Carnegie Mellon University DEPARTMENT OF ENGLISH

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STITCHBRIDGE

Eberly Center Teaching Excellence & Educational Innovation

SHAKESPEARE-VR

Bringing Virtual Reality into Humanities Education

The **Shakespeare-VR** project uses virtual reality technologies to bring students face-to-face with professional actors performing Shakespearean soliloquies in a replica of Shakespeare's Blackfriars Playhouse. Directed by Shakespeare scholar and Digital Humanities specialist, Prof. Stephen Wittek, the project combines the talents of partners from the virtual reality production company Stitchbridge, the Eberly Center for Teaching Excellence and Educational Innovation, the CMU Center for Digital Sciences, Humanities, Arts, Research, and Publishing (DSHARP), and the American Shakespeare Center. In addition to providing an exciting, immersive introduction to the spaces Shakespeare had in mind when he composed his plays, the project makes an important contribution to the growing body of research on virtual reality in humanities education. Shooting at the Blackfriars Playhouse in Staunton, Virginia took place in November, 2018. The first public demonstrations will take place at the digital showcase for the 2019 meeting of the Shakespeare Association of America, with trial tests in classrooms to begin in Spring 2019. The full project, including the virtual reality production, a classroom curriculum, and an archive of development materials will be freely available online by Fall 2019.

Virtual reality offers instructors a powerful new vehicle for demonstrating crucial details of early modern theatrical space: the thrust stage, the upper stage, the trap door, the tiring room, the discovery space, the tiered seating, the yard, and various other physical attributes. Attention to these details is important because, in order to understand the structure and conventions of a dramatic text, one must first understand that dramatists wrote with the capabilities and constraints of an extremely specific environment in mind. Think, for example, of Juliet calling to Romeo from her balcony on the upper stage, or Hamlet trading barbs with the Gravedigger, who cheerfully exhumes skulls from the trap door.

An ideal introduction to the spatial particularities of Shakespearean drama would therefore involve attendance at a performance in a Shakespearean theater—an option that is obviously unavailable at most universities. To establish a general semblance of theatrical space, instructors regularly employ two-dimensional visual aids, such as PowerPoint slides and video clips of live performances at the Globe or the American Shakespeare Center. Although these efforts help to clarify some basic distinctions between drama and other forms of literature, they can ultimately only offer a very abstract representation of what theatrical space actually looked and felt like, and are therefore a fundamentally limited vehicle for bridging the gap between a dramatic text and the physical dynamics of theatrical experience.

The Shakespeare-VR project has strong potential to solve this learning problem because, rather than a distanced, two-dimensional representation, one encounters an immersive, three-dimensional, embodied approximation of theatrical experience under the original conditions of production. Users can peek out at the stage from behind the discovery space, for example, or compare the view enjoyed by the lords in the balconies with the view afforded to the groundlings in the yard. Another compelling benefit is the ability of virtual reality to approximate the spatial dynamics between actors and theatrical spectators. Richard III can speak to spectators directly, just as he would in a theatre, without the mitigating influence of camera angles or a fixed, two-dimensional interface.

Another distinguishing feature of virtual reality is that it has the capacity to facilitate an active learning experience. In this respect, Shakespeare-VR builds on the success of 'practical' approaches to Shakespeare instruction pioneered over the past decade by educators at the Globe Theater and the Folger Institute (Banks 2014, Charlton 2012). Founded on a philosophy of 'learning by doing', these approaches endeavor to

supplement the traditional lecture with activities such as acting, vocalizing, improvising, and other forms of exploration that foster a more physical engagement with dramatic texts. In fields outside Shakespeare studies, researchers have begun to establish a compelling evidentiary basis for the educative potential of active learning activities situated within virtual environments (Freeman 2004, Prince 2004, Merchant 2014, Nicholson 2006). Shakespeare-VR is among the very first projects to bring virtual reality to Shakespeare education.

There are, however, a number of other efforts to join Shakespeare studies with emergent digital technologies. Two recent projects worth noting in this regard are Shakespeare's Globe 360°, an iPad app that guides users through a computer-animated version of the Globe Theatre, and Play the Knave, a video game that enables players to perform in scenes from Shakespeare's plays. Shakespeare-VR differs from these projects because it offers photo realistic imagery rather than computer-generated graphics, and because it works with a virtual reality headset rather than a two-dimensional screen. The distinguishing emphasis, in other words, is on a fine-grained approximation of experience in a richly detailed, immersive space. Moreover, in contrast to comparable current state technologies, Shakespeare-VR entails a design directed toward classroom-based learning objectives and the specific requirements of students, rather than casual users. The implicit argument of the project is that an ability to visualize immersive experience in theatrical space is crucially important to an understanding of Shakespearean drama—an insight that comes naturally to actors and theatergoers, but is not nearly as obvious to students working from a text in a classroom.

