Introduction

Stephen Wittek
David McInnis

Following the arrival of affordable, mass-market headsets and an ever-growing body of producers and consumers, it is now clear that virtual reality (VR) is here to stay for the foreseeable future. Alongside gaming and entertainment, one of the main industries helping to usher the new medium into the mainstream has been education, with institutions making investments in various VR-related technologies and researchers developing media for everything from language instruction to surgical training and flight simulation. In the humanities, a key locus of virtual reality development has been Shakespeare studies, which over the past few years has seen the emergence of VR-centred research endeavours such as the *Shakespeare-VR* Project (see Section 8) and innovative, full-length VR productions, such as *Hamlet 360* (see Section 6). At first glance, intersections along these lines seem inevitable given the ubiquity of Shakespearean drama in the academy, high school curricula, and multiple cultures worldwide. Indeed, since the early twentieth century, the introduction of new media technology – film, radio, television, video, the Internet – has found producers turning to Shakespeare as a source for content and cultural prestige, and educators enthusiastically embracing new means of presenting Shakespearean drama to students. On a similar note, the immersive capabilities of virtual reality seem tailor-made for the long-established practice of teaching Shakespeare through 'active learning', a pedagogical approach that gets students out of their seats, acting and vocalising, in order to emphasise the interpretive utility of space, embodiment, and movement. In short, if it is now clear that virtual reality is here to stay, it is also clear that Shakespeare will have a prominent presence in the virtual multiverse.

In this brief Element, we have brought together a diverse group of Shakespeare scholars, digital humanists, theatrical producers, media theorists, and pedagogical researchers to explore the intersection between Shakespeare and virtual reality, especially as it pertains to education. For the most part, our use of the term 'virtual reality' refers to the experience furnished by a head-mounted display that immerses users in a simulated

world. However, we have also made an effort to address other technologies and experiences regularly described as 'virtual', including augmented reality (the overlay of virtual objects onto the real world) (see Section 4), and the 'virtual classroom' convened by telecommunications technologies such as Zoom (see Section 5).

We begin, in Part I, by asking the most basic question of all – why Shakespeare and virtual reality? – and identify the key issues and ideas that define the topic. For Jennifer Roberts-Smith, whose scholarly work combines theatrical practice with virtual reality production, the pathway to substantive engagement with the medium begins by considering what Shakespeare can do for VR, rather than vice versa (Section 1). In an assessment that cuts through the hyperbole surrounding the rush to embrace virtual technologies, she develops a clear-eyed account of what virtual experience is and is not, and offers some suggestions for how to make virtual reality more Shakespearean, not merely in terms of content, but also in terms of artistic rigour and affective resonance. In the following section, Scott Hollifield expands on Roberts-Smith's argument by pointing towards affinities between virtuality and Shakespeare's dramatic technique, and by bringing the advent of Shakespeare and virtual reality into connection with the history and theory of Shakespeare on film. Together, the sections in Part I enable teachers and students to better explore the influence of Shakespeare on new media forms and reconsider how studying the experimental and multimedia theatre of Shakespeare's day better prepares us for engaging with new technologies in our own time.

Having situated the development of VR in its historical and intellectual context relative to Shakespeare studies in Part I, Part II proceeds to consider specific case studies by David McInnis (Section 3) and Emily Bryan (Section 4) that offer detailed first-hand accounts of experiments with virtual reality, augmented reality, and related technologies in connection to Shakespeare pedagogy. Erin Sullivan then ventures further into pedagogical theory, assessing the biases inherent in concepts of the virtual, and considering how such biases impact classroom dynamics (Section 5). Besides exploring the consumption and production of immersive media in classrooms, each of these sections addresses urgent equity issues, in particular the socio-economic and physical considerations around the use of

technology. In 2021, representative retail prices start at as little as US $10 for Google Cardboard headsets that work with smartphones to enable users to have virtual reality experiences, but contrary to popular presumptions, not all students have access to such headsets, smartphones, or sufficiently fast Wi-Fi to guarantee that teaching with VR is an efficient experience. Those students who do have access to the right tools may still be excluded from participation by physical hurdles (motion sickness, monocular vision, etc.), normative assumptions about gender, or a lack of digital literacy (age is no guarantor of technological fluency). An implicit question throughout this section, then, concerns the extent to which we can make VR a more inclusive technology.

