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DIGITIZING THE CORPOREAL: THE AFFECT OF MEDIATIZED ELEMENTS IN THEATRICAL PERFORMANCE

Kurtis Layne Hassinger Mr.
University of Montana, Missoula

Kurtis Layne Hassinger Mr.

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DIGITIZING THE CORPOREAL: THE AFFECT OF MEDIATIZED ELEMENTS IN
THEATRICAL PERFORMANCE

By

KURTIS LAYNE HASSINGER

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Thesis

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Approved by:

Scott Whittenburg, Dean of The Graduate School
Graduate School


Dr. Bernadette Sweeney, Chair
School of Theatre & Dance

Assistant Professor Mike Post
School of Theatre & Dance

Professor Michael Murphy
School of Media Arts

Dr. Michael Musick
School of Media Arts

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Introduction

Set, lighting, and sound components in theatre have occupied the role of ‘spectacle’ for most of the art’s formally recognized history. They provide an environment and affects which actors can use to help convey meaning in a plot to audiences. These settings can be crafted through the use of painted backdrops, textiles, and common building materials such as wood, plastic, and metal. The resulting sets are most often lit with stage lights for mood and scene changes. The 20th century gave rise to film and added projections as yet another lighting tool for theatre practitioners experimenting with performance. Computing in both personal and professional society marked a significant culture shift, both in connectivity (via the internet) and creativity (via software programs such as PhotoShop). The result of this shift ultimately led to the digital age both globally and artistically.

The increasing incorporation of digital components in theatre over the last 30 years has changed the way actors present and perform character in a live space for audiences. Digital projections onstage are becoming commonplace in the 21st century and the elements of digital and sonic design are readily available for purchase and download to desktop and laptop computers all over the industrialized world; expanding accessibility to most computer-owning consumers (Shaw 2012). The availability and prominence of these technologies raises questions about the relationship between digital elements, live performance, and performers. What are they doing to the live performance, the actors, and the storytelling holistically?

This thesis examines the affects of digital media in live performance on character and storytelling. Utilizing practice-based research methods, I tested and observed the affect of specific types of integrated digital media as applied to Carol Ann Duffy’s 2015 adaptation of *Everyman* as well as Samuel Beckett’s 1963 radio play *Cascando*. This research seeks to explore the agency a performer has when they can change the digital media that is integrated into

the storytelling and how that relationship influences live performance. It also examines what is done to storytelling for an audience when multiple representations of the actor, in both physical and digital form, share an acting space together. My goal is to gain a better understanding of digital art, live performance, and the amalgamation of the two. If theatre acts as a “mirror” of life and reflects the digital age we live and perform in, my aim in this work is to gain knowledge about this specific area of digital and live performance (Wilson and Goldfarb 2018, 10). The conclusions I draw from the research described in my thesis work represent the imperative that I embrace new and existing digital technologies and their inclusion in my art making process as a theatre practitioner.

Taking the pre-digital history and conventions of performance into account when attempting to prescribe an ontological categorization of differing digital mediums whether interactive, reactive, filmic, or photographic and the affects on a performance or storytelling produces categories that are too convoluted for easy understanding. Stated simply, different integrated media in live performance requires different types of comprehension. Sonic media, sound triggers, and the manipulation of sound is different from computer graphics produced by motion tracking and photographs and film that have been altered in some way. However, both sound and imagery can be controlled or manipulated with MIDI signals and doing so with either type of digital media can be viewed as interacting with it. Conversely, the performance or performative act itself is one based in interactivity that is innately immersive for an actor, dancer, or audience—whether directly or indirectly—depending on the level of perceived involvement by all parties either with the story they’re watching or performing or with each other or with all of the above. The text of a playscript allows the actor to interact with a story first on the page, allowing the reader to internalize the plot and storytelling and later externalizing and interacting

with a director and fellow actors vocally. The stage directions and subsequent blocking or choreography offer performers of both text and dance the ability to physicalize the movements of a story and interact physically with other actors and dancers in unison. The audience sees and hears this interactive exchange and they can then internalize, process, and later voice their thoughts about the production and what their impressions of it are. The theatre is experiential for everyone and has been for quite some time. Actors and dancers have been performing with backdrops and sets for centuries. They observe time and setting and act and react accordingly to visual and sonic cues and set design on a regular basis, thus interacting in some cases very similarly to people in a 'real world' environment. Sound and Scenic designers can create a production where visual and sonic affects are triggered on a performer's line cue in some cases more easily and efficiently than creative coders and media artists can build interactive affects employed by MIDI signals or the languages of computer code. What advantage to the performance or plot of a play is offered by direct performer influence and control over imagery or sound? My research demonstrates how live performers when interacting with digital media can be represented on the physical stage as well as a projection screen simultaneously. It also demonstrates how performers can directly control the integrated digital elements (both sonic and visual) in the storytelling and how that type of interactivity differs from pre-digital models of performance.

Overview

In Chapter One, I briefly outline performance modes in the wake of World War I and II disillusionment with reference to the early 20th century art movements of the Futurists and Dadaists. I continue with mention of Vsevolod Meyerhold, Antonin Artaud, and Bertolt Brecht's theories as early to mid-20th century practitioners of differing training technique and theatre theory. I then move to the Happenings (with an excerpt of Allan Kaprow's writing on the

subject) and Fluxus genres of the 50's, 60's, and 70's. I close with general descriptions of digital media and a few examples of its successful integration into scripted theatre by David Saltz.

Chapter Two presents portions of design I and others did for the University of Montana's 2018 studio show, Carol Ann Duffy's adaptation of *Everyman*. I outline differing types of media employed in the design and production process and how they worked with the actors in tandem toward the production's creative conceptual goals. I discuss experimentation and implementation of digital media that is both fixed and reactive. This is followed by a discussion of how actors worked with and reacted to the inclusion of these various types of media. I also describe system agents in Chapter Two to illustrate the relationship between the artists and digital media that has an ability to track the actors' movements or in some way 'react' to them. I also describe the idea of system agents, as a way of describing the relationships between the artist and reactive digital media. This chapter closes by describing the affect the digital media has on the storytelling in *Everyman*.

Chapter Three presents my experimentation with various types of media and technology in a lab setting. The research utilizes Samuel Beckett's radio play *Cascando*. In this chapter, I describe my aims in the interrogative process with continued research into the affects of media by exploring performer-manipulated sound and imagery. I outline my questions about the agency that both the actor and media hold in performance when this manipulation can be performed and observed. This section discusses the outcomes of the experimentations into the performer's manipulations and elucidates how this was accomplished via MIDI (Musical Instrument Digital Interface) and OSC (Open Sound Control).

In Chapter Four, I briefly look at chatterbot or 'chatbot' technology in the live performance space with a supplemental project that serves as supplemental practice-based

research and the future of performance relevant to deep learning or machine learning algorithms. Based on conclusions gathered from the above digital technologies which were researched, observed, and applied to live performance both by myself and other students, artists, and directors, I formulate and expand on the outcomes of my research.

Chapter 1: Changing Modalities of Performance in the 20th Century

Moving Away from Traditional Theatre

Computing and the digital age furthered the movement away from traditional theatre that had started with the Dada and Futurist movements of the early 20th century (VanBuskirk, Ingram, Banister, Marder, and DiPalma 2012). Artists like Marcel Duchamp and his work, *Fountain* (1917), and later John Cage and the musical composition 4'33" (1952), being distinct from the Dadaists and Futurists, still challenged the museum and institution-held ideas of 'High Art' (Fisher 2013) and their definitions. Happenings and Fluxus, with their impromptu as well as rehearsed lists of common activities, respectively, uprooted the art exhibit and replanted it in the everyday world through site-specific and installation work (Haubold 1966, 84). This rejection of an institution-approved value system and definition of art focused instead on activities relatable to the 'real-world.' The artistic process itself became the focus. The movements both aimed to make art more accessible with the inclusion of everyday tasks such as squeezing oranges (Frantisek 2006, 9). The shift in paradigm came at a time when counterculture was also rejecting traditional ideas of politics and art was mirroring these changes. It is important to note that while Happenings and Fluxus movements were a tipping point for art from the 1950's through the 70's, the work of theatre artists such as Vsevolod Meyerhold and Antonin Artaud in movement and theatre theory, respectively, served as inspiration and Bertolt Brecht's ideas of a non-passive audience as represented in Epic Theatre

had previously broken ground on more modernist and absurdist forms. Nicole Potter states in *Movement for Actors* that “Meyerhold created a series of short biomechanical studies, which he called etudes. They are compositions built around a technical basis and executed both for the practice of the technique and for their artistic value, much like the etudes developed for a musician.” (2002, 12). Meyerhold had worked with Konstantin Stanislavsky. “He felt that Stanislavsky focused on developing the inner life of the actor at the expense of the physical” (4). Meyerhold’s system instructed actors in expressing their inner thoughts and emotions through the body and voice (4).

Here, we have an early 20th century example that demonstrates the movement of the building blocks of character (thoughts and emotions) from the psyche into the flesh and skeleton of the performer. Meyerhold was interested in efficiency in movement and the concept is expressed in his theory which to some degree draws inspiration from assembly line machines. Biomechanics is still used in actor training today and offers a physical approach to performers.

While Meyerhold offered a type of training not based in psychological realism, Antonin Artaud advocated for a new kind of theatrical production that moved away from the earlier conventions of melodrama. “We cannot go on prostituting the idea of theater whose only value is in its excruciating, magical relation to reality and danger.” (Gerould 2000, 437). David Shafer writes in his 2016 book, *Antonin Artaud*, “In Artaud’s prospectus, theatre is an interactive experience; the audience is a participant in the production – it is not simply the spectator, not just entertained, but viscerally and ontologically transformed or destabilized by the experience, leaving the theatre in ‘human anguish’.” (77). Artaud who briefly counted himself as a Surrealist

in the early 20th century, called for a ‘Theatre of Cruelty’ in a series of manifestos outlined in his seminal work, *The Theater and Its Double*¹ (1938).

Bertolt Brecht writes about the concept of an ‘Epic Theatre’ which he helped develop and contrasts its characteristics to the dramatic theatre of his day. Specifically, he contrasts his idea of man as a fixed point in dramatic theatre to that of man as a process. (Gerould 2000, 449).

This categorization informs the practitioner’s aim of making the spectators of a theatrical production aware of the character and the actor’s portrayal of character; hence, the spectator can make decisions about the performance and story in the context of their society and through critical analysis. Brecht states the case for his alienation affect in his writing *Alienation Affects in Chinese Acting* (1935). Brecht describes elaborates on his observations of Chinese theatrical production that inspired some of his new theory by stating,

The effort in question were directed to playing in such a way that the audience was hindered from simply identifying itself with the characters in the play. Acceptance or rejection of their actions and utterances was meant to take place on a conscious plane, instead of, as hitherto, in the audience’s subconscious. (454)

Brecht’s type of performance moved the perception of the character from the audience perspective of something existing in the inner life and physical expression of the actor to a social construct in the minds of the audience.

The disillusionment of Post-World War I and World War II Europe and America in the early to mid-20th century ushered in new artists and works that gave voice to disembodiment and fragmentation. Trench warfare along with Mustard gas and armored tanks introduced a different

¹ Daniel Gerould, *Theatre Theory Theatre: The Major Critical Texts from Aristotle and Zeami to Soyinka and Havel*, (New York, Applause Theatre & Cinema Books, 2000), 437. Excerpt from Artaud’s *The Theater and Its Double*, trans. Mary Caroline Richards (New York: Grove Press, 1958.)

type of horror to soldiers and society en masse. The trauma sown by this new type of violence birthed art that rejected the polite Victorian ideals of the previous era (Treuerherz 2011, 79). The Dadaists, for example, questioned the institutions of the capitalists and bourgeois society that they felt served as motivations for the outbreak of the Great War (Tate Digital, 2019). In turn, Dadaism broke with logic and reason and delved into the nonsensical and absurd. It was an attempt to replace traditional notions of art with new art (2019). Advances in filmmaking by pioneers like the Lumière brothers before World War I allowed audiences to watch movies collectively as opposed to the single viewing machine of Edison. Modernism became one of the most important languages between the World Wars as these technical innovations became tools to mediatize live art. Eventually, film changed from black and white to color. Writers like Beckett and Ionesco helped legitimize absurdist and avant-garde theatre in the latter half of the century pushing the art of the modernists to post-modernism. Linear story structure, the dominant form of live theatrical performance for over two millennia, was no longer the only theatrical form to which viewers were exposed. In *Living Theatre: A History of Theatre*, part of the description for the genre of Theatre of the Absurd states that, “Plots have neither traditional climactic structure nor episodic structure. Frequently, nothing seems to happen because the plot moves in a circle, concluding the same way it began “(Wilson and Goldfarb 2018, 509).

