper folding. Technologies were implemented in ways we felt best helped to tell the story and achieve our design goals, and not with the objective of showcasing the abilities of the technologies themselves. *[inbox]* was presented in the broadly defined "Art Installation" category at the 2009 ACM Creativity and Cognition Conference for roughly fifty audience members.

Approaching the installation, visitors found a full-size 20 x 8 x 8 foot ISO shipping container in a parking lot (see Figure 4.10). Through the open door, a large-scale map was visible on the back wall of the container, as well as a slideshow and life-size mannequin seated at a desk. Before entering the container, visitors were given a Gizmondo and headphones. They were instructed to press play to begin the audio as they entered the container.

Figure 4.10: Visitors to [inbox] interacting with the augmented reality elements (on left) and peering into the shipping container (on right).

Through audio narration, visitors were greeted by the voice of an actor playing Malcom McLean, who was also represented by a mannequin seated at a desk. Background audio, in the form of a continuous loop of sounds sampled from sites along

the container's journey through shipyards, railroads, and highways played through speakers in the container itself. This ambient soundtrack could still be heard faintly despite the headphones. Malcom invited visitors to listen to the story of the invention of the container system, while they investigated a projected slideshow (see Figure 4.11). The slideshow consisted of projected photographs of shipping containers, bordered by AR frame-markers (a frame-marker allows images to be placed inside a trackable border). These allowed visitors to use the Gizmondo to access AR image overlays, metaphorically unpacking each container and viewing depictions of historical times and places from Malcom's story.

Figure 4.11: Barba testing frame marker interaction with projected slide show (on left) and tracking on large map in rear of container (on right).

After Malcom finished telling the story of the container, he asked visitors to search the large map on the back wall for items hidden there. The map displayed major shipping routes from the world's largest container ports, and was also embedded with AR frame-markers. The AR content visible on the map showed the most exported goods at each container port, such as paper, oil and electronics. Malcom then instructed the visitors to choose one export they could not live without and capture it using the Gizmondo by pressing the stop button on the device. As with all the instructions

throughout the experience, these are given both in audio and as text on the screen of the Gizmondo. As visitors brought each marker on the map into view, a hand-drawn cartoon-style depiction of an item was shown as an overlay and audio specifically related to that good was heard through the headphones.

Upon collecting an item from the map, visitors triggered an additional audio segment in which Malcom instructed them to bring their selected export over to the inbox on his desk. Malcom's desk was littered with miniature scale models of shipping containers in various sizes and colors, each with its own AR frame-marker. Each miniature container displayed a hand-drawn image of a common desk item such as an inbox, pencil, or globe when viewed through the Gizmondo. Once visitors found the AR inbox miniature container and deposited their chosen export by pressing the stop button on their device, they were able to view their export, as if it were actually in the inbox by looking through the Gizmondo.

At this point, Malcom remarked that the removal of an item from a container makes room for new cargo. He then asked the visitor to help him find out what that same container that had been chosen was being used for now. Visitors were instructed to return to the port where they chose to remove an export good and bring Malcom the new cargo. Returning to the map, visitors discovered that the AR overlay at this port had changed - and an image of the most exported *illegal* good was now visible. Illegal exports included drugs, weapons, narcotics, and even human trafficking. After visitors completed this task, Malcom thanked them for their part in making his system a success and said goodbye. Upon exiting the container, the visitor was given a cut-and-fold paper

model of a miniature container along with a written message from Malcom and an AR sticker similar to the ones used to indicate ports on the map.

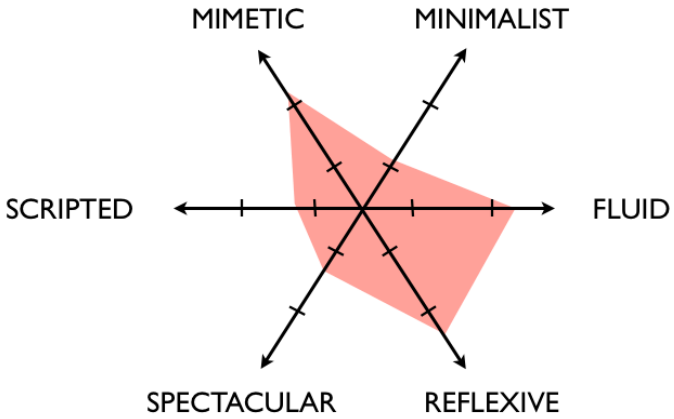


Figure 4.12: As with the map of Woyzeck in Figure 4.9, the map of [inbox] (above) results in a form not easily categorized.

Mapping *[inbox]*, it becomes clear that like *Woyzeck*, it does not fit the general form of narrative theater (see Figure 4.12). This means that like *Woyzeck*, it is more difficult to apply the other elements of the framework for analysis on *[inbox]* in ways that are relevant, as they specifically pertain to narrative theater. The experience is scripted, but in a non-linear way that includes multiple branching possibilities which emerge only through the audience member's choices, making it a scripted experience that approaches a rhizomatic form. The experience includes many interactive elements, with prompts for the audience member's input, but falls short of giving the audience member a chance to create their own nodes or otherwise produce content.

[inbox] includes many elements simulative of reality and is therefore somewhat mimetic. However, the experience also includes many reflexive elements, for example, *[inbox]* is about shipping containers and is housed inside a shipping container. The experience was minimalist in style, with simple, clean graphics and black-and-white frame fiducials, and also had an element of poor theater in the sense that without the

audience member's interaction, the experience would not take place. On the other hand, as with *Woyzeck*, the experience also contained some spectacular elements, due to the effects of the augmented reality technology.

Again, because *[inbox]* is not an example of narrative theater, it is more difficult to apply the many elements of the framework in analysis in ways that are relevant, as they specifically pertain to narrative theater. As with *Woyzeck*, we can see the digital technology in [inbox] was used in an integrated manner, but the categories of functions and central questions are more difficult to identify and answer. *Woyzeck* and *[inbox]* suggest a possible direction for further research; the development of a larger, cross-genre dramaturgical framework.

4.5: Connections

The use of the dramaturgical framework to analyze the above examples has provided a well-rounded understanding of each work, and in the case of work that was not able to fulfill expectation, such as *Club Verona*, the dramaturgy has helped develop a set of recommendations for revision. Analyzing each work has also provided an opportunity for reflection across examples, looking at digital performers, as well as the emergence of hybrid forms.

All four examples analyzed above included digital performers, but employed with different strategies, and resulting in different outcomes. *Machinal's* digital performer was a robot controlled from offstage with canned audio and responsive movement. *Club Verona's* digital performers were also controlled from off-stage, but were confined to a screen on stage, and exhibited mostly canned behaviors. *Woyzeck's* digital performers

were entirely canned video and audio recordings, and were also screen-based. In this case, however, the screen (the optical see-through HMD) created the illusion of the characters existing in physical space and not on screens at all. The digital performer in *[inbox]* was not represented on any type of screen, and instead was represented by pre-recorded audio and a physical mannequin, which was static.

It is interesting to note that the one example discussed that used a traditional screen for the digital performers, *Club Verona*, was the least successful. While this project's shortcomings stemmed from multiple sources, this does suggest there may be a lack of presence created by the traditional screen. This may be the result of the framing of the screen, a reminder of separation or absence difficult to overcome. Nevertheless, there are historical examples of work that have been able to overcome this difficulty, such as Erwin Piscator's *Hoopla Wir Leben!* and Josef Svoboda's *Graffiti* (see Sections 2.3 and 2.4).

Both *Woyzeck* and *[inbox]* are examples of works that are not easily categorized, but share some similarities with each other. Both experiences present navigable storyworlds, with audience members as the only physical performers. In both cases, the actors' performances have been digitized, and the actors are not physically present during the audience member's experience. Comparing the mapping of *Woyzeck* and *[inbox]* reveals they have similar shapes (see Figure 4.13).

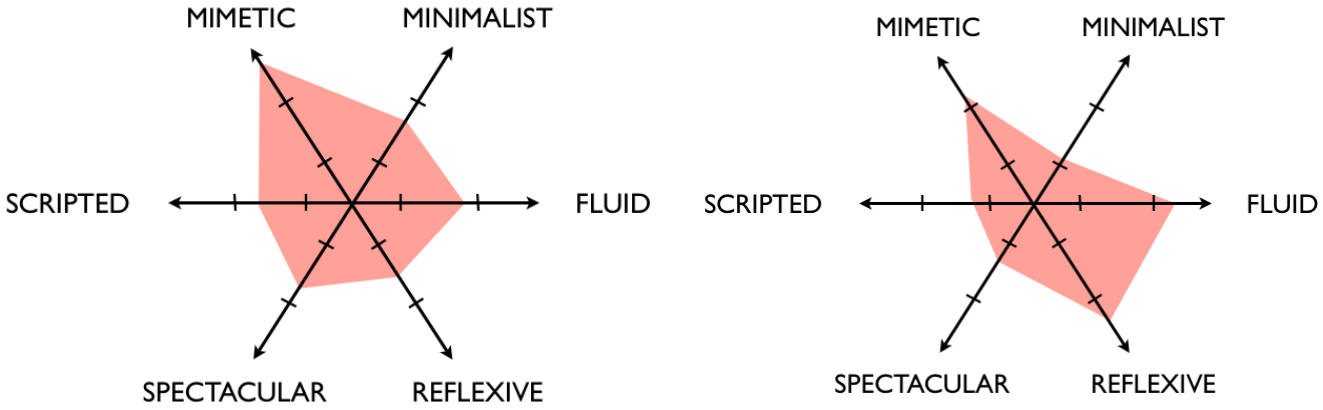


Figure 4.13: Mapping of Woyzeck (on left) and [inbox] on right, revealing similar shapes.

Comparing the shapes of *Woyzeck* and *[inbox]* with the generalized forms discussed in Chapter 3, it is possible *Woyzeck* and *[inbox]* represent a hybrid form, combining elements from both the narrative theater genre and the environmental art genre. Overlaying these generalized shapes on the mapping of the two performances reveals this hybridity (see Figure 4.14).

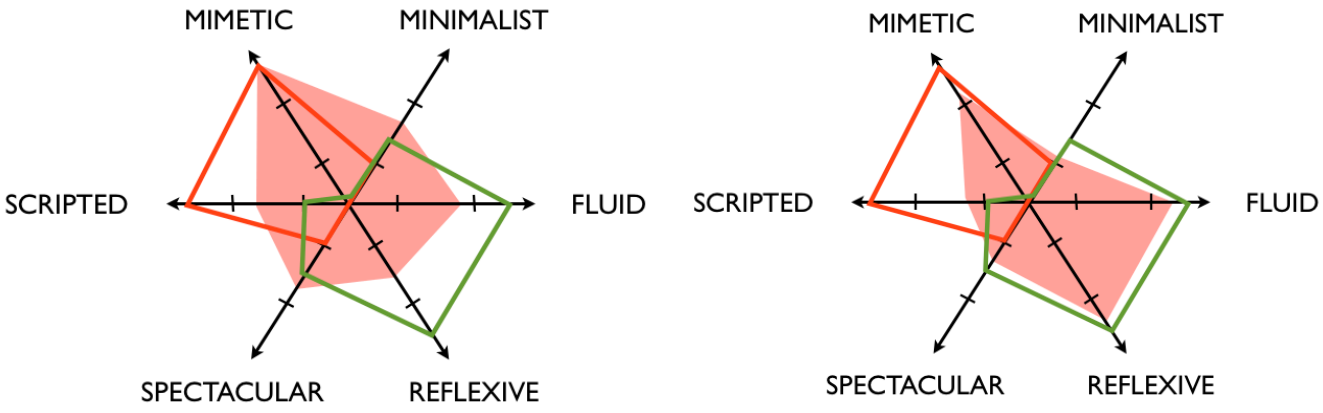


Figure 4.14: Mapping of Woyzeck (on left) and [inbox] (on right) with general narrative theater form (red outline) and general environmental art form (in green).

With this type of hybrid performance form, however, it becomes more difficult to determine which element is most dominant when the production is mapped. This means these performances may belong to a hybrid genre all their own, but may be more complex to analyze. Additionally, it may be more difficult to suggest a set of best practices for development of work in this hybrid genre.

It is also worth noting that both *Woyzeck* and *[inbox]*, unlike *Machinal* and *Club Verona*, were not presented in traditional theater spaces, and the audiences for these works were likewise not constructed as traditional spectators. Instead, these works required audience interaction, blurring lines between the roles of audience member, user, player, and performer. In some ways, it may be easier to succeed with work like *Machinal* that conforms to expectations of an established genre (narrative theater), while work in emerging, hybrid genres may be more difficult to produce consistently with success. Audiences may have clearer or more predictable expectations going into a performance like *Machinal*, while it can be more difficult to anticipate audience expectation regarding a hybrid work.

Instead of finding these complexities and difficulties discouraging, it seems these hybrid works indicate an additional interesting area for investigation. These hybrid examples point to an exciting direction for further research, and suggest a need to work to expand this dramaturgical framework for narrative theater into a cross-genre, comprehensive dramaturgy with a broader field of application. Strategies for moving forward will be discussed in Section 6.5.