Moving from the classroom to productions, Part III begins with Michael Ullyot's critical overview (Section 6) of some of the most notable VR adaptations of Shakespeare from the past few years, offering provocations for how future developers of VR technology might learn from successful stagings of Shakespeare's plays (thus speaking to Jennifer Roberts-Smith's concerns in Section 1); it will be of immediate interest to anyone teaching Shakespeare in performance. Turning the model of adaptation in these productions on its head, Jennifer A. Low (Section 7) analyses Red Bull Theater's 2019 presentation of John Webster's *The White Devil*, a production that used VR headsets as props, thereby putting Jacobean revenge tragedy in dialogue with present-day discourse around the virtual. Low's section provides a witty, metatheatrical answer-of-sorts to Jennifer Roberts-Smith's challenge to think in terms of 'what Shakespeare can do for VR', expanding 'Shakespearean' to encompass the stage, stagecraft, and technologies of early modern theatre, and in particular the affordances available to Shakespeare's contemporary, Webster, whose *White Devil* was written circa 1611–12 and probably premiered at the original Red Bull playhouse in Clerkenwell, London. Finally, to draw further lines of connection between virtual reality, performance theory, and pedagogy, Stephen Wittek shares a candid account of his education project, *Shakespeare-VR*, tracing the project's course of development from inception to planning, filming, dissemination, and classroom testing (Section 8). Justin Carpenter's annotated bibliography will be invaluable to anyone commencing work on this topic.

I Why Shakespeare and Virtual Reality?

1 What Can Shakespeare Do for Virtual Reality?
Jennifer Roberts-Smith

Each new medium in which the works of William Shakespeare have been articulated and adapted has contributed to the expansion of 'Shakespeare' as a conceptual field. 'Shakespeare' is ever increasingly more than the formal aesthetic configurations that were possible in the early modern media in which Shakespeare's works were initially expressed (the stage and print drama). As the cumulative contributions of artists, audiences, scholars, educators, and students have demonstrated over the past four and a half centuries, 'Shakespeare' now constitutes an infinitude of potential forms, awaiting articulation in unknowable future media. 'Shakespeare' has meant what each successive community of makers and audiences has made of it, and will mean what each new community articulates in new media as they emerge.

No individual medium could have made its contribution to 'Shakespeare' unless we – all of us, as communities of makers and audiences – had conceived of 'Shakespeare' as more expansive than the affordances of any one medium in particular. As Shakespeare educators encountering virtual reality (VR) for the first time, we know from long experience with other media that VR is no more likely to have a medium-specific power to manifest or teach 'Shakespeare' more faithfully or more effectively – to clarify or expand 'Shakespeare' as a conceptual field – than any other new medium before it. 'Shakespeare' is not medium-specific; it is arguably essentially intermedial, both in its complex performative-textual origins and in its later multimedial manifestations. 'Shakespeare' enables the kinds of 'intersections and the spaces in-between the intersections' (Chapple and Kattenbelt 2006: 24) among media that constitute communicative spaces within which experience can occur and meaning can be derived (Boenisch 2006). New technologies do not bring new affordances to Shakespeare; rather, 'Shakespeare' (as that conceptual field has been understood and instantiated by artists, audiences, scholars, teachers, and students) will bring new opportunities for meaning-making to VR, just as it has to earlier

technologies as they have emerged and have been configured in relation to one another.

Nevertheless, this is a beguiling moment in the emergence of VR as a medium, when the temptations of technological monomania, utopianism, and determinism are particularly acute. We have seen the 360-degree documentary film masterpiece *Clouds over Sidra* (Arora and Milk 2015) raise more than $3.8 billion in relief for Syrian refugees (Badsa 2017); we have read that 3D graphical simulations in the training of surgeons at the University of California, Los Angeles increased their success by 230 per cent (Blumstein 2019); and we acknowledge, along with the director of Commonwealth Shakespeare Company's *Hamlet 360*, that 'many young people's first experience of Shakespeare is not all that great' (Maler, cited in Harris 2019). Why wouldn't VR be just the thing to 'bring the material to life' for one and for all (Maler, cited in Harris 2019)? What follows here is a preliminary list of three propositions that might help to ground us as Shakespeare educators as we navigate the affordances that make VR seem so attractive. They are offered as a reminder that Shakespeare has at least as much to offer VR as VR does to Shakespeare. Virtual reality is one medium that can be leveraged in the open aesthetic system of 'Shakespeare', through which we engage our students in the processes of shared meaning-making that already animate our pedagogy.

Proposition 1: Like Shakespeare, VR is an open system. Rather than 'immersing' a participant in a hermetic illusion, VR highlights and generates meaning from the disjunctions between the virtual illusion and the participant's irreproducible, contingent sense of their own body and surroundings.

Virtual reality reconfigures the embodied relationship between spectator and screen by placing a participant at the centre of a spherical image that excludes other visual, auditory, tactile, and proprioceptive stimuli to varying degrees. Since VR's inception, VR hardware developers have conceptualised the technology as a system that aims to 'submerge the perceptual system of the participant in computer-generated stimuli' (Biocca and Delaney 1995). As a result of this governing concept, there is a general understanding that VR headsets are more immersive than, say, desktop computer screens, because they exclude the perception of visual stimuli not part of the virtual illusion (Dalgarno and Lee 2010: 11).