Paradoxical as it may seem, recent experiments with VR bear a striking resemblance to the silent films projected for awestruck audiences in the Nickelodeons of the early 20th century. In both cases, the earliest offerings were short and tended to focus on the novelty of a new technology, but quickly moved to more sophisticated experimentation. Moreover, in film and virtual reality alike, some of the very earliest attempts to develop the expressive capacity of the new medium involved the adaptation of Shakespearean drama, a ready source of familiar stories and cultural prestige. As the 20th Century progressed, film would eventually develop a grammar and storytelling logic of its own, and would radically change the ways people experience and think about Shakespeare. Virtual reality, by comparison, is still in its infancy. The Shakespeare-VR begins a conversation about how the medium might impact the production, teaching, and meaning of Shakespeare in years to come. Promising areas for research and theorization include: representation of soliloquies and interiority; documentation of theatrical experience; pedagogical application; spatiality; embodiment; production; affect; interactivity; and adaptation.

Collection and analysis of student learning outcomes

The primary objective of Shakespeare-VR is to foster skills for analyzing drama by accentuating the influence of theatrical space, performance conditions, and the interpretive decisions of performers. In order to measure skill acquisition, researchers will conduct a series of tests wherein three student groups will study three Shakespearean soliloquies under three pedagogical conditions: (i) text only, (ii) text + two-dimensional aid, and (iii) text + virtual reality performance aid. The 'text only' trials will function as a pretest component. In other words, they will set a baseline that researchers can use to measure the effect of the virtual reality intervention. On a similar note, the 'text + 2d' trials will enable researchers to measure the effect of virtual reality aid against more conventional, two-dimensional aids, such as PowerPoint slides and video clips. The trials rotate through three iterations with each group so that all students will have the opportunity to experience each style of presentation.

Following each trial, students will complete a questionnaire on that assesses their ability to (i) identify implicit aspects of spatiality and performance in a dramatic text, (ii) describe how issues of spatiality and performance might impact dramatic effect, and (iii) apply an understanding of these issues to an interpretive argument. Pedagogical experts from the Eberly Center will assist with the development of the questionnaire and evaluatory framework.

Impact on learning research and sustainability

The project has strong potential in terms of uptake and impact on the field. Knowledge dissemination efforts will include publication of scholarly articles, presentations at international conferences, media promotion, and demonstrations at festivals and other cultural events. In addition, the completed VR environment and curriculum will be available as a free digital download online, so any instructor with a standard virtual reality headset will have the capacity to transport students from the classroom to the most celebrated venue in the history of theatrical production.

Future aspirations for the Shakespeare-VR include implementation in courses on Renaissance drama, not only at CMU, but also across a diverse range of universities worldwide. Moreover, with some adaptations, the innovations developed in the VR-based curriculum could conceivably apply to similar courses focusing on critical appreciation of the performance arts. There is also obvious potential to build on the capabilities of the virtual environment itself. For example, successive iterations of the project could incorporate full plays, rather than select scenes, and may also include options for greater interactivity, enabling users to function, not only as spectators, but also as directors and actors.

Previous learning research

Prof. Wittek has a long history of engagement with projects related to technology-enhanced learning, an interest that stems from a core commitment to the ethic of Open Access and a desire to promote inclusivity in higher education. At McGill, he worked with programmers to develop DREaM, an Open Access corpus-creation tool that makes a massive archive of early modern texts amenable for use with macro-scale analytical tools. Another project of note is a digital edition of Shakespeare's *The Merchant of Venice*, which he is currently co-editing for Internet Shakespeare Editions (ISE) with Prof. Janelle Jenstad (University of Victoria). Since 1996, ISE has been an innovator in providing quality, peer-reviewed Shakespeare resources with the highest standards of scholarship, design, and usability. Building on this legacy, the editors aims to develop an edition that will accommodate the needs of a diverse, international pool of users while setting a new standard of excellence in online pedagogical and dramatic resources.

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Pedagogical Research

Curriculum development; evaluation of learning outcomes

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Virtual Reality Research

Filming, conceptualization, and production for VR experience

- Jaehee Cho, *Creative Director, Stitchbridge*
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Digital Research

Online dissemination, archiving, and accessibility

- Scott Weingart, *DSHARP, CMU*
- Matthew Lincoln, *DSHARP, CMU*

Performance Research

- Zoe Speas, *Actor, ASC*
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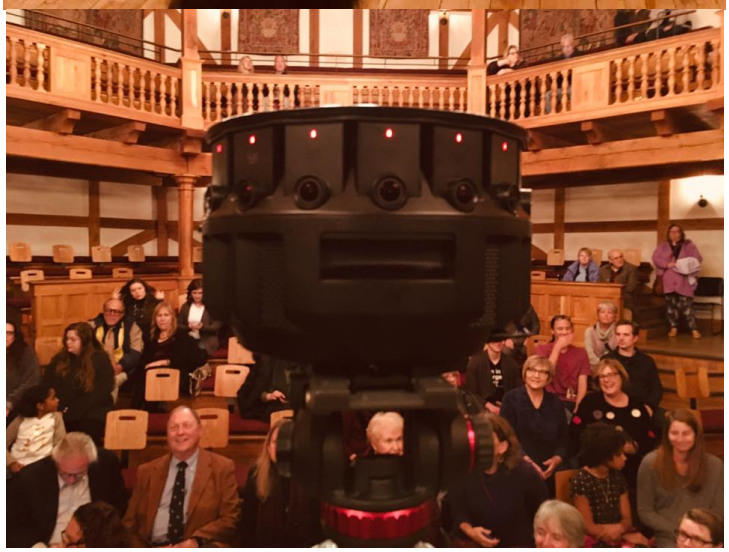

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