Virtual Reality in Theatre: A Survey of Audiences' Empathy

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This research will determine if students can self-report higher levels of empathy through the Interpersonal Reactivity Index survey while watching actors in virtual reality (VR) wearing head-mounted displays (HMD), versus watching the same production live and in person. The study films an original undergraduate, student-written play, using an Insta 360 One X 360-degree camera, to help compare and contrast the different mediums. The goal is to discover if VR should/can be implemented as a reliable mechanism for viewing live theatre in the future by testing how audiences relate to actors. This study does not challenge the current consensus on VR's pitfalls and limitations, but rather adds to the discourse surrounding VR's role in theatre.

Keywords: Empathy; Emotion; Theatre; Acting; Virtual Reality; Performance; Audience.

INTRODUCTION

In a world of infomania, viewers can now absorb stories through different screen sizes and devices. A new platform entering into the race for the viewer's attention is a mysterious technology called Virtual Reality (VR). While it is currently most accessible to the video game community and the tech-savvy purchaser, VR still struggles to establish itself as a device for spectators to experience linear narratives - especially theatre.

The possibilities for a successful collaboration between the stage and the virtual realm are not new. There have been many books, journals and articles on the topic of VR, but few cover its impact on theater, let alone an audiences emotional response. Adding to the conversation of how VR and theatre can successfully intersect, this research measures an audiences' empathic attachment to performers acting in a short Aristotelian inspired narrative designed for the stage. The aim is to determine if individual audience members can self-report through survey questions equal or higher

levels of empathetic attachment to a VR experience as compared to the same live performance. This data adds to the discourse asking: Can VR effectively transmute live stage productions into 360 videos and prove to be a captivating tool for theatres?

For this article, the definition of VR is only 360 live-action recordings experienced through a VR headset. This article is not addressing any computer-generated digital productions, actors, nor avatars.

BACKROUND

Virtual reality emerged into the zeitgeist via pop culture, through Stanley G. Weinbaum's short story "Pygmalion's Spectacles" (1935). Weinbaum's tale predicted a time when humans could wear goggles that projected a three-dimensional hologram for its viewers. VR went from speculation to actualization in 1957 when a cinematographer, Morton Heilig, created the "Sensorama." The "Sensorama" was a photo-booth looking device fitted with a large cloth over top so that the user could sit in darkness and see images in a 180-degree setting. Later in 1960, Heilig developed a device called the "Telesphere Mask," which is now widely considered to be the first crude head-mounted display (HMD). In 1965, the most laudable advancement in VR technology emerged when Ivan Sutherland and his student, Bob Sproull, took inspiration from Heilig and wrote a paper entitled *The Ultimate Display*. Their exposition then led to Sutherland creating "the first computer-aided HMD in 1968," (Steve Dixon 25) which has been "updated over the decades, [but] the basic design remains the same today." (Steve Dixon 25).

Aided by the innovation of the head-mounted display, in the 1980's artists started

to interweave traditional theatre practices with VR technology. In 1993, Brenda Laurel's and Rachel Strickland's, *Placeholder* captured the attention of a select few who tested the bulky and slow technology out in museum galleries. Their installation comprised of eleven Macintosh PowerBooks and consisted of over 25,000 lines of code and is considered the first notable performance and VR crossover.

Since *Placeholder*, VR computing and head-mounted displays have decreased in size, cost, and technological literacy. Viewers today can affordably experience 360 VR videos from their mobile devices with no prior instruction. Samsung, Google, Apple, Facebook, and HTC all have financial incentives to develop a unit that is so natural and universal; eventually, it will be just as necessary to own a VR headset as it is to own a television. The potential reach through this medium is limitless, and theatres have all since known of the opportunity. Steve Dixon reporting on erudite Howard Rheingold articulates it best:

"Howard Rheingold, one of VR's most enthusiastic early advocates and author of one of the first major books on the subject in 1991 (Virtual Reality) describes it as an ultimately theatrical medium while recognizing the challenge inherent in transforming a solo and subjective first-person VR experience into one that approaches Aristotelian understandings of theatre. Nevertheless, central tenets of Aristotle's dramatic notions such as mimesis and empathy are intrinsic to VR, and he suggests: 'I think that properly done, a virtual reality experience will have a greater sense of mimesis and of participation in the events' (Rheingold, Howard 1991: 34)" (Steve Dixon 23).