However, recent work in hardware design and software development has demonstrated that perceptual submersion does not hinge on the degree to which a VR system *excludes* sensory stimuli, but on the degree to which it *includes* stimuli participants expect to encounter in the real world. The most important factors are as follows:

- *Representational fidelity* – the degree to which a virtual illusion looks or sounds like reality.[1]
- *Interactivity* – the degree to which the illusion responds realistically to the embodied actions of a spectator.[2]
- *Identity construction* – the degree to which spectators can associate themselves with characters in the virtual environment.[3]

To date, VR developers have struggled to include enough sensory stimuli to make any given experience convincingly 'immersive'. A key challenge is the often-noted tendency of the technology to cause motion sickness in some participants, which derives from the disjunction between convincingly 'real' visual stimuli and less convincing tactile and proprioceptive stimuli.[4] Ironically, then, by aiming to completely overwhelm the participant's sensory perceptions, VR draws heightened attention to the senses it fails to overwhelm. The participant's body thus becomes a central signifier in any VR experience's aesthetic system, as is the case for spectators in the theatre. Ultimately, the system is open to all of the contingencies of sense, place, and preconception that participants bring with them.

New, aesthetically oriented work in virtual reality is beginning to explore the expressive potential of this salience of the body. For example, Paul Cegys and Joris Weijdom describe *The Blue Hour VR* (commissioned as part of the 2019 Prague Quadrennial's exploration of XR scenography, 36Q°) as 'explicitly focus[ing] on the interweave between different modes of sensing within the experiencer's physical body through the blending of real and virtual

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[1] See Bulu 2012; Dalgarno and Lee 2010; Fowler 2015; Kwon et al. 2012; Sanchez-Vives and Slater 2005.

[2] See Dalgarno and Lee 2010; Kwon et al. 2012.

[3] See Biocca, Harms, and Burgoon 2003; Bulu 2012; Fowler 2015.

[4] See Weech, Kenny, and Barnett-Cowan 2019.

environments. This radically (re)position[s] the body of the experiencer at the locus of performance' (Cegys 2020). This understanding of embodiment in VR as the embodied experience of the participant in counterpoint to the virtual image significantly extends the usual understanding of VR embodiment as the identification of participants with elements of the virtual world, as part of the process of *identity construction*.[5] If we conceive of VR experiences as situated in each individual participant's body and incorporating the unique and unpredictable contingencies that each individual brings with them, we will necessarily acknowledge and encourage a much broader range of perceptions than a hermetically 'immersive' system can accommodate. In addition to enriching opportunities for meaning-making, this approach also opens new possibilities for representation in virtual worlds, which need no longer be tied to realism.

Proposition 2: Like Shakespeare, VR is intermedial. Rather than taking mono-medial realism as its primary representational mode, it engages multiple media in stylistic impressionism, opening opportunities for interpretive agency.

Simulation of actual-world phenomena remains the design objective of most VR applications, using *either* 360-degree video (which is two-dimensional) *or* 3D graphics (which are also two-dimensional, but create an illusion of three-dimensionality). Shakespeare studies has largely focused on the documentation and/or simulation of live performance, most often using 360-degree video (Wittek's *Shakespeare-VR*; Maler's *Hamlet 360*), with some outliers exploring 3D-graphical renderings (Gochfield and Molina's *To Be with Hamlet*). As in most commercial applications, few attempts have been made to combine the two sub-media, because the aesthetic contrast between two and three dimensions has not generally been understood to be desirable. But if the stylistic contrast between 2D and 3D renderings were understood as a productive form of intermediality – one that deliberately leaves open 'the spaces in-between the intersections' between media (Chapple and Kattenbelt 2006: 24) in an intentionally impressionist aesthetic – we might leverage the ways those gaps can draw

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[5] See, for example, Waterworth and Waterworth's (2014) 'distributed embodiment'.

attention to the perspectives that the work and the viewer are both taking, or might take differently, on the objects of their gaze.

In other aesthetic contexts, intermediality has been embraced as a means of generating interpretive experiences that might lead to more just social and environmental outcomes. One important example is the *imagineNative 2167 VR* touring exhibition (2018–19) which used impressionist scenography to reorient audiences' understanding of Indigeneity in Canada away from the dominant tendency to historicise a lost Indigenous past and towards Indigenous Futurism (www.tiff.net/the-review/indigenous-existence-is-resistance).[6] In each of the exhibition's four individual works, incongruencies among the subsidiary media employed disrupted VR's tendency to mono-medial simulation. For example, Kent Monkman's *Honour Dance* manifested the dances of the ritual figure 'Berdashe' in four directions simultaneously, and Scott Benesiinaabandan's *Blueberry Pie under a Martian Sky* floated participants through a cosmological space defined by abstract, three-dimensional geometric forms.[7]

