

Telepresence Stage

Handbook





During our safe distancing times, this research has developed effective and affordable techniques to connect theatre and dance performers from their separate homes and place them within virtual sets online to create, rehearse and perform together as if on a real stage.

This handbook provides helpful DIY case study guides, analysis and links to resources and audio-visual materials of residency projects with ten performing arts companies.

Contents

Foreword

Foreword	4
----------	---

Case Studies

Telematic Quarantine	7
Phoenix Dance Theatre	31
Creation Theatre	47
Pigeon Theatre	67
Ririe-Woodbury Dance Company	88
Guttersnipe Theatre	108
Red Ladder Theatre Company	133
DAP-Lab	156
Sharp Teeth Theatre	179
Improbable	203

Follow-on Case Studies

CRIPtic Arts	230
Birds of Paradise Theatre Company	258

Project Team

Project Team	285
Follow-on Project Team	287
Contact	289



Foreword



The performing arts have suffered significantly from the effects of COVID-19 and almost ceased to exist in their traditional form since March 2020, with many in the sector finding themselves out of work and unsupported. While some working lives migrated online in Teams and Zoom meetings, the performing arts required a far more co-existent video experience to adapt.

Collaborative Solutions for the Performing Arts: A Telepresence Stage is an Arts and Humanities Research Council (AHRC) funded project led by the School of Art and Media at the University of Brighton, in collaboration with LASALLE College of the Arts in Singapore and the Third Space Network in Washington DC. In response to the COVID-19 impact on the performing arts sector, this project identifies new and creative ways for actors, dancers and other performing arts professionals to rehearse and interact together in shared online spaces and to produce collaborative live performances from remote sites. In a dramatic shift from the paradigm of the web-conference grid, the Telepresence Stage offers conceptual and technical solutions to break free of these isolating constraints and provides an altogether new platform, where our experience of online connection is heightened and re-envisioned through the superimposition of our bodies in virtual spaces.

The project team from media and performing arts backgrounds bring together their knowledge and experience of developing live networked performance research and practice for over 30 years. Through this partnership, the 18-month study combined techniques such as green-screen technology, networked video production and virtual set design to create a telepresence studio laboratory, providing full-body interactions between remote participants. Ten performing arts companies have undertaken residencies to test, explore, and perform online techniques, between their participating members in remote locations. Each residency explored and developed a live-streamed public performance demonstrating a unique range of telepresence solutions, made available via case study documents and videos, providing help guides, tutorial support and open-source resources designed to assist UK performing arts professionals to adapt and continue to work online.



Case Studies



Telematic Quarantine

Telematic Quarantine

November 2020



Research Team Summary

This pilot residency was conceived and directed by the project principal investigator Paul Sermon and co-produced by Steve Dixon, project co-investigator. Sermon and Dixon have previously collaborated on telematic performance projects beginning with *Unheimlich* in 2005, a performance installation directed by Steve Dixon for multiple users, linking and visually compositing audience members in Providence, Rhode Island USA with live performers in Manchester UK. In 2019, they created *Virtually No Exit* at LASALLE College of the Arts in Singapore, a ten-minute theatre experience for one audience member at a time.

Inspired by Jean-Paul Sartre's 1944 existentialist play 'No Exit', it conjoined live actors with the audience participant, who wore a VR headset, in changing 360° video environments. Both Sermon and Dixon have had longstanding careers working in telematic arts and digital performance, from Sermon's first telepresence installation *Telematic Dreaming* in 1992, conjoining two remote beds and gallery audiences using a videoconference system to Dixon's work as Director of the award-winning digital performance company *The Chameleons Group* since 1994.



Telematic Quarantine

November 2020



Pilot Residency Summary

The first project undertaken by the research team was a collaboration with a number of remote performers from many corners of the globe, staged for the International Limestone Coast Video Art Festival (ILCVAF) in Mount Gambier, South Australia. It was themed 'Video Art during and after the pandemic' and curated by Melentie Pandilovski. Telematic Quarantine: Telepresent stories of self [isolation] was streamed live on YouTube. It utilised a customised Skype connection to bring the international performers into Sermon's home in Brighton, UK, for an uncanny COVID-themed encounter.

Together, in a heavily layered video environment where participants moved through painterly-rendered 3D simulations of the rooms in Sermon's actual house, they played, improvised, and shared their stories of self-isolation. Over the two and a half hour live performance, the ideas and interchanges varied widely as did the theatrical/filmic genres explored: from kitchen sink drama to political satire, and from hospital drama to magic realism and the theatre of the absurd.

Telematic Quarantine

November 2020



Participant Engagement

Each individual performer, or in some cases groups of performers, had received technical instructions in advance to either set up a green-screen backdrop or to use a virtual green-screen background, to allow for the compositing (chromakeying) of their incoming video image with that of Sermon's. They were provided with no further instruction, other than a specific time to call and the length of call (either 10 or 20 minutes) and the following email invitation to visit him at his home where he was in quarantine:

“All you really need to do is turn up at my front door... I will most likely be in my dressing-gown still (it will be early for me) but I would like to show you around my house. I haven't had visitors in a long while so it will test our mental health, we might need to help each other, we might need a lie down, the neighbours are driving me crazy, complaining and partying outside, the constant sound of ambulances driving by and BBC News updates is giving me an intense headache. So, I really could do with a visit. You are very welcome to dress for the occasion, bring a 'gift' if you wish.”

The research team, performers and partners in this residency consisted of:

Producer/Director/Performer: Paul Sermon

Co-Producer/Performer: Steve Dixon

Performers:

Singapore – Felipe Cervera, Indumathi Tamilselvan, Nurulhuda Hassan and Alex Kong

Mont Gambier, Australia – Cynthia Schwertsik, David Blaiklock, Dan McLean and Mostyn Jacob

London, UK – Kristina Pulejkova and Birgitta Hosea

São Paulo, Brazil – Tania Fraga

Singapore Technical Director:
Khalid Al Mkhlaafy Mont Gambier

Australia Coordinator: Melentie Pandilovski

Telematic Quarantine

November 2020



Ideas and Experiments

The encounters that followed were entirely improvised. Whilst Sermon knew who was due to visit, he did not know how they would present themselves – in costume or character, or simply as themselves – and whether they were bringing any props, or ‘gifts’ along with them. Using a combination of software and chromakey techniques the incoming Skype callers were composited with Sermon’s image as he worked against a green-screen backdrop in his living room. The combination of Skype with a live video mixing software package enabled further pre-recorded content to be incorporated into the final composited output. Sermon and the remote visitors were layered onto background scenes, upon which foreground objects, props as well as specially created video clips and graphical elements were overlaid by Sermon at specific times, according to how the improvisations developed.

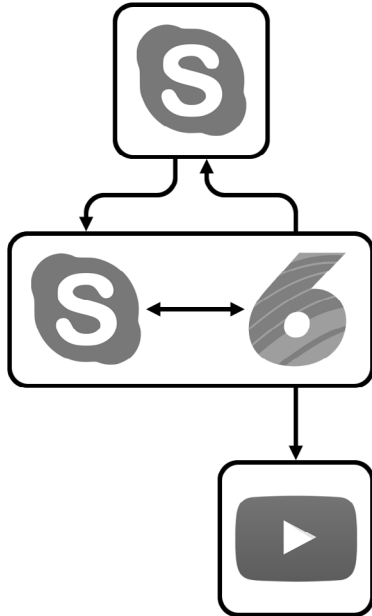
Each background was drawn directly from video recordings from Sermon’s home, with painterly video filters offsetting the photo-realist narrative and allowing for more playful agency, particularly with the foreground props and overlays. Many of these emphasised the sombre undertones of COVID-19, such as delivering a Downing Street briefing in the bathroom at a lectern in the form of a fruit machine which rotated strident safety messages (see Image 3; p.21), a moving graphic showing a ‘flattening’ infection curve (Image 4; pg.21), and through Sermon instantly relocating two participants from his living room into its television set, whereupon he put them on the spot to answer questions on coronavirus within a BBC Newsroom set (see Image 5; p.22). Throughout each episode, he controlled different effects live using an iPad, changing the room environments and activating the foreground props, effects and layers.



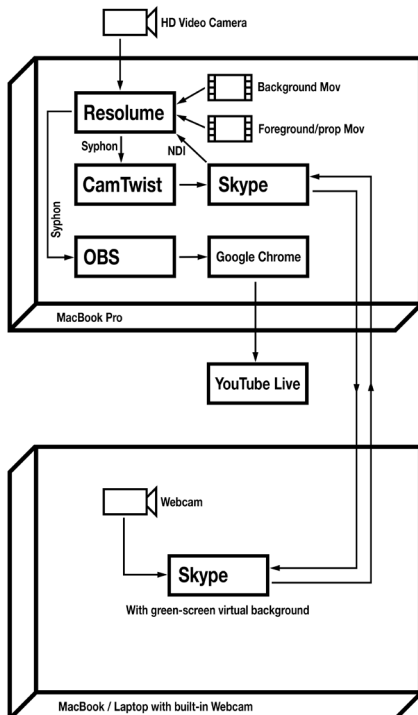
Performance



System Diagram 1: Internet communications via Skype, audio/video compositing with Resolume Avenue 6, streamed on YouTube Live.



System Diagram 2: Telematic Quarantine workflow.



The main communications platform used in Telematic Quarantine was Skype, with the individual and group participants calling Paul Sermon on Skype one-to-one in succession, with their sessions lasting 10 to 20 minutes each. By switching on NDI (Network Device Interface) in Skype (Preferences/Calling/Advanced/Allow NDI usage), it was possible for Sermon to feed the incoming audio and video Skype call directly into Resolume Avenue 6, a live video mixing programme designed for professional VJing (or alternatively this can be done using VDMX software). His local, live green-screen HD video feed was also brought into Resolume via the video capture device Blackmagic Design Ultrastudio Recorder. The two live input sources were then chromakeyed together along with other pre-recorded video clips and animations stored in Resolume, enabling multiple layers of audio and video to be composited in various scenography arrangements.

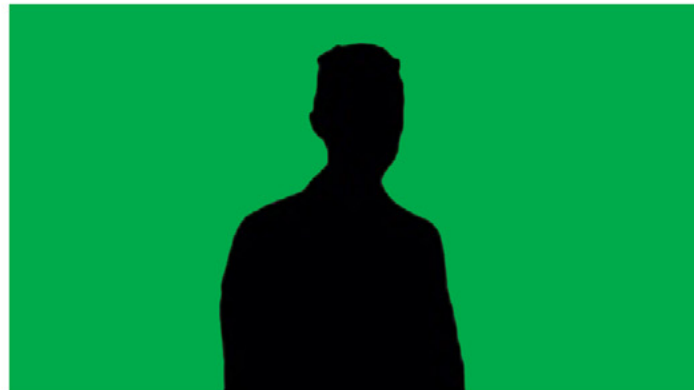
Resolume Avenue 6 made it possible to input video and animated backgrounds; switch between scenes; change the front and back chromakeying sequence of live sources and add pre-recorded green-screen props and effects anywhere within the scene – allowing multiple environments and situations. The composited video output was returned to the remote Skype participant using CamTwist, a virtual camera application for Mac that uses the Syphon plugin to share full frame rate video between applications. This allowed Skype version 8.59.0.77 to send the composited image as a virtual camera input to the participant. The output from Resolume was simultaneously fed to Open Broadcast Studio (OBS), also via Syphon and streamed on YouTube Live. In order for Sermon to both perform and switch scenes on Resolume, he used TouchOSC (Open Sound Control) on an iPad, a Mac application and editor that allowed him to setup up and control the scene sequences on Resolume remotely from the iPad, whilst still performing on camera.

Computer hardware and video resources used by Sermon for the central compositing node at his home in Brighton UK included:

- 1 x Mac Book Pro 2019 OS Big Sur
- 3 x LCD video monitor
- 1 x HDMI splitter/distributor
- 1 x Sony HD video camera
- 1 x Blackmagic Design Ultrastudio Mini Recorder
- 1 x Blue Yeti USB microphone
- 1 x Video light
- Broadband Internet (ethernet connected)

Participants' Technical Setup

Option 1: Basic Setup



The remote participants were required to call Sermon on Skype, with an image of themselves on a green-screen background. To help them prepare, they were provided with three green-screen Skype setup options, from a basic virtual green-screen option to a more advanced green-screen studio setup.

Participants' Technical Setup

Option 1: Basic Setup



Equipment:

Laptop or desktop computer with built-in webcam;
Skype version 8.64.0.80 or later; Ethernet cable for
the Internet connection.

Method

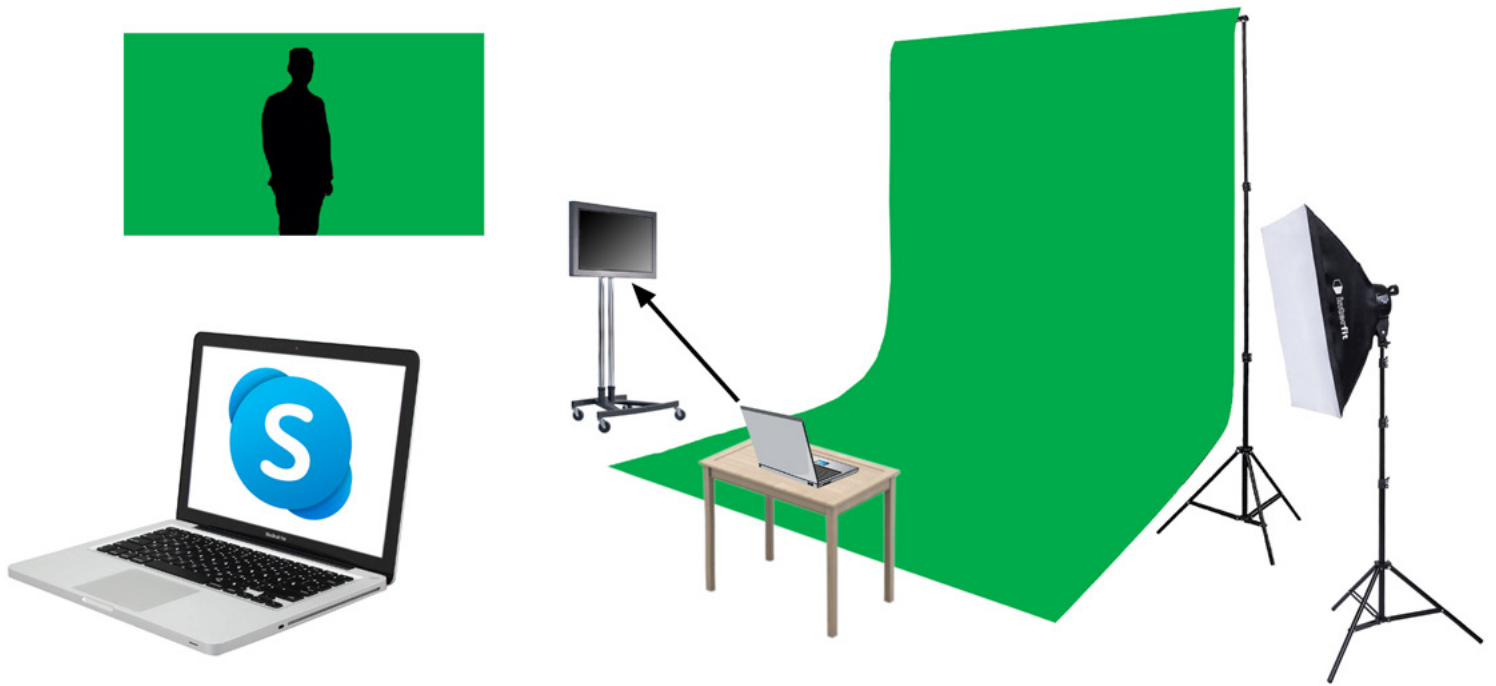
Use Skype with virtual green-screen background:
Create a virtual green-screen background (JPG)
1920x1080px, Hex Colour Value #04F404; Open
Skype and go into 'Audio & Video Settings'; Add (+)
a virtual green-screen background.

