2 Immersive telepresence in theatre: performing arts education in digital spaces

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Abstract

This case study examines a joint project in performer training and rehearsal conducted between Coventry University (UK) and Tampere University (Finland) using a variety of telepresence and app-based technologies. In this project, two identical spaces, equipped with rear projection screens and linked by videoconferencing technology, were created in both institutions. This study reports on the adaptation of the pedagogical practices to a digital setting.

Keywords: theatre, telepresence, COIL, rehearsal, Shakespeare, Beckett.

1. Context

Theatre traditionally has had a somewhat problematic relationship with online learning. Students of theatre "often select performing arts programmes at university because of the promise of the viscerality and the co-present experience with fellow actors and an audience" (Crossley, 2012, pp. 171-172). Most online practical work in the performing arts tends to be of an experimental nature, work that embraces the limitations of the laptop/mobile screen and the variable nature of home and academic networks.

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At the moment (March 2020), I am writing this under lockdown in the UK due to the current Coronavirus crisis. As my university closed three weeks ago, there was a last-minute scrabble to refocus teaching and assessment for online consumption with many of my colleagues having to come to terms with moving their teaching online for the very first time and many students genuinely distressed that their performances and productions, some of them planned for over a year, have now been replaced by online written assessments and presentations using videoconferencing. Facebook groups of theatre practitioners struggling to cope with this new online paradigm have sprung up and Twitter feeds showing photographs of Zoom theatre tutorials have now become ubiquitous.

The COVID-19 crisis interrupted (and continues to disrupt) any concept of performances for live audiences occupying the same physical space. As a result, practitioners and educators have turned to techniques that were previously the domain of more experimental practitioners, largely unknown outside of specialist circles. The largely physical experience of a theatre degree found itself forcefully moved into the digital space with all performance and rehearsal venues closing their doors to both performers and public alike.

The biggest problem that theatre teaching faces when moving online is that the subject mostly involves group activity, relying on work created in physical spaces. Online work requires a holistic understanding of how a digital space operates and theatrical work using these strictures needs to be planned and crafted with the dynamics of the networked world in mind from the outset. The virus outbreak and necessary social distancing has meant that many courses (including my own) have struggled to get work refocused to cope with the very different dynamics of digital learning. Theatre as a communal activity faces the challenge of moving traditional theatre work and teaching online whilst attempting to replicate the sense of belonging that comes from the rehearsal room.

This was a problem that we struggled with back in 2016 when we started the Immersive Telepresence in Theatre project. The course developed initially as

a joint initiative between Coventry University (UK) and Tampere University (Finland) to explore acting in a foreign language but eventually mutated into a course that explored performances of Shakespeare in both English and Finnish. The concept of this stemmed from the idea that acting in Shakespearean blank verse would be equally challenging for both English speaking and Finnish students. Tampere had experience in conducting research into teaching actors techniques to cope with acting in an unfamiliar tongue, so the combination of expertise in Shakespearean acting from the Coventry side, coupled with the Finnish research into acting in a foreign language seemed like an ideal combination of our specialisms.

Since the initial trial version in 2016, collaborations under the umbrella term 'Immersive Telepresence in Theatre' have occurred with The University of the Arts, Helsinki, Gothenburg Theatre Academy, Adam Mickiewicz University, Poznan, and Purdue University in the United States. Just as the pandemic prompted a shutdown in campuses worldwide, Tampere and Coventry were completing the most recent iteration of the project, a two-week exploration of the text of Samuel Beckett's 'Waiting for Godot'.

For the initial project, we adopted the term 'virtual stage' to describe our system until a colleague pointed out that there was, in fact, nothing 'virtual' about the space. Both sets of participants were physically present in their own campuses – they were not occupying a 'third space' even in a theoretical sense. A decision was made to adopt the term 'immersive telepresence' to refer to future versions of the project as it was felt that this was a more accurate description of the space. Telepresence (or telematics) as a term was first coined by Marvin Minsky (1980) in reference to the remote operation of robots, but has since taken on the wider definition of using internet related technologies to give the participants the sense of 'being there' in remote spaces, whether actual or virtual (Parker-Starbuck, 2011). Many researchers in the field have stressed that *liveness* is key to telematic communication and, as a result, live-streams do *not* constitute telepresence collaborations, nor do recorded performances – synchronous interaction is key to the experience.