CHAPTER 5
CASE STUDY: *after the quake*

This chapter will detail the processes and outcomes of a two-semester experiment in the integration of dramaturgical research, pedagogy, artistic production, and interdisciplinary scholarship. The impetus for this work was to create an opportunity to test out the dramaturgical framework developed in Chapter 3 in practice, in order to evaluate its effectiveness and reflect on any needs for improvement.

The course was a special topics course, open to students from across the university, and focused on the topic of technology in performance. The course design reflected multiple pedagogical goals, extending beyond the practical goal of creating technological elements for a play production the following semester. The course was co-taught by DramaTech Artistic Director and LMC faculty member Melissa Foulger and myself. The objectives of the course were threefold: first, to introduce students to the theoretical debates and dramaturgical theory surrounding digital technology uses in theatre; second, to examine examples of productions utilizing media on stage; and third, to guide the students through an iterative design process to develop working prototypes of scenographic elements for a play from the genre of narrative theater, *after the quake*, to be produced at DramaTech during the Spring semester.

after the quake is based on two short stories (*Honey Pie* and *Super-Frog Saves Tokyo*) by the Japanese writer, Haruki Murakami. The stories were adapted for the stage by playwright Frank Galati. Galati's adaptation is unique in several ways: the two stories are interwoven, shifting back and forth, and much of Murakami's original prose language is preserved, resulting in use of third person throughout. Much of this third person narration is delivered by a Narrator character, however, some sections are

spoken by the characters themselves. In addition, several characters are double-cast, meaning one actor plays two characters (one in each story) in several cases. The characters chosen to overlap provide interesting doublings throughout.

The scenes in the play from *Honey Pie* tell the story of a love triangle between a shy man who is a short story writer (Junpei), an outgoing man who becomes a newspaper reporter (Takatsuki), and a woman caught between them (Sayoko). The threesome met in college, when both men fell in love with Sayoko. Takatsuki, however, makes the first move and wins her over, eventually marrying her and having a daughter with her. Later, they divorce. Throughout their relationship Junpei remains close with them both, forming a painful threesome. Junpei is passive throughout the majority of this storyline, until the final scene of the play, when he declares (notably, in first person) his intention to marry Sayoko himself, who had been divorced from Takatsuki for several years.

In the *Honey Pie* story, Junpei tells stories to Sayoko's daughter, Sala, about two human-like bears who are veiled representations of himself and her father, Takatsuki. In response to Sala's nightmares following an earthquake, Junpei begins to write a short story for Sala about a superhero frog character who prevents an earthquake from occurring. This is the second story which is woven throughout the play, and is based on Murakami's *Super-Frog Saves Tokyo*. In this story, a depressed bank debt collector, Katagiri, is approached by a superhero six-foot tall frog, known only as Frog, to assist him in fighting a massive underground worm to prevent an earthquake in Tokyo.

While understandably skeptical at first, Katagiri eventually agrees to assist Frog in the fight against the worm, only to be shot in the street on the way to meet Frog for the fight. Waking up in the hospital, it appears that Katagiri has not been shot, but instead passed out from unknown causes. Frog visits Katagiri in the hospital and reassures him that he was a great help in the fight against worm while he was asleep, as the fight took place in the realm of imagination. Frog goes on to describe the fight, which ended in a draw but did prevent the earthquake. Frog's injuries turn out to be significant, and he dies gruesomely in the hospital room, and then disappears. This is followed by the final scene from the *Honey Pie* story in which Junpei declares a new sense of agency and direction, and his intention to marry Sayoko.

In terms of the structure of the double casting, the actor playing the Narrator also plays the Frog, the actor playing Takatsuki also plays Katagiri, the actress playing Sayoko plays also plays a hospital nurse, and in the DramaTech production, the actress playing Sala also had a cameo appearance as a short-lived girlfriend of Junpei's who is not named. In the DramaTech production, the actor playing Junpei was the only actor to play a single role, emphasizing his centrality to both stories, as the protagonist in *Honey Pie*, and the writer of *Super-Frog Saves Tokyo*.

During the Fall semester course, Foulger and I led the students through a pitch process, which included bringing outside experts into class for feedback. Students also learned about the dramaturgical principals from Chapter 3 and were encouraged to consider these as design guidelines. Eventually, the students narrowed down their design ideas to two projects for development: a costume sewn with electroluminescent wire to represent the fantastical frog character, and a Kinect-based gesture tracking

system that would read the emotions of every actor and generate a responsive projection representing the emotional arcs of each scene. The students tackled these ambitious projects with great tenacity and presented functioning prototypes for each project at the end of the semester. While both prototypes functioned in a basic sense, they were not reliably functional or durable. These shortcomings, among others, would be addressed during the production phase, when both designs were significantly revised.

Moving into the production phase during the Spring semester, we were fortunate to have a handful of students from the Fall course decide to continue with the project on an extracurricular basis. As rehearsals began, it became clear the original designs for the projects from the Fall course would need revision. Both designs were streamlined to improve functionality, and the gesture-tracking system was considerably refined to reflect the presence of the actors. In the Fall course, the play had not yet been cast, and we had no actors to work with in the classroom. In hindsight, we can see this absence led the students to design a system that was capable of performing the play nearly autonomously - in other words, the original design for the gesture-tracking system practically replaced the actors. By reading and displaying the actors' every emotion, the system made the actors themselves redundant, as it is the actor's primary job to portray the emotional intentions of the story.

To refocus the design of the gesture-tracking system in such a way that it worked to support (and not overwhelm) the actors, the system was constrained to track only a single actor's gestures during particular scenes. This strategy emerged during a series of technology-specific rehearsals that were part of the rehearsal process, and brought

the actors, director, and programmers into the same space to work with the system. These special workshop-style rehearsals allowed for a synergy to develop between actor and technology that had been missing during the classroom development process.

In conjunction with the performance of the play, we organized an afternoon symposium: *Performing Technology: Symposium on Digital Media, Stage and Performative Applications*. The goals of the symposium were to highlight the exciting work happening in performance and technology at both the Georgia Institute of Technology and the University of Georgia, seed the potential for collaborations across disciplines, situate the work done in our Fall course and Spring production within a larger context at the university, and extend the pedagogical experience for the students who had participated in the course or the production.

It is important to understand the process (including the time spent in the course in the first semester) that led up to the final production during the second semester, to understand the amount of time and manpower necessary to develop a successfully functioning design with emerging or newer digital technologies. The first semester course was comprised of fifteen weeks, and counting both the three hours a week in class as well as the time spent working outside of class meetings, this represents a considerable addition of time to the customary three- to five-week production schedule in commercial theaters and university theater settings. It must be emphasized that the final production of *after the quake* would not have been possible without this preliminary development period of fifteen weeks. This development period reflects ways of working that were common among several of the practitioners and groups of practitioners

discussed in Chapter 2. As discussed above in Section 3.5, the Bauhuas theater artists, Svoboda, and Saltz all have made use use of a laboratory type of production process.

What follows is a more detailed look at the course design, process and outcomes, production of *after the quake* with a description of the dramaturgical framework from Chapter 3 in practice. The interdisciplinary symposium is also discussed, as well as reflections on the larger project of integrating undergraduate coursework, artistic production, and research in the university setting.

5.1: Course Design and Process

I designed and co-taught an undergraduate special topics course with Melissa Foulger (Artistic Director of DramaTech and LMC faculty member) for the Fall 2012 semester. This course was LMC 2813: Dramaturgy and Design for Digital Technologies in Theater, and was housed in the Science, Technology and Culture (STAC) program but open to students from across the university at all levels as a humanities elective. The course was designed as an experiment in integrating undergraduate coursework with current research. The course was organized in three phases emulating the process of design development common in many research groups: foundational work, project pitches, and project development. The skills learned and practiced in the course extended beyond the immediate subject matter of digital technology in theater. Ideation, teamwork, iterative design, project management and feedback skills were also developed and practiced.

Twelve students enrolled, of which seven had previous theater experience, with five of those seven actively involved in the student theater at the university. Fields of study represented included STAC, Computational Media, Computer Science, Nuclear & Radiological Engineering, Environmental Engineering, Electrical Engineering, Mechanical Engineering, Biomedical Engineering, and Physics. In an introductory survey for the course, students self-reported possessing the following skills they felt would be relevant to the course: acting, dance, choreography, graphic design, programming across multiple platforms and languages, construction, theater lighting, sound, and costume design, traditional drawing and painting, Photoshop, Illustrator, Maya, CAD drafting, and leadership skills. Including students with this incredible range of skills and knowledge presented great benefits for the course.

In the first phase of the course, *Foundational Work*, students were introduced to the basics of teamwork, iterative design, design for the theater, the major theoretical debates about the role of digital technology in performance, as well as historical examples of relevant work. This phase of the course was designed to bring all of the students, with their diverse disciplinary backgrounds, to a similar level in terms of basic understanding of theater practices, design process, and dramaturgical history and theory. Along the way, as theoretical and historical material was introduced, this material was discussed or integrated into in-class exercises, as well as reflected upon by students individually in written blog assignments.

We began with team building, using common ensemble-building theater games designed to emphasize particular attributes of successful teamwork such as listening, give-and-take, and trust. This was followed by discussion of attributes of good and bad

teams, and students' previous experiences with group work. Building on this module on teamwork, a variety of readings on the nature of creativity were assigned, including excerpts from *The Imagineering Way* by a group of the Disney Imagineers, Bill Breen's article, "The 6 Myths of Creativity," and Mihalyi Csikszentmihalyi's chapter, "A Systems Perspective on Creativity" from Jane Henry's book, *Creative Management and Development*. Creativity was discussed within the context of the course as a necessary ingredient for success, and thinking about creativity from these various viewpoints helped the students gain access to strategies for understanding and developing creativity, which can otherwise remain a somewhat amorphous or elusive quality.

Students were next introduced to the script for *after the quake*, as well as the source material (short stories *Honey Pie* and *Super-Frog Saves Tokyo* by Haruki Murakami) from which the script was adapted by playwright Frank Galati. The script was discussed in class, along with Foulger's directorial concepts for the production (See Figure 5.1). Students also screened the documentary *The Tsunami and the Cherry Blossom*, which documents the aftermath of the 2011 earthquake and tsunami in Fukushima, Japan. While this was not the same earthquake portrayed in *after the quake*, the documentary provided important context for understanding the fear and anxiety surrounding earthquakes in Japan.

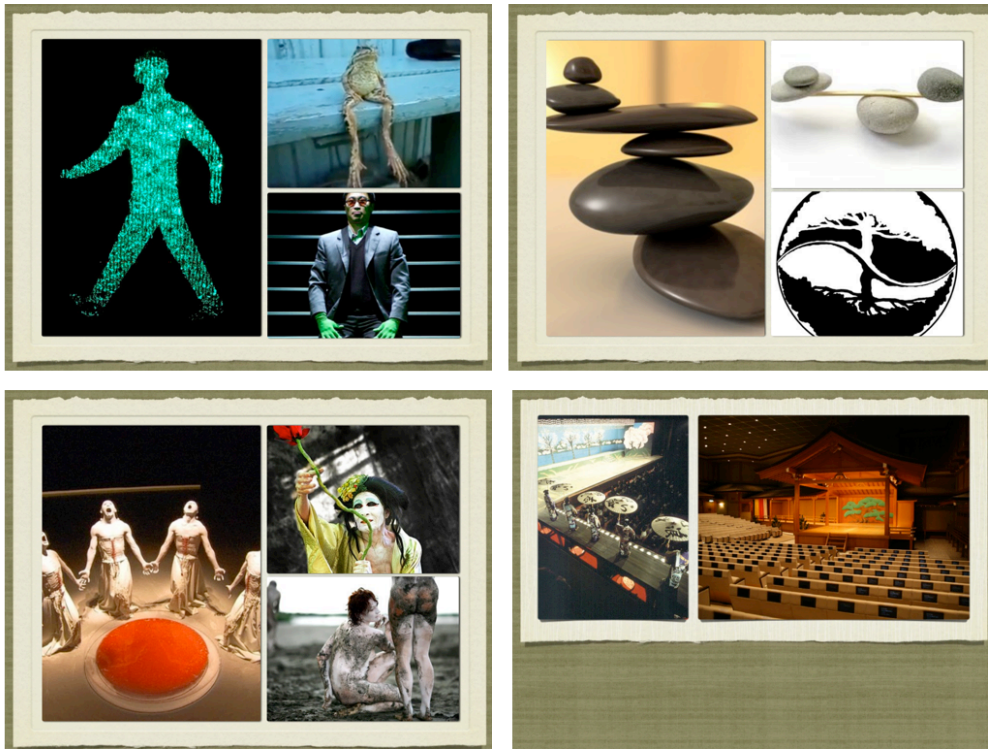


Figure 5.1: Images excerpted from director Melissa Foulger's concept presentation. Top left, man of green light and representations of Frog; top right, images of balance; bottom right, traditional Kabuki and Noh theaters; bottom left, examples of Buto performances.

Following the discussion of the script and Foulger's vision for the production, students read excerpts from Karen Brewster and Melissa Shafer's *Fundamentals of Theatrical Design* and a chapter on designers and technicians from Robert Cohen's *Theatre*. This material was used to introduce students without theater experience to the various design roles and common practices in production.