Suggestions:

Make sure your light source, daylight (window) or
artificial is in front of you; Try and have a neutral plain
wall behind you; Use wireless earbuds or headphones
if possible; Move back from the built-in camera
(computer) as far as you can to get as much of your
full body in the image as possible, whilst still being
able to see the computer screen in front of you.

Participants' Technical Setup

Option 2: Intermediate Setup



Participants' Technical Setup

Option 2: Intermediate Setup



Equipment:

Laptop computer with built-in webcam; Skype version 8.64.0.80 or later; Video screen, preferably 40" minimum, on a stand/plinth; Green-screen backdrop and stand, anything up to 6 metres wide; Video lights fluorescent or LED; Ethernet cable for the Internet connection.

Method:

Use Skype with green-screen studio setup: Set up the green-screen up to 2.5 metres high and as wide as possible, leaving some of the screen covering the floor, preferably 2 meters deep (floor), or as near as possible; Make sure the green-screen is flat with no wrinkles and has a smooth curve between the wall and floor; Position the Laptop computer with built-in webcam on a plinth or stool, as high and as far from the green-screen as possible to get a full body in the centre of the image, completely surrounded in green; The built-in webcam will need to be tilted downward a little, creating an oblique full view of the body; Position the video screen directly in front of the green-screen, as close to eye level as possible, without obstructing the view of the camera, keeping it out of shot; Position the video light/s next to the camera to get an even spread of light across the green-screen; Connect the laptop HDMI video output to the video screen input using an HDMI cable; Use wireless earbuds or headphones if possible.

Participants' Technical Setup

Option 3: Advanced Setup



Participants' Technical Setup

Option 3: Advanced Setup



Equipment:

Laptop or desktop computer; Skype version 8.59.0.77 (this is the only version that allows a remote camera input); 3 x Video screen, preferably 40" minimum, on stands/plinths; Video camera, preferably HD with HDMI output or HD Webcam, on a 2-metre-tall tripod or monopod; Video capture device, such as the Blackmagic Design Ultrastudio Mini Recorder for video camera input; HDMI splitter, 1 input to 3 outputs; Green-screen backdrop and stand, preferably 6 metres wide; Video lights florescent or LED; Ethernet cable for the Internet connection.

Method

Use Skype with remote camera and green-screen studio set up: Set up the green-screen, 6 metres wide, 2.5 metres high, 2 meters deep (floor), or as near as possible; Make sure the green-screen is flat with no wrinkles, and has a smooth curve between the wall and floor; Position the camera 2 metres high, as far from green-screen as possible to get a full body view in the centre of the image, completely surrounded by green (approx. 4 metres from the green-screen wall); The camera will need to be tilted downward a little, creating an oblique full view of the body; Position video screens on both sides of the green-screen at eye level facing inwards, out of shot; Position a video screen directly in front of the green-screen below the camera at eye level, out of shot; Position the video lights on either side of the camera to get an even spread of light across the green; Connect the camera to computer via video capture device, using HDMI cables and USB-C or Thunderbolt adaptors as required by your computer, capture device and camera, or use an HD Webcam; Connect the computer HDMI video output to the input on the HDMI splitter, and connect HDMI outputs from splitter to the three video screens using HDMI cables; Download and install Skype version 8.59.0.77 (for Mac OS: <https://skype.en.uptodown.com/mac/download/2214336> for Windows: <https://skype.en.uptodown.com/windows/download/2215854>); Open Skype and go into 'Audio & Video Settings'. Choose and select your remote camera input; Use wireless earbuds or headphones if possible.

Description and Analysis



Image 1
Visitors from Singapore, Alex Kong (left), Indumathi Tamilselvan (centre right) and Nurulhuda Hassan (right), dance and sing gospel songs to bring Paul Sermon (centre left) out of his dark mood and lure him into joining 'The Congregation'.



Image 2
Paul Sermon (left) and Cynthia Schwertsik (right) try to save each other from the flood in the bedroom.

Description and Analysis



Image 3
While (left to right) Paul Sermon, Felipe Cervera and Steve Dixon prepare to address the nation at a spinning fruit machine lectern for the daily press briefing, the UK Chief Medical Officer Chris Whitty suddenly appears in the bathroom mirror.

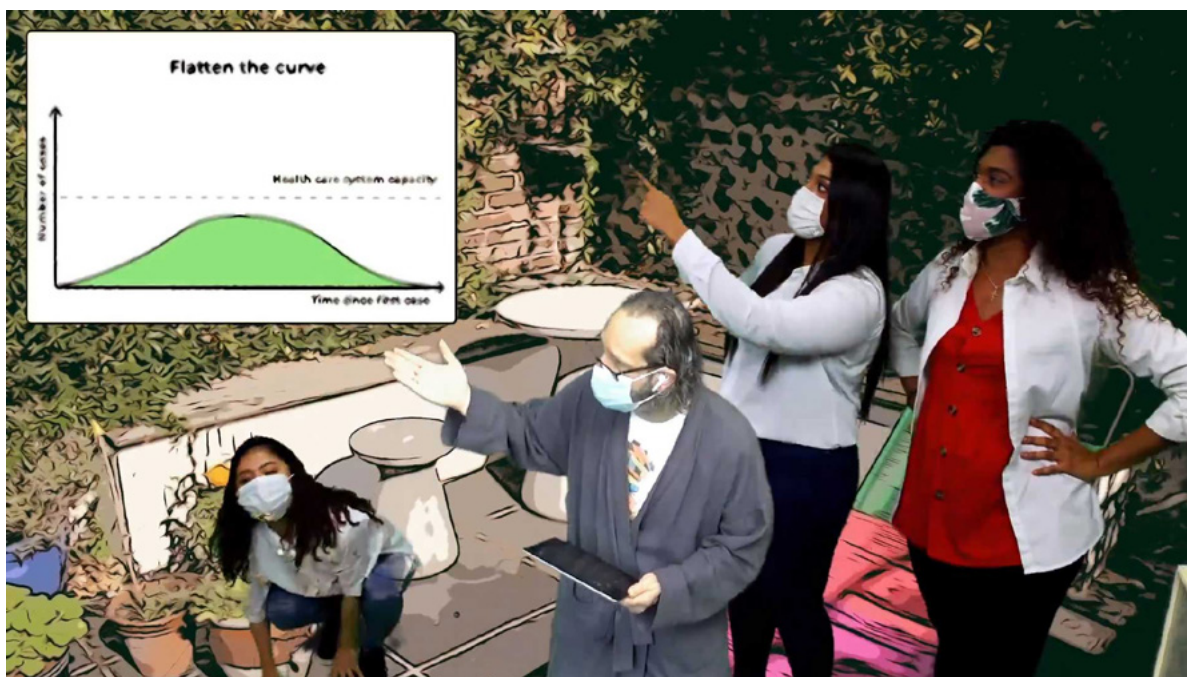


Image 4
Paul Sermon (centre left) discusses flattening the infections statistics curve with Alex Kong (left), Nurulhuda Hassan (centre right) and Indumathi Tamilselvan (right) from Singapore.

Description and Analysis



Image 5
On the BBC News (left to right) Paul Sermon asks Dan McLean and David Blaiklock to answer the viewers questions.



Image 6
Cynthia Schwertsik in Australia connects with Paul Sermon in the UK and firmly attempts to make a face-print portrait of him.

Description and Analysis



Image 7
From left to right:
Paul Sermon meets
Peter (Steve Dixon)
and Peter (Felipe
Cervera) at the front
door lobby for their
unexpected visit.



Image 8
In the kitchen Steve
Dixon (left) and
Felipe Cervera (right)
confront Paul Sermon
(centre) about a
voodoo-doll they
found behind the
toaster, over the noise
of anti-lockdown
protestors in the
garden.

Description and Analysis



Image 9
Playing with their senses: Paul Sermon (centre) smells the cheese as a possible source of the pandemic outbreak with Steve Dixon (right) and Felipe Cervera (left).



Image 10
Smoke gradually fills the living room whilst (left to right) Felipe Cervera, Paul Sermon and Steve Dixon sit down to relax on the sofa.

Description and Analysis

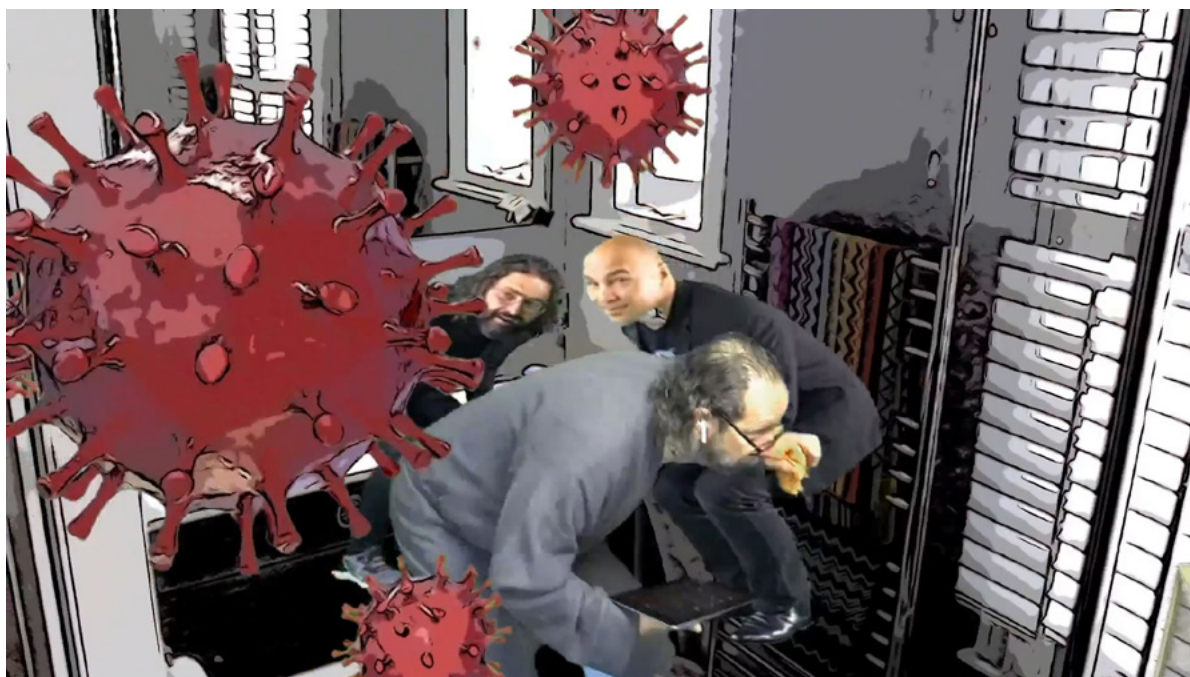


Image 11
In the bathroom (left to right) Dan McLean, David Blaiklock and Paul Sermon try to avoid an oversized coronavirus attack.



Image 12
Paul Sermon (centre left) in Brighton, UK confronts his split personalities in an improvised therapy session with visitors from the 'The Congregation' in Singapore (left to right) Steve Dixon, Indumathi Tamilselvan and Felipe Cervera.



Many performers came bearing gifts for their unrehearsed encounter. Cynthia Schwertsik arrived with a face-print self-portrait with which she attempted to smother Sermon's face to produce a dual face-print (Image 6; p.22); Tania Fraga brought a Brazilian potted plant which was placed in his garden; while collaborator/performer Steve Dixon arrived with Felipe Cervera, dressed in regulatory suits and ties, wishing to search the premises. Announcing themselves at the front door as Peter and Peter (Image 7; p.23), they formed a Pinter-esque double act, offering absurdist humour and underlying menace in equal measure (see Image 8, p.23). They revealed their suspicions that the house was in fact ground-zero of the pandemic outbreak, and Sermon played along (see Image 9; p.24). He activated some of the pre-recorded video overlays (props), with smoke effects gradually filling the room (Image 10; p.24), placard-wielding anti-lockdown protesters suddenly appearing through the window in the garden, and the dramatic appearance of an oversized coronavirus cell which swept into the room and attacked them (see Image 11; p.25).

Some performers, including Dixon and Cervera, were pre-scheduled for a second episode later in the day, and on their return picked up on some of the intervening events. It resulted in Peter and Peter's final revelation that they were actually members of a religious sect: 'The Congregation' (see Image 12; p.25). This followed on from a scenario played out earlier by visitors Indumathi Tamilselvan, Nurulhuda Hassan and Alex Kong, who danced and sang gospel-style arias (Image 1; p.20) to try to bring Sermon out of his dark mood and lure him into joining 'The Congregation'.

Video Recordings

Telematic Quarantine – Trailer 5 minutes mp4

[Watch here](#)

Telematic Quarantine – Performance 30 minutes mp4

[Watch here](#)

Telematic Quarantine – Residency PLAYLIST

[Watch here](#)



Evaluation



Participants' Reflections

Curator and coordinator of the contributing participants from Mount Gambier, Australia, Melentie Pandilovski, described how “the surprising elements of domesticity, fantasy, and interaction not only allowed participants to perform together, but to dream together, to create a world together”. It went further than he expected, “having a tactile feeling that was suddenly much deeper than previous telematic projects” he had seen before. Mount Gambier only had a long vertical green-screen allowing the legs to be visible, but the width was not wide enough and their image had to be cropped, which they found restrictive. Participants from Singapore marvelled at the amount of tricky and magic that was pre-prepared for the telepresence experience. They recalled the props; the rotating podium, a mantelpiece they could rest their arms on, and seats that you could pretend to sit on. Steve Dixon commented that:

“Normally in telematic work you have an actual chair or sofa to sit on, and in our case, we could only pretend to sit on it, but this was more pleasurable than working in space – that sense of illusion and delusion – I am sitting on the sofa with you even though there is no sofa here – the proprioceptive conjoining is joyful”.

Participating performers Felipe Cervera and Steve Dixon highlighted the innovation in being able to be put inside another space, for example when they were instantaneously placed within a TV set, with the reframing increasing their sense of three dimensionality and of spaces within spaces. They described a telepresent disorientation:

“You forget where you are within this technically mediated world, and what’s interesting is you begin to forget you are within it, and then you suddenly remember, and then before long you forget again”.