2.   Aims and description of
the Erasmus+ Virtual Exchange

In June 2015, the initial meeting between theatre staff from Coventry and Tampere universities rather naïvely suggested a series of online rehearsals to explore, rehearse, and perform selections from the text of Shakespeare's 'Coriolanus'. The course was to be delivered synchronously, but we faced a problem in that we had not considered which digital platform could best replicate the sensations of a physical rehearsal process in a virtual setting.

> "Performance and performer training requires both intimacy and openness – the ability to simulate/recreate emotions and to be comfortable with both physical and emotional intimacy in order to re-create this in a public performance situation" (Gorman, Syrjä, & Kanninen, 2019, p. 238).

We often hear talk of 'chemistry' between performers, a phenomenon that occurs when actors have developed a strong working relationship, and are used to each other's speech patterns and physicality. However, it is very challenging to attain this online, with participants who had never actually met face to face before the start of the project.

The initial idea was to have students collaborate together in small groups working via Skype or Google Hangouts, but this solution turned out to be immediately problematic. Laptop screens and the technological limitations of webcams made it difficult to discern facial expressions, and the added latency of these platforms made real time communication frustrating when trying to follow the rhythms and patterns of Shakespearean dialogue.

There was an additional problem in that the rooms that students traditionally engage with these software packages (labs, bedrooms, student flats) lack space for performers to move around. Even if the performers are able to move, their images become so tiny that any real rehearsal work becomes almost unwatchable. The more users occupy these spaces (as you will be aware from Zoom meetings),

the smaller the image becomes as the screen fills with windows. Using any of these formats meant that full group work would be impossible.

Eventually, a rather ambitious (and naive) decision was made to create a space in both countries that would allow us to have a synchronous experience for both groups. We decided to support this work with Adobe Connect[4] for contextual lectures and small specific scene rehearsals[5]. Inspiration for this spatial design came from an installation by a Coventry colleague, Joff Chafer, who, in collaboration with the Australian performance artist, Stelarc, had created a physical space in the Herbert Art gallery, Coventry, that linked to the online virtual world, Second Life. Called 'Extract/Insert', participants entered the physical space in Coventry and interacted with a virtual recreation of that same space on a large rear projection screen. They were able to interact with avatars on this screen by stepping onto a plinth that "would insert their image, captured by an infra-red camera, onto a separate screen in the Second Life space visible on the screen" (Chafer, 2015, p. 249).

The basic physical architecture of this installation would be adapted to create two identical spaces in Tampere and Coventry both with carefully balanced lighting, sound, and camera positions to give the occupants the illusion that they were occupying the same space in real time. The set up occurred over one week in February 2016 using H.323 videoconferencing technology[6] and large rear projection screens with the bulk of the technology (bar the camera) hidden behind both screens. This camera, situated at waist height in the centre of the screen, was the focal point for interaction and play between the students and is still the piece of technology that encourages the bulk of experimentation (Figure 1).

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4. For more recent versions of the project we have switched to Zoom for this aspect of the course. Adobe Connect, although effective for our initial projects, proved to be too expensive and complex when compared to other software solutions.

5. Students were split into six scene groups of two Tampere students and three Coventry students. Adobe Connect was also seen as a 'fall back option' in case the larger space proved to be unworkable.

6. Polycom in Coventry, Cisco in Tampere. Both systems use the same H.323 protocols which enables higher speed transfer of data back and forward between sites. This technology was chosen as it is the simplest and most affordable solution for first time users engaging in this type of task. For low latency it does need some fairly advanced networking skills and the bulk of the set up (to this day) involves testing the latency between both sites and tweaking the network connections on both sides. For the most recent iteration of the project (Godot Online) we have switched to the NIMBRA media server from NetInsight which allows us to experiment with low latency cameras.

Figure 1.   Set up of screen with camera slightly above waist height[7]

Adobe Connect was also used to give each scene group (consisting of two Tampere and three Coventry students) their own individual 'rooms' to work independently on their scenes. Facebook was also utilised for scheduling details, sharing research materials, and to provide a quick way for students in each location to share photographic and video material of the ongoing work.

3.   Nuts and bolts

Coriolanus Online, the first iteration of the project, threw up some interesting and unexpected problems for both students and staff new to working in this fashion. I am sure that now, since we have all been working remotely, readers

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7. Published under CC BY in Gorman, Syrjä, and Kanninen (2019, p. 243).

of this article are painfully familiar with the twin concepts of bandwidth and latency. These problems were amplified in the first incarnation of the telepresence experiment due to the sheer scale and ambition of what we were attempting. Research conducted into latency in online collaboration in the performing arts suggests that a latency of 20 milliseconds gives the impression of participants being 20 feet apart (Miske, 2016)[8]. Once latency goes above 40 milliseconds, playing instruments, singing, and synchronous performance becomes problematic – imagine having to communicate with another person across a large room. During Coriolanus Online, we faced latency times of over 600 milliseconds meaning that synchronous activities had to be adapted to cope with this delay between sites[9].