Students next moved on to present conceptual collages based on their own interpretations of *after the quake*, as a pre-cursor to individual pitches for projects (see Figures 5.2 - 5.3). Students then read excerpts from Philip Auslander's *Liveness* and Peggy Phelan's *Unmarked*, and a Lincoln-Douglas style debate was conducted in class on the implications of technology in performance. Building on this theoretical

background, historical examples from Chapter 2 were introduced, along with the dramaturgical framework from Chapter 3.

With this theoretical and historical background material in place, the course began the shift toward the second, practice-based phase. Students prepared questions for a group of design professionals who visited class to discuss the topic of technology in performance as a panel. Panelists included Georgia Tech research scientist from the School of Industrial Design, Clint Zeagler, who specializes in electronic textile interfaces; Tony award-winning scenic designer, Kat Conley; and theatrical technical director, lighting designer, and electrician Ben Tilley. Following this discussion with professionals about the benefits and challenges of integrating digital technology in narrative theater practice, students were introduced to the dramaturgical framework from Chapter 3, and encouraged to consider it as a design guideline moving forward.

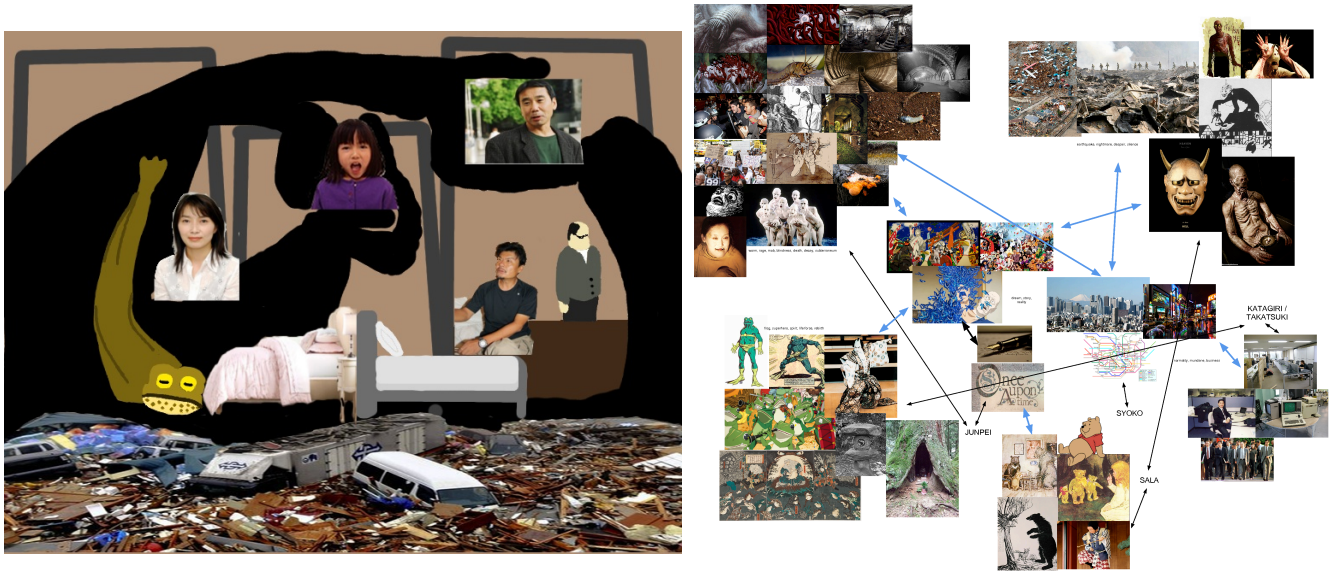


Figure 5.2: Examples of student concept collages. Left, by Matthew Guzdial; right, by Adam LeDoux.

Figure 5.3: Examples of student concept collages. Left, by Sterling Olson; right, by Sam Whited.

In the second phase of the course, *Project Pitches*, the students first developed individual design concepts for after the quake that integrated digital media, and then worked collaboratively in teams to develop design concepts. The students' individual pitches included a range of ideas, from systems for digital shadow puppeteering, to an animated earthquake fissure between two stages (one stage for each story in the play), to a light-up costume, and more (See Figures 5.4 - 5.6). At this point, students were also introduced to the Graphics, Visualization and Usability's Rapid Prototyping Lab. Students were approved for unsupervised use of the facility after undergoing safety training and orientation provided by the lab's administrator, Scott Gilliland. Relevant visitors were also brought into the course during this time to provide feedback on design plans and mock-ups. Visitors included Georgia Tech media researcher Jay David Bolter as well as four Digital Media doctoral students with design experience (Mariam Asad, Paul Clifton, Tom Jenkins, Andy Quitmeyer).

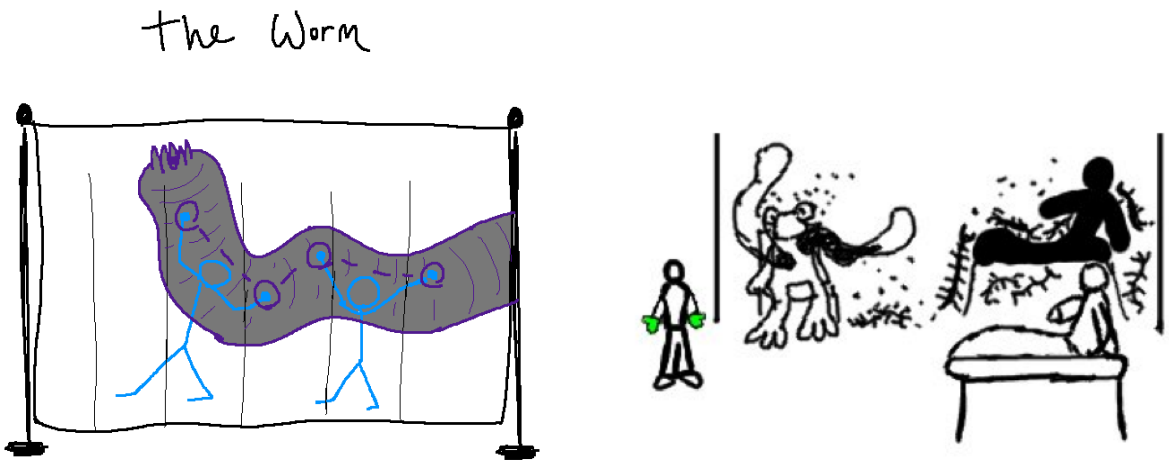


Figure 5.4: Examples of individual pitches. Left, by Adam LeDoux, a Kinect-based digital puppet to represent the worm character, projected in front of actors. Right, by Matthew Guzdial, a Kinect-based hand tracking system to manipulate animations of the animal characters in the story, projected behind actors.

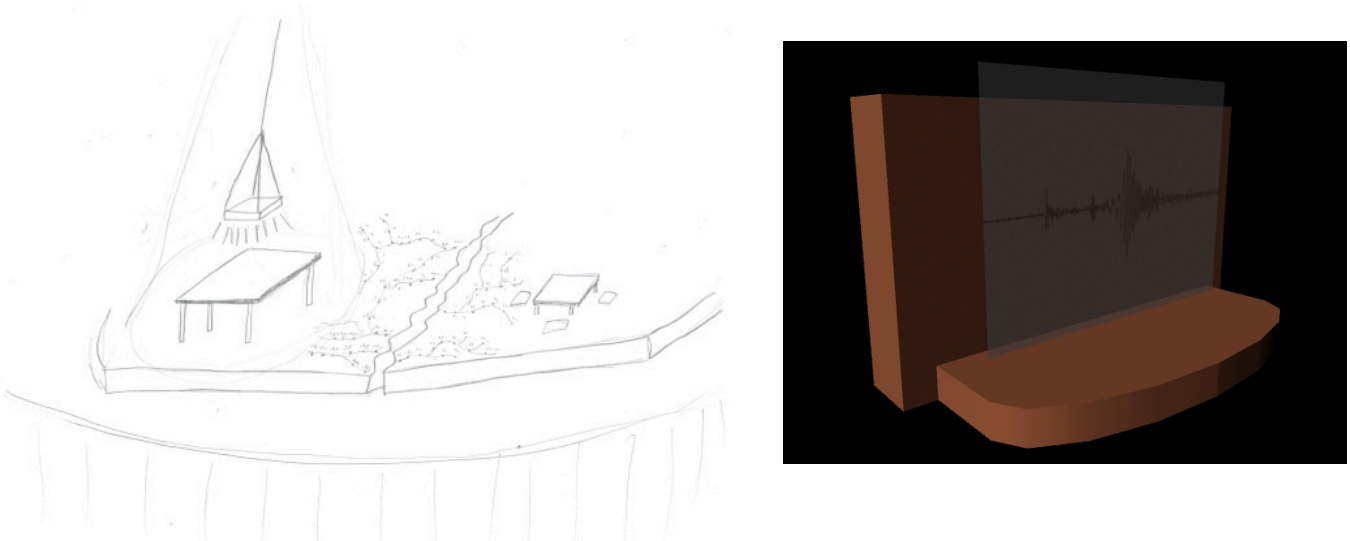


Figure 5.5: Examples of individual pitches. Left, by Aswin Natarajan, a split-stage design divided by an earthquake fissure lit by animated LED lights. Right, by Rachel Johnson, a projected background of an animated seismograph wave.

Figure 5.6: Examples of individual pitches. Left, by Tejas Kotak, design for frog costume with green and red LED lights. Right, by Ty Autry, design for frog costume gloves using electroluminscent wire to create the illusion of frog-shaped hands.

In the third and final phase of the course, *Project Development*, each team of students worked to bring a single design concept from paper prototype to fully functioning demo. After reviewing individual pitches together in class, it became clear most pitches fell into a few categories: earthquake representations, Kinect-based gesture tracking for digital puppeteering, and costume ideas for the frog character. Foulger and I then stepped in to shape the students' variety of ideas into concepts for two projects: a costume for the frog, and a responsive projection of a waveform that would represent the earthquake and be generated by tracking actors' gestures with the Kinect.

5.2: Course Outcomes

The two teams, which came to be known as the costume team and the Kinect/wave team, both produced functioning prototypes by the end of the course. At several points during this final phase, students presented their in-progress work at campus

demo days to receive outside feedback from demo day attendees, which included members from the Atlanta community, industry, as well as students and researchers from across the university. This process of demoing outside the classroom gave students the opportunity to practice articulating their work to viewers outside the course with diverse backgrounds, and receive feedback.

The costume design incorporated green and red electroluminescent wire (e-wire), an actor-operated switch, and a sound driver. The green wire was operated by the actor, using a toggle switch located in the cuff of the jacket sleeve. The actor would turn the green on during the scenes when he portrayed the frog character, to indicate his transition from the narrator character to Frog. The red wire was controlled by a sound driver, which was designed to respond to piece of music composed by the students for the frog's death scene. The concept here was to produce flashing red lights among the green lights, representing the frog's body's disintegration caused by an infestation of worms.

This team began prototyping by using colored tape on a jacket, then pinning wire in place on the jacket, and finally sewing the wire to the jacket using black bias tape. The bias tape was used to mask the wires when not in use, and was porous enough to allow light to shine through when the wires were illuminated (see figures 5.7 - 5.9).

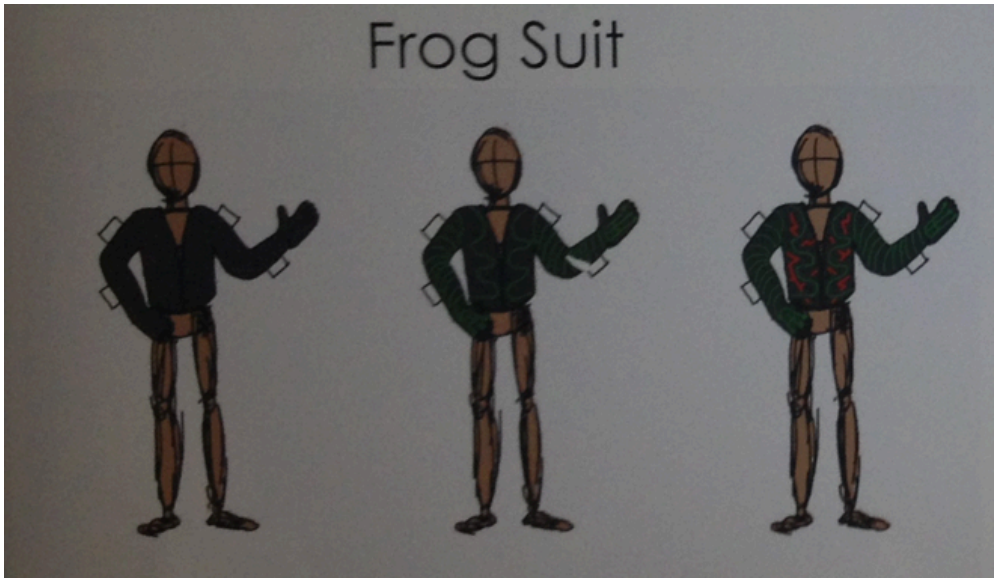


Figure 5.7: Concept sketch of frog costume, showing from left to right, lights off, green lights, red and green lights. By Adam LeDoux.