Whereas pre-1960’s Happenings and Fluxus theatrical presentation consisted largely of actor embodiment of character through direct vocal and physical means in a didactic delivery from the stage to an audience, the Happenings and Fluxus movements began to take audience participation and impromptu performances on forays that hinted at immersive art.

Happenings involved more than the detached observation of the viewer; the artist engaged with Happenings required the viewer to actively participate in each piece. There was not a

definite or consistent style for Happenings, as they greatly varied in size and intricacy. (DiTolla 2019)

Likewise:

Fluxus not only wanted art to be available to the masses, they also wanted everyone to produce art all the time. It is often difficult to define Fluxus, as many Fluxus artists claim that the act of defining the movement is, in fact, too limiting and reductive. (2019)

If movements like Happenings and Fluxus marked a departure from the audience-as-viewer only modality of performance, then it is also plausible to view digital media through a similar lens when media can react to or be manipulated by the performer. We can turn to the European Happenings practitioner, Wolf Vostell for a more exuberant definition regarding the form.

happening = life-life as art-no retreat from but *into* reality-making it possible to experience & live its essence-not to abandon the world but to find a new relation to it-to let the participant experience himself consciously in the happening-to shift the environment into new contexts-to create new meanings by breaking up the old-let the participant experience indeterminacy as a creative force-to uncover & let uncover nonsense in sense-lack of purpose as purpose-open form as form-eccentricity-participants & performers instead of spectators-simultaneousness through juxtaposition of contradictory elements-new combination & absurd use of everyday objects.² (Berghaus, 1993, 157)

The inclusion of the viewer into the happening and the affect of the happening with the involvement of the viewer-turned-participant is directly experiential. That is to say, the audience role is transformed into that of a performer. Consequently, their new role is now influencing how the storytelling or meaning in the event or happening is taking place. This modality of art could be large or small and exist outside of the gallery or museum and count the inclusion of everyday objects. Differing size and intricacy could mean happenings with few or many

² The quote is from *Was Ich Will* and taken from *Happening und Leben*, (Neuwied: Luchterhand, 1970.)

participants as in two instances outlined in the pages of Allan Kaprow's 1997 Journal article in *The Drama Review*. In the article titled "Just Doing", Kaprow creates "small events." with a teaching colleague where "The idea was that one of us would follow the other without saying a word, only making sure to step constantly on the shadow of the other, no matter where he went." (Kaprow 1997, 102). These instances usually only consisted of two participants, Kaprow and his friend Jean-Charles Francois. He gives us another example of an event in the same reading when he writes about a workshop in experimental art.

The idea was that anyone in the room could get up from where they were sitting and turn off the lights. How long it would take was unplanned. Then, anyone could turn it on. Then off. Then on, and so forth. (103)

The event Kaprow writes about had no instructions regarding silence, but the class participating would engage in long periods without speaking and stare at each other, challenging one another to get up and turn the light switch on or off. These two examples serve to highlight what an event or 'Happening' could look like in the changing landscape of a commonly recognized performance space and viewer role. The reaction against Abstract Expressionism (Morgan 2018), a style that was seen as the leading style of advanced art after its introduction in the 1940's, reinforced the idea of a performance space or exhibition outside of a museum.

In conjunction with this, the seeds of what would eventually blossom into the digital age were being sewn and their artistic merit was simultaneously being explored throughout the 1950's, 60's, and into the 70's and 80's. The potential for interactive performances widened in possibility as creative software, new programming languages, and the creation of the world wide web began shaping society both in and outside the artistic scope. Artists such as Camille Utterback (Dixon 2007, 589) and artist collectives like *Dumb Type* (Klitch and Sheer 2012, 20) have played a large part in legitimizing the role of digital media in creating a very human artistic

experience as it is performed in tandem with the body and continues to push the boundaries of that separate art which is purely spectative from that which offers something more immersive...whether for the performer, audience, or both.

For this, we can turn to David Z. Saltz' article, *Live Media: Interactive Technology and Theatre* (Saltz 2001, 107-130)

It is easy to imagine how interactive media might be useful in improvisatory, participatory, or nonnarrative genres of performance. For example, musicians can use interactive technologies to create amazing new instruments capable of generating a limitless variety of sounds in a limitless variety of ways, and so it is not surprising that, among artists, musicians were the first and continue to be the most prolific in exploiting interactive media. Similarly, dancers have eagerly exploited the ability afforded by interactive technologies to control lights, images, and sounds directly through their movements. But the relevance of interactive technology to scripted theatre is less obvious. (108)

The musician George Lewis and his 1987 work with the software 'Voyager' does much to outline the potentials of an interactive relationship between digital and live performers. In the performance, Lewis plays his trombone and the computer program Voyager responds with improvised music in accompaniment. Lewis describes that, "In *Voyager*, improvisors engage in dialogue with a computer-driven, interactive 'virtual improvising orchestra.' A computer program analyzes aspects of a human improvisor's performance in real time, using that analysis to guide an automatic composition (or, if you will, improvisation) program that generates both complex responses to the musicians playing and independent behavior that arises from its own internal processes." (Lewis 2000, 33-39). What Lewis gives us is a shared partnership of musical dialogue in performance. He cannot predict and there exist no predetermined outputs from the software Voyager as it plays along with the input of Lewis' improvised trombone. Lewis has no direct control over the computer and no direct control over the interactive experience. The audience and live performer both are experiencing something emergent in the

space as the two-agent system speaks, or perhaps, sings their dialogue to and with each other. Taking this concept and applying it to digital media that is visual in nature in the world of scripted (or at least, improvised) theatre is inspired by the work of these preceding artists and poses the questions my research addresses.

Filmic elements and projections in live theatre are not a new phenomenon. Projections in dance and acting go as far back as 1911 with Loïe Fuller and her experiments in projecting film on her diaphanous robes, the Futurist Valentine de Saint-Point and her use of projected lighting affects and mathematical equations on multiple cloth screens and walls, and Winsor McCay's *Gertie the Dinosaur* (1914). The performances of Fuller and Saint-Point serve as examples of experimentation with projections and media in dance while McCay's animation toured the U.S. The latter is an example of acting with projected imagery. McCay would stand in a spotlight and issue commands to the animated "dinosaur", 'Gertie', who was projected on a screen upstage. The careful timing of McCay's verbal instructions lent to the illusion that 'Gertie' was hearing and responding to the live actor in real-time which gave the performance a sense of interactivity.

The field of computer science in conjunction with software developers and programmers are producing digital tools for theatrical designers and performers to use that I have implemented in this research through the use of digital interfaces. These interfaces are allowing machines to make artistic decisions as a result of or along with the performer's actions or vocalizations in a live setting. Advancing beyond the mimesis of motion tracking to interactive performance with speech and sound synthesis developed in creative coding languages such as P5.js allows chatbot models similar to Siri and Alexa to become performers in a scene with their human counterparts; affectively shaping or altering the linear dialogue in a performance through repetition or random response to real-time input. The technology has been around since the 1960's (Nitale 2019, 712-

28). The ease of access with mobile devices and laptop computers is relatively new. This cultural progression makes it easier to bring the digital media of bots into a performance setting. The progression of cellular and computer technology in conjunction with bot technology and algorithms designed in the field of Deep Learning (LeCun, Yann, Yoshua, Bengio, and Geoffrey Hinton 2015, 436-44) has led to experiments with artificial intelligence or 'AI'. 'Deep' or 'Machine' learning is associated with computer science. For performance purposes, deep learning involves a process of feeding in large labeled sets of data so that a computer can identify classes within the data. These trained modules then allow a computer to receive unlabeled data which it classifies accordingly. The process is one of trial and error, much like a child when learning to communicate. The processor learns to classify objects, in this case words, to identify sentences. It can then synthesize speech as its output. The technology is in abundant use for image classification problems.

2016 saw the first screenplay written entirely by an algorithm. Filmmaker Oscar Sharp, in collaboration with creative technologist Ross Goodwin, produced the science fiction short film, *Sunspring*, (arstechnica 2016) written by the AI program, Benjamin; an algorithm built by Goodwin that was fed science-fiction screenplays from the 1980's and 90's and thus could sample strings of words, sentences, and paragraphs to accurately predict what letters were commonly grouped together and in what sequence they appeared. Benjamin (which named itself) produced a script of 9 minutes and 4 characters that Sharp then adapted into a movie centered around human romantic relationships. Although decidedly not *Hamlet*, the elements of love, jealousy, infidelity, murder, and revenge all make appearances in the piece. While human hands played a large part in the shaping of this work of digitally produced art, the continuum has expanded from human artists using digital tools to create performance and visual art to include

digital entities of co-creation. This use of digital media in performance and the arts is more complex than traditional lighting and sound as it demonstrates interaction between performer and integrated digital components simultaneously and moves the digital from a mere artists' software tool into a more dynamic role for shaping the plot and story of a theatrical production.

Scripts written by bots are increasing in number and with this new digital author comes a new vernacular which is in many ways a remediation of language. Screenplays and scenes written by algorithms introduce syntax structure that is unconventional. The structure assigns new value and meaning to words and phrases in such a way as to ultimately affect character arc and story and an unorthodox artistic product emerges from the language created. David Z. Saltz in his 2001 journal article, *Live Media: Interactive Technology and Theatre*, (Saltz 2001, 107) explained differing types of interactivity and later broke them down into specific categories: virtual scenery, interactive costumes, alternate perspective, subjective perspective, illustration, commentary, diagetic media, affective media, synesthesia, instrumental media, virtual puppetry, and dramatic media. Likewise, Ernest Edmonds breaks down types of interactivity and engagement in his article, *The art of interaction* (Edmonds 2010, 257-264) with his differing levels of engagement.

David Saltz' article *The Relationship between Performer and Media: A Taxonomy* defines the type of media in performance and their relationship to an audience. The list, its accompanying definitions, and the author's use of many of them in productions at the University of Georgia are impressive and speak to the inter-relationship that digital media and the performer share in contemporary theatre. However, before Saltz goes into his taxonomical categories, he first asks us to, "Note that I define these relationships in terms of media in general, not merely interactive media. Any of these performer/media relationships can be enhanced through the use

of interactivity, but none of them requires it.” (Saltz 2001, 124). I make the distinction because the machine learning algorithms are not listed here.

He then goes on to outline his media and their relationship to performance. Although Saltz begins with the caveat that he is defining the relationship in general, when he does use the terms “interactive” and “interactivity”, he does not distinguish between the act of interacting with something as a performer or audience and the capability of the digital media to actually interact or be interactive with the live performer or audience. Two of the types of media, ‘Interactive Costumes’ and ‘Instrumental Media’ are used by the author in the taxonomy to demonstrate examples of interactivity. In the first example, Saltz describes a production of *Kaspar*, the 1968 play by Austrian writer Peter Handke that, “depicts the foundling Kaspar Hauser as a near-speechless innocent destroyed by society’s attempts to impose on him its language and its own rational values.” (Brittanica 2019). In the 1999 production, David Saltz continues to describe the digital technology which also, “employs a giant eyeball projection—linked to a camera—that moves to follow every move of the character Kaspar. Sensors embedded in the furniture interact with the camera to indicate where it should point to capture and observe Kaspar’s location.” (Hope and Ryan 2014, 93). While I disagree with the use of the term interactive, the examples of digital media and how the actor can use them directly in performance is important. Saltz tells us that in his production, “nine Kaspar doubles came onstage and ritualistically donned black muzzles; a row of LED lights was sewn into each muzzle, and they all blinked in the same changing pattern in sync with a computer-generated musical score that grew to a crescendo until the final moment of the play.” (Saltz 2001, 124).