Well known companies and theatres have already tested VR's potential collaboration.

Some notable examples include the Adelaide Symphony Orchestra's, *The Classics Unwrapped Virtual Reality Concert Series* in 2015, Disney's recording of their opening number in *The Lion King*, and Commonwealth Shakespeare Company's feature-length production of *Hamlet* entitled *Hamlet 360*. These crossbreeds are a significant step towards the integration between art and technology, yet in 2020, VR has still not found a strong enough foothold inside the industry. *Hamlet 360* (one of the most successful adaptations currently accessible for free online) has merely 40 thousand views on YouTube. What is the problem? Why have theatre lovers not demanded that plays be adopted for VR to offset expensive ticket prices and provide remote viewership? The answer is complicated.

OBSTACLES

> *"For a VR application system based on art performance, its effectiveness is highly relying on how well the system can evoke the same level of emotional response. Secondly, to what extent such VR application could have the same emotional response is the key to the great audience experience."* - (He, Linjia, et al 3)

To provide a "great audience experience," VR still has a considerable number of obstacles to overcome. Most articles that address the problem highlight three core issues: the absence of touch, the distraction of the HMD, and the failure to replicate a live performer's presence.

One of VR's most significant problems is that the technology can not currently replicate touch. Touch is vital to the way humans experience live events. It can be as simple as sitting in a comfortable theatre chair, or holding the playbill in your hand while watching

a production. These sensory experiences add to the way theatre connects with us on an emotional level. Because VR has not addressed touch yet, it "simply does not seem to deliver the degree of presence that would be required to make a simulation" (Gallace & Spence 206).

There is also the problem of the ever-present: head-mounted display. While the HMD was a vital step towards increasing the scope of the technology, paradoxically, it is also one of the biggest inhibitors. In the paper, "Virtual Reality: Do Not Augment Realism, Augment Relevance", authors Johan F. Hoorn, Elly A. Konijn, and Gerrit C. Van Der Veer identify that the HMD is one of the central issues with current VR technology. Despite the advancements in comfort, weight, and processing power, "there is always a contextual cue (e.g., the head-mounted display unit) that makes the user aware things are not real" (21).

While the failure to incorporate touch and a distracting HMD are central concerns, from their failures "the discourse that is emerging provides useful insights into many other fields, including presence in theatre and performance" (Samur 12). Sebastian Xavier Samur's paper, "Comparing Stage Presence and Virtual Reality Presence" examines the differences between stage presence and digital presence. He also discusses the negative technological impacts on the audiences' level of immersion and emotional connection. Measuring presence in VR is a popular subject among scholars, and many believe it is the most critical hurdle to overcome. Samur recommends utilizing Cormac Power's three modes to measure presence: fictional, auratic, and literal. The term fictional "refers to the extent to which the spectator feels present in relation to the

fictional setting or characters of a piece (such as *Hamlet*)." (Samur 2) The term Auratic "refers to the extent the spectator feels a heightened presence in the actor." (2) Lastly, the term Literal "refers to the spectator's acknowledgment of the theatrical framework." (2) Samur's report is important to this research endeavor because we know we can not currently hope to test or recreate a level of presence through VR up to live production standards. Despite VR "falling short of its formidable ambitions" (Samur 12), It can open up the door to discover other ways in which VR is successful.

WHY EMPATHY?

Chris Milk, an American director and immersive artist, who has spent his career understanding VR's capabilities, stated in his 2015 TED Talk, *How Virtual Reality Can Create the Ultimate Empathy Machine*, that VR is "the ultimate empathy machine" (02:27). His sentiments are not hyperbolic; several studies have found that VR can arouse high levels of empathy in viewers better than any other technological device available.

Author Bimbisar Irom, in the article, "Virtual Reality and the Syrian Refugee Camps: Humanitarian Communication and the Politics of Empathy", finds that VR raises the levels of empathy for western viewers when seeing Syrian refugees in poor conditions. Similar to watching a live performance, Irom has spectators view 360 recordings of Syrian Refugee Camps, and he reports that VR delivers something called "affordable empathy that carries no physical and emotional risks" (6).