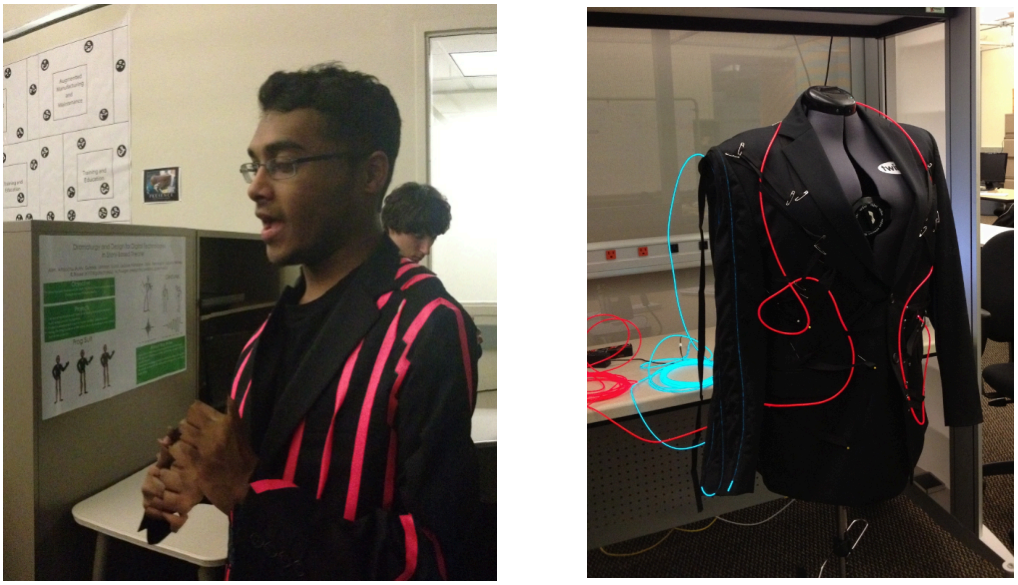


Figure 5.8: Tejas Kotak demos the design for the jacket with colored tape representing lights (left), later version of jacket with e-wire pinned on (right). Photos by Melissa Foulger.

Figure 5.9: Tejas Kotak, Adam LeDoux, and Ty Autry at work during class sewing e-wire and bias tape to jacket and wiring battery packs and switches to e-wire. Photo collage by Jeremiah Attaochu.

The concept for the Kinect/wave team evolved into a responsive projection system that would read the emotional intentions portrayed by every actor, via his or her gestures, and create a projection of an expressive wave to display the emotional arcs of each scene. Naturalistic gestures were too subtle and variable to be read by the Kinect, however. To create gestures readable by the Kinect, a codified gesture language was needed. Foulger suggested Francois Delsarte's gesture system of aesthetic gymnastics, or "grammar of pantomime", which had been developed in the late 1800's and was recorded by a student of Delsarte's work, Genevieve Stebbins, in a book published in 1885, *The Delsarte System of Expression*.

Based on the dominant themes in the play, the Kinect/wave team began work on a gesture library correlated to thirteen emotions: fear, anxiety, confusion, sadness, regret, loneliness, relief, physical pain, strength/endurance, excitement, terror,

weakness, and exhaustion. The Kinect was programmed with gesture recognition algorithms using Processing and the Simple Open NI library. The thirteen emotions were defined based on a set of data received from the Kinect: horizontal location, vertical position, proximity to the sensor, which gesture the Kinect believed the actor was performing along with a percentage representing the accuracy at which the gesture was performed, tempo, and duration. This data set was then used in Quartz Composer to generate a responsive waveform for each emotion, that would react based on the actor's input according to the above set of variables. The students developed a gesture handbook with guidelines to help actors learn the gesture language (see Figure 5.10).

For the final presentation of work in the course, Foulger selected a single scene for the students to focus on, the scene with the frog's death. This is the most dramatic scene in the play, the climax of the action, and gave the students the opportunity to demonstrate the widest range of functions of the scenographic elements they had designed. Foulger also identified particular points for the Kinect/wave team during this scene when specific gestures would be used to express particular emotions. This helped to narrow the set of thirteen emotions to a smaller set. Foulger also cast two students to stand in as actors in this scene, playing Katagiri and Frog. These students practiced to learn the gesture language so that their movements would be correctly interpreted by the Kinect (see Figure 5.11 - 5.12).

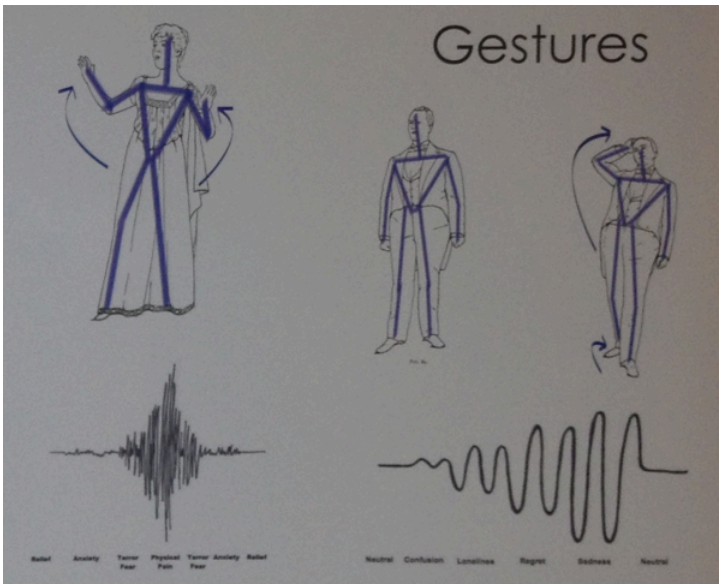


Figure 5.10: Images from the gesture handbook, by Sterling Olson. On left, gesture for terror with corresponding waveform below; on right, gesture for confusion with corresponding waveform below.

Figure 5.11: On left, Ty Autry demonstrates Kinect tracking of "terror" at an early demo day; on right, Sam Whited demonstrates Kinect tracking and responsive wave representing "confusion" at a later demo day.

Figure 5.12: Students rehearse in class for the presentation of the final projects, directed by Melissa Foulger, seated on left. Sam Whited, on left, portrays Frog, with Alex Pennington, center, portrays Katagiri. Matthew Guzdial, right, monitors the Kinect, for which he was the lead programmer.

Throughout the course, student learning was assessed using a variety of methods, with the aim of speaking to a variety of learning styles and levels of mastery. Blogs were used to solicit reflection on theoretical readings and discussions, as well as meta-reflection about the process of group work, pitching and refining ideas during the course. Individual and team pitches were documented, as well as individual concept collages, and group paper prototypes. Design team work was documented on team development blogs and workflow documents, which was all collected in a centralized course website at http://afterthequake.weebly.com (see Figure 5.13).

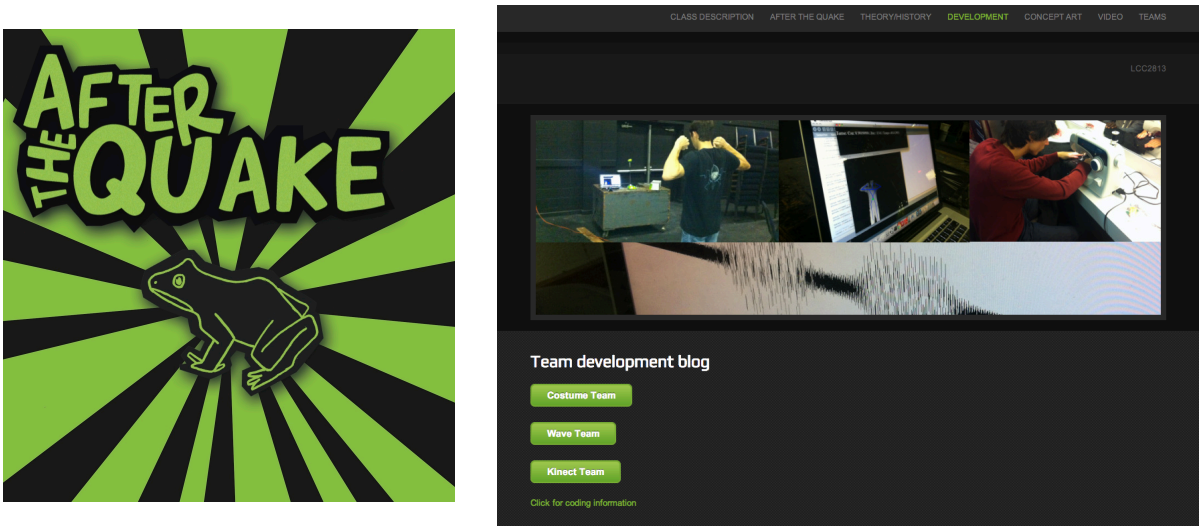


Figure 5.13: On left, project logo; on right, screenshot of course website. Both designed by Sara Allen.

Both projects were presented as functioning prototypes at the end of the semester in class, with several of the guests returning who had visited previously throughout the semester to provide feedback. While the jacket functioned smoothly, the appearance of the prototype was less than ideal. The black bias tape helped to mask the wires when not in use, but the tape had been sewn on in such a way that the surface of the jacket was puckered. This drew attention to the wires, even when they were not lit, which was distracting and diminished the surprise of the lights as well.

While the kinect/wave system was able to track and display waves for gestures representing terror and confusion, the system was not able to function reliably. At times gestures were successfully picked up and the correct wave resulted, but at other times, gestures were not read by the kinect or the wave did not respond as expected. The unreliability presented a problem for audience members in terms of making it difficult to draw a correlation between what was displayed in the projection and which gestures the actors performed.

Following the presentation of both projects in class, a final class meeting was used to reflect on the quality of the process during the course and the outcomes for each project. There was unanimous agreement among the students that they would have liked more time to work on the projects. The students felt that with additional time, the shortcomings mentioned above could have been addressed. The students would also have liked more time in class with outside experts, access to more computers with Quartz Composer (we had only two), and more help from the instructors in breaking down work into smaller tasks, and in particular, more help identifying tasks that could be worked on in parallel.

Nevertheless, the students were proud of the work accomplished. Particular achievements noted during the final discussion included the wide variety of new skills learned by the students, from soldering e-wire, to programming in Quartz Composer, to sewing, to learning new skills in Illustrator and Photoshop. The students also felt a sense of achievement and pride that even though neither project was flawless, both did function. Moving forward, the students who had worked on the costume team said they felt the costume needed to be re-built from scratch to improve its aesthetics, and they wanted to add a pair of pants with lights to match the jacket. In terms of the Kinect/wave system, the team expressed interest in developing a more abstract gesture system made of smaller gesture elements that would appear less codified on stage. They also felt that transferring some control to the back-stage operators, in terms of when the kinect is on and sensing and when it is off, would improve reliability. Additionally, they discussed the idea of creating a contingency plan to allow a back-stage operator to control the wave projection with a mouse, in cases in which the system did not work.

5.3: Production Design and Process

Moving into the production phase the semester following the course, we were very fortunate to have several students from the course elect to continue to work on the production as an extracurricular activity. Alex Pennington, who had been the lead programmer for the responsive waveform in Quartz Composer continued with the project, as did Matthew Guzdial, who had been the main programmer for the Kinect. Alex Pennington also played the role of Takatsuki/Katagiri on stage. Tejas Kotak had been on the costume team and became the sound designer for the production, and Kevin Sabato, who had been on the Kinect/wave team became the master electrician for the production, and also worked on aspects of the lighting design. Having the continuity with these students was vital to the development of the two design elements of the costume and Kinect/wave system in production.

After the course had ended, it was clear the designs needed further development to improve reliability (in the case of the Kinect/wave system) and aesthetic appearance (in the case of the costume). Reflecting on the Kinect/wave system, Foulger and I also felt the project needed to be revised conceptually. Unwittingly, the design created in the course left little room for the actors. On some level, anyone could learn the correct sequence of gestures and perform the play, generating the responsive projection. The design was overbearing, and could almost have been an installation version of the play, functioning on its own. The need for a tightly codified gesture language seemed to constrain the actors considerably, and was at odds with the third central question addressing functionality in the dramaturgy: “Does the technology assert overly

procedural structures or hinder the actor physically?" In the case of the design from the course for the Kinect/wave system, the answer to this question was unfortunately yes.

Additionally, there seemed to be a lack of textual justification for the original design of the Kinect/wave system. The impetus had been to represent the emotional earthquakes of the play by displaying the gestures as various seismographic waves, but it is ultimately the actors' jobs to create the emotional arcs of the scenes themselves. The actors are needed to interpret the text, and it seemed somehow redundant to add this additional layer of interpretation with a projected waveform. It was not quite clear what in the narrative called for the system, or how the system helped to tell or expand the story. In hindsight however, Foulger and I could see why the students may have felt the urge to create such an overpowering system. No actors had been cast during the class, and it was likely in response to this absence the students were drawn to creating a system that could stand in for the actors in some ways.