This issue of latency initially had an effect on pedagogy, especially in terms of what could be achievable in the space during the first iteration of the project. A synchronous session on Finnish folk dancing led by Tampere choreography tutor, Samuli Nordberg, managed to cope with the delay between both sites as Tampere students were demonstrating unfamiliar steps to the Coventry students who were attempting to replicate these moves (Figure 2).

It was when we moved to other activities which would be standard practice during theatre teaching that the issue of latency proved rather more problematic. A session in which both groups attempted to sing an Elizabethan 'round song' proved to be impossible as both were completely out of synch with each other and the activity had to be adapted to take this into account. A simple game of 'grandmother's footsteps' in which participants attempt to sneak up on 'the grandmother' and must freeze when he/she turns had to be altered in

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8. Miske's research mainly deals with instrumental collaboration which requires much lower latencies than acting as performers need to be perfectly in synchronisation. Dialogue can cope with higher latencies as thought and response need to come into play. However, when looking at the rhythmical patterns of blank verse (which is not naturalistic dialogue) there is a certain point where high latencies can cause problems for the performers.

9. In later incarnations, we have shaved valuable milliseconds from the latency between both sites. Some of this was due to better communication with the teams that administrate the campus networks, getting dedicated ports for the project and not sharing bandwidth with the general traffic on the campus. In 2020, the switch to the NIMBRA media server (primarily designed for live streaming of broadcast television) improved the stability and latency of both connections. Because of the manner in which this system encodes sound and video we found that, during Godot Online, latency had been reduced to around 40 milliseconds.

consideration that the students on both sides could see each other move due to the delay[10].

Figure 2. Finnish folk dancing lesson conducted by Samuli Nordberg: Coriolanus Online 2016[11]

During this initial version of the project, students were given free rein to play with the technology, exploring the limitations and advantages of this technologically enabled space for rehearsal and teaching. We started each day with a one hour warm up using the whole group in both campuses. These workshops/warmups were the most 'experimental' aspects of the course and remain so in each subsequent incarnation. Over the five years of the project, we have invited guest artists and academics to participate in these sessions, teaching a wide variety of

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10. https://www.youtube.com/watch?v=67nxQTkCZsM&t=1s – first half shows a demonstration of latency between Hong Kong and Tampere and the second half shows the attempt to play 'grandmother's footsteps'.

11. Reproduced with permission from © Immersive Telepresence in Theatre: http://telepresenceintheatre.coventry.domains/iterations/coriolanus-online/

skills including dance, voice, yoga, asahi[12], a skiing lesson and, with Purdue, a burlesque masterclass[13].

Each group would then have an hour in the main telepresence space to develop their scenes before moving on to continue this work in their individual Adobe Connect spaces. Whole group communication, schedule changes, and research materials were uploaded to a private Facebook group (which, rather surprisingly, continues to operate). Facebook also gave us the ability to share images and video clips from both locations in real time, giving each group an immediate sense of what the other side could see and hear. It also became an important 'back channel' for communication between groups if any of the technology failed at any point[14].

4.   Evaluation

As mentioned in Lindén, Kanninen, Kupiainen, and Annala (2019),

> "[t]he students moved rather easily from one technological environment
> to another and even introduced new ways of using personal social media
> to solve study-related problems. Second, the usually very daunting
> experience of throwing oneself into acting in a foreign language with
> a 'native speaker' did not seem to be a long-term issue. […] The
> international co-operation did not happen in a strange cultural space but
> in a neutral place created by everyone's bodily presence" (p. 91), see
> Figure 3.

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12. A form of martial arts and relaxation techniques developed in Finland.

13. https://www.youtube.com/watch?v=8zA52730D-g From 3.50 - 5.44 King Lear Online (2017) singing sessions led by vocal tutor Soila Sariola (Tampere) and Sam Fox of Kiln Theatre (UK).

14. On the 2nd of February 2016, the UK academic network was hacked and the internet went down for the afternoon. Two days later Adobe Connect decided to update their software meaning that the platform went down for the day. Students switched (without prompting) to other platforms such as Skype or Facebook messenger to continue the work and made new arrangements through the Facebook group.