In the study, "Virtual Reality For Inducing Empathy and Reducing Prejudice Towards Stigmatized Groups: A Survey", authors discover that VR's benefits "provide

preliminary support for the use of VR for successfully inducing empathy into people and reducing their prejudice towards stigmatized groups" (Christofi & Despina 6). This study tested VR as a tool for helping users understand their level of prejudice.

Both articles do not address the relationship between audience and actor, but they do prove that empathy is measurable through VR and that prerecorded 360 videos elicit that response. In this essay, we aim to keep the subject but shift the focus over to the Theatre Arts and understand how VR applies to an audience.

The importance of empathy within the theatre harkens back to Aristotle's *Poetics*. A still dominate story structure in western theatre, the *Poetics* philosophize that a great play must invoked pity from an audience; otherwise known as a "catharsis". Elly A. Konijn, author of "Spotlight on Spectators: Emotions" in The Theater, believes that measuring pity/empathy is "vital to Aristotelian drama" (176) and understanding what audiences prefer. When testing various emotional responses from an audience, Konijn found that empathy was essential and that "none of the other emotion categories contributed to the overall appreciation" (182) of the material. The leading stimulus for this response was not the lighting design, sound design, nor the directing, but it was "the actor's performance [that] turned out to be the strongest object of spectators' emotions" (Konijn 183).

AIM OF STUDY

Studying how VR can communicate empathy from theatre actors is a lonely pursuit. There are little to no resources on the subject. We know that empathy translates well though VR recorded videos, and we understand that an actor's performance is the most

substantial stimulus for empathy within the theatre. Can VR enhance this relationship? This study does not challenge the current consensus on VR's pitfalls, but rather adds to the stimulating discourse Sebastian Xavier Samur calls for to shape VR future in the arts.

PARTICIPANTS & CONTENT

In preparation for this research, I was hard-pressed to find VR theatre content accessible to the public. Most VR theatre productions do not mimic traditional black box shows, but instead, they push the boundaries of what the technology can contribute. The essay, "Dance Performance, and Virtual Reality: an Investigation of Current Practice and a Suggested Tool For Analysis" best describes the more popular forms of audience viewing perspectives as being: "Active (the audience being asked to take an active role in tracking the performance around the 360 space), Participatory (the audience being asked to participate in the performance) and Interactive (the audience being asked to change elements of the work through interacting with the piece)" (Smith 207). This study dismisses these three classifications and seeks to report on a Passive audience member. Our audience members will simply watch the performance and report back. Many VR applications allow it's viewers to change camera angles, sit in the middle of the stage like *Hamlet 360*, or influence the story's outcome. A perfect example of a passive audience member can be found using a London based start-up called LIVR. LIVR is a subscription-based VR application that allows viewers to watch small black box London based theatre productions in the comfort of their homes. The production quality of these shows is a perfect example of what we are looking to replicate because

they are not reliant on camera tricks, high budget spectacles, or celebrity talent. We want the audience to focus on the characters within the play.

Our cast, writer, and director are all undergraduates at Loyola Marymount University in Los Angeles (LMU). Student Madeline McHugh formed a team to produce a 7-minute drama performed on LMU's campus in the Theatre Arts building. The primary function of the script is to adapt Aristotelian unities, in conjunction with Freytag's story arc, to tell a liner narrative of a tragic hero in conflict with another character. The hero is the point of focus in the play that the audience will report their levels of empathy towards. The writing has purposefully provoked the audience to feel pity towards this actor/character. We purposefully restricted props, lighting design, and sound design. The set design is minimal in efforts for the spectators to focus solely on the actors, and the short format neutralizes the risk of a potential cumbersome HMD interpreting viewer's attention. After the production is over, a random selection of audience members will complete online surveys through Google Forms.

SURVEY

Participants will answer questions based on Davis, M. H. research called, "A Multidimensional Approach to Individual Differences In Empathy." Davis formed the Interpersonal Reactivity Index (IRI) that defines empathy as the "reactions of one individual to the observed experiences of another" (113). The IRI survey will consist of 25 questions using a 5-point Likert scale. Each item within the survey has four different subcategories that inform the final score. The subcategories are taken directly from Davis:

- Perspective Taking – the tendency to spontaneously adopt the psychological point of view of others.
- Fantasy – taps respondents' to transpose themselves imaginatively into the feelings and actions of fictitious characters in books, movies, and plays.
- Empathic Concern – assesses "other feelings and concern for unfortunate others.
- Personal Distress – measures "self-oriented" feelings of personal anxiety and unease in tense interpersonal settings.