Steve Dixon likened it to the Brecht alienation effect and noted the lure of seemingly being able “to go through the screen and touch the person on the other side. But this unreality which seems real makes it similar to the best European puppet theatre, where audiences are more moved than with real actors – it goes into the realm of the uncanny, of the familiar yet strange”. Melentie Pandilovski commented that the only thing he would change, with hindsight, “would be for this project experience to go on for longer to know its full possibilities”.



Research Team Reflections

In contrast to their previous telematic collaborations where audience participants journeyed through many diverse virtual environments and locations, Paul Sermon and Steve Dixon felt there was real innovation in putting participants inside a very specific and defined space (inside Sermon's house). The sometimes opaque and sometimes transparent framing and layering of the backgrounds and foreground objects/effects increased the sense of three dimensionality and feeling of spaces within spaces. The experience of Telematic Quarantine has been likened by the performers to a science fiction dystopian reality, and many noted its impressive visual aesthetics, which gave a sense of sci-fi fantasy to what were relatively mundane domestic settings. Sermon had re-created the quite ordinary rooms in his home, but had rendered them extraordinary through painterly, colourised treatments together with overlaid pre-recorded sequences and surreal and outlandish effects. In the bedroom, water comes flooding in (Image 2; p.20), but no one knows why; visitors appear on the TV during a BBC news report (Image 5; p.22), drugs rain from the sky and clouds of smoke fill the room (Image 10; p.24); while outside an ambulance makes continual appearances, circling the house ominously.

Although the meetings and conversations between Sermon and his visitors were unrehearsed, Sermon's control of these scenographic elements helped to generate interesting narratives and interactions. As he engaged the visitors in telepresent tours walking from room to room, the architecture of his home became the storyboard, in combination with which the effects and foreground props helped spark a telematic dramaturgy and script. In preparation, Sermon had provided himself with prompts, question and actions, written on large post-it notes in front of him covering his living room wall, off camera.

These prompts allowed him to help stimulate the narrative action, for example, through the use of stock questions and phrases such as:

- **Who's that at the door? Is he with you?**
- **You're feeling ok, aren't you? No symptoms then?**
- **Are you hungry? Help yourself?**
- **You can leave via the TV, everyone comes and goes through the TV.**
- **Maybe you should wash your hands while you're here.**
- **Is that smoke? I can't smell it.**

There are many constituent parts to Telematic Quarantine, from layered background scenes, host performer and visitor performers to the foreground layers and props, and Sermon's question prompts. They converged to provide a unique and original telematic theatre performance using a trinity of key elements: dramaturgy, telematics and scenography.



Key Takeaway Points

By using Skype, this telepresence system provides a low-cost solution, with the only significant software cost and requirement being for Resolume Avenue 6 or VDMX. However, the system does require a number of programmes to run concurrently. While this project was designed to run on a Mac it could be equally configured for Windows. The only drawback with Skype is the necessity to use an older version, 8.59.0.77, as later versions (tested on a MacBook Pro) will not allow a virtual camera input.

The participants in Mount Gambier were restricted by the width of their green-screen backdrop, which was only 2 metres wide, which meant their image had to be cropped in Resolume for compositing. This limited their space for interaction. The project team strongly recommend green-screen backgrounds of at least 3 metres width, but preferably 4 metres or more. The system works best when the entire body of the performer is surrounded by green.

The participants and researchers all commented on how successful the sense of visiting a real home space had been, with the scenographic architecture providing a sense of everyone existing together within it, as a unifying “space within a space”. The project researchers concluded that when creating such telematic performances, artists and participants will do well to consider carefully ideas of location, spatiality and movement in relation to dramaturgy and story-telling, and how triggers and connections are made between spaces, performers and actions.

Telematic Quarantine was intended to be an improvised exploration of the telepresence stage, but many participants and partners commented on a desire for more time to practice, rehearse and perfect their ability to interact. Performing on a telepresence stage requires time to get accustomed to, and the project team recommend that those unfamiliar with working in this space prepare for, explore and rehearse as much as possible.



Phoenix Dance Theatre

Phoenix Dance Theatre

February – April 2021



Company Summary

Phoenix Dance Theatre is the longest-standing UK-based professional contemporary dance company outside London. It is also one of a handful of mid-scale contemporary dance companies to employ professional dancers on permanent contracts. Founded in 1981 by three black British men from Leeds, and celebrating its 40th anniversary in 2021, the Phoenix Dance Theatre's mission is "to inspire and entertain through dance, and to develop new audiences for dance, whilst enriching and embodying the spirit of a multi-cultural Britain".

Its portfolio combines national and international touring programmes with extensive educational provision and community outreach work. In a typical

year, its productions are seen by up to 20,000 people and the team engages with up to 6,500 people through outreach activities. The company describes its primary aim as being "to create dynamic, diverse and relevant work that embodies the company's rich Caribbean history and shines a light on cultural narratives which are often overlooked or untold".

www.phoenixdancetheatre.co.uk/

PHOENIX DANCE THEATRE

Phoenix Dance Theatre

February – April 2021



Residency Summary

The Phoenix Dance Theatre Residency consisted of 5 practical sessions/rehearsals to investigate the possibilities of working with telepresence as a creative space. There was also an introductory meeting and a reflective session to gather feedback from the team. The company had limited time to commit to the project as they were starting intensive rehearsals for the first “live” performances as COVID restrictions were beginning to lift. The decision was made to work with improvisation as an exploratory tool, rather than to focus on choreographing a final performance. This provided the maximum opportunity to try different approaches and possibilities within the time available.

Background images were used to inspire simple narrative situations, with which the dancers could interact if they chose. In the first session, the team worked together in a studio space, learning how to use the equipment and how to interact with the digital scenography via the screens. Subsequent sessions took place with team members working remotely. Two dancers were in the same household so they were together physically, while all of the other team members were in separate spaces, each setting up their own equipment. By the end of the residency, a collection of simple improvisations had indicated several possibilities within the time available for expansion into more formal choreographic works for future times.



Company Engagement

During the COVID 19 lockdowns, Phoenix Dance Theatre began exploring ways of increasing their engagement with digital platforms and performances: www.phoenixdancetheatre.co.uk/whats_on/digital-programme/

Working with telepresence complemented that work, enabling them to explore digital options for the creative process as well as the product. In their letter in support of the Telepresence Stage project, the Executive Director wrote:

“This project is highly important to performing arts companies, as we seek ways to rehearse and create new work in the wake of COVID 19. It has the potential to reinvent collaborative workshopping, rehearsal and performance spaces in virtual environments that support social distancing even when dancers are working closely together. We are excited by the opportunities that it offers at a time when new possibilities are few and far between for the arts.”

The company members working on the residency consisted of four dancers: Alabama Seymour, Carlos Martinez, Reynaldo Santos and Mirabel Huang-Smith, Technical Director: Kieron Johnson, Rehearsal Director: Joanne Bernard, and Artistic Director: Dane Hurst.

Ideas and Experiments

Initially, the Phoenix Dance Theatre team wanted to experiment with alternative viewpoints that are not usually possible to achieve in live stage settings. They chose images of holes in the ground, with four scenographic designs representing different types of spaces. The dancers positioned cameras above their heads pointing down at green screens spread on the floor. This provided a vertical perspective so that the dancers could appear inside the hole or on the ground above the hole (see Image 5; p.42). In later sessions, the cameras were positioned in front of the dancers with the green screens behind them, sometimes with furniture under the green screens so that the dancer could appear to be sitting on chairs or climbing on items within the digital scenography (see images 2–6; p.40–42). Digital scenography for these sessions included a horizontal hole in the ground, a woodland scene, a Mad Hatter’s tea party in the forest, and a country road at night. Different kinds of interactions were explored in each of these contexts.

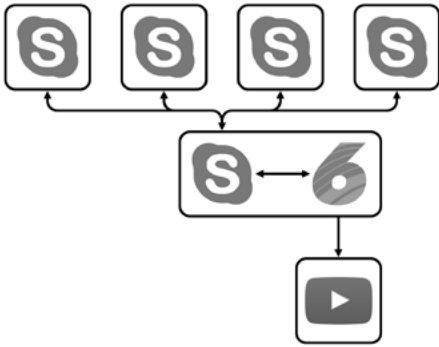
Initially, the dancers chose to play with moments of simulated contact, e.g. touching, stroking, holding hands, pushing and pulling, punching, kicking. This type of interaction helps to instigate a sense of co-presence and togetherness in the digital space even though the dancers are in separate spaces physically. Copying, mirroring, and hiding behind each other’s images also played a part in realising connection at an embodied level and learning to understand digital space. Changes in perspective and scale were introduced, as dancers worked closer to and further away from their cameras to change their relative sizes in the digital space.



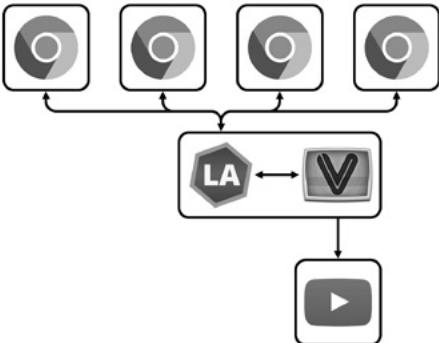
Performance



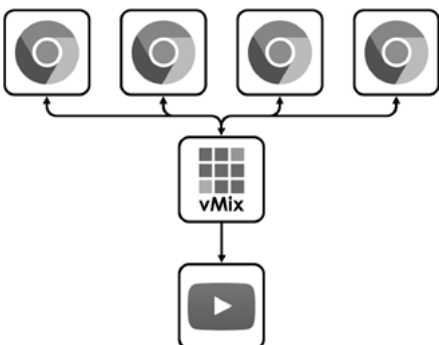
Sessions 1 and 2 – System: Internet communications via Skype, audio/video compositing with Resolume Avenue 6, streamed on YouTube Live



Session 3 – System: Internet communications via Google Chrome and LiveToAir, audio/video compositing with VDMX, streamed on YouTube Live



Sessions 4 and 5 – System: Internet communications via Google Chrome and vMix, audio/video compositing with vMix, streamed on YouTube Live

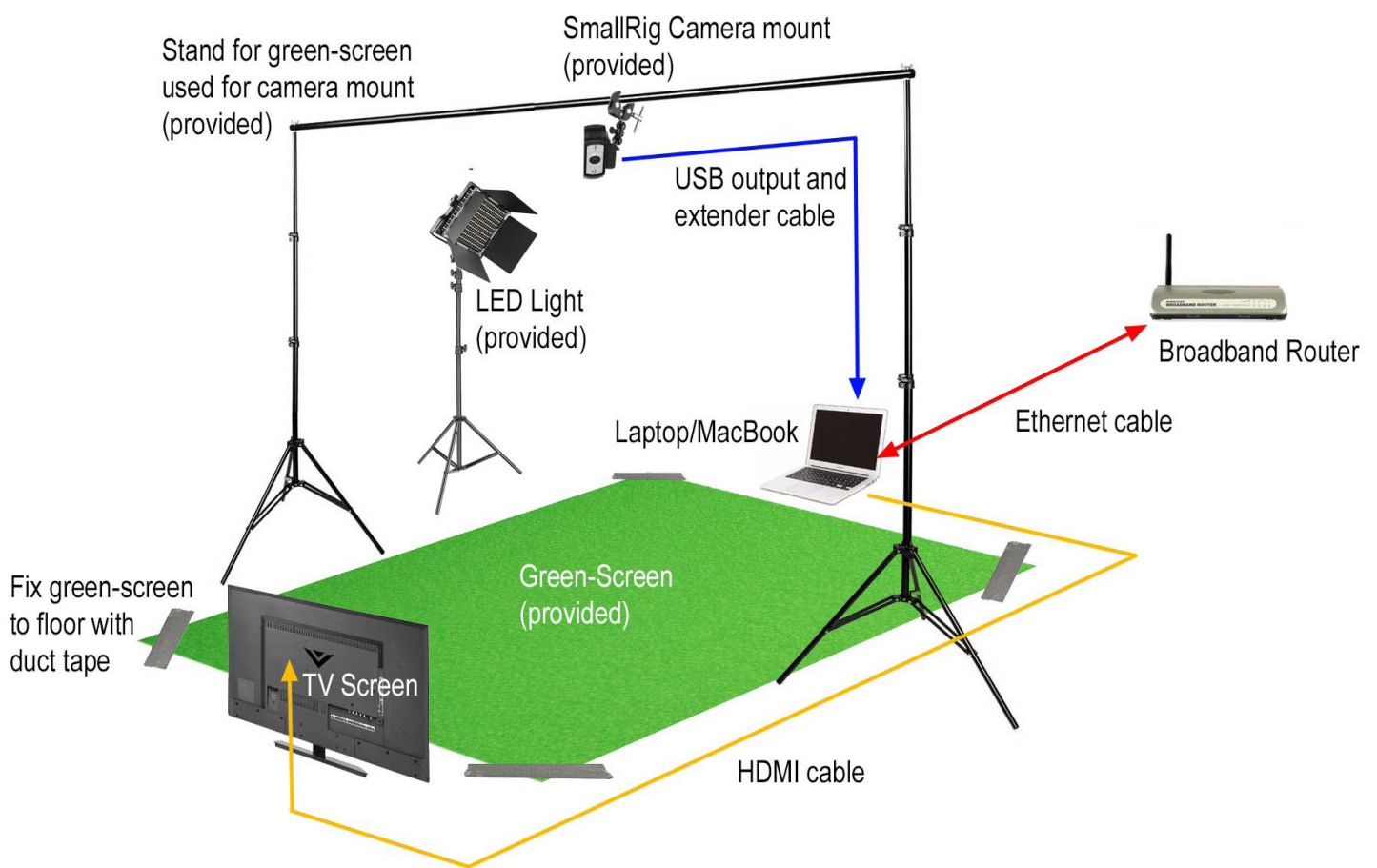


In all sessions the remote participants (satellites) made a video call using a range of Internet communications applications to the same central (node) location, where they were audio/video composited, using differing systems and techniques. The central node relayed the composited image back to the remote satellite participants and simultaneously streamed it on YouTube Live.

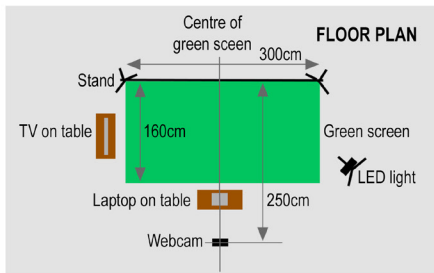
The residency commenced (Session 1 and 2) using a combination of Skype and live video mixing (VJing) software Resolume Avenue 6 to composite all participants within the same video output image. Whilst this was a successful low-cost approach, returning the composited image to a participant in a group Skype call reduced the size and position of the image in the Skype interface. This solution works best as a peer-to-peer connection between just two participants. Project partners 'Third Space Network' in Washington DC trialled (Session 3) a combination of LiveToAir, a networked video broadcast call-in system via Google Chrome, and a Mac based live video mixing application VDMX. However, the latency of the connection was such that it proved difficult to interact in real-time and further testing of this solution is required. Using vMix on Windows 10 provided a solution (Session 4 and 5) that combined the Internet video communications via Goggle Chrome and audio/video compositing in the same application, reducing the need for multiple computers, whilst providing low latency and full screen video return. This is currently the most successful software solution used. However, the chroma-keying functionality in vMix is limited.