Foulger and I worked to revise the design, moving to tracking the gestures of only one actor instead of every actor, and only during particular scenes instead of during every scene. Tracking only one actor meant the Kinect could be calibrated to one specific person, increasing reliability as well. Using the whole system less often also meant fewer chances for the system to misfire and create confusion for the audience. Because the act of gesturing to create the projection is an act of inscription, like writing, it made sense to limit the tracking to the Junpei character, who is a writer.

We made the choice to use the Kinect/wave system only during the scenes from *Super-Frog Saves Tokyo*, as this is the story that Junpei is writing. It expanded the story to restrict the system in this way, emphasizing that Junpei, who is passive in the *Honey*

Pie story, finds agency in his own storyworld of *Super-Frog Saves Tokyo*. Foulger staged the actor at the side of the stage, puppeteering and responding to the action in the story he writes by gesturing to create the wave projection.

The wave represented different things at different moments in this configuration - at times, the wave seemed to represent the worm, at other times, an earthquake fissure, and at other times, the level of dramatic tension in the scene. In this way, the Kinect/ wave system produced multiple functions, operating dramatically (as a character, the worm, moving the action forward), as commentary (highlighting Junpei's lack of agency in the *Honey Pie* story, and pointing out moments of dramatic tension in the *Super-Frog Saves Tokyo* story), and as scenery (the wave also could be interpreted as an abstract element of the set).

There was no set designer attached to the project during the coursework, and many students as well as Foulger and I felt this could have been a benefit to the project had it been possible. The set designer for the production, Tamil Periasamy, joined the project relatively late in the process, after auditions had completed. His concept for the set was inspired by traditional Japanese architecture, and included a small stage in the round, surrounded by four areas for audience seating divided by four torii gates, with four hanamichi-style walkways leading to and from the stage (see Figure 5.14). The hanamichi is a long walkway leading to the stage in Kabuki theater where the actors can be seen to transform into character. For *after the quake*, the central stage area was filled with sand, similar to a rock garden, and also included a small table with four small benches. The stairs leading up to the stage from the four walkways were backlit with

LED color-changing lights, so that colors could shift to indicate the tone of each scene (see Figure 5.15).

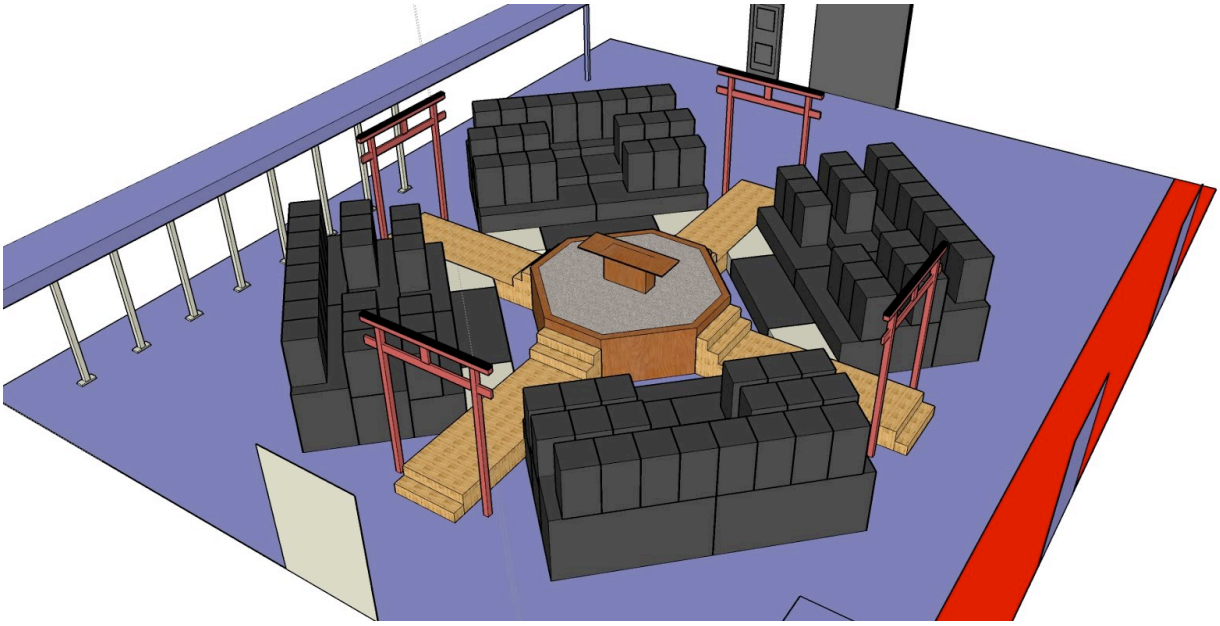


Figure 5.14: 3D model of Tamil Periasamy's set design for after the quake.

The complication of audience sight-lines in the in-the-round configuration led Foulger to develop a plan to project the responsive wave from above onto the horizontal surface of each walkway. Plans were also made to continue the projection upward at each torii gate, projecting on the vertical surface of Japanese-style door banners. This last element was never realized, however, as we were unable to successfully send signals from two Kinects to one computer with Quartz Composer. This was unfortunate because of the in-the-round sight-lines, a small number of seats in each audience seating section could not see the projections on the walkways very clearly. Also in accommodation of the sight-lines, plans were put forth to purchase at least one more additional Kinect to allow for Junpei to stand at more than one position during his gesturing scenes. However, due to both time and budget constraints, it was not possible

to work with more than one Kinect. This meant that some audience members were not able to see very clearly what Junpei was doing to create the wave projections.

Figure 5.15: Image from preview performance of after the quake. Junpei (Eric Arndt) on left, gestures to create responsive waveform projected on all four walkways, visible on far right. Frog (Justin Grey) seated, and Katagiri (Alex Pennington) on right.

Working with the new costume design team, Rachel Stewart and Andrew Majoras, the Frog costume was revised and rebuilt as well to improve both functionality and aesthetics. Under the stage lighting it turned out the red e-wire was not visible from the audience, so the red wire (along with accompanying sound driver) was cut. The design for the layout of the green wire on the jacket was simplified, restricting the wire to the edges of the jacket where piping would be. This helped to avoid the puckering effect that had occurred during the class when the design had called for e-wire throughout the

jacket. Additionally, the switch in the cuff of the sleeve used for turning the green wire on and off was cut. The switch was awkward for the actor to use, and was replaced instead by a wireless DMX controller that was operated remotely by the lighting board operator in the booth. During the course of rehearsals it also became clear the battery packs for the jacket lasted only for one run of the show before the lights began to noticeably dim. To prevent this, fresh batteries were used for each performance. The coat was turned on when the actor playing the Narrator/Frog was portraying the Frog, and turned off again when the actor was portraying the Narrator (see Figure 5.16).

Figure 5.16: On left, another view of Junpei (Eric Arndt) gesturing to create projected waveform on walkway. On right, Frog (Justin Grey) with the frog costume's glowing green piping visible.

The rehearsal process was traditional, four-week rehearsal schedule common at many university theaters and in commercial theater. The exception was that once a week technology workshop-style rehearsals were held. (Normally technology is not

integrated into the rehearsal process until the final week before the play is performed.) It was at these technology workshop rehearsals, through a close collaboration between the Kinect and wave programmers, the actors, director, and myself that the final design for the system emerged. It was clear however, that without the time spent in the course the previous semester creating prototype designs, integration of digital technology at this level would not have been possible in the production. The four-week rehearsal process would not have been sufficient to develop the two digital scenographic elements - the frog costume and the Kinect/wave system - from the ground up.

In the end, the Kinect was placed on the floor to track the actor's gestures from below to avoid inadvertently tracking audience members seated behind the actor. The gestures were re-conceptualized not as emotional representations, but as a conductor's gestures for controlling the wave like a musical instrument. Tempo, proximity to the Kinect, and distance between the two hands were measured by the Kinect to send data to the Quartz Composer file to determine the thickness, speed, and amplitude of the waveform. After rehearsing with the system, the actor playing Junpei was able to control the wave to produce the effects desired during different points in each *Super-Frog* scene. Foulger worked with the actor to identify these points and accompanying waveforms for each scene.

A contingency was built in such that if the actor became aware the wave had frozen, he could subtly step back, out of the tracking range of the Kinect, and allow the system to reset. Additionally, the the sound board operator in the booth also operated Quartz Composer from the same computer. After each scene had completed in which the Kinect/wave system was to be used, the board operator waited for the wave to

“disappear” once the actor was out of tracking range, and paused the Quartz Composer program so that in case any other actor walked in or out of tracking range in the following scenes, the wave would not be inadvertently activated.

The production was performed for one preview performance and six regular performances, over the course of two weekends. Both scenographic elements, the Frog costume and the Kinect/wave system, functioned reliably throughout the production’s run. An analysis of the production using the dramaturgical tools outlined in Chapter 3 is discussed in the following section.

5.4: Production Analysis

In this section the final production of *after the quake* will be analyzed with the dramaturgical framework from Chapter 3. Taking a look at *after the quake* and the three spectrums of opposing aspects, we can classify the production as follows: there were many elements that simulated reality (furniture, props, naturalistic clothing in all cases except the Frog costume, naturalistic movement and speech); there was a reflexive element or moment (the use of third person, preserved from Murakami’s prose by Galati’s unique adaptation style, brought attention to the presentational nature of the play); the play was scripted with each scene progressing in a linear narrative fashion, however from scene to scene non-linear movement was common (movement between the two stories, movement back and forth in time); the production included interactivity with some agency (the responsive Kinect/wave gesture sensing system); the production included an element or moment that saturated one or more of the senses (the use of the four simultaneous projections across the four walkways attempted to saturate the visual

sense); and the production was also stylistically minimalist (the spare, Japanese modernist style of the set). These attributes are marked with red on the three spectrums in Figure 5.17.

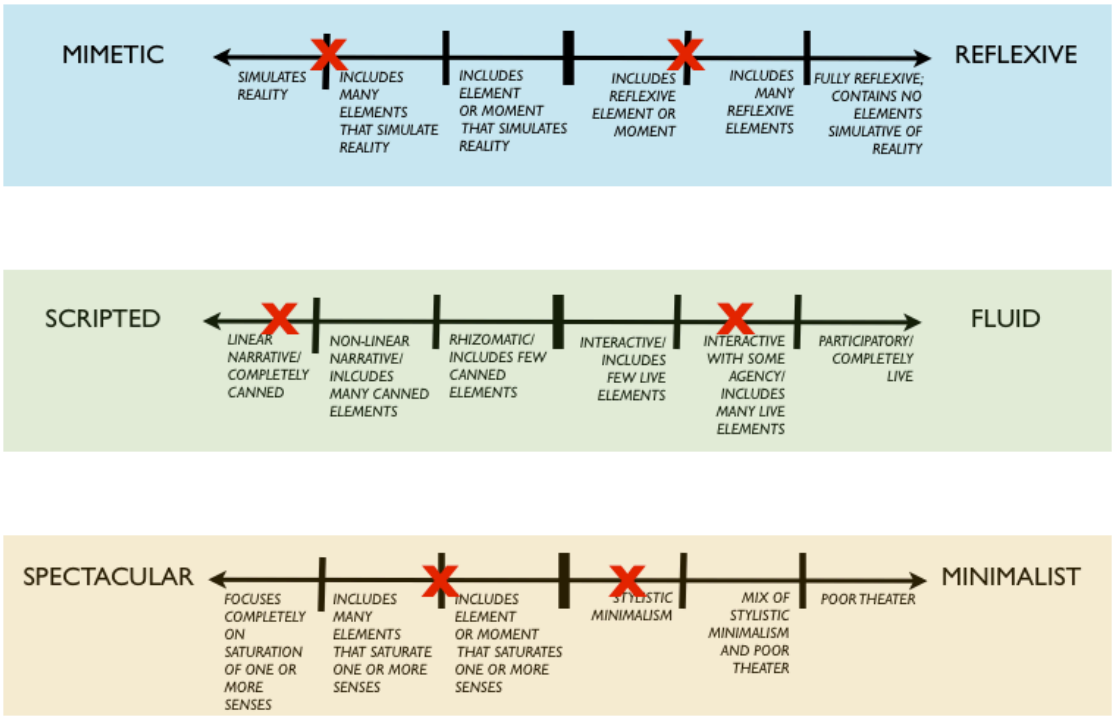


Figure 5.17: Opposing aspects of after the quake production marked in red across each spectrum.

Rearranging the spectrums to form the map, the production can be mapped as seen in Figure 5.18. Comparing the shape of the production with the red outline representing the general shape of the narrative theater genre in Figure 5.19, we can see that the production does, for the most part, fit in with the narrative theater genre. The script's third-person reflexivity pulls the play slightly away from the most common conventions of the genre, and the spectacle and fluidity of the kinect/wave system pulls the production toward the corresponding elements, which are also less common for this genre form.