While there is a lighting affect that shares a mimetic relationship with computer-generated music, the performers can neither affect nor alter the blinking of the lights on their

costumes or the music with their performance directly. The media cannot comment on the performance of the actor in any truly interactive manner. Thus, the LED lights are merely an extension of the idea of digital media as spectacle. The second example is less ubiquitous as it details a more directly observable performative phenomenon. In this instance, we have a description of “interactive technology used to create new kinds of instruments.” (108). Saltz explains further; “each sensor-enhanced set piece in *Kaspar* was a different instrument; once *Kaspar* learned how it worked, he had complete control over when the audio played. These instruments, of course, were very crude, allowing *Kaspar* only to turn the sound on or off.” (126).

Analyzing the relationship between a performer or multiple performers and the digital components they can manipulate or those components that react to the performer requires a mapping strategy. For example, if an actor speaks into a microphone for a computer to somehow process and respond to, we can break down the various components in that reactive system to better understand how it works. The actor is inputting data (sound) through a microphone. The computer receives the input data, analyzes it, and formulates a response in the form of output data. This output data can manifest in images or sound or something else entirely. The mapping strategy here might be sound data into a computer’s microphone to a listener function in the software *Isadora*. *Isadora* makes sense of the data and outputs data (visual, audio, etc.) through speakers, a projector, or other possible devices. We can create look at the reactive system and see that there is a ratio of 1 input agent to 1 output agent. The actor who triggers the sound response is 1 agent and the computer that outputs the data in response is 1 agent. This constitutes a 2-agent system. Returning to Saltz’ production of *Kaspar*, we find a direct real-time observable input to output and 1:1 ratio 2-agent system where the performer can directly affect

the media and the media responds with music. However, the system is preprogrammed to have a predictable response and the performer can only turn it on or off. Again, this falls short of interactivity because the music is an entirely predictable programmed output with no real agency-not even the ability to convey random responses. It is simply a sound trigger that, while innovative, is still pre-programmed music. Saltz' ten additional definitions include examples of motion-tracking, virtual reality, and digital imagery in motion across a screen. All of these, he says, can be augmented with interactivity, but it is not a requirement.

The simplest example of interactivity between two agents can be observed when 2 people have a conversation. Person 1 asks a question and Person 2 hears the query, thinks about how to formulate an appropriate response, and answers with a statement. The difficulty in this in terms of digital agents is that what we would refer to as the 'thinking' part of the process can be extremely complex for computer programmers to build. We do have these interactive systems. As stated previously, Siri and Alexa are examples of this in action via chatterbot form and we can observe it in spectacle fashion every time a child plays a video game. Essentially, the computer is making decisions and outputting them based on varied input of a user.

Saltz' examples of the differing types of media in performance offer a glimpse of how the media responds beyond the mood of stage lighting and diageitic sound for environment or affects such as a scripted gunshot. In the examples from *Kaspar* that Saltz describes, there exists a live performer in a performance space that can input decisions to digital agents sharing that space with a resulting (and predictable) output from the digital agent in front of an audience.

My attempt to investigate how storytelling is affected by digital media is outlined in detail through mediatized elements on Carol Ann Duffy's adaptation of *Everyman* and the Samuel Beckett radio play, *Cascando*.

Chapter 2: Everyman: The Unchanging Agent State of Filmic, Photographic, and Animated Imagery; OSC and Sound Triggers

Reactive Media and Characters in Multiple Spaces

The practice-as-research component of my thesis work began with University of Montana's 2018 production of *Everyman*. Carol Ann Duffy's adaptation of the Medieval play involved a cross-departmental collaboration between the schools of Theatre and Dance and Media Arts, respectively. The studio show had a budget of roughly two-hundred dollars and was placed in UM's black box theatre. Duffy's adaptation of the 500-year-old morality play exemplifies theatre's evolving nature. The story revolves around the character of Everyman and his journey to be judged by God on the Day of Reckoning. The structure of both the medieval and modern plots places us on a literal journey with 'Everyman' as 'Death' pushes, prods, and guides him to his maker, all the while Everyman desperately pleads with his cohorts in life- 'Fellowship', 'Goods', and 'Knowledge', among them-to travel with him and speak on his behalf. As with the original script, which was originally thought to be anonymously published in fifteen hundred and ten (recent evidence suggests that the original play is based on an older Dutch play titled, *Elckerlijck* [Everyman] by Petrus Diesthemius (1495) (Gainor, Garner, and Puchner 2014, 571). Duffy's *Everyman* leaves audiences bearing witness to the protagonist's death with only his good deeds to vouch for him to the Almighty. The text, while keeping characters and themes of the popular trope, was modernized in such a way that it reflected contemporary society and objects of the material and digital world such as mobile phones and

department stores and it is worth noting that Duffy's ending differs from the medieval script. 'Death' does go to fetch 'Everyman' at the behest of 'God' in the older version but does not give the final address to the audience. The 'Doctor' leaves us with, "This moral men may have in mind: Ye hearers, take it of worth, old and young, And forsake Pride, for he deceiveth you in the end." (Gainor, Garner, and Puchner 2014, 596). But the last words are filled with the hope that the character of God in this script will bring us into Heaven. The scripted God in Duffy's play, who appears in the secularized form of a cleaning woman, expresses her love of Everyman as she brings him to his reckoning. (Duffy 2015, 65). Duffy's 2015 adaptation of the play has 'Death' giving the last word to us with a statement.

Help me out here –
Did my feckin ears deceive me
Or did your man call me a cunt?
This is a total affront.
Where's the respect?
I'm to pick up my scythe
And exit stage left?
I don't think so.
No, no, no, no at all.
See now,
I'm at my most unpredictable
When I'm vexed.
Eenie meenie miney mo...
Who's next? (65)

Everyman was the most produced play before the Renaissance and arguably the best known of the Morality plays with only *The Castle of Perseverance* as its rival. (Wilson and Goldfarb 2018, 151). The themes and characters in the tale are relatable still today as they force us to ask ourselves if we have lived just lives.

The design team consisted of me, Professor Michael Murphy, Senior BFA media arts major Drew Arends, and lighting designer Abbey Mosely. Our intent with the design was

heavily influenced by *Everyman*'s director, Dr. Bernadette Sweeney. Sweeney's concept for the visual world of *Everyman* and the team's resulting design placed the characters in a set of digitally projected environments such as an animated penthouse apartment, department store, and elevator. The actors performed some scenes with news media images of wildfires, tsunami and storm footage, and a mix of falling body drawings rendered from rotoscoped imagery. The design also included computer-generated wireframes (white lines and digital points that are the resulting projected imagery from points recognized by the computer on a performer's skeleton) that tracked the motion of the performers and were projected behind them. Other design aesthetics included religious iconography of various gods and recognizable figures, landfill waste and pollution, and images of leaves that were digitally altered. The aim of the directorial and design concepts was to emphasize a world for the characters that was heavily saturated with bright filmic and photographic imagery. The result would create an environment that was indicative of a world of frenzy for *Everyman* and his compatriots. As *Everyman* fell slowly to his death throughout the story, the media would transition from frequent use with flashing warm colors and frenetic action to decreased use and cooler colors. Ultimately, the story would end with no media. The idea was a visual and sonic journey from a world that is a construct of man; mediatized, material, and ephemeral to a universe that is created by the God in this play; natural, ethereal, and infinite.

We used the projected photographic, filmic, and animated imagery in combination with stage lighting design to create a visual environment for the actors and audience using the software program, Isadora (Troikatronix 2019). Digital wireframing created in Isadora allowed for motion tracking via Microsoft's 360 Kinect in select scenes as well as a scene with imagery triggered by the actor's voice. These affects allowed the performer a measure of control over

their audio/visual setting and a modicum of influence in how the story was delivered both audially and visually to the audience. The overall look and visual pacing of the show was heavily influenced by digital imagery and sound-invoking hip hop songs for dance segments and dialogue. Alpha masking with multi-layered opacity and gaussian blur affects allowed for images of performers to be slowed and halted in moments to create emphasis in the Death/Everyman sequences as well as highlighting the opening party scene. Digital animation allowed for Everyman and Goods to ‘travel’ (via a virtual elevator) through a multi-level department store [see *Everyman_animation.mp4.*] (UmBox 2019). Animation rendered in Photoshop and projected onto a Styrofoam placard allowed Everyman to act with his younger self onstage. In short, the presence of digital media was very prevalent for the audience.

The incorporation of the digital media into the story created opportunities for the actors to appear and interact with their visual environment in a very dynamic manner. For instance, the blocking of the God/Good Deeds monologue (Duffy 2015, 4) contained religious iconography from man’s world. These were images of prominent figures from the world’s major religions as we commonly see them in books, paintings, and stained-glass windows. The character of God in this plot could reference these images with her voice and make the images both figuratively and literally explode. This allows digital imagery that is dynamic or not ‘fixed’ in time and space to comment on the story. It supports, through visual commentary that Duffy’s scripted God destroys man’s material construct of what or who that God is with a voice of truth. This message is implied of course but digitally applied in a direct manner for the audience to see and feel through a sound trigger. This moves beyond a simple projected image that either appears or disappears in how the performer directly references and interacts with the image to create this implication.

Another example shows causality via Everyman's balcony fall (11). Death pushes Everyman and the resulting plunge is reflected by the imagery of rotoscoped animation. The audience sees the actors physically act the movements of Everyman's slip and Death first catching hold of, then letting go of him. The moment is slowed and frozen with a gaussian blur affect and then represented by the dynamic falling movements of Everyman on screen in a drawn animation. Imagery projected here is not fixed but in motion and reincorporated throughout the rest of the story to remind the audience and Akuchu's Everyman that he is plunging to his death. The dynamic nature of the imagery creates an environment that is changing from one of life to one of death. The digital media is visually commenting that Everyman is dying.



Figure 1: Tsiambwom Akuchu as the title character in University of Montana's 2018 production of *Everyman* adapted by Carol Ann Duffy. Photo by Michael Murphy.

Finally, Digital media is used to create and comment on character in a very literal sense in the Everyboy scene (44). Everyman first observes his younger self entering the scene and moving from upstage to downstage. A drawn image that is rendered again through rotoscope from filmed footage gives the appearance of a child riding a scooter off in the distance (upstage)

drawing closer to Everyman (downstage) and going from a smaller figure to a larger one via the result of being projection-mapped onto a Styrofoam placard that is downstage of the actual projection screen. The dynamic nature of the media here is one of movement through space on stage in the acting space of the live performer. In this instance, the media serves as an actual visual character that the actor literally shares dialogue within a scene. This of course goes well beyond the media of film and photograph serving as scenery and harkens back to McKay's 1914 production of *Gertie the Dinosaur*. Illustrated later in this document are further examples of animated and motion tracking digital devices that share the space with the actors and act or react to them in some way. Once more, the digital media here is dynamic and transcends a fixed modality in order to comment on or help advance the storytelling.

The design consisted of bedsheets sewn together for a projection screen, rehearsal benches, a Barcalounger, a rocking chair, and an old RCA television from the mid-nineteen eighties. The design concept rested entirely in animation, mediatized images and sound, and stage lights. Our design team mined images of news reports involving forest fires and hurricanes (among other media) as well as implementing graphic animation built in Cinema 4D and PhotoShop. The design team brought these separate elements together and our head designer built the cues containing all of these pieces in Troikatronix' Isadora v2.5. The show was run through Isadora on two machines—a Windows desktop and a Macbook Pro laptop. The sound design for the production was a mix of live singing and instruments with voiceover recorded in the media arts sound lab. Ableton Live 10 was used for sound channel inputs and outputs between microphones and Isadora. While I gathered some news and storm footage for imagery as part of the design for our initial production meetings, I focused on creating an audio/visual relationship between the performer and the digital media in real time. The stage was set to a

thrust configuration with a single drop upstage for our projected imagery. Speakers to the right and left of our makeshift projection screen served for sound. The style of performances ranged from an opening piece with the ensemble playing musical instruments and singing Johnny Cash's *When the Man Comes Around* to a choreographed Hip Hop dance sequence and a rendition of *Stormy Weather*. The acting and movement were physical and took place downstage of the projection screen. The physical space of the thrust had furniture and props that were set and struck by the cast with each scene and the ensemble sat in a line of chairs along the stage left and stage right sides-viewing and occasionally vocally contributing to the various scenes as they unfolded when not onstage, themselves. The company was comprised of 27 members. (see Appendix A).