The remote satellite dancers each used MacBook computers, connecting to their routers by an ethernet cable, in the most successful cases. They were calling via Skype for the initial sessions, and then via the Google Chrome browser for the subsequent sessions with LiveToAir and vMix. The dancers were supplied with green-screen materials, stands, LED video lights and webcams, along with installation set-up diagrams for their home location to ensure they all had near-identical sets for collaboration. It was also suggested that they use additional TV outputs to monitor their interactions and movement remotely.

Participants' Technical Setup



Participants' Technical Setup

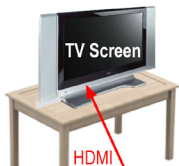


Use the SmallRig to mount your camera 1.8 meters high, using a shelf or door (or stand if you have one). Position it directly central to the green-screen, 2.5 meters away from it. Point the camera downward to get a full picture of the figure. See floor plan detail for info

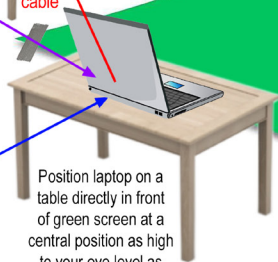
If you have a TV screen its very helpful to use as a larger 2nd monitor to the left or the right of the green screen, position it on a table as high to your eye level as possible and connect it to your laptop with an HDMI cable



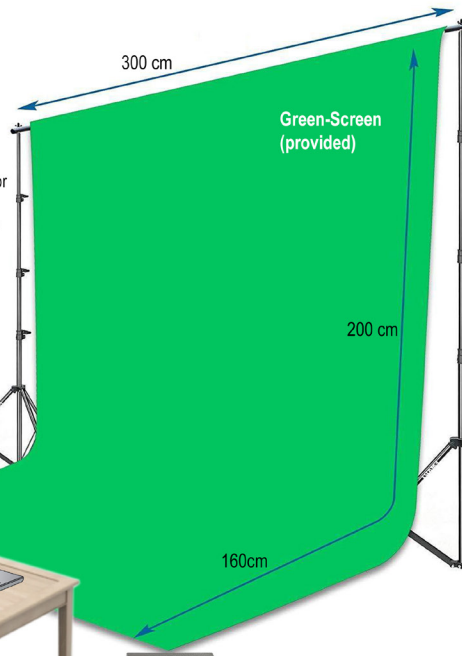
Webcam and mount (provided)



HDMI cable



Position laptop on a table directly in front of green screen at a central position as high to your eye level as possible



Fix green-screen to floor with duct tape

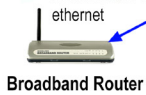


LED Light (provided)

Make sure your lights are not too close and causing, hot spots and shadows, sometimes pointing it up and bouncing the light off the ceiling helps defuse it in smaller rooms

Connect your laptop to your router with an ethernet cable, switch off WiFi on your laptop to make sure its using ethernet

Ethernet cable



Broadband Router



Video studio resources supplied to satellite participants:

3 x Green Screen

(Neewer 10 x 12FT / 3 x 3.6M PRO Photo Studio 100% Pure Muslin Collapsible)

3 x Stand

(Fotga 2.1 x 3m Background Stand Support Backdrop Stand Greenscreen Heavy Duty Adjustable Photography Muslin Background Support System Kit)

1 x Lights

(Neewer 3 Pack Advanced 2.4G 660 LED Video Light Photography Lighting Kit, Dimmable Bi-Colour LED Panel with LCD Screen, 2.4G)

3 x Webcam

(Logitech C930e USB 1080p Full HD Webcam)

3 x Camera mount clamp

(SMALLRIG Cool Ballhead Clamp Mount with Mini Magic Arm – 1138)

Computer hardware resources used by satellite participants:

2 x MacBook Pro 2017 OS High Sierra
1 x MacBook Air OS High Sierra
Broadband Internet (ethernet connected)

Computer hardware resources used by the central compositing node research team:

1 x Mac Book Pro 2019 OS Big Sur
1 x PC Laptop Windows 10 with NVIDIA GeForce GTX 1060 Graphics Card
Broadband Internet (ethernet connected)

Description and Analysis



Image 1
The dancers and Rehearsal Director play with being together in digital space while they listen to a researcher speaking – Session 1, 8 March 2021



Image 2
Alabama simulates pushing Mirabel's arm away – Session 4, 29 March 2021

Description and Analysis



Image 3
Mirabel tries to bite Alabama's foot as they experiment with a hole from a different angle – Session 4, 29 March 2021



Image 4
The Mad Hatter's Tea Party – "No, you can't have any tea!" – Session 5, 31 March 2021

Description and Analysis



Image 5
Reynaldo bridges a hole in the ground, while Alabama walks over him (camera view from above) – Session 2, 22 March 2021



Image 6
Reynaldo pulls Mirabel out of a hole – Session 5, 31 March 2021



Images 2 and 3

Alabama and Mirabel experimented with a horizontal hole in the ground, with Alabama in front of the image (or scenographic layer) of the hole and Mirabel behind it. This positioning meant that parts of Mirabel's body could be seen through the hole – an arm (Image 2, p.40), or her head (Image 3, p.41), or a foot or a leg – but Alabama's whole body was visible all of the time. Alabama had placed a green screen over a sofa, so she could perch on the sofa and appear to be sitting on the wall of the hole. She worked mostly in a contained or constricted manner, as if she were hiding inside the hole, while Mirabel used more extension in her movements, passing the hole or peering into it.

Image 4

The Mad Hatter's Tea Party inspired a humorous improvisation based around the scene from 'Alice in Wonderland' (image 4, p.41). Alabama and Reynaldo were located in the same physical space, working with Mirabel in a different physical space. The physical proximity of Alabama and Reynaldo enhanced their togetherness within the digital scenography, highlighting the challenge to Mirabel as she attempted to join them for tea. Alabama and Reynaldo were in the scenographic layer behind the tea table and Mirabel was in the layer in front of it. This positioning enabled Alabama to drop down and hide behind the table, jumping up to surprise Mirabel whenever she got close to the table.

Images 5 and 6

Holes were a recurrent theme in the various improvisations – seen from above, below and horizontally. In image 5 (p.42), Reynaldo makes a bridge over a hole with his body, whilst Alabama walks over him. In image 6 (p.42), Reynaldo pulls Mirabel out of a hole in the ground. Holes provide narratives related to hiding and revealing, jeopardy and safety, here and there, all of which seemed to hold particular meaning in relation to the nature of working across physical and digital spaces. Most of the improvisations returned to these themes, regardless of the

Video Recordings

Phoenix Dance Theatre – Trailer 5 minutes mp4

[Watch here](#)

Phoenix Dance Theatre – Performance 20 minutes mp4

[Watch here](#)

Phoenix Dance Theatre – Residency PLAYLIST

[Watch here](#)



Evaluation



Company Reflections

At the end of the short residency, the Phoenix Dance Theatre team felt that a number of their experiments offered scope for further creative exploration. They agreed that playful improvisation was an essential part of discovering how to move as both a physical body and a digital body in the telepresence stage. They found images of holes to be useful scenographic devices because they gave shape and orientation to the digital space that enabled the dancers to locate themselves more readily in it. However, on reflection, and watching back some of the workshop recordings, they said that they wished they had spent more time playing without any scenography so that they had thought more about the relationships between their physical and digital bodies.

The Phoenix team had enjoyed playing with vertical views, with the cameras suspended over their heads, but they had abandoned that idea because they were struggling to get the cameras high enough to have their whole bodies in the camera view. (This was one of the restrictions of working in their own homes, although it could have been managed easily in a studio space.) On reflection, the Phoenix team realised that they had worked almost exclusively with their full bodies in the image, except when part of a body was occluded by scenographic devices. They realised that they usually work on stage, and it was alien to them to think about the choreography of body parts rather than whole bodies. This realisation brought to mind a range of new choreographic possibilities that they had not considered.

Technically, the Phoenix team had found it straightforward to set up their computers, cameras, lights and green screens as instructed. When we settled on the vMix system, they found that easy to use. None of the dancers had access to multiple screens in their own homes, which proved a significant restriction as they always had to look at the computer screen to locate themselves in the digital space, so most of the choreography was front-facing. For future work, they would prefer to have at least one more screen in each location so that they could orient themselves more freely.

Research Team Reflections

The Phoenix Dance Theatre residency was shortened due to their commitments as lockdown lifted and they began to prepare in earnest for their 40th anniversary gala performance in the summer. This situation resulted in a focus on improvisational workshops rather than preparing for a performative outcome. In many ways this was useful for the first residency of this project, as it enabled the project team to experiment with different approaches. In the first instance, it gave us the opportunity to explore different platforms and discover the different advantages and disadvantages of Skype, LiveToAir and vMix in this type of context. Secondly it allowed the Phoenix team to try out multiple ideas, since they did not need to settle on one for a performance. The theme of holes was recurrent, reflecting a through-line of interest in hiding and revealing across the workshops. This largely spatial approach highlighted the layering effect of the digital scenography, where dancers are either in front of or behind elements of the scene. It also highlighted the way that the dancers felt both present and absent in the telepresence stage. Similarly, the dancers often made attempts to touch, push, pull, or have other forms of physical interactions with their digital partners, even though they knew that direct influence of this nature was not possible. This experimentation with boundaries between digital and physical spatiality, and between visual and proprioceptive sensation, was a fertile area, which could have been explored further if there had been more time.

It was useful to be reminded in this residency that it takes time to become accustomed to working with and through a digital image of one's body. Unfortunately, the length of the residency (5 x 1-hour sessions) meant that the dancers were only just starting to become accustomed to linking their physical bodies with their images in the digital space. Longer sessions would have enabled a stronger sense of embodied connection between physical and digital bodies, allowing the dancers to inhabit digital space more readily.



Key Takeaway Points

Working with overhead cameras and green screens on the floor presents an unusual perspective with many possibilities for choreography. Wherever the cameras and green screens are placed, it is important to consider the positioning of screens so that the performers can see the composite image whilst performing.

For dance companies, we recommend experimenting both with and without digital scenography. Working with digital scenography helps to give the digital space shape and provide inspiration. However, working without it places emphasis on relationships between bodies within the digital space, and also upon each dancer's relationship with their own image.

It takes time for a dancer to become accustomed to the relationship between their physical body and their digital body in the telepresence stage, as they learn to work with/through the screens. Allow time initially for that relationship to develop – several hours will be beneficial for a deeper sense of moving simultaneously in physical and digital space. Time invested at this stage will pay off later in the creative and rehearsal processes as the dancers will be able to move more confidently and with a stronger sense of presence in the digital space.



Creation Theatre

Creation Theatre

April – June 2021



Company Summary

Creation Theatre are an Oxford based company and have been producing and performing innovative theatre productions in alternative locations and settings for over 20 years. After the UK went into lockdown in March 2020, they adapted quickly and moved their programme online by combining live performance and video production with vMix software and Zoom meetings, continuing to make their work available to both existing and new international audiences. They have since produced a prolific range of productions and at the start of this residency they were just completing their sixth digital stage production, Romeo & Juliet. The work of Creation Theatre has been previously studied and extensively documented by the UKRI-AHRC funded project “Digital Theatre Transformation: A Case Study and Digital Toolkit” <https://www.creationtheatre.co.uk/about/digital-theatre-transformation-2> led by Professor Pascale Aebischer from the University of Exeter.

It focused on Creation Theatre’s online production of Shakespeare’s *The Tempest*, providing practical advice and guidance for performing arts companies including how to sustain revenue and develop audiences throughout COVID-19. Our case study builds on both Creation Theatre’s recent online success and the work of Aebischer and the team at Exeter to explore further opportunities in digital performance. Specifically it involves the use of a Telepresence Stage system to create a coexistent shared online theatre space.

<https://www.creationtheatre.co.uk>





Residency Summary

Due to their busy ongoing online programme Creation Theatre undertook a focused residency project, concentrating on one single scene with two performers interacting across a small square card table. Whilst they appeared to be sitting at the same table, they were in fact miles apart, and they were joined at one point in their final performance by an additional remote audience member, who also appeared seated at the same table. As they played with the physical possibilities and impossibilities of their telematic encounter, they explored the telepresence possibilities of their new found coexistence. The table scene constructed was a digitally layered mise-en-scène adapted from Paul Cézanne's classic painting *The Card Players*

(1895) (Image 1, p.51), which provided the virtual set for the two actors to occupy (Image 2, p.51). Giles Stokley and Graeme Rose, working in their separate locations and brought together on-screen using video chromakey techniques, enthusiastically explored the illusionary, laconic and comic potentials of live telematic theatre across Cézanne's card table. Physical objects and props played a major part, with them placing their domestic tables and chairs to exactly line up with those in Cézanne's painting so they could appear to truly inhabit its virtual space. Initial experiments and rehearsals included the occasional appearance of Cézanne's painted Impressionist characters with whom the actors interacted (Image 3, p.52). The faint sound of a distant accordion player in the background completed the sense and atmosphere of a French Provence setting.



Company Engagement

From the outset Creation Theatre embraced the aims and objectives of the residency programme, wanting to add new techniques and approaches to their existing digital repertoire. Whilst they were familiar with the effects and use of chromakeying, they were keen to explore the use of green-screen as a virtual studio set rather than just a backdrop; combining actors situated in identical green-screen studio spaces and mapping the camera angles precisely. In early workshops the research team and the company discussed the importance of the alignment between the physical and virtual forms in order to co-experience the space and visually optimise interactions between the remote actors. The incorporation of tangible objects within each actor's separate green-screen setting, including a table and two chairs which visually aligned and matched the dimensions in the painting, provided a convincing scenography from which to explore playful connections and develop an original dramaturgy.

“What’s really liberating is that acknowledgement of the playfulness of the form because I think there’s loads of potential in that. As audiences become more sophisticated for digital theatre, their expectations become greater and so what’s interesting is to really find a kind of tangible connection with the playfulness of the form and I find that really great.”

Graeme Rose, Creation Theatre.

Ideas and Experiments

Using Cézanne’s painting *The Card Players* (1895) as a virtual set required subtle visual adaptations to the original painting, changing the angle and size of the table and removing its original two card players, to create the empty scene. The virtual table was adjusted to align with the physical tables in the green-screen spaces in the two actors’ homes. Once camera angles were correctly aligned, it became possible for the actors to walk around it – moving from in front of to behind the table. The actors particularly relished the opportunity to actually lean on the virtual table (Image 4, p.52), something they had not explored before, and even sit on the table (Image 5, p.53) which one actor did in a display of defiance of formality. Playing with the form and using the surface of the table became a central vehicle in their devising process and in the development of the story-board and performance. The relationship between the characters changed, and moments of conflict and confrontation arose in relation to it, for example with Giles Stoakley casually putting his feet up on the table and Graeme Rose indignantly wiping down the table top in response (Image 6, p.53).