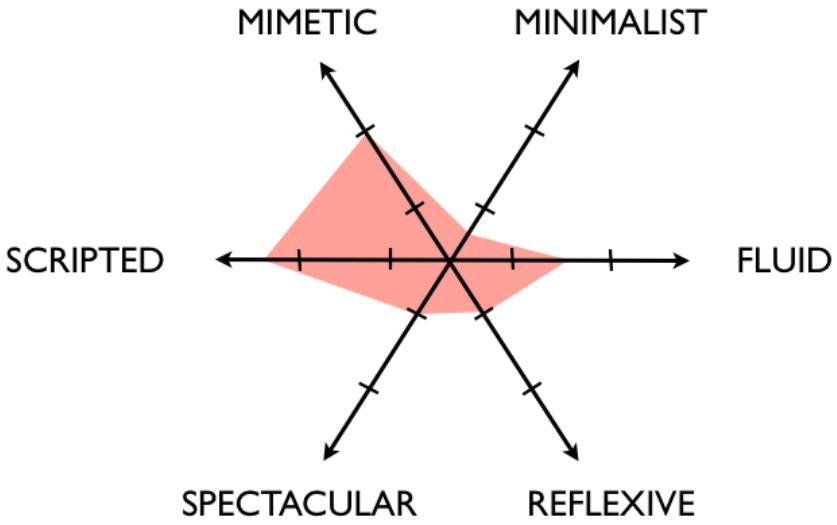


Figure 5.18: Mapping of after the quake production.

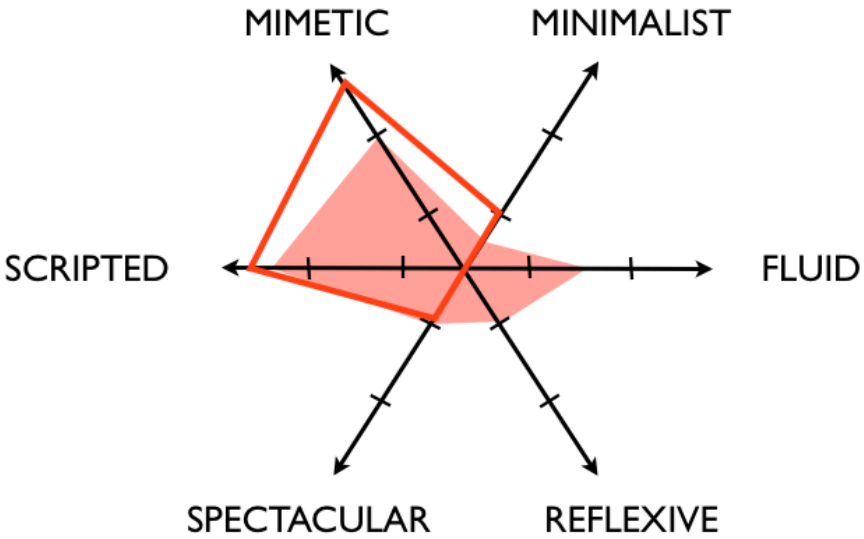


Figure 5.19: Mapping of after the quake (pink) with general shape of narrative theater genre overlaid in red outline.

Moving on to consider *after the quake* in terms of levels of integration of the digital technology in the production, we can see the digital technology was used in an integrated manner, according to the integration model (see Figure 5.20).

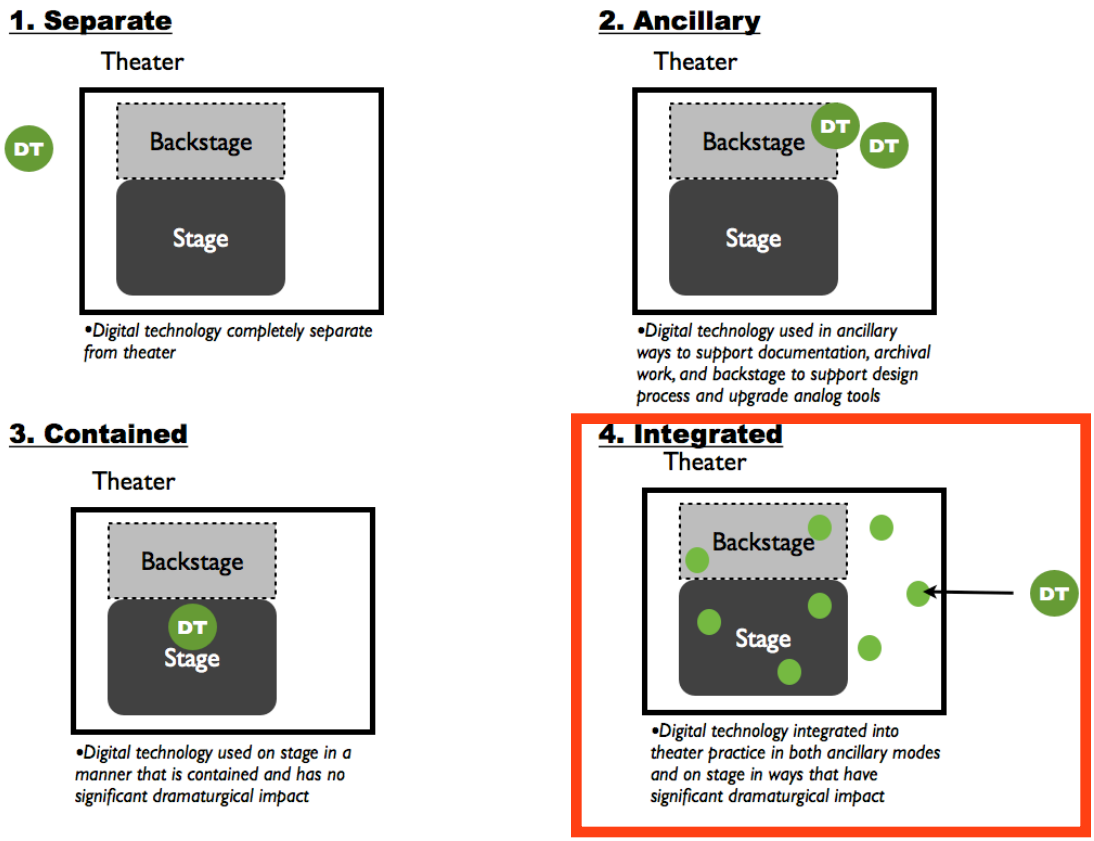


Figure 5.20: Integration Model with after the quake's level of integration highlighted in red square.

In this production of *after the quake*, the digital technology was used both backstage and onstage in both ancillary modes and in ways that had significant dramaturgical impact. For example, the use of the glowing frog costume created a swift, dramatic transition between the narrator and frog characters. Without the e-wire, the actor would have needed a traditional, cumbersome costume change. This would have had to take place on stage in many cases, in full view of the audience, due to the quick nature of the script's shifting between the two characters of Frog and Narrator. This would have resulted in added reflexive qualities for the production, further highlighting the performative process of the production.

Referring to the normative shape of the narrative theater genre, it is clear this would not be desirable, if the objective of the production design was to play into convention. The normative shape of narrative theater falls on the side of mimesis, and not reflexivity. Additionally, the choice to have the jacket controlled from backstage wirelessly also contributed to reducing reflexivity in the production. Watching the actor turn the jacket on and off with a switch in the cuff of the sleeve each time, as originally designed during the special topics course, could have contributed to highlighting performativity.

The use of the Kinect/wave system was likewise dramaturgically influential, and reflected an integration of digital technologies both on- and offstage. The system provided an expanded representation of the worm character, the threat of the earthquake, and the power of Junpei as the author of the *Super-Frog Saves Tokyo* scenes. Without the Kinect/wave system, it would have been difficult to emphasize these aspects of the story in such a seamless way.

Referring to the integrated functions of technology in performance, we can see the technologies used in *after the quake* employed dramatic, commentary, scenery and costume functions (see Figure 5.21).

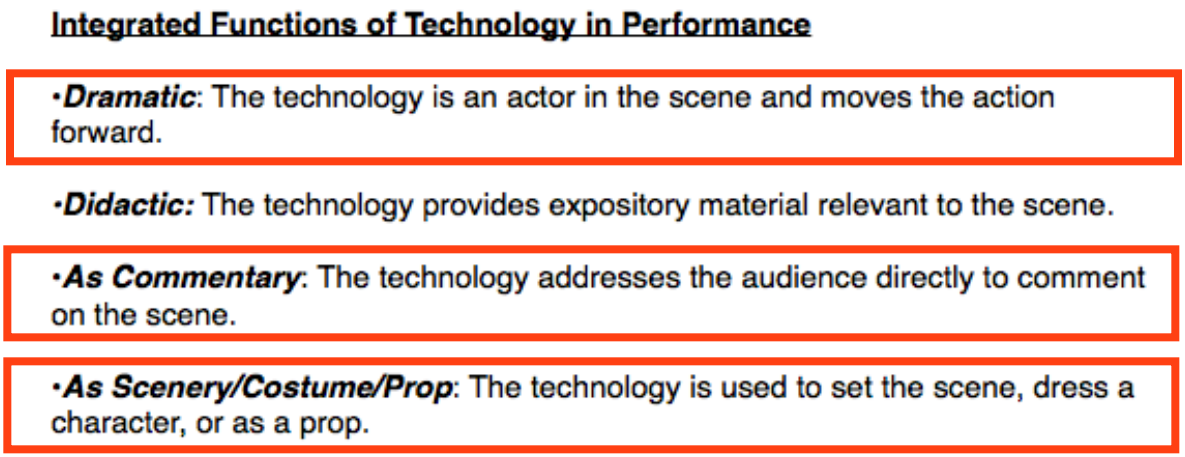


Figure 5.21: Functions of technology in after the quake, outlined in red.

The function of the luminous jacket for the Narrator/Frog is simple to identify, as it clearly functioned as costume. The functions of the Kinect/wave system are more complex to untangle, particularly because the functions shifted at different points during the play. At times, the projected wave represented the earthquake, which functioned as scenery, illustrating the setting of the scene in Tokyo above an impending earthquake fissure. At other moments, the wave represented the worm character, and in these moments the wave functioned dramatically, moving the action forward. In these moments, the actors playing the Frog and Katagiri reacted to the worm as a way of moving the momentum of the scene forward and increasing dramatic tension. And at other moments, the wave system functioned as commentary, highlighting Junpei's power as the author of *Super-Frog Saves Tokyo*, as well as his corresponding lack of agency in the *Honey Pie* story.

Central Questions Regarding Digital Technology in Narrative Theater

Addressing textual justification:
•What in the narrative calls for this use of this particular technology?
•How does the use of this technology help to tell or expand the story?

Addressing aesthetic cohesion:
•How does the use of this technology fit with the rest of the design elements?

Addressing functionality:
•How does the use of this technology impact the actor? Does the technology assert overly procedural structures or hinder the actor physically?
•Does this technology function reliably?

Figure 5.22: Central questions regarding digital technology in narrative theater.

Revisiting the set of central questions (see Figure 5.22), we can discuss each as it relates to the production of *after the quake*. In terms of textual justification, the fantastical elements in the story (the Frog, the worm) certainly call for creative staging, as does the cinematic quality of the script, which switches back and forth rapidly between the two stories that are interwoven in a style reminiscent of film cuts. Use of the frog costume helped to expand the story in the sense that it helped the audience to visualize the fantastical creature, as well as quickly mark the difference between the two characters played by a single actor (Narrator/Frog).

The Kinect/wave system helped to tell the story by representing the worm character and the threat of the earthquake, as well as highlighting Junpei's role as the author of the *Super-Frog Saves Tokyo* scenes. At times, it seemed as if Junpei was puppeteering his characters, but as the play progressed, it came to seem more like he

was responding to them. This can be interpreted as a profound reflection on the writing process, reflecting the way a writer initially creates characters, but as the characters grow, begins to channel them or respond to them.

In terms of aesthetic cohesion, both the jacket and the projected wave were stylistically minimal, fitting in with the minimalist Japanese design of the set and minimalist, contemporary costume design. As for the functionality of the frog costume, it did not hinder the actor physically, and it did function reliably - especially with the implementation of the wireless DMX driver to control the lights on/off switch from backstage. As for the functionality of the Kinect/wave system, while the original design for the system did assert overly procedural structures, forcing the actors to learn a codified gesture language, the revised system used in production was flexible and allowed the actor more creative control over the projected waveform.

By implementing the dramaturgical framework outlined in Chapter 3 for the design of this production of *after the quake*, a thoughtfully integrated use of digital technology on stage was achieved for this piece of narrative theater. While some aspects of the production did deviate from narrative theater genre norms, the overall impression was still of a narrative theater piece. While application across more productions will be needed to draw larger claims about the dramaturgy's effectiveness, we can say that in this case the outcome was successful in avoiding some of the common pitfalls seen in application of digital technology in theater. Arnold Aronson notes in discussing George Coates's work:

> [...] as with many theatrical attempts at discourse with technology, one gets a creation that is neither one thing nor another. [...] As fascinating as some of these productions are, they will, I believe, become little more than footnotes to theater

> history. [...] It is not theater created as a consequence of the new technology, it is theater *about* the new technology. It *discusses* rather than *embodies*. (*Looking* 76)

In the case of this production of *after the quake*, by using the new dramaturgical framework, we were able to create a production of narrative theater that did not discuss the technology employed at all, and instead employed the technology in embodied ways, resulting in dramaturgical impacts that served to strengthen the storytelling aim at the core of the genre. While this chapter provided analysis and reflection on the use of the dramaturgical framework in one case, Chapter 6 will provide a broader analysis of the dramaturgical framework, based on Christine Halverson's criteria for the evaluation of frameworks.