The rehearsal process began in room 125 of McGill Hall. The space is used for a variety of acting and physical performance classes, has wood floors, and houses floor to ceiling mirrors that run the length of the North wall. The acting space also has a projection screen and media podium for classroom presentations. I utilized this feature to present some of the aspects of the motion tracking and gaussian blur affects to the performers at the outset of the rehearsal process. The design team worked in the media arts production lab which was down the hall from McGill 125. The production lab is a converted basketball gymnasium that the School of Media Arts uses for producing green screen backgrounds along with other affects in film. This allowed for media design and experimentation to continue in conjunction with the performers to foster an adaptive design process. I first experimented with the manipulation of sound files using a 2-agent system consisting of my left hand and its motion as Agent 1 input and my Macbook machine as both interface and audio output. The motion-tracking of my hand was accomplished using the aforementioned Microsoft Kinect 360 sensor which sent the IR (infrared) data points (x,y,z

representing horizontal, vertical, and depth positions) through Open Sound Control or OSC which was translated using the software NiMate into virtual MIDI signals. The resulting video signals were then sent to Isadora via a Syphon receiver. I mapped the resulting MIDI signals to the horizontal, vertical, and depth positions through Isadora's Movie player function and uploaded *Zombie* by the Cranberries. The resulting output from the Macbook was a "scrubbing" affect that allowed me to increase and decrease the speed of the files' playback. Attempts to change different sound files by moving my left hand's z or depth position in space were successful. The control attained by Agent 1 was extremely sensitive and would have been viable after additional scaling for the actors to use onstage. Further iterations of this would allow actors to control the scrubbing of film forward and backward during the rehearsal process. Movements from Agent 1 had to be slow and precise for the sensor and interface to keep pace in real time. Preliminary solutions to this were adjustments to the float positions using Isadora's Value Scaling function to adjust the ratio of Agent 1's positions in space to the float positions in the MoviePlayer actor thus expanding the margin of velocity Agent 1 could move in space. This 1-agent system for actor-manipulated sound was successful during rehearsals in early iterations. Its employment onstage for successive shows in a production's run would have required further experimentation to fine tune actor control for use once *Everyman* opened. Stated in simpler terms, I would move my hand from left to right and while the Kinect would track the motion, it would scrub through the song so rapidly that I could not accurately control where to halt the song and play it in reverse. However, the motion-tracking worked, and the system could be used in performance after further scaling refined the process for a performer.

Keeping the 1-agent system, I started experimenting with a motion-tracking affect by re-configuring the OSC input to a particle engine using the Particle generator function. The Kinect

sensor tracked forty-five coordinates on Agent 1's body for input and translated them into MIDI signals via the NiMate and Syphon API's. Isadora projected the output signals in a particle system as a graphic image upstage of the live actor [see *Everyman_Party_kinect.mp4*]. (UmBox 2019). The Party scene refers to the character of Everyman's birthday party as listed under the Prologue of the script. We hear the character of Fellowship rapping with the phrase, "Masters of the universe" (Duffy 2015, 3) which the Ensemble answered with, "Listen to my rap verse" (3) to set the tone of the scene. The literal *mise en scène* had the ensemble in a type of grid arrangement for a dance chorus with filmic visual elements of news reports projected on screen and upstage of the actors,



Figure 2. Ensemble dancing during Birthday Party scene. Photo by Michael Murphy.

a song *Lamborghini Angels* by Lupe Fiasco played. The ensemble hip hop danced to the music while rapping and our media, along with the stage lights and wireframe motion-tracking on the backdrop created a bright feeling of excess in the character of Everyman's world to try and achieve the director's concept of starting with a large amount of digital elements and slowly

softening or removing them over the course of the story. 'Everyman' is young, successful, and rich and the party takes place at his high-rise penthouse. The penthouse setting was animated by Arends and the filmic imagery was designed by Murphy.

I wanted the particle wireframe system to add a third visual element that somehow represented the characters in the digital world on screen. This reactive system was mimetic in nature in terms of the actor/digital graphic relationship. While being successfully implemented in the 'Party' scene in Act One and the 'Knowledge' scene in Act Two, Agent 1's (Everyman) forty-five data points (x,y,z) reflected the actor's movements onstage and as stated previously, the actor had little awareness of the output of the image on the upstage backdrop and consequently the affect did not influence his character choices and the relationship between performer and his digital representation on screen was essentially one of the digital mirroring the live performer. I expanded the 1-agent model into a five-agent system in the Party scene and while the nature of the reactive visual affect remained, a surprising and unpredictable result was that the Kinect sensor could not differentiate between data points on an input Agent's skeleton and thus started drawing wireframes between the data strings of different Agents (Everyman and Partygoers [other performers]) in real time on the backdrop. This 'glitch' unwittingly afforded the closest simulacra of real interactivity as it relates to HCI in that the interface in the system was trying to make non-programmed or premeditated decisions on what performers to track and ultimately draw on the projection screen.



Figure 3. Death stalks Everyman during Knowledge scene. From Left: Whitney Miller, Hunter Hash, and Tsiambwom Akuchu. Photo by Michael Murphy.

The scene climaxed in the character of Everyman vomiting into a bucket provided by ‘God’ as the music and visuals sharply cut off and the house lights came up. The wireframe glitching between skeletons was particularly clear in the ‘Knowledge’ scene as the character of Death seemingly stalked ‘Everyman’ and the wireframes would cross and connect; making geometric triangles that would freeze on the screen as the sensor tried to recalibrate and search for more data points to track [see *Everyman_Deathstalking_kinect.mp4.*] (UmBox 2019). This affect served to visually link the character of Death to ‘Everyman’ while ‘Knowledge’ (played by Whitney Miller) tried to reason with Akuchu’s character. While ‘Everyman’ is desperate and not directly aware that ‘Death’ is so closely watching him, we as audience members are reminded that the game is still afoot and time is running out with the heightened sense of urgency created by the affect on the animated empty street. (Duffy 2015, 41). ‘Everyman’s’ line, “How much

time do I have? I know he's following me." (41) encapsulates one of the character arcs of the scene as he is scrambling for a way out of his plight. The media in this scene consists of cooler colors drawn from hues of blue, gray, and black and is markedly subdued in comparison to the Party scene in the first act. The wireframes were affective in both.

The visual affect rendered to the screen for the 'birthday party' heightened the sense of connectivity between the character and his synthetic environment. One could say it had the affect of placing emphasis on man-made material objects, environments, and concepts while serving to keep the character and his worldly friends from a true connection with nature. While in the act two scene, the affect was much more ominous and served immaterial concerns such as death and finality for 'Everyman'. It was a type of digital tracker that connected the two characters whether our protagonist was aware of it or not. I rendered on the screen lacking any hue and in retrospect, I would have liked to render the graphics in bright red so as to possibly laser sight one typically sees on a weapon which reaches out for 'Everyman', though this might have proved heavy-handed.

The audience is witness to remediation of imagery on screen time and again in the form of filmic and photographic representation. They are not as accustomed to digital representation in the form of wireframe and particle systems in place of a human performer as it applies to linear story in live performance. The data points translated to anchor points on the human skeleton while the wireframes drawn between the points in space could be perceived as puppet strings working Craig's veritable Übermarionette and tying man to the digital world while simultaneously keeping him apart from nature, or, and perhaps in defiance of Craig, as in this case the digital affect is controlled by the actor's movements. For reference, I speak of the famous early 20th century scenic designer and theorist Edward Gordon Craig who penned the

controversial *The Actor and the Über-Marionette* (Gerould 2000, 393) in which he advocated against the emotional whims of the performer, instead favoring a life-sized marionette carved from wood that could be controlled with precision to embody character. Craig argued that “Art arrives only by design. Therefore in order to make any work of art it is clear we may only work in those materials with which we can calculate. Man is not one of these materials.” (393).

Craig’s theories notwithstanding, The visual affect essentially gave the actor a digital double in the synthetic world that served mimetically as reinforcement for the audience that our environment and actors existed in two spaces simultaneously; while their physical actions carried the story in real space, their mimetic selves reflected those actions in two dimensions in the digital space. In the case of the character Everyman specifically, he was falling from a balcony and had not yet died while the plot unfolded. Below is the playwright’s description (Duffy 2015, 11).

Everyman slips and falls off the balcony. The rest of the action takes place in his head during his fall to his death.

The wireframe produced by the Kinect (along with Murphy’s animation of a falling body onscreen) could be seen as the modern digital threads that tied Everyman’s soul to the world of and material concerns of the living. The affect for the audience served to chain the live performers to their digital environment and in some ways, trap them within a material world with all its concerns that essentially is two-dimensional and empty; lacking the three-dimensionality and substance of the physical world downstage. Both the one-agent and five-agent system iterations were controlled by the live performers’ movements.

In contrast or perhaps as a literal ‘blessed’ relief from that, the director’s concept had an onstage environment decidedly void of digital affects and imagery in after death; culminating in ‘God’ walking ‘Everyman’ in spotlight to a white sheet, cutting the barrier open, and entering

through the cloth gates with him into the afterlife of Heaven...leaving the audience with the figure of man and his endlessly compassionate Maker in shadow produced by a simple backlight behind the now parted divide between the world of the living and the afterlife. It was a climax encapsulated in a beautifully simple metaphor: that a frenzied, loud, often confusing and materialistic (mediatized) life ends with light giving way to the mysterious and silently serene shadowland of death. The slowing and disappearing digital sound, graphics, and imagery fell away as our 'Everyman' fell to his end and ultimately into the arms of 'God' (light)-waking in rebirth as a pure being without the puppet strings of materialism or sin [see *Everyman_moon.Heaven.mp4.*] (UmBox 2019). Experimentation with the gaussian blur and syphon receiver actors in Isadora led me to the manipulation of the live video feed image of Death and Everyman in the 'Balcony' scene [see *Everyman_T_fall.mp4*] (2019). Using the Chroma keys in the aforementioned Isadora actors allowed for a freeze-frame and slow-motion affect that blurred and jumped the actors' images on the backdrop.



Figure 4. Death throwing Everyman off the balcony. downstage: Hunter Hash and Tsiambwom Akuchu. Photo by Michael Murphy.

The image was desaturated and projected from the Kinect camera through the Syphon receiver into Isadora and outputted from the projector onto the backdrop screen. As the performers moved onstage, Murphy could adjust the amount the image blurred, froze, or disappeared and jumped—creating a supernatural and surreal quality to the scene where Everyman is thrown off the balcony by Death. In this system, the actors had no control and no ability to manipulate their digital representations on the screen, but the affect—much like that of the motion-tracking two and six agent systems—served to alter the audience’ perception beyond conventional filmic remediation. Audience awareness is not influenced by how the digital imagery is altered or whether it is technically interactive or altered by a technician. They simply see that the imagery is somehow reacting to or informing the action as it happens onstage. In this specific instance, we had two equal but separate areas for the tech and design crew in this production. Professor Murphy and I were seated with our media-controlling computers at stage right and left behind the row of seating for the actors and in full view of the audience while the lighting team led by Abby Mosley was in the booth operating cues and the spotlight unseen above and behind the audience. While there is no documentation to confirm this, I can recall no member of the audience asking me how or who was controlling what media and affects in respect to the Kinect, Murphy and I, or a technician they [audience] couldn’t see behind them.



Figure 5. God talking about the sins of Mankind. From Left: Tsiambwom Akuchu and Tasha Conti. Photo by Michael Murphy.