The virtual set consisted of several layers; walls, chairs, table and a bottle of wine. Invisible cross-fades between these different layers allowed the actors to be positioned in different perspective configurations and to walk around virtual props, for example, placing Giles behind and Graeme in front of the bottle of wine on the table (Image 4, p.52). Switching between foreground and background sequences provided the actors with a greater sense of depth within the scene, also allowing them to stand behind or in front of the virtual chairs and each other. The occasional appearance of one of Cézanne’s original card players suddenly brought three characters around the table, as did the surprise arrival of an audience participant, using an additional layer, who was brought in during the performance. He was incorporated into the action and, among other things, attempted to catch balls that the actors rolled or bounced across the table towards him (Image 7, p.54).

The Creation Theatre company members working on the residency and *The Card Players* performance were:

Giles Stoakley – Actor
Graeme Rose – Actor
Guy Gadney – Audience participant
Lucy Askew – Creative Producer

Creation Theatre

April – June 2021



Image 1
A modified version of Paul Cézanne's *The Card Players* (1895), adapted to align with the green-screen table and set.



Image 2
Creation Theatre actors (left to right) Graeme Rose and Giles Stoakley fill the empty seats to replace Cézanne's original card players.

Creation Theatre

April – June 2021



Image 3
There's no smoke
without fire –
Graeme Rose
(centre) attempts to
light the motionless
card players pipe.



Image 4
Swapping seats –
Giles Stoakley (left)
leans over the table
to inform Graeme
Rose (right) that he
has taken his seat.

Creation Theatre

April – June 2021



Image 5
Graeme (left) protests and sits on the table, much to Giles' (right) disgust.



Image 6
Making himself at home, Giles puts his feet up on the table as Graeme attempts to clean up after him.

Creation Theatre

April – June 2021



Image 7
Giles (right) rolls a blue ball to audience participant Guy (centre) who attempts, but fails to catch it rolling off the table, as Graeme Rose (left) looks on in frustration and disbelief



Performance



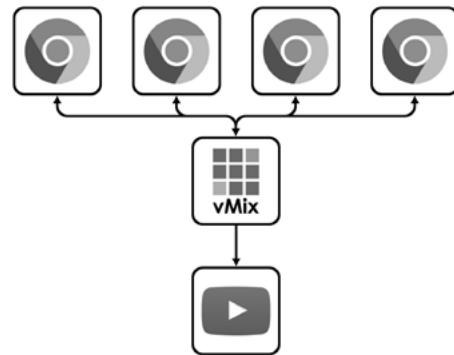
Based on Creation Theatre's previous experience and familiarity with vMix, and its reliability and stability, this residency was completed entirely using a vMix system. This software vision mixer provides a complete single-programme Telepresence Stage solution, and is to our knowledge unique in its incorporation of videoconference communications (vMix Call) with video mixing and chromakeying effects.

vMix uses the Windows operating system and was developed by StudioCoast PTY Ltd., who describe it as follows: "Like most vision mixing software, it allows users to switch inputs, mix audio, record outputs, and live stream cameras, videos files, audio, and more, in resolutions of up to 4K. The software is also capable of various configurable external output and display options. With the inclusion of vMix Call the software vision mixer provides built in video-conferencing. With vMix Call, any third party with access to a web browser (on any platform including mobile) can connect remotely to the vMix software. This allows the operator to incorporate the call into a live production in the same way that they would with any other source."

<https://www.vmix.com>

Using the Google Chrome browser and vMix Call website <https://advanced.vmixcall.com>, the separate actors located in Oxford and Birmingham called the vMix software (operator) running on a computer in Brighton. The incoming video calls and virtual sets were chromakeyed together by the operator and simultaneously sent back to the remote actors and streamed on YouTube Live (Diagram 1).

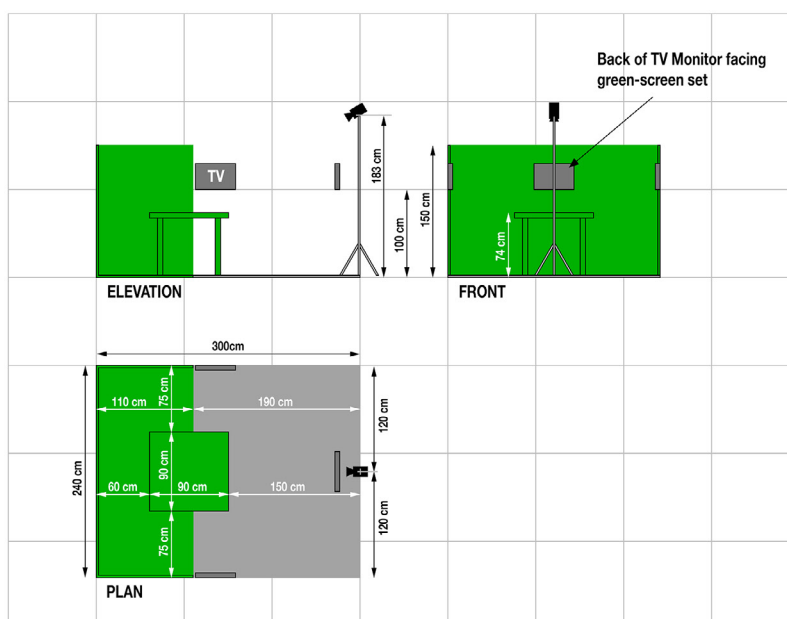
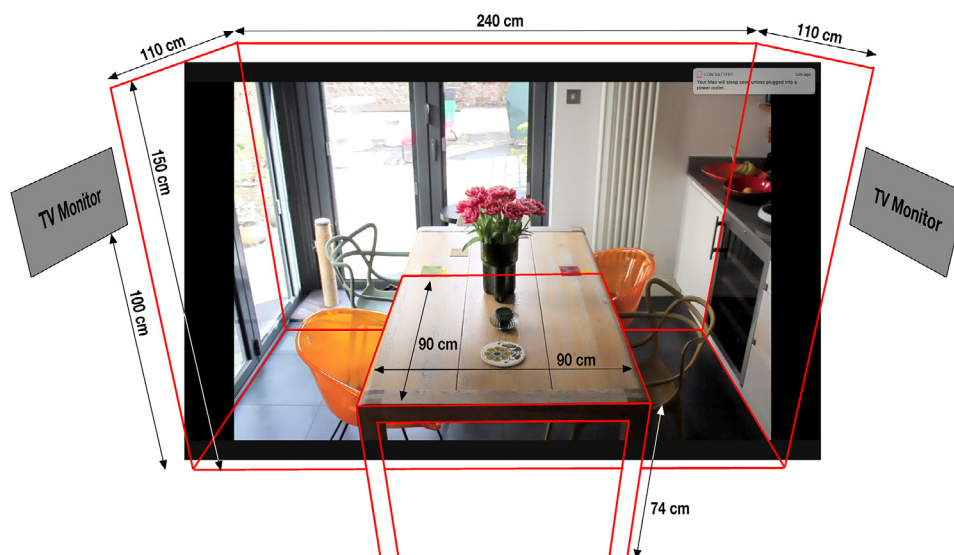
Diagram 1 – Telepresence Stage system workflow.



Participants' Technical Setup



Diagram 2 – Technical Setup Plan for green-screen table and set.



The two remote actors set up identical green-screen sets according to a Technical Setup Plan (Diagram 2) provided by the Telepresence Stage research team, detailing the specific space dimensions and positioning of tables, cameras and screens. The setup was designed specifically to align with The Card Players virtual set, and therefore it was vital that the actors followed the instructions in order to create the spatial chromakeying alignment of all the elements and layers (Image 8, p.58). The final alignment was calibrated by cross-fading the

incoming green-screen table set with the virtual table background (Image 9, p.58), enabling the performers to make detailed adjustments to their camera angles and to the positions of their tables to ensure they were precisely in place. Crucially, the performers set up additional TV monitors on either side of their green-screen sets. This allowed them to look directly left or right, which helped them to better gauge and choreograph their various and changing physical positions in the scene, whilst simultaneously appearing to look directly at each other across the table.

Participants' Technical Setup



Image 8
Graeme Rose sets up his table and green-screen backdrop and checks its positioning and dimensions according to the Technical Setup Plan.



Image 9
Giles Stoakley uses a cross-fade of his green-screen table set and the virtual table to calibrate the final alignment of the two scenes.



The hardware and software used for the vMix operator in Brighton included:

1 x Software: vMix PRO version 24.0.0.58.
1 x Desktop PC: AMD Ryzen 7 3700X 8-Core Processor
3.60 GHz, Windows 10 Pro, NVIDIA Quadro P2200,
Blackmagic DeckLink Duo 2, Blackmagic DeckLink
Mini Recorder.
1 x Monitor 1: DELL U2421HE Monitor.
1 x Monitor 2: Samsung 24" LCD HD TV.

Each participating performer provided and used the following hardware and software:

1 x MacBook Pro / Laptop Windows 10
1 x Google Chrome: <https://advanced.vmixcall.com>
2 x 24" LCD HD TV

In addition, they were each supplied with the following equipment and materials:

1 x Webcam - Logitech C930e USB 1080p Full HD
1 x USB3 extension cable 3 metres (for webcam)
1 x Folding, square card playing table, 85 x 85 x 70cm
1 x Green-screen paint - Mylands CSO Green 5L
1 x Camera/light stands - set of two, 2.1 metre high
1 x Video light - Neewer 2-Pack Dimmable Bi-color 660
LED Video Light with stand
1 x HDMI Splitter

Description and Analysis



Image 10
Two identical cups in the same position allows Giles Stookley (right) to pour Graeme Rose (left) a drink, but Graeme's cup remains mysteriously empty.



Image 11
Graeme and Giles dispute the winnings and play a hand-stacking game on the cash, as their front and back image sequence is quickly switched by the vision mixer.

Description and Analysis



Image 12
The card players rise to their feet and only the table separates them as the dispute over the winnings gets heated.



Image 13
A third card player appears from another Cézanne painting on the same theme. Graeme and Giles attempt to communicate with the Impressionist character, who is unresponsive, apparently lost in his game of cards.

Description and Analysis



Image 14
A typical 'head and shoulders' shot of live audience participant, Guy Gadney (centre) is placed at the head of the table. He is comforted by Graeme (left) behind him and offered a drink by Giles (right) in front of him.



Image 15
The card players attempt to impress their audience visitor with a simple, yet impossible game of catch the ball.



With the starting point of Paul Cézanne's classic painting *The Card Players* (1895) (Image 1, p.51), the two actors from Creation Theatre take the places of their nineteenth century counterparts (Image 2, p.51) to engage in a surreal card game and to wonder why a glass of wine poured by one of them cannot be tasted by the other (Image 10, p.60). Playing cards are dealt and are miraculously picked up by the player opposite, and wads of banknotes suddenly appear as the stakes are raised (Image 11, p.60). As the competition and tension mounts, things turn ugly as a weapon is produced and the argument begins to get physical (Image 12, p.61). Fortunately, the reappearance of one of Cézanne's card players at the head of the table provides a distraction and calms the situation down as they try, unsuccessfully to converse with the inanimate Impressionist figure (Image 13, p.61). Just as the card players give up the ghost and Cézanne's card player fades away; an audience participant makes a surprise appearance and takes his place at the table. But this visitor can speak, and our card playing actors welcome their new friend and pour him a drink (Image 14, p.62). Games are played, with balls being thrown and rolled across the table to one another (Image 7, p.54), although they seem very difficult to catch (Image 15, p.62). The Creation Theatre actors revel in the challenge of achieving the impossible by creating the illusion of physical conjunctions between themselves, their props and the virtual setting, despite being many miles apart. They use a mix of ingenuity, sleight of hand and comic slapstick, but like absurd Samuel Beckett characters they seem destined to try and fail, and try and fail again, but better.

Video Recordings

The Card Players by Creation Theatre - Trailer

3 minutes mp4

[Watch here](#)

The Card Players by Creation Theatre - Performance

25 minutes mp4

[Watch here](#)

Creation Theatre – Residency PLAYLIST

[Watch here](#)



Evaluation



Company Reflections

Creation Theatre were beginning to incorporate digital media into their shows before the pandemic, and by the time they undertook their residency, they had already completed 16 online productions. But digital theatre had still been a somewhat limiting experience for them, with, for example, the inability to make actions such as ‘passing’ or ‘throwing’ an object to each other feel real. They saw the Telepresence Stage project as offering them the possibility to explore digital theatre as a 3D space with depth, ‘touch’ and connection. A key shift for them during the residency was to “unlearn a camera centric focus and think differently” (Graeme Rose) about digital theatre as a space to coexist. “When you become two people engaging in a different way... it allows you to do things that are emotionally very difficult to do down the lens” (Giles Stoakley) to create theatrical tension. For example, Giles describes the moment when Graham sat on the table with his back to him, looking at him in disgust, as “the most magical in the whole show ... the action of using attention to create drama is something we have not been able to do”.

As a site-specific company, the actors’ relationship with the audience is critical. They were excited to “mix carefully choreographed and technically competent acting with an audience participant ... [or] ‘rogue agent’ who could do or say anything to disrupt the activity” (Lucy Askew, Creative Producer). This was felt to be both artistically and commercially interesting for consideration for future productions and the potential kinds of experiences they can create for audiences, who are becoming ever more sophisticated and familiar with digital formats. They reflected on how audiences now perceive and appreciate the skill of the actors when they do manage to catch a ball (or achieve the sleight of hand illusion of doing so) or at least get their hands in the right place. There is also a playfulness and ‘pleasure principle’ in knowing that they will never actually catch the ball. Indeed, the fact that the audience is ‘in on the joke’ of this unreality heightens their attention. The act of engaging an audience member in the same virtual space, who does not to know the rules but is able to play and explore it, was particularly exciting for Creation Theatre. They expressed enthusiasm for doing so again in potential future projects including “creating installations in galleries or in shop fronts over different sites connected across the country, engaging audiences in a similar activity” (Giles Stoakley).

Research Team Reflections

Creation Theatre approached their Telepresence Stage residency with a clear objective: to learn from the opportunity to work with green-screen techniques to establish the sense of a very solid spatial and physical set for their characters to inhabit, move around and interact together in very physical ways. At one point this included one stabbing the others’ hand. The process was as much a conceptual learning curve for them as it was a practical one. It meant shifting the emphasis from the actors being together in one location and performing on camera to an audience in another location, to the actors performing to a remote audience from their two separate locations, yet coexisting on a shared digital ‘stage’ in a third location – the Telepresence Stage. It provided the actors with the ability to coexist, to perform and act in unison, on screen/ stage together. Their decision to focus on the card players’ table and to use a selection of props to explore this new online theatrical space opened up a range of new possibilities, as Giles Stoakley, Actor and Production Manager for Creation Theatre observed:

“Since we’ve started doing digital theatre, I’ve always thought the kind of kitchen sink drama with small casts would just not work, but actually the feeling of real space and confinement that this gives you opens up a whole raft of drama that I never thought would work digitally. I think it’s really, really exciting.”

Creation Theatre used the opportunity of their Telepresence Stage residency to experiment with the paradoxes and potentials of how the physical can interact with the virtual in ‘third space’ telematic theatre. They reported it as eye-opening – feeling like they were discovering an entirely new medium, and experimenting with it exuberantly to discover its ‘magical’ possibilities in much the same way that Georges Méliès and the early cinema pioneers did over a century ago. A week after their residency, Creation Theatre’s Creative Producer Lucy Askew wrote to the research team to let them know that “we’re already using things we discovered in the next show!”