5.5: Symposium

In conjunction with the performance of the play, Foulger and I organized an afternoon symposium: *Performing Technology: Symposium on Digital Media, Stage and Performative Applications*. The goals of the symposium were to highlight the exciting work happening in performance and technology at both the Georgia Institute of Technology and the University of Georgia, seed the potential for collaborations across disciplines and institutions, situate the work done in our Fall course and Spring production within a larger context at the university, and extend the pedagogical experience for the students who had participated in the course or the production.

This event brought together researchers from across Georgia Tech whose work intersects with performance in different ways, as well as top researcher in the field from the University of Georgia, Dr. David Z. Saltz, to present a keynote talk on his legacy of

work with responsive technologies on stage as well as his current project with a robotic performer in *commedia del'arte* (see section 2.5 for discussion of a selection of Saltz's works). Shorter talks were presented on work ranging across a broad spectrum of performance-related technology research: the development of AI agents based on analysis of improv performer decision-making (Dr. Brian Magerko), a digital-physical puppetry interface exploring the cognition involved in recognizing one's own movement (Dr. Ali Mazalek), the invention of new musical instruments and robotic musicians, leading to new forms of musical expression and collaboration (Dr. Gil Weinberg), uses of media to develop socially situated process-based performances (Dr. Michael Nitsche), and architectural works exploring the use of digital technology in the design process, as well as the performative nature of installation (Dr. Tristan Al-Haddad).

The breadth of scope of the research presented at the symposium was impressive, however, the majority of work could be grouped in the categories of installation art, environmental art, music, improvisational performance, and more science-driven work. The notable exceptions were Saltz's robotic *commedia* project, Mazalek's digital puppetry performance *Pictures at an Exhibition*, and *after the quake* as examples of narrative works. *after the quake* was the only example of current work in the narrative theater genre, with Mazalek's work categorized as puppetry and Saltz's current project understood as an exploration of an historical theatrical form that is distinct from contemporary, mainstream narrative theater as it has been defined in this dissertation. This relative lack of examples of digital work in narrative theater underscore the nature of this genre as problem area for digital performance research, and the originality of the contribution of this dissertation.

It is not accidental that this work with digital technology in narrative theater was developed in an engineering school environment. At first glance, a theater program at a tech school with no theatre major, minor, or department faces significant challenges. Upon closer examination, it becomes clear that the tech school environment presents unique potentials for pedagogical, artistic, and research integration. Demonstrating the relevance of theater for such an institution can seem difficult, but focusing on intersections between performance and technology can open up opportunities not present in a traditional theater program. It is becoming more common to see institutions invest in interdisciplinary programs, centers, and initiatives, based on the recognition that the areas between disciplines are where innovation happens.

Moving forward, I aim to further develop the reach of this type of work, integrating coursework and production work with a formal collaboration with a research lab. My goal is to foster a two-way collaboration between performance and technology, with uses of emerging technologies on stage advancing not only performance research, but also advancing technology research by conducting user studies with performers and ethnographic research with audiences. There is already a well-formed precedent for integrating research and artistic practice in this manner in the long-term collaborations of Steve Benford's and Gabriella Giannachi's research lab and the Blast Theory performance group at the University of Nottingham. Integrating pedagogy into this collaboration seems a logical next step. I feel that creating a virtuous circle between research, artwork, and pedagogy has the potential for enriching outcomes across all three contexts in exciting and unexpected ways.

CHAPTER 6

CONCLUSION

6.1: A New Dramaturgy

In summary, narrative theater was identified in Chapter 1 as a problem area due to the lack of innovative engagement with digital technologies in the genre. Chapter 2 collected examples of relevant historical pre-digital work and contemporary work with digital technologies used on stage in inventive and imaginative ways, along with a review of the accompanying theoretical work produced in each case. Concepts and approaches gleaned from the example dramaturgies presented in Chapter 2 were used in Chapter 3 to lay the groundwork for a new dramaturgy for digital technology in narrative theater. This new dramaturgy consists of four parts: 1) a taxonomy of performance; 2) integration model; 3) set of functions of integrated uses of technology in performance; 4) set of central questions regarding digital technology in narrative theater. Chapters 4 and 5 demonstrate the dramaturgy's critical and productive capabilities across various applications.

6.2: Revisiting Liveness

Reflecting again on concerns by scholars engaged in the debate about liveness in performance (see Section 1.4), this dissertation has addressed some of the central issues of the debate. In response to Phelan's concerns that the essence of performance is threatened by the introduction of digital technology, we can see that in the case of *after the quake*, while some aspects of the performance fell outside the normative genre

shape of narrative theater, the production was still recognizable as a piece of narrative theater. In addition, thinking back to the many examples discussed in Chapter 2, we can see there are a handful of important productions in which digital technology was employed in innovative ways while maintaining the integrity of the work at hand.

However, it is important to be reminded that Phelan's definition of performance as a form "Without a copy [...] it eludes regulation and control" (148) points to her focus on works in other genres, certainly not mainstream or commercial narrative theater. While I would contend that even narrative theater cannot ever be fully copied in the same way that a digital file, such as an .mp3, can be cloned to the extent that the copy becomes indistinguishable from the original, I would not suggest that narrative theater is outside the bounds of "regulation and control." As a mainstream or commercial form, this genre of theater is undeniably bound up with Late Capitalist systems of production. Nevertheless, I do not believe it is due to the involvement of digital technology in this genre that the genre finds itself in a position of social or economic complicity. There have been so few examples of integrated uses of digital technology in this genre, it does not make sense to look to the technology as the force behind the genre's role in society. Other factors would need to be investigated to determine the precise reasons for some theorists' view of the genre as playing into cultural hegemony. Whether or not the genre really is culturally hegemonic is another discussion as well.

In response to Auslander's claims that media and theater "[...] are rivals, not partners" (1) and "[...] audience perception may be inevitably drawn to a screen even when there are human beings present" (40), this new dramaturgy has laid out a method for successfully integrating digital technology into what may be thought of as one of the

most traditionally conservative performance genres. This success has been demonstrated not only in the analysis of examples from Chapter 2 and Chapter 4, but also in the case study of *after the quake* in Chapter 5. Notably, *after the quake* used projection, but not screened images. The dynamic Auslander articulates regarding the projected image's domination over the live actor seems to refer specifically to the use of projected video on stage. Auslander's focus on the video image may be a reflection of the state of technology during the time when the book was written. The first edition was published in 1999. Fortunately, fourteen years later in 2013, we currently have a comparative multitude of digital tools available for expressive uses beyond video projection alone.

6.3: Method of Evaluation

From the field of Computer Supported Cooperative Work (CSCW), scholar Christine A. Halverson provides a useful method for the evaluation of theoretical frameworks. While this dissertation is not in the field of CSCW, Halverson's work is applicable across disciplines. In fact, Halverson's impetus to devise this method of evaluation stemmed from the interdisciplinary nature of CSCW research, in which it is common to "appropriate theories and methodologies from other fields" (243). Halverson goes on to describe a common view of what researchers expect from theoretical frameworks, as presented by Barthelmess and Anderson:

> The value of any theory is not 'whether the theory or framework provides an objective representation of reality' (Bardram, 1998), but rather how well a theory can shape an object of study, highlighting relevant issues. In other words, a classification scheme is only useful to the point that it provides relevant insights

about the objects it is applied to. (Barthelmess & Anderson in Halverson 244-245)

This point of view on theories underscores the importance of a theory's usefulness in practice, both in critical analysis and hands-on production. Halverson outlines four attributes or "powers" that constitute successful theoretical frameworks (see Figure 6.1).

Power	Description
Descriptive Power	"[...] provide a conceptual framework that helps us make sense of and describe the world" (245).
Rhetorical Power	"Theory should help us talk about the world by naming important aspects of the conceptual structure and how it maps to the real world. This is both how we describe things to ourselves and how we communicate about it to others. Further, it should help us persuade others that our view is correct" (245).
Inferential Power	"[...] we do want a theory to help us make inferences. In some cases those inferences may be about phenomena that we have not yet understood sufficiently to know where or how to look. We may hope that inferences will lead to insights for design. Or we may want to predict the consequences of introducing change into a particular setting" (245).
Application Power	"[...] how we can apply the theory to the real world for essentially pragmatic reasons. Mostly this translates to our need to inform and guide system design. We need to describe and understand the world at the right level of analysis in order to bridge the gap from description to design" (245).

Figure 6.1: Halverson's four criteria for successful theories, rearranged in chart form.

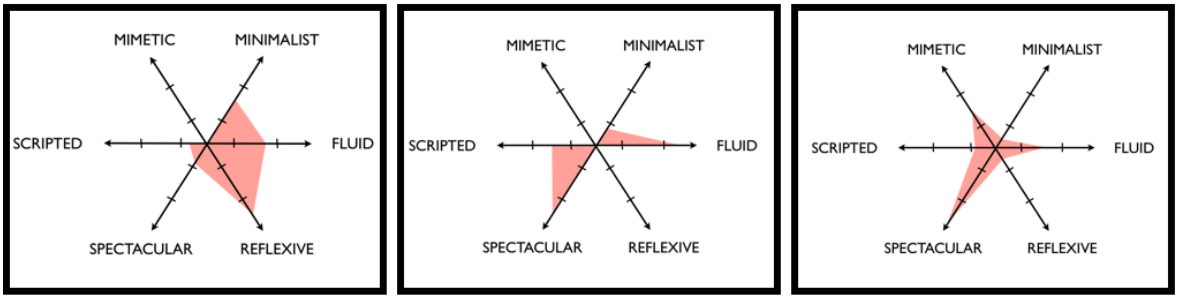
Halverson cautions that these four attributes alone are not enough to guarantee success of a theoretical framework. Particularly in the case of cross-disciplinary application of theories, researchers must "be aware of what a theory might be predisposed to do - based on the nature of its attributes," as well as cognizant of the scope of the theory, and how that aligns (or does not align) with the research goals at hand (245). Halverson goes on to demonstrate the application of these four criteria in evaluation of two theories relevant to her field: Activity Theory and Distributed Cognition.

In the following section, I will apply Halverson's criteria to evaluate the new dramaturgy for digital technology in narrative theater.

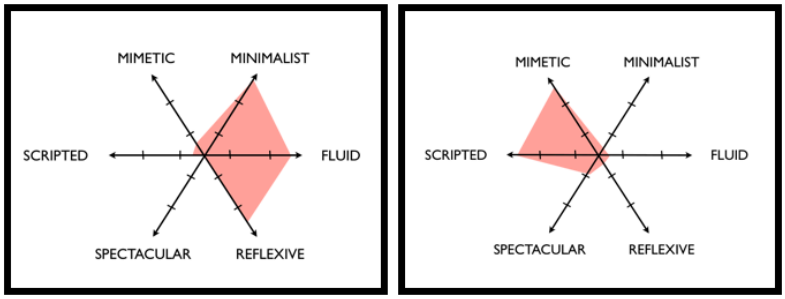
6.4: Evaluation of the Dramaturgy

Beginning with descriptive power, which Halverson defines as " "[...] provid[ing] a conceptual framework that helps us make sense of and describe the world" (245), I have demonstrated that the dramaturgy does possess descriptive power. The three spectrums made of opposing aspects (mimetic - reflexive, scripted - fluid, spectacular - minimalist) create a map that is capable of being used to describe not only generalized genre forms but individual productions as well (see Figures 6.2 - 6.3). Each spectrum has units that have been defined in detail, meaning that the shape generated by mapping a production is not wholly subjective, but arrived at by evaluating each aspect of the production with regards to the definitions along each segment of each spectrum.

Additionally, the integration model, set of functions of integrated uses of digital technology in narrative theater, and set of central questions regarding use of digital technology in narrative theater all contribute to the dramaturgy's descriptive power. This set of four tools (map, integration model, functions, central questions) combine to give a detailed description of the way in which digital technologies operate in narrative theater, and how various uses of digital technologies do (or do not) have dramaturgical impacts on the production in question (see Figure 6.4).