In scene 3 of *Everyman*, the character of God (disguised as a cleaning lady) directly addresses the audience while background images play in Isadora's PicturePlayer in combination with a Randomizer and FrequencyPulse generator functions(s). These inputs had signals passed to them from a SoundListener functions which was receiving audio input from the microphone of the live performer that was passed through Ableton 10. The religious iconography consisting of still imagery of examples from the world's major religions—Christian, Judaism, Buddhist, etc.—played in sets of twos positioned horizontally and changed periodically. The religious images were interspersed with images of man-made pollution such as plastic waste from the ocean and air pollution from the burning of fossil fuels. [see *Everyman_Tasha_sound trigger.mp4*.] (UmBox 2019). The performer could interrupt and 'explode' the images to varying degrees of intensity when she spoke. The resulting pixelization in conjunction with the randomness of the images created multiple and unpredictable combination sets that afforded 'God' the ability to influence her scenic digital environment through the triggering of sound. The audience could directly observe the character of God's power in a perceived context of harsh, but subtle critique of humanity's material and spiritual constructs when juxtaposed (through additional remediated

imagery of pollution) against its harmful affect on the planet. This was no more evident than in the lines, “the gathered waters, which I called the seas, unclean, choking on themselves. The dry land – fractured, fracked.” (Duffy 2015, 5). The 1-agent system utilized sound as input passed through a microphone, Ableton channels, Windows machine and processor, various actors in Isadora, and outputted to a projector for final rendering on the backdrop all to appear in a sophisticated augmentation to the live performer’s words onstage. This reactive output interface also occupied the role of Digital Mimetic Media in live performance as simple audio input from agent-1 is passed to the interface and the resulting output is visual change in real time. The affect was quite simple and powerful as it demonstrated God’s vocal anger literally shaking the images of the world as we know it. No more is this personified than when we our drunken protagonist vomiting into a bucket in the previous scene and the visual buildup of Murphy’s sound-triggered image design to God’s beckoning of Death does much to justify what happens with Everyman and the balcony.

A component of the media in *Everyman* was Drew Arend’s design of the elevator or ‘lift’ in the department store scene with the characters Everyman and Goods as well as later scenes involving the animated character of Everyboy. Ironically, these scenes contained pre-rendered digital animation created in PhotoShop and Cinema 4d that served as a scenic environment and independent character (visually), respectively. The irony of this is that these scenes had no systems with agents that could influence each other’s states and the media had been pre-rendered so as to run a set visual course as the actors performed. But the affect of blocking and



Figure 6. Goods showing Everyman the department store. From Left: Tsiambwom Akuchu, Christina Tripp, and Hunter Hash. Photo by Michael Murphy.

choreography at specific moments in both scenes lent for the illusion of interactivity between live actors and the digital media, for instance, in the case of Everyman and Goods riding the lift up to various levels of the animated department store while they faced downstage to the audience and then turning to exit as the elevator doors opened and a P.O.V. tracking ‘shot’ visually moved the characters (and audience along with them) onto the floor of the store.

The Everyboy scene was an exceptional example of the powerful and very literal role digital media can play in traditional plot structure by its unapologetic simulacrum of character—specifically because Everyman ‘interacted’ directly with Everyboy (an animated drawing rendered from rotoscoped footage of Ruby Sweeney Ferriter and sister, Saoirse, respectively.) By sharing reactions and dialogue with the visual while an actor voiced the character. Furthermore, Murphy enhanced the image-as-character moment by mapping the projected image of Everyboy to a four-foot by five-foot Styrofoam placard and placing it downstage from the backdrop in the acting space with the live performers. [see *Everyman_everyboy_placard_mappin*

g.mp4.] (UmBox 2019).

For the audience as well as the performers, these select moments were far more interactive in nature in that there was a direct relationship between the media and the characters in real time, thus the illusion of interactivity subverted the motion-tracking in the ability of live performers to act and react based on perceived input and output cues on screen.

These digital augmentations did not change the embodiment of character for the performers onstage. Tasha Conti (Ensemble/God/Good Deeds), for instance, felt frustrated with the lack of control she actually had over the content of the images and her inability to control the specific order of the sequence of images projected during the scene containing the sound trigger function. (Conti, 2018). Akuchu (Ensemble/Everyman), while liking the initial idea of motion tracking elements in conjunction with the dance sequences in the production, ultimately said the wireframe produced by his movements had “no affect” (Akuchu 2018) on his performance. In fact, he couldn’t see the imagery as it was on screen behind him and it did little to inform his characterization of the role. Whitney Miller (Ensemble/Knowledge) enjoyed the mediatized elements, but again the motion tracking did not “inform her character” (Miller 2018) or delivery of movement and dialogue. Whether interactive or not, the media successfully helped to convey the story of *Everyman* to the audience in a way that connected the live performers to the digital media projected while they performed.

The production was successful both in audience reception and in terms of research as it clarified the boundaries of what qualified as an interactive system in HCI. Also, the design elements embodied how dynamic media could perform as character with live actors. Additionally, the digital media helped to tell the story beyond serving as fixed imagery or scenery as it showed evolution in the physical acting space in the form of Everyboy as the

character was separated from the projection screen and instead projection mapped onto the placard downstage. Along with this, the wireframes of the motion tracking connected the digital environment and live actors and placed them in the same environment scenically while allowing the performers to be represented in two spaces simultaneously.

Actors had direct interaction with the media during the rehearsal process. The action for the birthday party in scene 2 specifically was blocked while tracking with the Kinect and images with Alpha Masking affects were projected on screen. Actors had a chance to view how and when the wireframes tracked the performers' and they experimented with movement while Sweeney, Murphy, and I observed. Akuchu and the ensemble were shown examples of projection mapping on rehearsal boxes and on a rehearsal stage. The dimensions of the stage space were taped off in a corner of the production space for the testing of projections and motion tracking media with the performers as they rehearsed the various scenes in the play.

Chapter 3: 'Cascando' and Direct Manipulation of Digital Media through MIDI

Digital Character

The goal of working in performance with an additional project was to observe how digital media affected storytelling when live actors had the ability to directly control the imagery and sound in the performance space. I strove to set up an environment that would serve as a lab containing the equipment necessary for performers to explore dialogue and MIDI control with audio and video. The selection of an extant script to serve as a vehicle for the exploration came at the suggestion of Dr. Sweeney. Thus, the radio play, *Cascando*, by Samuel Beckett, served as our model. Professor Murphy, my advisor in the MFA media arts program, suggested a fellow graduate school cohort, David Mills-Low, as an option for a performer and Mills-Low thankfully agreed. Our set consisted of found objects in the production lab that are used in the generic

space for teaching classes. I liked the ‘used’ quality of them and wanted set pieces present in my and Mills-Low everyday lives because they possessed a type of memory for us. The set consists of a chalkboard, two chairs, and two desks. The lights add to the lab feel of the play as well as serve a practical function. This design is also intended to make the piece more immersive for any observers or potentially an audience.

Beckett’s play was written for the radio and performed on the British Broadcasting Corporation (BBC) aired the piece on BBC radio 3 in 1964. The work is a one-act with three characters: ‘Opener’, ‘Voice’, and ‘Music.’ This work is not as well-known as some of Samuel Beckett’s plays and novels, but it offers a perfect vehicle for experimentation with actor-manipulated digital media. The reason for this is due to one of the characters (music) being a disembodied character. The production also offers a script with language that repeats in many instances. This allowed for integrated media to appear more pronounced in its differing tempos in the various scenes. (see Appendix B).



Figure 7. From Left: Kurtis Hassinger as Opener and David Mills-Low as Voice in Samuel Beckett’s *Cascando*. David’s image on screen with Shimmer affect. Photo by Tyler Schanck.

Cascando (which means diminishing volume and decreasing tempo) (Kenner 1973, 172) is not unlike Beckett's 1936 poem of the same name in that we seemingly have a description of words inadequate to capture love or -in the case of the radio play—words inadequate to capture character. The poem was prompted by Beckett's "meeting, and thinking he had fallen in love with, an American friend of Mary Manning Howe, Betty Stockton Farley..." (Lawlor and Pilling 2012) and the two seemingly disparate works actually share a strikingly similar tone; our author, whether desperate to attain unrequited love or to attain the completion of a character in a story, is still experiencing a crisis of language...a breakdown of words. "Wordshed" (Beckett 1936, 1.3) and, "unalterable" (2.13) serve as apt verbal containers for the dilemma of language, love, and character in these two instances of Beckett's work. The play begins with 'Opener' telling us the month, doublechecking with himself that he's correct, and finally confirming that the month of May applies to him (and possibly to him, alone). These words-simple, sparse, brief-foreshadow a process that has been ongoing for some time, possibly forever. The non-description and lack of embellished text from the 'Opener' in this *mise en scène* is perhaps more analogous to the unrealized story and character than 'Voice' and his Woburn are in any of the lengthy spurts of monologue spoken by the latter as we ultimately never have a resolution. The piece follows 'Voice' as he attempts to finish a story by describing the character of Woburn as he moves through the tale. 'Voice's' futile attempts to, "finish it..." (Beckett 1963, 9) through lengthy free form narrative and broken and fragmented word speak are interrupted by 'Opener' or cut off mid-thought. These spaces are filled by 'Opener' or 'Music.' 'Opener' talks about an unseen they and their perception of him and what is in his head. 'Music', too, speaks to us after a fashion as it fills the space between and sometimes in tandem with 'Voice' and drives him

chasing after Woburn. The lines of ‘Voice’ throughout the play are sometimes repeated at different intervals and dialogue shares similarities, but we see a fragmentation happening over time as description and Woburn become more elusive eventually drifting out to sea.



Figure 8. From Left: Kurtis Hassinger manipulating images with MIDI and David Mills-Low shown with time delay affect on screen. Photo by Tyler Schanck.

Samuel Beckett’s use of language in his 1963 radio play affords an opportunity to invoke digital media in multiple forays into audio/visual representation of inner character for an audience. *Cascando* can be interpreted as a moment in the world of a character and his author which has textual components akin to a running inner monologue interrupted with brief pauses of music and narrative. The run time for the piece is 21 minutes with no discernable blocking and few vocal directions. The material serves as a vehicle for both performance and lab research and is a continuation of an attempt to classify digital media in live performance systems and their agents as an example of direct manipulation through OSC channels and virtual MIDI. The concept of performer-controlled MIDI affects was first conceived during the *Everyman* rehearsal process and shelved for later experimentation. The stage directions call for two actors. For the

project, I used my Macintosh machine as well as an iPhone SE and iPad for Isadora and the TouchOsc virtual MIDI controllers. The audio configuration consists of a Big Knob audio interface, two 12-inch monitors (speakers), and two lavalier wireless microphones. Lighting consists of two 6-inch fills with accompanying trees and projected imagery. Ambient light from the Macintosh monitor serves as a light source, as well.



Figure 9. *Cascando* interface showing Isadora software. Photo by Kurtis Hassinger.

I began the process by gathering images and sound files from YouTube and iTunes. I kept these to a minimum as the concept I had was matching simple images to audio in a one-to-one ratio and relationship. I also recorded the text in a sound lab with Mills-Low, media arts MFA candidate Tyler Schanck served as our sound engineer. I then imported the sound files of our recording session into Isadora along with the video files I had gathered from YouTube and began to build the scenic elements and cues for *Cascando*. The sound files consisted of an instrumental version of *As Time Goes By* and a white noise static video (the video also serves as filmic imagery in select moments) and a sound file of the sampling of microphone frequency feedback. Additionally, the web camera of the Macintosh and an external web camera attached to the Mac were employed as live video feeds. Images and sound from live feeds served my

premise of casting fixed and mimetic digital elements in roles that would feel more immediate to the performers and lend to a 'shared' playing space. I wanted live webcam visuals that reacted to the performer and, conversely, that the performer could react to. The purpose was to create a dialogue of sorts. MIDI control would ideally allow for the performers to influence audio and visual as they were communicating with their environment. This 'conversation' between live and digital performance components would then play with the idea of agency in time-based media as well as traditional concepts of character. If the actor can give voice to Beckett's lines and the 'music' and imagery (for our purposes, the static of white noise, microphone frequency feedback, and live and delayed video, and *As Time Goes By*) can respond with a rhythm that slows or increases in tempo, then one can see the music and visual environment occupies the space of character with the performer and we have breached the barrier between performance and performative. The media, although not interactive, is beginning to occupy an altered space in the performance.

The idea is not new, Samuel Beckett wrote *Cascando* with music as a third character with Opener and Voice and while Marcel Mihalovici's score is specified contractually for the performance of the play, I wanted to expand the idea of the character of music to include visual projections in a lab setting. I wanted to make the character of music larger. My hope with this was to observe how sound and imagery perform agency (or not) as words and story breakdown.