Key Takeaway Points

Precise set up diagrams were drawn up in accordance with the virtual set, allowing the remote actors to construct identical green-screen sets. The provision of identical tables and certain props was clearly important in ensuring the illusion and the visual alignments between the actors' two green-screen spaces. Careful consideration of the green-screen set design in advance remains crucial to such performances, ensuring the objects and green-screen interfaces are identical, and allowing the actors to coexist in the same scale and from the same camera angle within their set arrangements.

The use of green-screen paint rather than green fabric material was found to be preferable when working with certain green-screen sets and physical objects such as tables, where movements or objects placed on the table may result in creases in the material. These do not 'key' well and will show up on screen to disturb the illusion of a consistent and flat table surface. Green-screen paint allows for better physical interaction with objects, providing a consistent shade of green throughout the set design, which enables greater precision for chromakeying the separate locations together.

The Creation Theatre actors considered and developed green-screen effects to attempt to blend their sense of coexistence. Some worked successfully but others failed in their efforts at 'suspending the audience's disbelief'. Some of this was due to a lack of rehearsal time to fully explore and practice the various illusionary effects and tricks, and this is an important consideration in increasing a sense of authenticity and spatial fusion in telepresence stage productions.

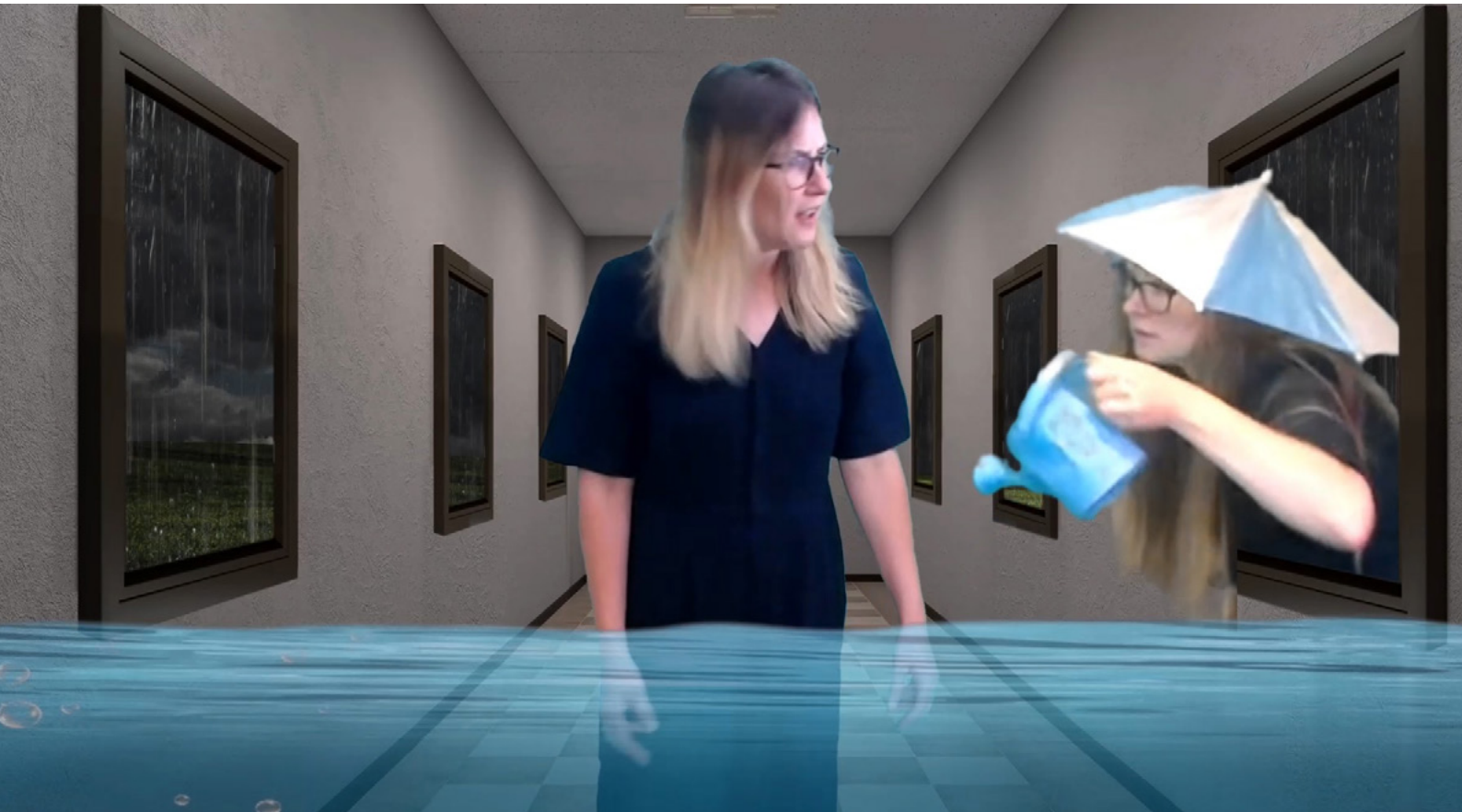
Creation Theatre used a typical 'head and shoulders' video-chat image of a live audience member to great effect, by scaling and placing their video to fit within the scene as though he was sitting at the head of the table. The ability to incorporate audience participation directly into telepresence scenes, either as passive or active contributors enhances the theatricality of such performances. It provides a real sense of liveness (this cannot be a recording) as well as suspense for other members of the audience, who realise they may also find themselves suddenly appearing 'on stage' within the *mise-en-scène*.



Pigeon Theatre

Pigeon Theatre

April – July 2021



Company Summary

Pigeon Theatre are a Manchester and Leeds-based contemporary performance company established in 2001. Their work is experimental and interactive, often using non-traditional spaces and unconventional means to create intimacy between themselves and their audiences. Their site-specific works include promenade events, and performances in domestic kitchens (The HOUSEKEEPER, 2002-3) and pub bars (the REHEARSAL (HAPPY HOUR), 2006-7) that draw the audiences directly into the action. The company explore multiple ideas and themes, from the construction of identity (the TWICE REMOVED, 2009-12) and the relationships between grand ideas and minutiae (a BIG CONCEPT and a VERY LITTLE DETAIL, 2009-10) to childhood, envy, love and loathing (the SMELL of ENVY, 2021-13). Their central research concern focuses on the formal structures of space, environment and architecture.

Pigeon Theatre were former greenroom (Manchester) Associate Artists, and former PANDA Incubated Artists, commissioned by PANDA-monium to develop and perform a trilogy, The Rehearsal, for Manchester International Festival 2007. They have toured extensively in the UK, as well as in Europe including at the International Theatre Festival, Amsterdam and the Jerzy Grotowski & Thomas Richards Workcentre, Pontadera, Italy.

<https://pigeontheatre.wordpress.com>



Pigeon Theatre

April – July 2021



Residency Summary

The company decided strategically to commence their residency with no preconceptions or initial creative ideas, starting from an entirely empty page. This was in order to allow the Telepresence Stage platform and the experience of working in virtual spaces to help prompt their approach, and inspire storylines and dramaturgical elements. The first session proved pivotal in that respect. The research team had set up a series of graphical geometric shapes as background planes and foreground objects for the two actors, Anna Fenemore and Gillian Knox (working remotely from their separate homes) to explore and co-inhabit (Image 1, pg.70). The shapes, including rectangles, triangles, circles and trapeziums had certain 'cut-out' elements and/or were layered as backgrounds and foregrounds (Image 2, pg.70). Depending on the actors' positions in relation to them, parts of their bodies could be seen whilst other parts were hidden, in the same way that a person looking out of a window is viewed by someone outside the house (Image 3, pg.71). The layers of images could be reordered instantly at the push of a button so as to place someone in front of or behind an object or plane.

This directly prompted many of the scenographic ideas the company developed, with multiple types of windows and geometric shapes becoming a dominant visual aesthetic.

Various digital scenographies were created as the project progressed, from a building frontage with large, ornate Gothic windows (Image 4, pg.71) to a long corridor with multiple doors which were sometimes open, sometimes closed, and at other times replaced by windows (Image 5, pg.72). These looked out onto a pastoral landscape with changing weather, from a sunny day with fast moving clouds to stormy with torrential rain. These settings enabled the two actors to either co-locate within the same space, for example in the corridor, or be separated in two different spaces, but still able to observe and interact with the other, for example, with one inside the corridor and the other outside looking in at them through a window (Image 6, pg.72). The sense of togetherness followed by separation grew increasingly marked and dramatic as the performance progressed, climaxing in a final sequence. In an empty room, Anna watches impassively as Gill, who is trapped in close-up inside an old-fashioned TV set, becomes gradually submerged under water (Image 7, pg.73).

Pigeon Theatre

April – July 2021



Image 1
Working from their separate homes but conjoined using green-screen chromakey techniques, Gill Knox (left) and Anna Fenemore (right) appear together on the Telescence Stage.



Image 2
During their first session, the actors improvise with different geometric planes and virtual objects, and explore touching one another telematically.

Pigeon Theatre

April – July 2021



Image 3
Looking out of a window shape, Anna takes a virtual bite out of Gill's hand.



Image 4
Through a Gothic window, Anna converses with Gill as they both enjoy some wine, in Pigeon Theatre's Where are the children?

Pigeon Theatre

April – July 2021



Image 5
Gill, in the foreground, dances enthusiastically across the corridor before exiting through a door.



Image 6
The corridor's doors are reconfigured as windows for a number of scenes in the production.

Pigeon Theatre

April – July 2021



Image 7

In the final scene of *Where are the children?*, Anna watches an increasingly frantic Gill on TV, as rising water gradually submerges her.



Company Engagement

Two of Pigeon Theatre's founding members took part in the research project, and when approached were enthusiastic at the prospect for three primary reasons. Firstly, to enable them to work together remotely and safely despite the social distancing protocols surrounding the pandemic and its lockdowns, and secondly to be able to devise and rehearse from home with their respective children with them, without the need for childcare arrangements which rehearsals would normally involve. Thirdly, they were excited to experiment with the new possibilities that telematic theatre using virtual scenography would offer to their ways of working.

Both confessed to generally lacking confidence and expertise with technology, and to being a little scared at the prospect of setting up and operating their equipment in their homes. However, with some guidance from the research team, they found the system much easier to set up and operate than anticipated. They noted that it was relatively straightforward and they were thrilled to feel they were achieving something technically proficient. They concluded that "if we can do it ... then anyone can do it".

“Had we more time, I think we should have got even wackier so that was fantastic, totally working in a different way and trying to push it. It created a world that you just did want to spend time with and mess around with ... it's just an exciting space that's naturally making you want to experiment, to be in and enjoy. The kind of theatricality that it's able to create is just brilliant and incredibly exciting for us.”

Pigeon Theatre performer, Gillian Knox.

Ideas and Experiments

The company built up their ideas progressively, using improvisations and developing scripted sequences. They were fascinated by what could be achieved that was specific to the digital medium and not replicable on a traditional stage. When experimenting with video-mixing their two remote spaces and using different compositing effects, they developed a number of ideas. One was to use a real-time video function that rendered both of their bodies at 50% opacity. This provided an effect that was used in the final performance, where their two faces, when positionally aligned, appeared to be a new composite face superimposed together as a ghostly image (Image 8, pg.75). Another 'doubled' effect was achieved when Gill's face appeared within a TV monitor placed in front Anna, whose torso and legs were positioned to provide a visual image of one body. As Gill yawned, Anna's hand started to rise. As it moved up towards her face, Gill mirrored the same hand movement, and her hand appeared in the TV's screen to complete Anna's movement (Image 9, pg.75). Such sequences extended the company's ongoing explorations of identity politics in a novel way, using compositing techniques to interrogate notions of selfhood and otherness. Anna and Gill reflected that over the years their looks, including hairstyle and spectacles, had become increasingly similar and that these types of digital-only effects extended their recurring theme and conundrum of "who is who, who is dominant, and who is not."

Pigeon Theatre

April – July 2021



Image 8
Respectively walking forwards and backwards, moments are reached when the images of the two performers, each rendered at 50% opacity, align and converge eerily.



Image 9
Like a game of exquisite corpse, Gill's head and Anna's body are separate, but provide the illusion of being connected when Anna's hand movement to cover a yawn is completed, apparently seamlessly, by Gill on TV.



Performance



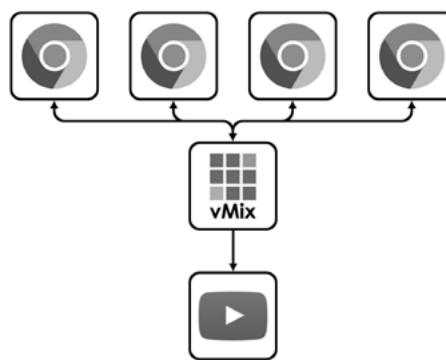
The Pigeon Theatre residency was completed entirely using a vMix system. This software vision mixer provides a complete single-programme Telepresence Stage solution, and is to our knowledge unique in its incorporation of videoconference communications (vMix Call) with video mixing and chromakeying effects.

vMix uses the Windows operating system and was developed by StudioCoast PTY Ltd. It allows users to switch inputs, mix audio, record outputs, and live stream cameras, videos files, audio, and more, in resolutions of up to 4K. The software is also capable of various configurable external output and display options, and with the inclusion of vMix Call the software vision mixer provides built in video-conferencing. With vMix Call, any third party with access to a web browser (on any platform including mobile) can connect remotely to the vMix software. This allows the operator to incorporate the call into a live production in the same way that they would with any other source.

<https://www.vmix.com>

Using the Google Chrome browser and vMix Call website <https://advanced.vmixcall.com>, the separate actors, located in their separate homes in Manchester called the vMix software (operator) running on a computer in Brighton. The incoming video calls and virtual sets were chromakeyed together by the operator and simultaneously sent back to the remote actors and streamed on YouTube Live (Diagram 1).