The format in our survey is adapted from a Fetzer Institute article called, "*S*elf Report Measures for Love and Compassion Research: Empathy." The Fetzer Foundation's mission is to "help build the spiritual foundation for a loving world" (Fetzer Institute) and uses Davis, M. H.'s findings on measuring empathy in their work. The questions in the survey are slightly altered from the original test, and our investigation will shift the focus away from one's self and focus on the characters within the production. Some of our questions include:

- I was touched by what I saw. (EC)
- There are two sides to this story. (PT)
- I can very easily put myself in the place of the leading character. (FS)

Results from each form are tallied up at the end of the study to create a final score, which is compared to other participants.

MATERIALS

The materials used in this study are from LMU. The William H. Hannon Library,

School of Film and Television, and the Theatre Arts department have provided the resources, equipment, and space to facilities this research production.

The play is filmed using an Insta360 One X camera with a Video Bitrate - Up to 120Mbps. There are several video modes included in the camera design: standard 360 videos, time-lapse mode, bullet time, HDR video, log 360 videos. The camera's adaptable devices include iPhone 11/11 Pro/11 Pro Max, iPhone XS/XS Max, iPhone XR, iPhone X, iPhone 8/8 Plus, iPhone 7/7 Plus, iPhone 6s/6s Plus, iPhone SE. We recorded in the standard 360 video mode and then uploaded the finished video to YouTube's 360 player. No external audio microphone was needed. After filming and converting the video to an online format, we then complied 10 Google Cardboard HMDs ($ 15.00 a unit) and lent them to different students. For those viewers who did not have a smartphone capable of watching 360 videos, we offered in-person viewings of the production on an iPhone X. Every participant was encouraged to use to over the ear, noise-canceling headphones.

METHOD

The data collected from this research is from three different sample groups. Each sample group will experience our play and self-report their feelings using an online format. No viewer will be aware of what we are testing.

Group A

This group of viewers will see the production in its original format. They will only watch the production live, in person, and will fill out an IRI survey after the production

has finished. Their responses will offer a controlled understanding of how the production was received in person with no technology present.

Group B

A randomly select few from Sample Group A will watch the production both in-person and again through VR. Within Sample Set B, one group will attend the production live and then immediately watch the VR recording. At the same time, a different group will watch the VR recording first and then directly view the live version. The purpose of this process is to diversify the findings and to allow different types of people to experience the production in various orders. Here we are looking to determine if the order of viewing matters for testing VR's impact on empathy from actors.

Group C

Sample Set C will be similar to Sample Set A; however, the group will never see the live performance. Audiences will only watch the show through an HMD and report back. This group's data is compared and contrasted to Sample Group A.

RESULTS

This experiment was set to film in March 2020. Due to the COVID-19 epidemic, this study has been forced to pause until social distancing is no longer required. Once we can make theatre in person again, the results will be compiled and added here. While the situation is unfortunate, at minimum, this study further proves the need for scholars to understand how theatre can best be created and experienced remotely using digital technology.

Note for the William H. Library Grant - Due to the COVID-19 outbreak, my studies' results have been postponed. As I continue to research and navigate during this unprecedented time, please allow me to add the results once I have completed the experiment.

FINAL THOUGHTS

Scholars have yet to reify VR's future collaboration with theatre. Still, the enthusiasm surrounding the subject is palpable within the community. As the technology grows and sets a higher standard for storytelling, the theatre population will inevitably have to reconsider its appeal as a long-term option for content exportation. Hoorn, Konijn, and Veer state it: "While it is already made clear that VR, at this moment in time, can not shake the looming understanding that what is being watched is fiction, the goal of theatre isn't that. Theatre does not always ask that we forget where we are, but asks that we are vulnerable enough to lose ourselves in the story or actors".

This study and its findings aim to be the catalyst for creative collaboration between Theatre and Film departments at universities around the nation. In future work, we hope to look closer at how different acting techniques for the stage communicate through VR. Further analysis of how stage acting training can translate though VR is needed as VR becomes more accessible, and stories begin incorporating new screen sizes.

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