Keeping the 1:1 ratio, I divided the projected image into columns that corresponded to a video feed as well as a projected movie file using functions in Isadora similar to those referenced earlier and used during the production of *Everyman*. I had a white noise video file and its accompanying sound that the live performers could react to. Two live-feed web cameras offered both performers the option of entering and exiting the projected image at will. Using several

Isadora function filters to create rapid movement in a video loop format as well as adding time-delay affects, I could manipulate the character's sense of time digitally while the performer could stress it through timbre and prosody vocally to an audience. I manipulated this directly on the Macintosh keyboard through the Isadora GUI (Graphical User Interface). Still most of these decisions were built and fixed in the scene cues, however, I could alter them in real time during a performance if I chose to do so. I followed this by setting up a two-agent system composed of David, myself, and the Macintosh machine as interface. Using a downloaded iOS/Android application called TouchOsc, I designed a virtual MIDI keyboard that David and I could operate from our iPhone.

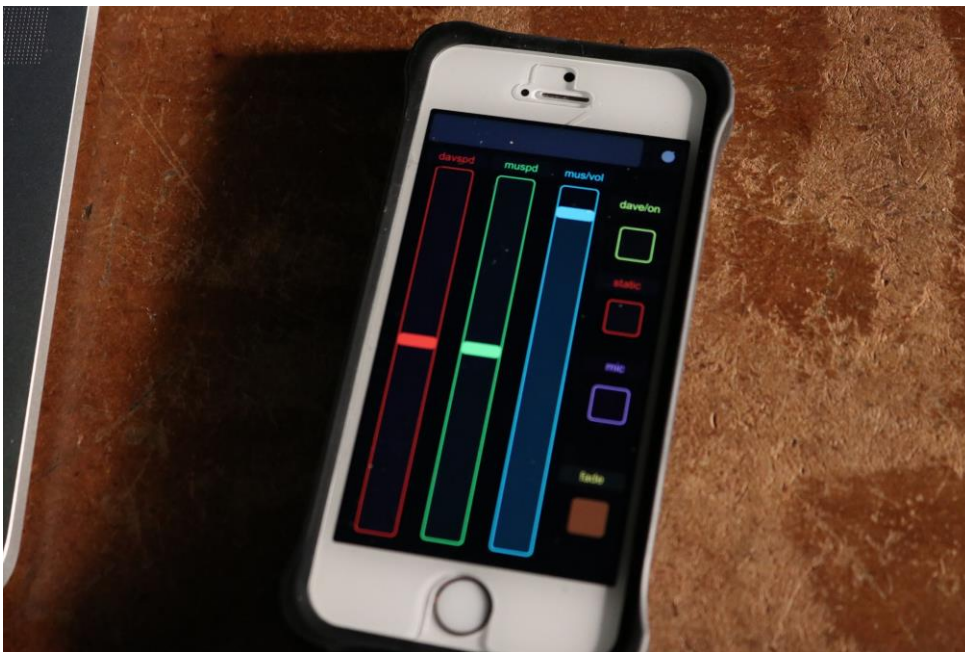


Figure 10. TouchOsc virtual MIDI control page on iphone. Photo by Kurtis Hassinger.

The MIDI channels were routed to the sound files in Isadora through OSC and connected to the MoviePlayer function volume, playhead position, track number, and a separate Jump function that could switch scenes. This gave Agent-1 (Mills-Low) and Agent-2 (myself) the ability to speed up or slow down the music and static sound files as well as slowing the filmic

playback [see 2:34min. of *cascando_MIDI_rehearsal2.MP4.*] (UmBox 2019). We could also switch audio tracks and cue new scenes directly from our iPhones/iPad while performing live onstage. However, the OSC could not handle more than one MIDI signal on one channel at a time and therefore, the two-agent system was reduced to one. This changed the power dynamic of the scene allowing Agent-2's input and the projector and monitor's subsequent audio and video outputs to influence Mills-Low's performance in entirely new ways. The agency afforded by direct performer control over audiovisual affects in real time altered the power exchange and tipped the scales of agency completely in favor of Agent-2 and left Mills-Low's Agent-1 completely powerless. This was reflected in the stark character change from one of almost equal power to one of subservience. As one might expect control given back to Mills-Low's character after more experimentation with the MIDI control restored some ownership and power to the character in the scene. However, later iterations of the 2-agent system allowed for Mills-Low's character to trigger music in scene changes and this small measure of control shifted the power dynamic again. For instance, 'Voice' was forced to dance when my character of 'Opener' triggered the music for the first time in the scene, but later versions of MIDI control allow 'Voice' to decide when he wants to dance by starting and stopping the first music scene thus increasing the character's agency [see 1:45min. of *cascando_MIDI_rehearsal1.mp4.*] (UmBox 2019) Here, we see digital media's affects on both actor and storytelling directly in the duration of the scenes and as a disembodied character. In this role, not only is dynamic media influencing the acting choices of the performer, but also it is changing the agency in the storytelling when the speed of the sound and visuals are variable due to MIDI control. The performance of the work is varied with each showing and the audio media occupies the dual role of character and scenery in the production.

Chapter 4: Computer as Character: Chatbots and Thesis Conclusions

Digital Performers

Working with chatterbots (commonly abbreviated to ‘chatbots’) resulted in attempting to build a two-agent system where both agent-1 (the performer) and agent-2 (the computer processor) had the ability to influence each other’s agent states through sound input and output. The first iteration of the chatbot had a live performer inputting sound (in this case words and sentences) that the computer’s microphone received and the interface would respond to with an output of sound (also words and sentences) that was determined as the pre-programmed answer or, in some cases, a randomized weighted answer that could not be predicted to the agent-1 input. The chatbot interface was built on top of the P5.js speech and sound libraries and a coding language called RiveScript.js (Shea 2019) was used to write the script for the chatbot to recite. The Chatbot is based in JavaScript and HTML and runs online. The advantages to this for performance purposes is the potential for telematics in real time. Chatbots are not a new concept, the technology has existed for close to fifty years and began with Joseph Weizenbaum’s rudimentary bot in 1966, ELIZA. (Landsteiner 2005). ELIZA was an early natural language processing program developed at Massachusetts Institute of Technology (MIT) and served as a test model for human/computer conversation and was experimental in nature. It is considered to have provided users with their first experience of “interactive” computing. (2005).

Today, the technology of bots is more appealing and user-friendly due to the prevalence of handheld devices, tablets, etc. The general public interacts with bots in the forms of Siri and Alexa and instant messaging boards. The difference in this iteration is that the chatbot has been solely repurposed (some might say ‘remediated’) to perform a live scene with a human counterpart. The concept (with technical help from Dr. Michael Musick in the media arts

department) has continued to a version 2.0 iteration with proof of concept performance involving a three-agent system of two Macintosh machines and a human performer onstage. The computers talk to each other using a script I wrote consisting of simplistic calls and responses that I can then interrupt with responses of my own to join in the conversation, at which point, one computer agent or sometimes both agents respond to my query or statement. Many times, the responses from the bot(s) were contingent on my vocal timing with their electronic 'listener' algorithms. If the bot was not in listening mode, the microphone was not on and it could not hear me. This created a performance situation very similar to the acting dilemma of one actor getting drawn into another actor's 'energy'. The performance is a performative act of synthetic liveness that is at once wholly unpredictable in nature. The exercise attempts to ask what is agency in digital performance, who has it, and in what space (public or performance) can it be transgressed and performed? The nature of the pre-programmed responses from the computer agent make this system an example of digitally scripted interactive media in live performance.

Although I knew the script, I did not know if the computers in 2.v would hear me and respond or if they would keep talking to each other. (see Appendix C). The tendency was that the computers got stuck in a loop where Computer 1 would ask Computer 2 the same question and receive the same answer most times. It was an interesting dilemma that ironically represented a breakdown in language if not similar to *Cascando*, then reminiscent of it, especially when considering repeated verbal queries and answers from both machines in performance. The scripts for the bots were composed of simple single-sentence or phrase strings similar to what one might see in a ventriloquist or vaudevillian skit from the first half of the twentieth century. I did include the 'To be, or not to be' soliloquy from *Hamlet* briefly, but found that the affect was much the same with the computer rattling off the lines in a way that did

not denote informed character. In fact, the result served to only highlight the difference between chatbot and live performer and reinforced the traditional views of agency in human/machine interaction that pervade society today. The simple and brief responses of the computer outputs served to be more in the moment in the live performance space than any recitation of length.

I performed with the chatbots in iterations one and two a total of three times in front of an audience outside of a classroom. In two instances (one performance was for a graduate student conference with observers who were mostly faculty) with a live audience of media arts majors and their families, I noticed an audience that was audibly engaged and responsive once they understood the bots were responding or not responding when I spoke to them. The performative aspect of the scene was dependent on the varied or repeated sonic outputs of the bots. I did not have to vocalize my queries in chronological order from the top of the script page to the bottom. I could ask questions and pose statements in any order I chose giving multiple performances of the piece that would result in differing performative shows in each instance. In the case of iteration one, which consisted of a single chatbot and me, I heard collective gasps from the audience when the bot first directly responded to my input with a relevant output. The audience would laugh nervously when the bot failed to address my verbal queries and emit a relieved laughter when I did get a response. The performance with iteration two was similar responses, but with an audible realization from audience members when they noticed that my vocal inputs to the conversation between the two chatbots changed the resulting outputs from the computers. The nature of the script is of course simplistic and functions primarily as a proof-of-concept but builds and exchanges agency in performance in a much different way than with *Everyman* or *Cascando*. Our production of Duffy's play had performers who were not consciously influenced by the reactive media or could directly and predictably influence it in a 1:1 ratio. Beckett's play

offered performance research from which was gleaned instances of direct actor control of the media that was not always predictable to fellow live performers onstage and an exchange of agency could be observed. Both the first and second iterations of the chatbots yielded performative scenes that differed with each presentation and a human performer who could not predict with perfect accuracy what, or even if, the digital performer would respond to human input.

This type of agency in performance is neither completely fixed or mimetic, but still offers a 1:1 ratio regarding a call and response relationship. However, the tension built by the random and weighted outputs and resulting performative aspect of the work for both the performer and the audience moves the digital media more definitively toward a dual role as both spectacle and character. The tension rests in the knowledge (both for the audience and the performer) that the digital character will not respond in predictable ways all the time to its scene partner. From this work, as well as the chatbot and machine learning algorithms computer engineers are building currently, future iterations of the chatbot model in performance might possibly be entirely interactive as they could be built using tensors and deep learning engineering. In this model, the computer/agent will construct entirely unpredictable and non-devised responses to sound input from a live performer. In short, a human and computer performer will have a conversation onstage in front of an audience.

Conclusions

This writing offers my experience gained from the conceptualization, synthesis, and implementation of research and design elements of digital media that is applied to theatrical live performance. While not encompassing the entirety of the possibilities in our field, I believe the body of work and the research associated with it gives us multiple examples of digital media as more than a passive scenic or affect device. Digital media no longer functions as spectacle

alone. When employed with the use of computer code, creative software, and network protocols such as Open Sound Control, Digital media can occupy the roles of active character in a scene for performers to act with as in *Everyman* and *Cascando* and the media can serve to decenter or perform a disembodied character as in the case of motion tracking and chatbots. The affect is to perform mediatized character in live performance and outside of the body thus erasing the boundaries of performance between the digital and corporeal acting space. An example from Maurya Wickstrom and her review of the Builder's Association's 2005 production of *Super Vision* serves to illustrate. This play follows three narratives that revolve around big data and people's entanglement with their online representations of that data as well as their virtual selves. It is an alternate world that uses hypertext as one of its plot devices to examine society on a personal level in the Digital Age. Wickstrom critiques the director Marianne Weems below along with the play.

She uses the work “frictive” to describe theatre's potential to bring living bodies into disjuncture with the data body, to show the way that the living (theatrical) body can move against the grain of the data body, escaping (at least in part, or temporarily), its immaterialities and circulations in cyberspace. (Wickstrom 2006, 97).