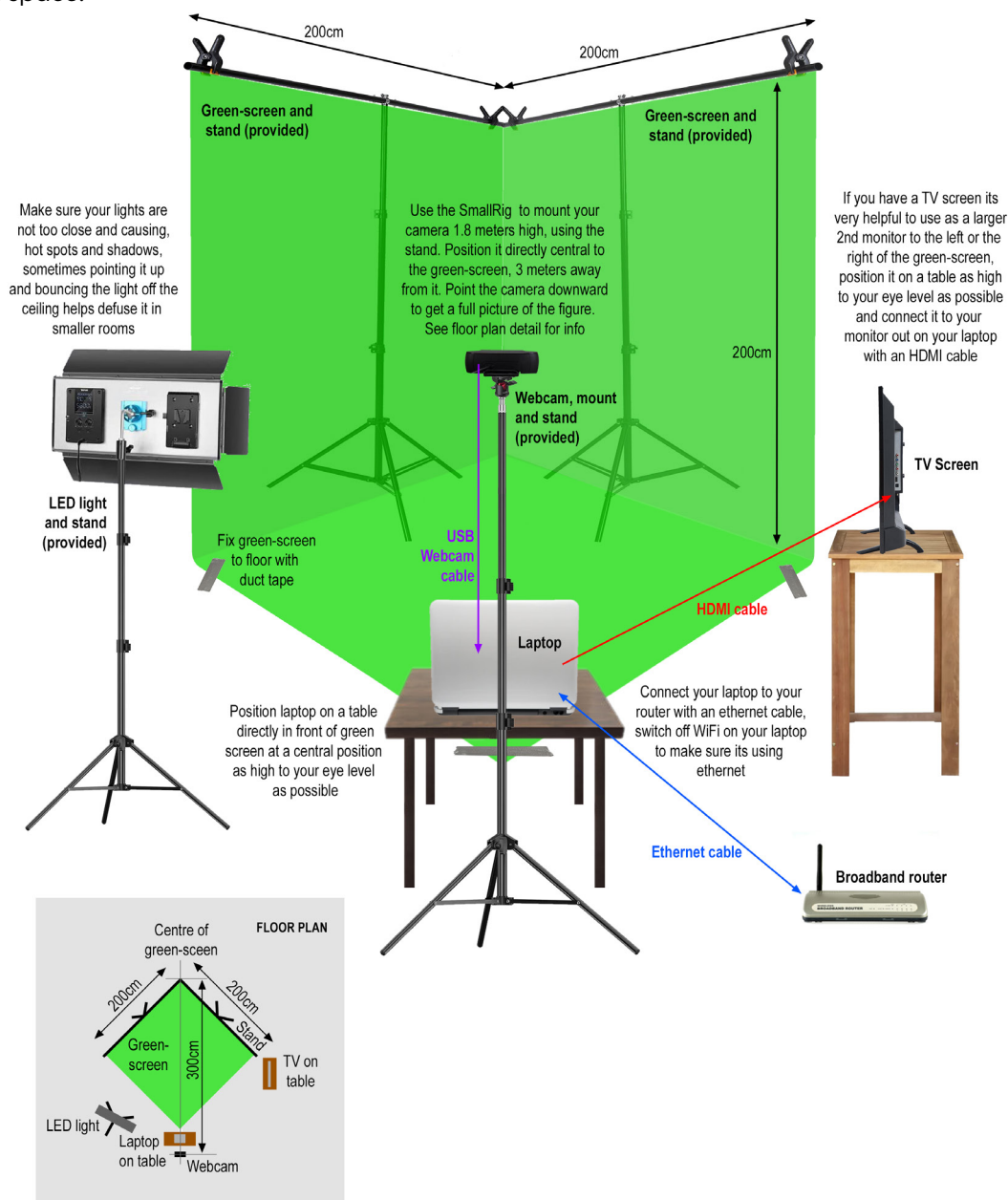
Diagram 1 – Telepresence Stage system workflow.



Participants' Technical Setup



Diagram 2 – Technical Setup Plan for green-screen space.



The two remote actors set up identical green-screen sets according to a Technical Setup Plan (Diagram 2) provided by the Telepresence Stage research team, detailing the specific dimensions of the space and the positioning of the green-screens, camera, laptop and video screen. In order to create as wide a green-screen as possible and overcome the limitation of the small room sizes, two green-screens were placed together at right-angles in each location. The green-screen arrangement used the two walls to create a complete backdrop 3.5 metres wide.

This also allowed the actors to step back and forth within the space, whilst surrounding each actor within their green-screen environment. The performers set up additional TV monitors on either side of their green-screen sets. This allowed them to look directly left or right and still be able to see the composite image, which helped them to better gauge and choreograph their various and changing physical positions in each scene, whilst simultaneously appearing to look directly at each other, thereby appearing to coexist and converse in the same space.



The hardware and software used for the vMix operator in Brighton included:

1 x Software: vMix PRO version 24.0.0.58.
1 x Desktop PC: AMD Ryzen 7 3700X 8-Core Processor
3.60 GHz, Windows 10 Pro, NVIDIA Quadro P2200,
Blackmagic DeckLink Duo 2, Blackmagic DeckLink
Mini Recorder.
1 x Monitor 1: DELL U2421HE Monitor.
1 x Monitor 2: Samsung 24" LCD HD TV.

Each participating performer provided and used the following hardware and software:

1 x MacBook Pro / Laptop Windows 10
1 x Google Chrome: <https://advanced.vmixcall.com>
1 x 24" LCD HD TV

In addition, they were each supplied with the following equipment and materials:

1 x Webcam - Logitech C930e USB 1080p Full HD
1 x USB3 extension cable 3 metres (for webcam)
1 x Video light - Neewer 1320 LED Video Light
1 x Camera/light stands - set of two, 2.1 metre high
1 x Camera mount - SMALLRIG Panoramic Ballhead
2 x T-Stand with 2 metre crossbar
2 x Green-Screen, 2 metre width x 4 metre length
1 x Set of 10 screen clamps



The 25-minute performance *Where are the children?* follows two mother characters as they lose and find one another in various locations, tidy away toys, converse, drink, dance, and repeat themselves. They discuss the intricacies of domestic chores, making lists, worrying and not worrying, self-confidence (or lack of it), semantics and verbal articulacy. Intermittently, they ask “Where are the children?” and note that it becomes “impossible to say where we are right now” as they move through continually changing virtual sets.

The show begins in an empty room save for a TV set, which one character switches on to reveal a corridor (Image 10, pg.81). The two characters suddenly appear within that corridor, moving in and out of six doors and carrying toys, to the accompaniment of cheerful children’s music (Image 11, pg.81). This slows down to an eerie, sinister dirge as they realise one of them has disappeared. She suddenly reappears like a spectre, seemingly haunting the body of the other as their outlines and faces appear to merge (Image 8, pg.75). The optimal size of washing loads is discussed at absurdist length, as the corridor fills with piles of toys and their children appear: one ballet dancing, another playing in a full Batman costume, while a baby crawls around (Image 12, pg.82). Anna, in the foreground of another room pours a cup of tea for Gill, who is staring through a dinner hatch in the background, the illusion being created by the teapot’s tipping action above Gill’s outstretched cup, synchronised to pouring liquid sound effects (Image 13, pg.82).

Gill yawns, Anna asks if she’s boring her, and conflict begins to build. They find themselves miniaturised at either side of the TV monitor. They pull themselves into it (Image 14, pg.83), and find themselves at either side of large Gothic windows, where they drink wine and talk incessantly (Image 4, pg.71), and the subject turns to acts of betrayal. Anna becomes doubled with her live image and actions replicated in two windows, with one image twice the other’s size and upside down (Image 15, pg.83). Gill yawns, Anna asks again if she’s boring her and the scene changes to the corridor. Anna is outside in torrential rain and leans through a window, tipping a toy watering can. Water rises ominously around Gill inside (Image 16, pg.84). The performance ends with Anna in the TV room watching Gill on the screen, in an increasingly desperate close-up as she is submerged by the water (Image 7, pg.73). Anna asks if she’s boring her, then switches the TV off.

Video Recordings

Where are the children? by Pigeon Theatre - Trailer

4 minutes mp4

[Watch here](#)

Where are the children? by Pigeon Theatre - Performance

25 minutes mp4

[Watch here](#)

Pigeon Theatre – Residency PLAYLIST

[Watch here](#)

Description and Analysis



Image 10
In an empty room, Gill switches on the television in the opening sequence of *Where are the children?*



Image 11
Gill (left) and Anna (right) walk in opposite directions as they repeatedly enter, cross the corridor, then exit through the doors carrying various children's toys.

Description and Analysis



Image 12

As the corridor fills with piles of toys, a child performs a ballet dance in the background while a baby and a Batman-costumed child play in the foreground.



Image 13

Anna pours a cup of tea through a dinner hatch for a grateful Gill.

Description and Analysis



Image 14
Finding themselves miniaturised on the television console, the protagonists decide to attempt to get inside the TV, and succeed.



Image 15
A bemused Gill is confronted by two versions of Anna, one inverted and giant-sized.

Description and Analysis



Image 16
As rain falls outside, Anna leans in through a window with a toy watering can to fill up the corridor with water.



Evaluation



Company Reflections

The company reflected that one of the most surprising and satisfying aspects of the project was that it led to a radical change from their usual style of performance. Where previously their work was grounded in place and the down-to-earth material realities of site-specific events, this production explored out-of-the-ordinary spaces, which took their aesthetic and theatrical point of view into a whole new direction. Anna reflected it opened up “new levels of imagination” with “a feeling of a kind of otherworldliness which is so completely opposite to any Pigeon show that we do normally, which is about being rooted in whatever space it’s in—you’re in a pub and you’re having a drink with somebody and that’s what that show is ... [but] that sense of a kind of fantasy world where you’re not quite sure what is happening or who is who is a very different kind of content and approach to thinking about theatre.”

The company felt that the different virtual set environments not only stimulated novel ideas but provided their essential narrative structure, which would never normally be their approach to scripting a performance. They noted how surprised they were with the levels of intimacy the system brought about, particularly when the two of them rehearsed alone without the research team being co-present.

As some dialogue was quick-fire between them, the time lag due to Internet connectivity at times unnaturally lengthened the gaps between the end of one actor’s speech and the beginning of the others. This affected timing and rhythm, and led to what they called a more “conscious and deliberate” acting style. This lack of precision was equally perceived as a disadvantage of some of the virtual sets, for example, the windows of the corridor, which Anna leans into from outside. When her body position was only slightly inaccurate, her limbs or head would breach and bleed beyond the edges of the window frames and come through the walls, spoiling the illusion.

Pigeon Theatre reflected on how intense the working experience was, describing a 3-hour rehearsal in virtual space as equivalent to 9 hours in a physical studio. They noted the performance experience still felt like theatre (rather than television or anything else), since there is still a frame and a live audience, and the same nervous stage fright experienced as it begins; but it is also a “kind of isolated theatre experience, doing it into a void.” They concluded that following the lockdowns, the project “kickstarted” them, making them feel like “they were creatively alive again” and offering them “different ways of approaching work which is always exciting” and which they wish to repeat in the future.



Research Team Reflections

The company adapted well and enthusiastically to the Telepresence Stage platform, which provided a space to create a more otherworldly type of show than their normal work. The project enabled them to develop some of their recurring themes such as identity and gender in significant new ways, and seemed ideally suited for their self-reflective, post-Brechtian style of theatre. In many of their works, they 'break the fourth wall' to confront their audience and remind them this is performance, and this occurred in fresh and interesting ways within the screen medium of *Where are the children?*

At different points in the performance, Anna and Gill would, for example, wonder if their lengthy considerations of domesticity and motherhood were at all interesting to anyone, and turn accusingly to stare direct to camera and their audience. They refer to their script, and 'losing' it by forgetting a line, and question whether they are believable. Gill ends one humorous, volcanic monologue composed of small talk with the words "Small talk, why bother?" spoken to camera.

But their witty musings on the mundane are metaphorical and migrate into philosophical realms, for example, when one discussion on the minutiae of washing becomes a conceptual discourse on "the cyclical nature of cleaning." An Anna monologue showering Gill with compliments uses increasingly absurd similes to reach a type of sycophantic sublime before ending abruptly and harshly, leaving Gill to reflect that Anna is "not a pleasant drunk". Gill later reflects: "all your words seem familiar to me and yet it's as though they've been put together strangely, as if their final purpose were to cancel each other out ... everything remains open and unending and faintly ridiculous."

Key Takeaway Points

This was a successful project in terms of meeting the company's objectives to begin working again within a lockdown context, and to expand their ideas and scope into new telematic/digital contexts. It culminated in a strong and engaging final performance. The research team believe its success was in part due to the company setting high ambitions for themselves, including developing a complete and densely worded script from scratch, as well as employing multiple virtual set designs and a range of visual effects. They were also able to rehearse and hone their performances in detail by arranging separate sessions beyond the regular 3-hour sessions with the research team, where the two of them could work alone and explore the virtual settings.

There were some technical issues that were resolved, including ensuring effective blackout of windows in their domestic spaces to provide consistent lighting. Other technical aspects worth noting include optimising the positioning of the greenscreen and the camera in relation to the size of home spaces, since one performer had very little room outside of the sides of the camera frame. This resulted in occasional limbs or body parts inadvertently appearing or remaining in the shot.

Whilst the main focus of this research was to find ways of working remotely during lockdown situations, this residency demonstrated the value of remote home rehearsals for people with caring responsibilities. The two actors were able to rehearse and perform whilst their children were in the house with them, removing the need for sometimes difficult and/or costly childcare arrangements. This is no small benefit for many actors and performers, regardless of wider circumstances.



Third Space Network and Ririe-Woodbury Dance Company

Third Space Network and Ririe-Woodbury Dance Company

April – July 2021



Company Summary

The Third Space Network (3SN) is an artist-driven Internet platform for staging online creative dialogue, live performance and activist projects: empowerment through the act of becoming their own broadcast media. A project of Randall Packer, the Third Space Network explores the Internet as a theatre of the future, a place for live artistic experimentation, activism, and social change. Since 2016, 3SN has staged numerous events, including: an international online symposium at Nanyang Technological University in Singapore, Art of the Networked Practice; a series of interviews, Networked Conversations, with leading practitioners and pioneering artists in the media arts; live performances involving a global consortium of actors, musicians, dancers, and performance artists; a two-year series of panel discussions, Raw Hope of Humanity Rising, devoted to the role of the artist in society and politics; and numerous other events that have brought together both local (Washington, DC) and international artists to explore the most far-reaching possibilities of streaming media as a community of theatre.

Ririe-Woodbury (Rī-rē Woöd-būr-ē) Dance Company is Utah's most established institution for contemporary dance. The Company actively embraces and commissions the work of contemporary

choreographers, tours worldwide, and develops dynamic education and community outreach programming. Under the Artistic Direction of Daniel Charon, Ririe-Woodbury Dance Company is committed to building upon the vision of its founders as it continues to evolve as an important voice for innovation in contemporary dance and dance education.

Tenor and performance artist, Charles Lane has spent his career traveling across the boundaries of opera, concert and choral music, cabaret, experimental music, and performance art. For more than 25 years, he has sung in over 100 productions with the Los Angeles Opera Chorus, working with some of the worlds most renowned conductors, theatre directors, and operatic stars, and has toured around the world with the Los Angeles Chorale and the LA Philharmonic under the direction of Maestro Gustavo Dudamel.

www.thirdspacenet.com

www.ririewoodbury.com



Third Space Network and Ririe-Woodbury Dance Company

April – July 2021



Company Engagement

The residency presented an opportunity for the Third Space Network to introduce to the Ririe-Woodbury Dance Company techniques in online dance/music performance. It was also an opportunity to bring together Los Angeles tenor and performance artist Charles Lane, with dancer and choreographer Daniel Charon, artistic director of the Ririe-Woodbury Dance Company in Salt Lake City, to collaborate on a new online performance project Black|White, testing the possibilities of Internet theatre. The collaborators were interested in creating a new work that involved the two artists performing live from their home studios with green screen installations, and to delve into the narrative and performative possibilities of the geographical distance between Los Angeles & Salt Lake City.