Figure 3.   Coventry and Tampere students greet each other in Godot Online 2020

Over the five years of the project we have continued to refine both the technology and pedagogy that involves teaching in mediated spaces such as these. The traditional teaching methods that we would use in a live space had to be slightly adjusted to cope with this semi-digital method. At the beginning of the process it is tempting for the tutor to focus on the participants onscreen as this object is such a dominant presence in the space. One also gets the initial sense that these onscreen students are international visitors to your 'home space' and not just one half of the whole group. We found it necessary to try and psychologically overcome the temptation to deliver everything to the screen at the expense of ignoring the home students. The optimal position for the tutor in this space became either at the side of the group standing diagonally so that both groups could view his/her face or standing at the back of the space (Figure 4).

An unforeseen aspect of the initial course is that, as work continued in the Adobe Connect spaces, the team noticed a shift in the dynamics between the students in the main space. As they got to know each other through their own individual rehearsals using the app, they became much less self-conscious about interacting together in the main area. The Facebook group began to fill with pictures of students spending time and talking to one another in Adobe Connect. In terms

of engagement, this level of informal interaction (either digitally or in person) outside the classroom is almost as important as the formal interactions within the campus space (cf. Krause, 2007). We were delighted when we discovered that the students had even shared a 'virtual beer' together over Adobe Connect. What was unusual back in 2016 has now become commonplace for us all during the pandemic (Figure 5).

Figure 4.   Galileo online 2019, tutor positioned in the centre of the semi-circle and further back than the participants[15]

Figure 5.   Virtual Beer Coriolanus Online 2016
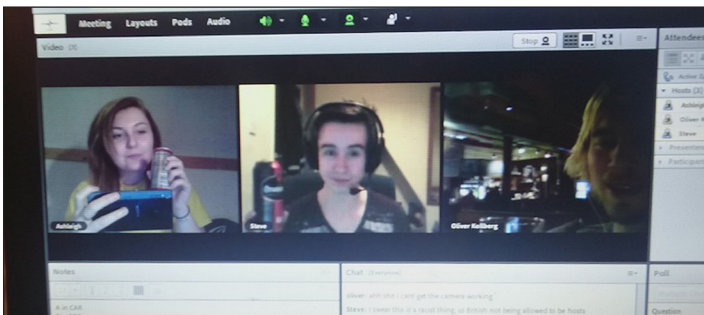
15. Reproduced with permission from © Immersive Telepresence in Theatre: http://telepresenceintheatre.coventry.domains/uncategorized/galileo-online/.

5.　Lessons learned and conclusion

Recreating the physical rehearsal space through telepresence technologies may be time consuming and technically rather complex, but the benefits to international collaboration between academic institutions, especially during the current pandemic, are vast. Not only have we saved money on expensive hotels/ hostels during field trips, but we have effectively doubled our staff teams during these projects, enabling true international collaboration at a fraction of the cost. Of course, this digital experience does not replace the experience of travelling to another country and, in the past, we have adopted a blended experience with students working online for two weeks before travelling to the partner institution to continue the work and, on some occasions, to stage a performance with both casts.

With our most recent project the plan was, after the two weeks online work, to gather in Tampere to continue rehearsals and develop the piece for performance in 2021 as part of UK City of Culture. Of course, the global pandemic derailed those plans. As we continued rehearsals whilst watching case numbers rise, there was a sense that we might not be able to conclude the project in the way we intended. At the start of each session the students discussed the pandemic with increasing concern. Eventually Finland closed all schools and universities on the 16th of March with the UK following suit on the 20th of March. There was a sense of gloom as both groups of students realised that the trip would not occur.

Both casts had never met in person – and still have not[16], although there are plans to regroup in March 2021 to finish the work for performance in both cities either live or live-streamed.

Telepresence technologies encourage students to "broaden their horizons, [permit] discipline based academic theories to be contrasted with practice and, in addition, [allow them] to have greater confidence in assessing how theatre is created in other countries [and cultures]" (Kanninen, Syrjä, & Gorman, 2016,

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16. https://youtu.be/e6_81P43-qg - Godot Online documentary consisting of interviews conducted via Zoom, rehearsal footage filmed on iPhones and the final sharing of work between both casts on the last day before both institutions closed due to COVID-19. It shows the work in progress which was still at an embryonic stage as well as discussions with students about working during a global pandemic

p. 226). The desire to co-create across borders is a strong enough justification for the existence of telepresence enabled theatre and performance and can be a rich field for theatre pedagogy advancing both rehearsal and pedagogical methodologies. As our connections with each other redefine what we think of as 'presence', perhaps digital solutions on this scale for performing arts education can offer new ways to preserve our live work for the future.

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