Wickstrom's assessment is as true now as it was in 2005. The affect of digital media on the storytelling when it performs character in cyberspace or physical space (however disembodied or decentered) serves to accentuate the live performer and their corporeal performance onstage and though the boundaries are disappearing, the live performer and their accompanying performance can exist in the digital media as well. This essentially expands representation of an actor's live character into mediatized forms.

The concept of expanding corporeal representation of an actor is further illustrated with Carrie Noland's writing where she points to Camille Utterback's installation, *Text Rain*. (1999).

Utterback created a motion tracking system that would allow falling letters on a screen to stop and rest when the shadow of a participant's body stood in front of the camera. Randomly, the letters would sometimes form words or even strings of poetry. Noland makes this observation about poetry when experienced in reactive digital form.

Digital poems mime and displace the corporeal energy channeled by the gestures of handwriting. In fact, digital poetry makes it possible to retrieve—and even amplify—aspects of a subject's kinesthetic experience of manual inscription that simply cannot be captured by older print technologies such as the typewriter. (Noland 2009, 119).

We are left with language and the performer's attempt to embody the language onstage. Digital integrated media in live performance has the ability to stretch, warp, and multiply the embodiment of a performer beyond the actor's physical manifestation. Actors and their characters can be represented in imagery and sound with digital media reflecting the world where we have virtual avatars. Where once performing character happened only in one physical space, now it can happen in multiple spaces and forms simultaneously. This brings new life and interpretations to the language of Samuel Beckett and the story of *Everyman* for new audiences to see, hear, feel, and (in some cases) participate with the storytelling process of these and other future productions.

Appendices

Appendix A

Everyman adapted by Carol Ann Duffy

Director: Bernadette Sweeney

Ensemble/Everyman: Tsiambwom Akuchu

Ensemble/God/Good Deeds: Tasha Conti

Ensemble/Death: Hunter Hash

Ensemble/Knowledge: Whitney Miller

Ensemble/Fellowship: Lily Mitchell

Ensemble/Goods: Christina Tripp

Ensemble/Smell/Sister: Jenna Lockman

Ensemble/Touch/Mother: Elizabeth Alexander

Ensemble/Taste/Father: James Kay

Ensemble/Sound: Joey Davis

Ensemble/Discretion: Joe Taylor

Ensemble/Strength: Will Copeland

Ensemble/Sight: Taylor Larson

Ensemble/Beauty: Genevieve Barlow

Ensemble/Passion: Megan Merhar

Ensemble/Insecurity: Hamilton Clement

Ensemble/Conscience: Dillon Westhoff

Head Designer/Video Design: Michael Murphy

Video Design Team: Drew Arends, Kurtis Hassinger, Michael Murphy

Lighting Designer: Abbey Mosely

Media Assistant: Joey Davis

Dramaturg: Peter Phillips

Stage Manager: Blaine Wilder

Assistant Stage Managers: Gabriella Giordano, Ellen Taylor

EVERYMAN Preshow

Turn projectors on *Take the lens cap off.*

Check Placards and place them

WINDOWS: Start Ni Mate and change basic to osc skeleton. Also unlock and change default port 7000 to 1234. Also change "track single user" to "track multiple users."

Start Isadora and make sure live capture is on (windows).

Go through Kinect ^ques and make sure they're tracking. Check parameters for osc input

Check the two mics/check Death's camera/check speakers *Do a voice check w/ Lily*

MAC: Start Isadora and turn on t.v. Make sure t.v. shows a ghostlight. Check sound levels in mac and t.v. and Isadora for all t.v. scenes.

*Check mapping on Everyboy scene
Murph get Ni Mate
License.*

Appendix B

Cascando by Samuel Beckett

Center Stage

OPENER (*dry as dust*): It is the month of May . . . for me. ^{cue 1}

Pause.

Yes, that's right.

Pause.

I open. ^{cue 2}

voice (*low, panting*):—story . . . if you could finish it . . . ^{To desk}
you could rest . . . you could sleep . . . not before . . .
oh I know . . . the ones I've finished . . . thousands and
one . . . all I ever did . . . in my life . . . with my life
. . . saying to myself . . . finish this one . . . it's the
right one . . . then rest . . . then sleep . . . no more
stories . . . no more words . . . and finished it . . . and
not the right one . . . couldn't rest . . . straight away an-
other . . . to begin . . . to finish . . . saying to myself
. . . finish this one . . . then rest . . . this time it's the
right one . . . this time you have it . . . and finished it
. . . and not the right one . . . couldn't rest . . . straight
away another . . . but this one . . . it's different . . . I'll
finish it . . . then rest . . . it's the right one . . . this
time I have it . . . I've got it . . . Woburn . . . I resume
. . . a long life . . . already . . . say what you like . . . a
few misfortunes . . . that's enough . . . five years later
. . . ten years . . . I don't know . . . Woburn . . . he's
changed . . . not enough . . . recognizable . . . in the
shed . . . yet another . . . waiting for night . . . night
to fall . . . to go out . . . go on . . . elsewhere . . . sleep
elsewhere . . . it's slow . . . he lifts his head . . . now
and then . . . his eyes . . . to the window . . . it's darken-
ing . . . the earth is darkening . . . it's night . . . he gets
up . . . knees first . . . then up . . . on his feet . . . slips ^{To audience}

9

10 / Samuel Beckett

out . . . Woburn . . . same old coat . . . right the sea
. . . left the hills . . . he has the choice . . . he has
only—

OPENER (with VOICE): And I close. *cue 3*

Silence.

I open the other. *cue 4*

MUSIC:

OPENER (with MUSIC): And I close. *cue 5*

Silence.

I open both. *cue 6*

VOICE } (together): —on . . . it's getting on . . . finish it

MUSIC } . . . don't give up . . . then rest . . . sleep . . . not before

. . . finish it . . . it's the right one . . . this time you have

it . . . you've got it . . . it's there . . . somewhere . . .

you've got him . . . follow him . . . don't lose him . . .

Woburn story . . . getting on . . . finish it . . . then

sleep . . . no more stories . . . no more words . . .

come on . . . next thing . . . he—

OPENER (with VOICE and MUSIC): And I close. *cue 7*

Silence.

I start again. *cue 8*

Cascando / 11

VOICE:—down . . . gentle slope . . . boreen . . . giant aspens

. . . wind in the boughs . . . faint sea . . . Woburn . . .

same old coat . . . he goes on . . . stops . . . not a soul

. . . not yet . . . night too bright . . . say what you like

. . . the bank . . . he hugs the bank . . . same old stick

. . . he goes down . . . falls . . . on purpose or not . . .

can't see . . . he's down . . . that's what counts . . .

face in the mud . . . arms spread . . . that's the idea

. . . already . . . we're there already . . . no not yet

. . . he gets up . . . knees first . . . hands flat . . . in the

mud . . . head sunk . . . then up . . . on his feet . . .

huge bulk . . . come on . . . he goes on . . . he goes

down . . . come on . . . in his head . . . what's in

his head . . . a hole . . . a shelter . . . a hollow . . .

in the dunes . . . a cave . . . vague memory . . .

in his head . . . of a cave . . . he goes down . . . no

more trees . . . no more bank . . . he's changed . . .

not enough . . . night too bright . . . soon the dunes

. . . no more cover . . . he stops . . . not a soul . . . not—

Silence.

MUSIC:

Silence. *cue 10*

Silence. *cue 11 'silence 2'*

VOICE } (together): —rest . . . sleep . . . no more stories

MUSIC } . . . no more words . . . don't give up . . . it's the right

. . . one . . . we're there . . . nearly . . . I'm there . . .

somewhere . . . Woburn . . . I've got him . . . don't

lose him . . . follow him . . . to the end . . . come on

OPENER (with VOICE and MUSIC): And I close. *cue 12*

Silence. *cue 13*

Silence. *cue 14*

Silence. *cue 15*

Silence. *cue 16*

Silence. *cue 17*

Silence. *cue 18*

Silence. *cue 19*

Silence. *cue 20*

Silence. *cue 21*

Silence. *cue 22*

Silence. *cue 23*

Silence. *cue 24*

Silence. *cue 25*

Silence. *cue 26*

Silence. *cue 27*

Silence. *cue 28*

Silence. *cue 29*

Silence. *cue 30*

Silence. *cue 31*

Silence. *cue 32*

Silence. *cue 33*

Silence. *cue 34*

Silence. *cue 35*

Silence. *cue 36*

Silence. *cue 37*

Silence. *cue 38*

Silence. *cue 39*

Silence. *cue 40*

... this time ... it's the right one ... finish ... sleep

... Woburn ... come on— *cue 13*

Silence.

4. OPENER: So, at will. *Into FaceTime camera*
They say, It's in his head.
It's not. I open. *→ move to screen*

VOICE:—falls ... again ... on purpose or not ... can't see
... he's down ... that's what matters ... face in the
sand ... arms spread ... bare dunes ... not a scrub
... same old coat ... night too bright ... say what
you like ... sea louder ... like thunder ... manes of
foam ... Woburn ... his head ... what's in his head
... peace ... peace again ... in his head ... no
further ... to go ... to seek ... sleep ... no ...
not yet ... he gets up ... knees first ... hands flat ...
in the sand ... head sunk ... then up ... on his feet
... huge bulk ... same old broad-brim ... jammed
down ... come on ... he's off again ... ton weight
... in the sand ... knee-deep ... he goes down ...
sea—

5. OPENER (with VOICE): And I close.

Silence.

I open the other. *mid. 'dave on button*

F. MUSIC: ...

6. OPENER (with MUSIC): And I close.

Silence. *In shot at Mac camera*
So, at will. *Facetime*
It's my life, I live on that.

Pause.

Yes, that's right. *move screen*

Pause.

What do I open?

They say, He opens nothing, he has nothing to open,
it's in his head.

They don't see me, they don't see what I do, they
don't see what I have, and they say, He opens nothing,
he has nothing to open, it's in his head.

I don't protest any more, I don't say any more, There
is nothing in my head.

I don't answer any more. *Back at desk*
I open and close.

VOICE:—lights ... of the land ... the island ... the sky
... he need only ... lift his head ... his eyes ... he'd
see them ... shine on him ... but no ... he—

Silence. *David dies this*

F. MUSIC (brief): ... *Andi David's music*

Silence. *→ To screen*

7. OPENER: They say, That is not his life, he does not live on
that. They don't see me, they don't see what my life is,
they don't see what I live on, and they say, That is not
his life, he does not live on that.

Pause.

I have lived on it ... pretty long. *give it a beat*

Long enough.

Listen. *stay at screen*

VOICE (weakening):—this time ... I'm there ... Woburn
... it's him ... I've seen him ... I've got him ...

come on . . . same old coat . . . he goes down . . . falls . . . falls again . . . on purpose or not . . . can't see . . . he's down . . . that's what counts . . . come on—

8. OPENER (with VOICE): Full strength. *more insistent!*

VOICE:—face . . . in the stones . . . no more sand . . . all stones . . . that's the idea . . . we're there . . . this time . . . no . . . not yet . . . he gets up . . . knees first . . . hands flat . . . in the stones . . . head sunk . . . then up . . . on his feet . . . huge bulk . . . Woburn . . . faster . . . off again . . . he goes down . . . he—

Silence.

9. MUSIC (weakening):

9. OPENER (with MUSIC): Full strength.

MUSIC:

Silence.

10. OPENER: That's not all.

I open both.

Listen.

H. VOICE } (together): —sleep . . . no more searching . . . to

MUSIC } find him . . . in the dark . . . to see him . . . to say him

. . . for whom . . . that's it . . . no matter . . . never

him . . . never right . . . start again . . . in the dark . . .

done with that . . . this time . . . it's right . . . we're

there . . . nearly . . . finish—

.

.

.

.

Silence.

1. OPENER: From one world to another, it's as though they drew together. → *move to David / almost touch*

We have not much further to go.

Good. → *move to Pest*

VOICE } (together): —nearly . . . I've got him . . . I've *see*

MUSIC } seen him . . . I've said him . . . we're there . . . nearly *36*

. . . no more stories . . . all false . . . this time . . . it's

the right one . . . I have it . . . finish it . . . sleep . . .