Crucially, in intermedial works like these, the site of intermediality is not the technologically generated illusion, but the participant's perception of the gaps among the media that generate the illusion (Cegys 2020: 84; and see Boenisch 2006). These gaps require VR participants to engage actively in meaning-making in a way that is cognate, perhaps, with the witnessing that Freddie Rokem says constitutes an active self-reflection on one's 'role and experience as a spectator' (2010), or the active 'inhabiting' of representational worlds that Robin Ridington describes as the role of the listener in Indigenous storytelling (1998). When it uses impressionism to generate intermediality, VR may be less a mechanical or even an embodied concern, and more a perceptual concern, which invites us to understand participant agency as a form of self-reflection arising out of the 'affective dissonance' that Roger Simon argues is 'significant for either confirming or altering one's framework for acting in the world' (2011). An increasing body of theoretical work on virtuality is acknowledging the participant's perception as the medium in

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[6] See *ImagineNative 2167 VR tour* (2018–19).

[7] See *ImagineNative 2167 VR tour* (2018–19).

which the virtual manifests (e.g. Grimshaw 2014). If we were to conceive of Shakespeare in VR as 'immersive experiences delivered through the human imagination' (Damer and Hinrichs 2013), beholden to the standards established in a millennia-long history of 'virtual art' in a range of earlier media (Grau 2003), we might expect and enable it to demand the same critical and ethical engagements that we expect of everything else we call 'art', including 'Shakespeare'.

Proposition 3: Like Shakespeare, VR engages spectators in communal acts of meaning-making. Rather than generating individualised experiences, it generates opportunities for the communal consideration of shared experiences.

The community-building, meaning-making power of watching others watch the stage was an integral aspect of early modern theatrical experience (Dawson and Yachnin 2005). On my first visit to a VR arcade, what struck me most vividly was the way in which each VR participant was similarly a spectacle for others watching. Some commercial VR experiences have capitalised on the potential of VR as a spectator sport so successfully that it is arguably more fun to watch other people play than to play yourself (see *Richie's Plank Experience* for a vivid example). But the principle extends to the full range of extant applications of VR: ultimately, if it is the experience of the VR participant that is of interest, it is of interest not only to each participant individually, but also to the community (or communities) to which the participant belongs.

In the same way that no individual game can constrain the gameplay of its players (Boluk and LeMieux 2017), no individual VR build can constrain the experience of its participants. As in the theatre, the meaning of a VR experience is located outside, not inside, the 'magic circle' that has come to be understood as the hermetic space of a virtual world (e.g. Salen and Zimmerman 2003). It lives more substantively in the discourses that arise from it than in the experience itself, and it will continue to be co-constituted by discursive communities long after the technologies that originally generated it have become obsolete. For us as teachers of 'Shakespeare', this matters because it confirms that the discourses we generate through the use of VR in our classrooms will shape the social spheres in which students engage long after our classes have ended. This final proposition about what

Shakespeare has to offer VR, then, makes explicit the question that under-lies the preceding two – namely, to what end are we teaching 'Shakespeare' at all? It engages us in precisely the kinds of critical and ethical questions that technological monomania, utopianism, and determinism dodge, by asking us not what we can do, but why, and how we will hold ourselves accountable.

Shakespearean VR

My proposal, in summary, is that Shakespeare might do quite a lot for VR. In particular, I propose that we Shakespeare educators need not think of ourselves as beneficiaries of the affordances of a revolutionary new tech-nology. Instead, we might think of ourselves as contributors to the devel-opment of the discursive spaces occupied by the audiences for this new medium. As Harry Robert Wilson has recently observed, other aesthetic applications of virtual reality do just that; virtual reality performance, for example, 'challenges the promise of VR . . . to provide unmediated presence and immersion by drawing attention to attention, defamiliarizing our every-day perceptions, foregrounding media of representation, their aesthetics and techniques – drawing us in and pushing us away' (2020: 130).

In its emphasis on the self-reflexivity that is enabled when media of representation are acknowledged and interrogated, Wilson's observation invokes the metatheatricality so frequently associated with the Shakespearean theatre. When we acknowledge that our understanding is perceptual and contingent upon representation, we can begin to understand ourselves as members of discursive communities engaged in shared meaning-making. What if, as educators and producers, we imagined the virtuality of VR not in terms of the affordances of a closed technological system that generates hermetic illusions, but as an encounter with alternate, perhaps not actual, but certainly possible, versions of the real? What if we asked of it what we ask of aesthetic works in other media – what we ask of 'Shakespeare' in fact – which is to help us to reflect not just on what our experiences mean, but also on how we have come to ascribe those meanings, and what their consequences might be?

If 'Shakespeare in VR' has been, to date, a stable rendering of something easily recognisable as a work of Shakespeare within the affordances of emerging VR technologies, 'Shakespearean VR' is the potential generation