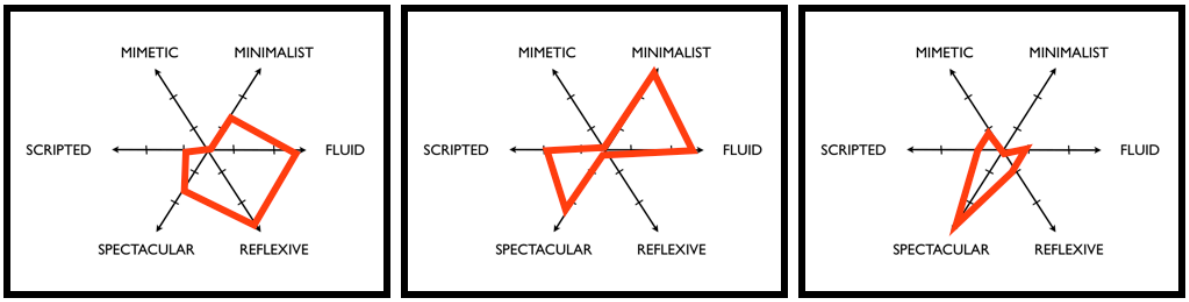


Screen, Brown University 2002 | *WNBA Game*, Philips Arena 2012 | *Ovo*, Cirque du Soleil 2010

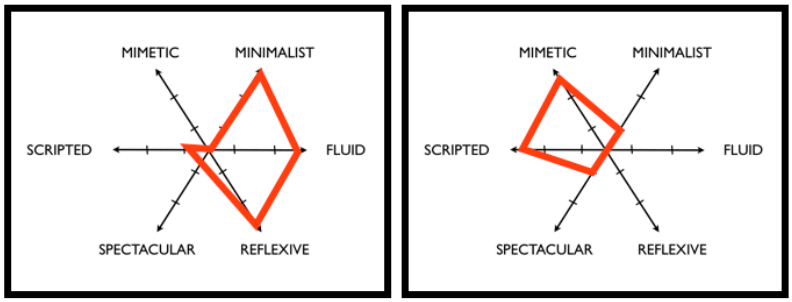


Ulrike/Eamon Compliant, Blast Theory 2009 | *Who's Afraid of Virginia Woolf*, Broadway 2005

Figure 6.2: Mapping of multiple examples from different performance genres.



Installation Art | Sports | Circus



Environmental Art | Narrative Theater

Figure 6.3: Mapping of generalized genre forms.

Regarding rhetorical power, the dramaturgy "help[s] us talk about the world by naming important aspects of the conceptual structure and how it maps to the real world" (Halverson 245). By identifying three sets of opposing tensions that can be used to understand the shapes of various productions or normative genre shapes, the dramaturgy "names important aspects" that help us to define the landscape of performance. The other three tools of the dramaturgy, the integration model, functions, and central questions also contribute on a more detailed level to the conversation about the nature of narrative theater performance in practice with digital technologies. As for the ability of the dramaturgy to " [...] help us persuade others that our view is correct" (Halverson 245), this remains to be seen. One aim moving forward is to inspire the community to respond to and help further develop this dramaturgical framework. It is through this process that the persuasive power of the dramaturgy will be determined.

In terms of inferential power, the dramaturgy is capable of "leading to insights for design," as well as "predicting the consequences of introducing change in a particular setting" (Halverson 245). The case study of the development of *after the quake* (Chapter 5) demonstrated the first aspect of inferential power, by showing how the use of the dramaturgy led to "insights for design." In particular, the dramaturgy's emphasis on textual justification, aesthetic cohesion, and functionality shaped the design of the final production, resulting in the introduction of digital technologies in successful yet subtle ways that supported the central expectations and aims of the narrative theater genre.

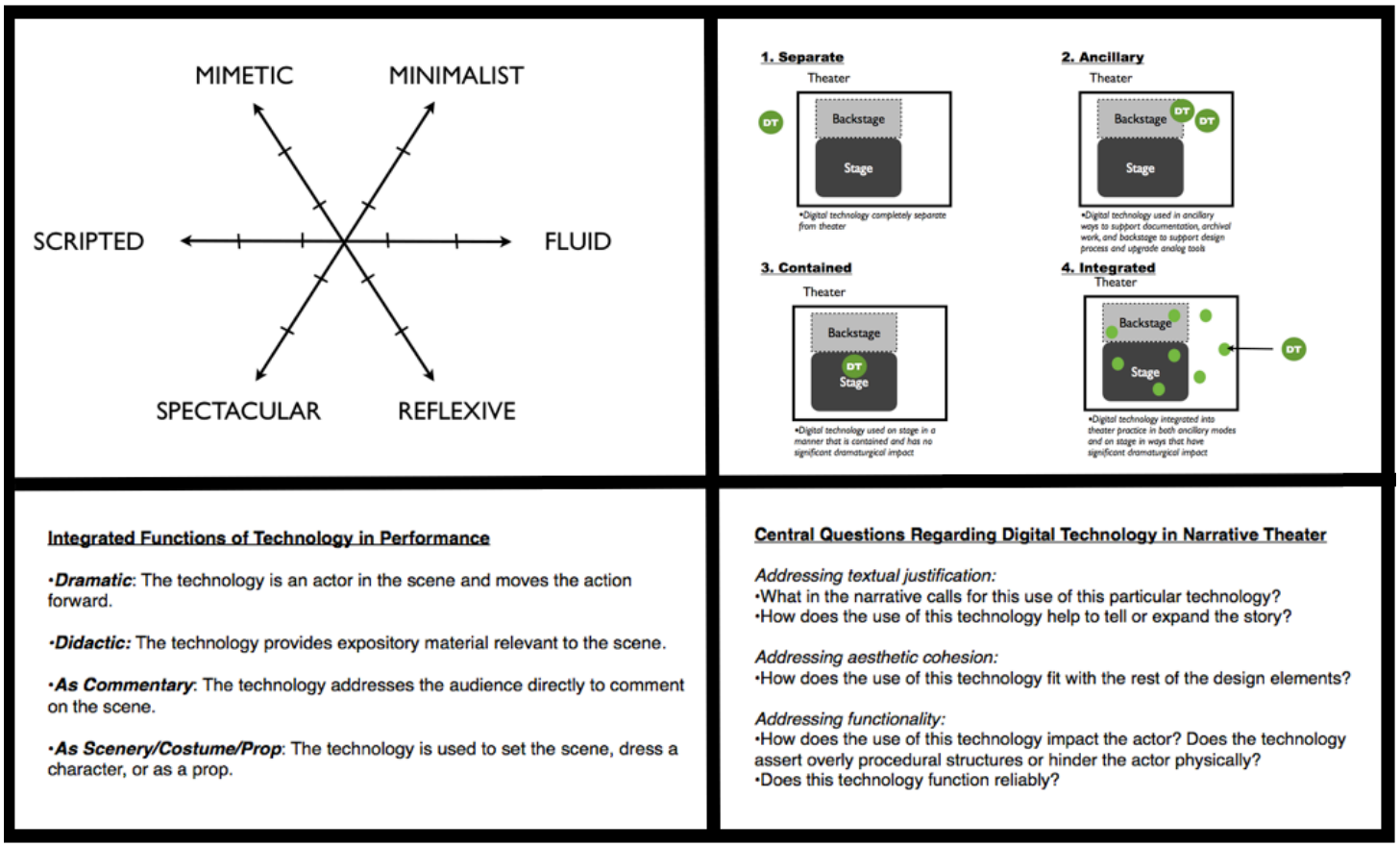


Figure 6.4: Set of four tools in the dramaturgy: map, integration model, functions, and set of central questions.

In a further illustration of inferential power, I have demonstrated in Section 4.2 with the discussion of *Club Verona* that the dramaturgy can be used not only to describe a production, but also to predict the shape of a production that has not yet been produced (see Figures 6.5 and 6.6). This demonstrates the inferential power of the dramaturgy to predict the consequences of a revised design for the production, resulting in a production that no longer conforms to the norms of the narrative theater genre, but instead begins to look like what may be a hybrid form of performance.

As for application power, I have demonstrated the usefulness of the dramaturgy in practice in the two-part case study of *after the quake* discussed in Chapter 5. In summary, I have developed a new dramaturgy for digital technology in narrative theater

that has descriptive, rhetorical, inferential and application power. This dramaturgical framework is both critical and productive, contributing to both analysis and practice.

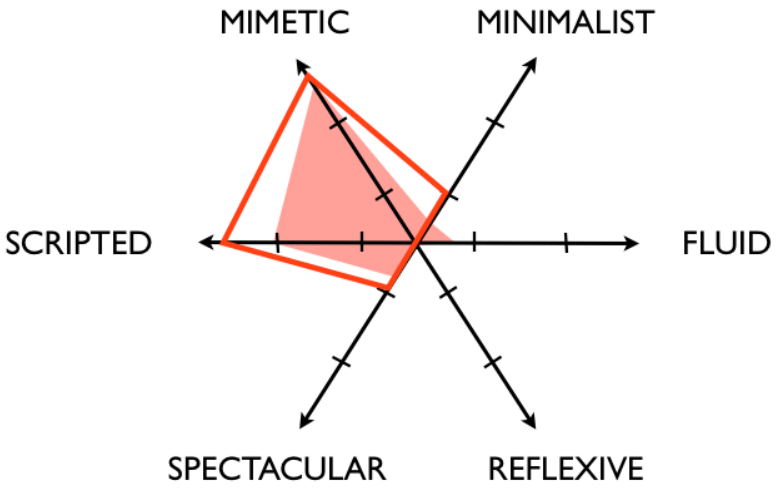


Figure 6.5: Mapping of Club Verona (in pink) with generalized shape of narrative theater (red outline).

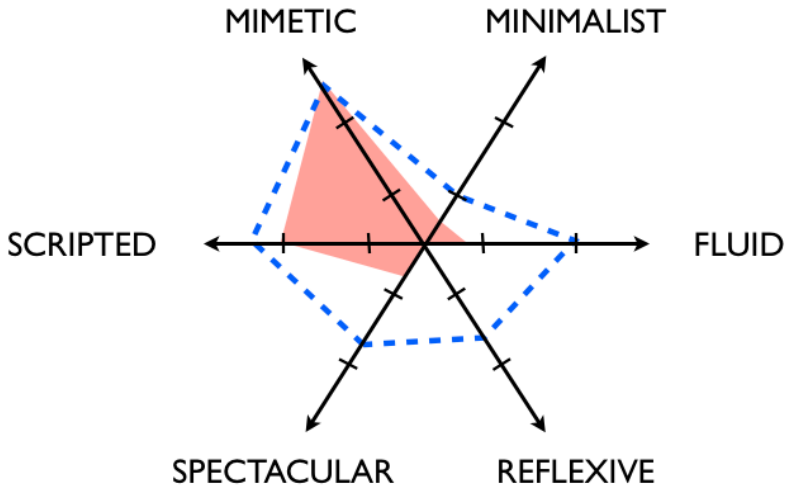


Figure 6.6: Mapping of Club Verona (in pink) with shape of proposed revision of the production (dashed blue line).

6.5: Plans for Further Research

Moving forward, I see this dramaturgy for digital technologies in narrative theater as opening the door to a larger avenue of work that is only just beginning. Expanding the dramaturgy to apply to additional genres is a priority. In particular, the musical could

be a fertile genre to investigate in terms of integration with technology. The musical is a mainstream, narrative form that shares some similar strategies with narrative theater, but seems particularly enticing because in many commercial examples, digital technology is often in play. There may be a connection between the tradition of spectacle in the genre, (the spectacle of singing and dancing) that encourages an acceptance of technological spectacle as well.

Expanding the dramaturgy to encompass hybrid works is another priority for further research. In particular, focusing on works with performing audiences would be a compelling direction to pursue (see Sections 4.3 and 4.4). While there is some work done in this area already, for example, theories about participant trajectories from Benford and Giannachi, there is still room to further expand our understanding of these works. While the trajectory theory is helpful for designing and understanding users' navigation through certain works, this theory is also limited because of its focus on a particular type of work with a more narrow, technologically-centric definition of mixed reality (MR).

In terms of investigating the development of hybrid forms, it seems some forms may be particularly difficult to combine, but these areas may be the frontiers of artistic innovation. It will be necessary to engage the larger community of researchers to identify these areas. It would also be helpful to use the dramaturgy to develop a set of possible difficulties that will accompany practice with these hybrid forms. The aim would not be to predict which difficulties practitioners will encounter, but to identify challenges that are likely, along with sets of corresponding strategies for overcoming them. Additionally, it could be productive to redesign the mapping function of the dramaturgy

to examine the shifts of genre forms over time, or the shifts within a particular production over the course of its duration. This could be represented by reconceptualizing the maps as three-dimensional graphs, with one axis representing the passage of time, or by creating two-dimensional animations of the maps.

Finally, I aim to develop a way of working that innovates the integration of pedagogy, artistic production, performance research, and technology research. Inspired by the success of the special topics course, production of *after the quake*, and interdisciplinary symposium discussed in Chapter 5, I plan to pursue the creation of collaborative relationships with fellow researchers across engineering, media, and performance to develop a virtuous circle between teaching, research, and artistic production. I believe this type of interdisciplinary collaboration has the potential to enrich outcomes across all three domains in exciting and unexpected ways.

In conclusion, by developing a dramaturgical framework that is both critical and productive, I aim to engage communities of theorists, practitioners, and theorist-practitioners on the topic of digital technology in performance. By highlighting the handful of important historical works in narrative theater that have integrated digital technologies in innovative ways on stage, and by providing a method for creating such work today, I hope to inspire other practitioners to continue the development of work with digital technologies in the narrative theater genre. The goal here is not to infuse every piece of narrative theater with digital technology, but to make the path clear to doing so, if desired for a particular production. By developing a framework that is critical, I have suggested new ways of naming and new ways of thinking about the central attributes of performance and the nature of performance's relationship with digital

technology. In doing this, the aim is to expand and enrich the discourse about technology in performance.

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