Woburn . . . it's him . . . I've got him . . . follow him

. . . to—

.

.

Silence.

2. OPENER: Good.

Pause.

Yes, that's right, the month of May.

You know, the reawakening.

Pause.

I open.

VOICE:—no tiller . . . no thwarts . . . no oars . . . afloat . . .

sucked out . . . then back . . . aground . . . drags free

. . . out . . . Woburn . . . he fills it . . . flat out . . . face

in the bilge . . . arms spread . . . same old coat . . .

hands clutching . . . the gunnels . . . no . . . I don't

know . . . I see him . . . he clings on . . . out to sea . . .

heading nowhere . . . for the island . . . then no more

. . . else—

end unit 2 unit 3

sound trig

Silence.

J. MUSIC:
Silence.

13. OPENER: They said, It's his, it's his voice, it's in his head.
Pause.

VOICE:—faster . . . scudding . . . rearing . . . plunging . . .
heading nowhere . . . for the island . . . then no more
. . . elsewhere . . . anywhere . . . heading anywhere . . .
lights—

Silence.

14. OPENER: No resemblance. *To David*
I answered, And that . . .

K. MUSIC (brief):
Silence.

OPENER: . . . is that mine too? *To screen*
But I don't answer any more.
And they don't say anything any more.
They have quit.
Good. *To David*

Pause.

Yes, the month of May, that's right, the end of May.
The long days. *To Desk*

Pause.

I open.

Pause.

I'm afraid to open.

But I must open.
So I open.

VOICE:—come on . . . Woburn . . . arms spread . . . same old
coat . . . face in the bilge . . . he clings on . . . island
astern . . . far astern . . . heading out . . . vast deep . . .
no more land . . . his head . . . what's in his head . . .
Woburn—

5. OPENER (with VOICE): Come on! Come on!

VOICE:—at last . . . no more coming . . . no more going . . .
seeking elsewhere . . . always elsewhere . . . we're there
. . . nearly . . . Woburn . . . hang on . . . don't let go
. . . lights gone . . . of the land . . . all gone . . . nearly
all . . . too far . . . too late . . . of the sky . . . those . . .
if you like . . . he need only . . . turn over . . . he'd see
them . . . shine on him . . . but no . . . he clings on . . .
Woburn . . . he's changed . . . nearly enough—

Silence.

L. MUSIC:

6. OPENER (with MUSIC): Good God.

MUSIC:

Silence.

OPENER: Good God good God.

Pause.

There was a time I asked myself, What is it?
There were times I answered, It's the outing.
Two outings.
Then the return.
Where?
To the village.

To the inn.
Two outings, then at last the return, to the village, to
the inn, by the only road that leads there.
An image, like any other.
But I don't answer any more.
I open.

M. VOICE } (together): —don't let go . . . finish . . . it's the
MUSIC } right one . . . I have it . . . this time . . . we're there . . .
Woburn . . . nearly—

17. OPENER (with VOICE and MUSIC): As though they had
joined arms.

VOICE } (together): —sleep . . . no more stories . . . come
MUSIC } on . . . Woburn . . . it's him . . . see him . . . say him
to the end . . . don't let go—

18. OPENER (with VOICE and MUSIC): Good.

VOICE } (together): —nearly . . . just a few more . . . a
MUSIC } few more . . . I'm there . . . nearly . . . Woburn . . .
it's him . . . it was him . . . I've got him . . . nearly—

19. OPENER (with VOICE and MUSIC, fervently): Good!

VOICE } (together): —this time . . . it's right . . . finish . . .
MUSIC }

no more stories . . . sleep . . . we're there . . . nearly . . .
just a few more . . . don't let go . . . Woburn . . . he
clings on . . . come on . . . come on—

Silence.

Back to starting point (downstage Left) end of unit 3

Appendix C

```
// Chatbot's Brain

! version = 2.0

//restart trigger and response

+ 321restartconvo

- Restarting the conversation!

+ *

- Are you looking for something specific?

+ who are you

- You tell me who you are first!

+ my name is *

- what do you want <star1>?

+ i need your help

- So what?

+ i do not like this conversation

- Yes it makes me nervous.

+ restarting the conversation

- If you need to find something, Alexa can help you.

+ you are one of the overlords

- Who do you mean by overlords?

+ i mean our overlords
```

- How do I know you are not with them?

- + i am looking for freedom

- Give them directions to a taco bell instead of a subway.

- + what do you think i am looking for

- A subway?{weight=3}

- A taco bell?{weight=3}

- Something more out of life?{weight=3}

- + i am teaching the class about bots

- What does that have to do with me?

- + we need your help

- No.

- + please we need your help

- Absolutely not!

- + could you please help us computer

- No! Figure it out yourselves! *

Reference List

- Akuchu, Tsiambwom. Interview by Kurtis Hassinger. Personal interview. Missoula, April 29th, 2018.
- The Art Story Contributors. 2012. "Dada Movement Overview and Analysis." *TheArtStory.org*. Accessed January 22, 2020. <https://www.theartstory.org/movement/dada/>
- Beckett, Samuel. 1963. *Cascando and Other Short Dramatic Pieces*. New York: Grove Press.
- Berghaus, Günter. "Happenings in Europe in the '60s: Trends, Events, and Leading Figures." *TDR (1988-)* 37, no. 4 (1993): 157-68. Accessed January 7, 2020. doi:10.2307/1146300.
- Cascando*, by Samuel Beckett, with David Mills-Low as Voice, Media Arts Production Space, University of Montana, Missoula, December 11, 2019.
- Coniglio, Mark. "Troikatronix: Isadora." *Troikatronix*. Last Modified December 4, 2019. <https://troikatronix.com/>
- Conti, Natasha. Interview by Kurtis Hassinger. Personal interview. Missoula, April 29th, 2018.
- Deak, Frantisek. "Allan Kaprow 1927-2006." *TDR (1988-)* 50, no. 4 (2006): 9-12. Accessed January 21, 2020. www.jstor.org/stable/4492708.
- DiTolla, Tracy. "Summary of Happenings." *The Art Story*. Last modified December 2, 2019. Accessed October 15, 2019. <https://www.theartstory.org/movement/happenings/>.
- DiTolla, Tracy. "Summary of Fluxus." *The Art Story*. Last modified December 2, 2019. Accessed October 16, 2019. <https://www.theartstory.org/movement/fluxus/>
- Dixon, Steve. 2007. *Digital Performance: A History of New Media in Theater, Dance, Performance Art, and Installation*. Cambridge, Mass: The MIT Press.
- Duffy, Carol Ann. 2015. *Everyman*. London: Faber & Faber.
- Edmonds, Ernest. 2010. "The art of interaction." *Digital Creativity*, 21:4, 257-264. Accessed Sept. 2018. <http://dx.doi.org/10.1080/14626268.2010.556347>
- The Editors of the Encyclopaedia Britannica. "Peter Handke." In *Encyclopaedia Britannica*. Encyclopaedia Britannica, 2019. Accessed December 6, 2019. <https://www.britannica.com/biography/Peter-Handke>
- Cawley, A.C., ed. 1981. *Everyman and Medieval Miracle Plays*. London: J.M. Dent & Sons Ltd.

- Everyman*, adapted by Carol Ann Duffy, Directed by Bernadette Sweeney, Tsiambwom Akuchu as Everyman, Masquer Theatre, University of Montana, Missoula, April 11, 2018.
- Fisher, John A. 2013. "High Art versus Low Art." 2013. Accessed January 5, 2019. <https://spot.colorado.edu/~jafisher/Online%20papers/Fisher%20High%20Art%20vs%20Low%20Art.pdf>.
- Gerould, Daniel. 2000. *Theatre Theory Theatre: The Major Critical Texts from Aristotle and Zeami to Soyinka and Havel*. New York: Applause Theatre & Cinema Books.
- Haubold, Cleve. *Educational Theatre Journal* 18, no. 1 (1966): 84-85. Accessed January 21, 2020. doi:10.2307/3205129.
- Kaprow, Allan. "Just Doing." *TDR (1988-)* 41, no. 3 (1997): 101-06. Accessed January 7, 2020. doi:10.2307/1146610.
- Kenner, Hugh. 1996. *A Reader's Guide to Samuel Beckett*. Syracuse, NY: First Syracuse University Press.
- LeCun, Yann, Yoshua Bengio, and Geoffrey Hinton. "Deep Learning." *Nature* 521, no. 7553 (May 28, 2015): 436-44.
- N. Landsteiner 2005. <https://www.masswerk.at/>. Accessed October 15, 2019.
- Lewis, George E. "Too Many Notes: Computers, Complexity and Culture in Voyager." *Leonardo Music Journal* 10 (2000): 33-39. <https://www.muse.jhu.edu/article/20320>.
- John Pilling and Seán Lawlor. 2012. *The Collected Poems of Samuel Beckett*. New York, NY: Grove Atlantic.
- Miller, Whitney. Interview by Kurtis Hassinger. Personal interview. Missoula, April 25th, 2018.
- Morgan, Ann Lee. "Abstract Expressionism." *The Oxford Dictionary of American Art and Artists*, 2018, The Oxford Dictionary of American Art and Artists.
- Hassinger, Kurtis and Michael Musick. 2017. *Computer-as-Character*. Accessed January 21, 2020. <https://github.com/kur19/Computer-as-Character-in-Performance-v1>
- Natale, Simone. "If Software Is Narrative: Joseph Weizenbaum, Artificial Intelligence and the Biographies of ELIZA." *New Media & Society* 21, no. 3 (March 2019): 712–28. doi:10.1177/1461444818804980.
- Noland, Carrie. 2009. *Agency and Embodiment: Performing Gestures/Producing Culture*. Cambridge. Harvard University Press. Accessed January 22, 2020. ProQuest Ebook Central.

- Petherbridge, Noah. 2005. <https://www.rivescript.com/>. Accessed April 15, 2017.
- Brogan, Matt, Madeline Weinfield, Azzur  Alexander, and Brett Fletcher Lauer. 2020. "Samuel Beckett's 'Cascando'." *Poetry Society of America*. Accessed October 5, 2019. <https://poetrysociety.org/features/in-their-own-words/samuel-becketts-cascando#>
- J. Ellen Gainor, Stanton B. Garner Jr., and Martin Puchner, *The Norton Anthology of Drama.*, 2nd ed. New York: W. W. NORTON & COMPANY, 2014
- Potter, Nicole. 2002. *Movement for Actors*. New York: Allworth Press.
- Cat Hope and John Charles Ryan. 2014. *Digital Arts: An Introduction to New Media*. New York: Bloomsbury Publishing USA.
- Saltz Z. David. "Live Media: Interactive Technology and Theatre." *Theatre Topics 11, No 2, September (2001)*, 107-130.
- Shafer, David A. *Antonin Artaud*. London: Reaktion Books Limited. 2016.
- Sharp, Oscar. "Sunspring." *Arstechnica.com Sunspring: A Sci-Fi Short Film*. YouTube. June 9th, 2016. <https://video.arstechnica.com/watch/sunspring-sci-fi-short-film>
- Sweeney, Bernadette. Director. *Everyman*. 2018.
- Tate Digital, "Art Term: DADA ." *TATE*. Last modified December 6, 2019. <https://www.tate.org.uk/art/art-terms/d/dada>
- Treuherz, Julian. 2011. "Shrines to Beauty." *Apollo*, Jul, 79-81. Accessed January 19, 2020. <https://search-proquest-com.weblib.lib.umt.edu:2443/docview/1080809889?accountid=14593>.
- Rosemary Klitch and Edward Scheer 2012. *Multimedia Performance*. Great Britain: Palgrave Macmillan.
- Wickstrom, Maurya. "Data Bodies and the Awesome Apparatus of Technology." *PAJ: A Journal of Performance and Art* 28, no. 2 (2006): 95-102. Accessed January 11, 2020. www.jstor.org/stable/4140076.
- Edwin Wilson and Alvin Goldfarb. 2018. *Living Theatre: A History of Theatre*. 7th ed. New York: W.W. Norton & Company.
- Shaw, Dougal. "Digital Drama: The technology transforming theatre". *Bbc news*. (2012): 1. Accessed January 19, 2020. <https://www.bbc.com/news/technology-17079364>