They also wanted to create a forum for dancers, musicians, actors, and other artists/performers, as well as the general public, to join them in open dialogue about the process, tools, methods, and possibilities of online performance. In so doing, it was their aim to use the final workshop/performance as a public forum for addressing the Internet as a viable medium for live performance, not just a substitute for physical theatre during the pandemic. 3SN believe networked performance is its own creative medium, with a unique set of techniques, sensibilities, narrative, and approaches for live performance.

There were four artists who collaborated in the residency: Randall Packer, Gregory Kuhn, Charles Lane, and Daniel Charon. For the performance/workshop on 15 July 2021, they had 83 registrants who participated by contributing questions through chat. The audience included members of the Ririe-Woodbury Dance Company, other performing arts professionals from around the world, as well as the general public.

“Being inside of my apartment in downtown LA surrounded by all this technology it was hard to get a sense of theatre at the beginning, but eventually through the process and entire performance I completely forgot that I was in my apartment studio and it really did feel like Daniel and I shared the same stage and that was a remarkable and rewarding feeling and experience for me.”

Tenor and performance artist, Charles Lane

“... I agree totally, and that really just happened in the last day or two when we were able to just keep running, it was like diving into the third space and I had to picture you next to me, like I really had you in this space with me, and it felt a little bit like an alternate reality, which was really awesome.”

Daniel Charon, artistic director of the Ririe-Woodbury Dance Company

Third Space Network and Ririe-Woodbury Dance Company

April – July 2021



Ideas and Experiments

The Black|White residency project was a response to the crises of pandemic isolation and racial polarization in the aftermath of COVID-19. The collaborators wanted to explore distance and separation through the medium of the Internet as an environment to situate two performers: one Black, one White, one a singer, the other a dancer, two individuals who must negotiate distant worlds, distant neighbourhoods, distant lives, and different skin. A reconciliation through the language of image, music, rhythm, collage, and movement, co-mingled in the immaterial space of the Network.

3SN wanted to explore the personal dynamics of intimacy between the two performers despite geographical distance. The narrative of the work was designed around dissolving the boundaries of racial division, with visual material used as backgrounds based on the neighbourhoods of the two performers in Los Angeles and Salt Lake City. To develop intimacy and relationship between the two performers, 3SN discovered that it was necessary to spend a great deal of time allowing them to talk to one another

on set, get to know each other, two performers who had never met in person. Rather than spending all of their time rehearsing with sets and music, they spent considerable time with the two performers engaged in conversation in a voided black space (Image 1, pg.92), just talking about their lives, aspirations, and artistic ideas. They discovered that this technique allowed for a high quality of engagement while the performers were learning to situate their bodies in virtual space mediated through the “windows” of their video monitors. This process of becoming accustomed to being “together” while physically remote is frequently an important part of working with telepresence for new users. It requires the development to two new relationships: firstly, the relationship between one’s own virtual body and one’s physical body, and secondly the relationship with the other’s body, which is simultaneously present and absent. In Black|White, the obvious negotiations around race, life experience and neighbourhood was entwined with the negotiation of physical and virtual bodies and spaces. For these performers, the complex process of learning to co-inhabit voided black space together was a vital precursor to introducing additional virtual scenography and sound.

Third Space Network and Ririe-Woodbury Dance Company April – July 2021



Image 1
Charles Lane
(left) and Daniel
Charon (right) in
conversation.



Performance



The performers were each equipped with a computer, iPhone camera, earbuds for audio, reference monitor, green screen with stand, three LED lights, and high-speed Ethernet connection. One installation was installed in the studio of Charles Lane in Los Angeles (Image 2, pg.96), the other in the studio of Daniel Charon in Salt Lake City (Image 3, pg.96).

The residency rehearsals and performance/workshop were engineered by Randall Packer from the Third Space Network studio in Washington, DC, using Gnural Net's LiveToAir as the primary networking system www.gnuralnet.com/livetoair. A component of LiveToAir, the Call-in Manager, was operated by Gregory Kuhn from his studio in Philadelphia. Thus, there were four nodes in the setup, two for performance, and two for the online platform.

For video processing and compositing, 3SN used VDMX software, which combines the video streams of the two performers from LiveToAir, and then mixes them with other visual materials for background/foreground compositing. They used mattes to fill the image of the performers with silhouettes and video materials. Music and vocal processing was accomplished in Ableton Live software www.ableton.com. They also used a networked audio platform, Sonobus www.sonobus.net, to transmit high quality stereo audio between the performers and the engineering studios. This was critical since one of the performers was a singer, whose voice was processed through a variety of effects, reverb, and delays, as well as layered with additional music, which was engineered in the 3SN studio.

Situating a remote dancer and singer in virtual sets, compositing their live movement, voices, and actions in virtual environments, all in real-time, requires a great deal of technical coordination, automation, and control to achieve a stable, fluid production. For this work, every subtle change in set, movement, video, and sound was precisely cued-in with a software design controlled by MIDI commands. Ableton Live software, while typically used for musical composition and recording, provided for the coordination of cues and timing for all the various audio-visual elements, including: chroma keying, mattes, silhouettes, video material, sound levels, etc. This method of control and theatrical cuing has been refined by the two collaborators Randall Packer and Gregory Kuhn in their previous electronic theatre and new music productions.

The primary adaptation to 3SN's technical setup was with audio. Initially they used LiveToAir's built-in audio, which like most online platforms, is insufficient for professional music broadcasting. So, they decided to use Sonobus, a platform designed for low latency, high quality audio streaming. The biggest technical challenge was the use of Bluetooth earbuds in conjunction with the Sonobus system. This is because peer-to-peer low latency audio streaming protocols do not work well with the commercial Bluetooth standard. With a larger budget, the collaborators would have used more expensive wireless in-ear headphones that are transmitted via radio frequencies, typical of stage productions.

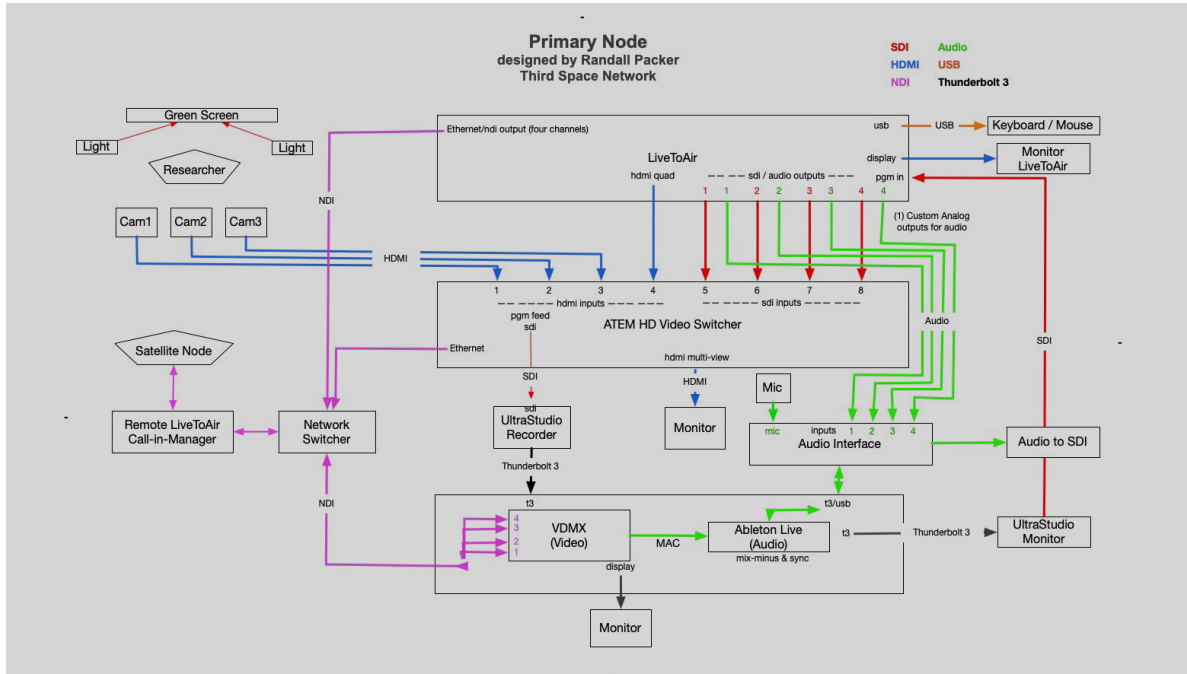


Diagram 1 – Detailed technical system for primary node

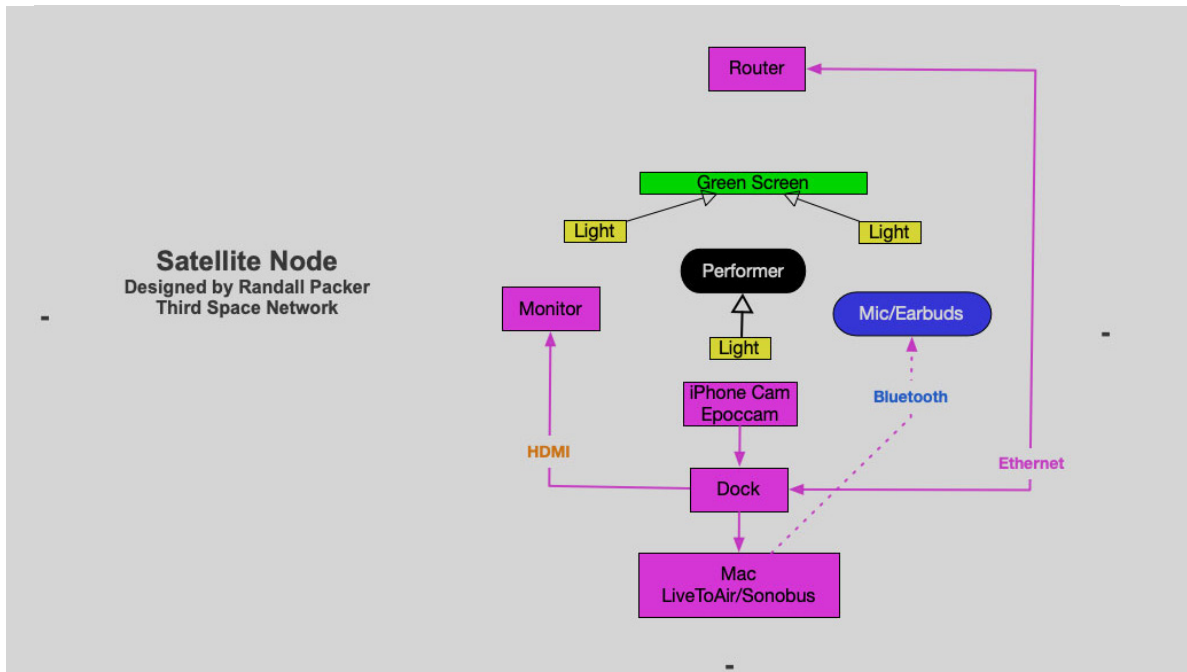


Diagram 2 – Detailed technical system for satellite node.

Technical Setup



Image 2 – Green screen setup in the Los Angeles studio of Charles Lane.



Image 3 – Green screen setup in the Salt Lake City studio of Daniel Charon.



Third Space Network studio

Hardware:

- PC/Windows computer for LiveToAir with monitor
- Blackmagic Design ATEM HD video switcher with preview monitor
- Macintosh computer for audio-visual software with monitor
- Blackmagic Design UltraStudio Recorder (video input)
- Blackmagic Design UltraStudio Monitor (video output)
- Mark of the Unicorn (MOTU) Audio Interface
- Audio to SDI converter
- Network switcher
- Multiple HDMI video cameras
- Green-screen and stand
- LED Video Lights
- Remote computer for LiveToAir Call-in-Manager

Software:

- LiveToAir (call-in)
- Call-in-Manager (remote LiveToAir browser software)
- VDMX (video)
- Ableton Live (audio)

Performers studio

Hardware:

- Macintosh or PC/Windows computer with monitor
- Network switcher / router
- Dock for Ethernet and HDMI I/O
- iPhone camera
- Bluetooth earbuds with microphone
- Reference monitor for side view
- Green-screen and stand
- Three LED Video Lights

Software:

- LiveToAir browser software
- Epoccam app for iPhone
- Sonobus audio software

Description and Analysis



Image 4
Charles Lane silhouette against the background of Alexander Calder sculpture in downtown Los Angeles.

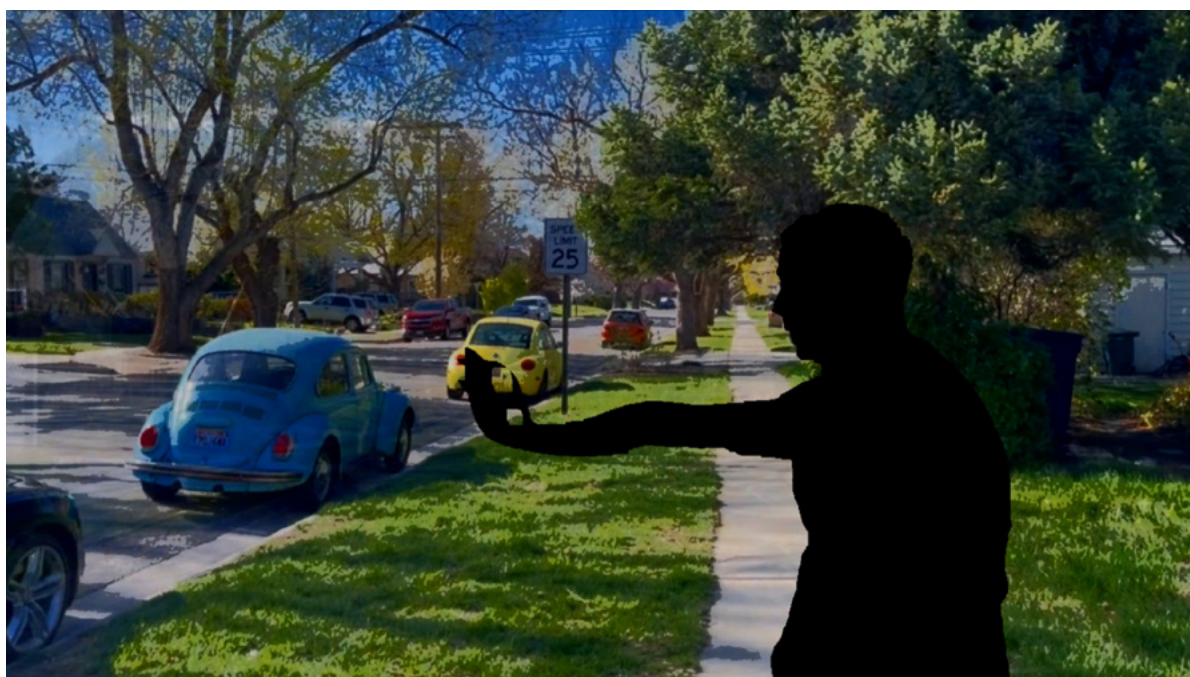


Image 5
Daniel Charon silhouette against the background of suburban Salt Lake City.

Description and Analysis



Image 6
The performers' silhouettes against a superimposed background of the two neighbourhoods.

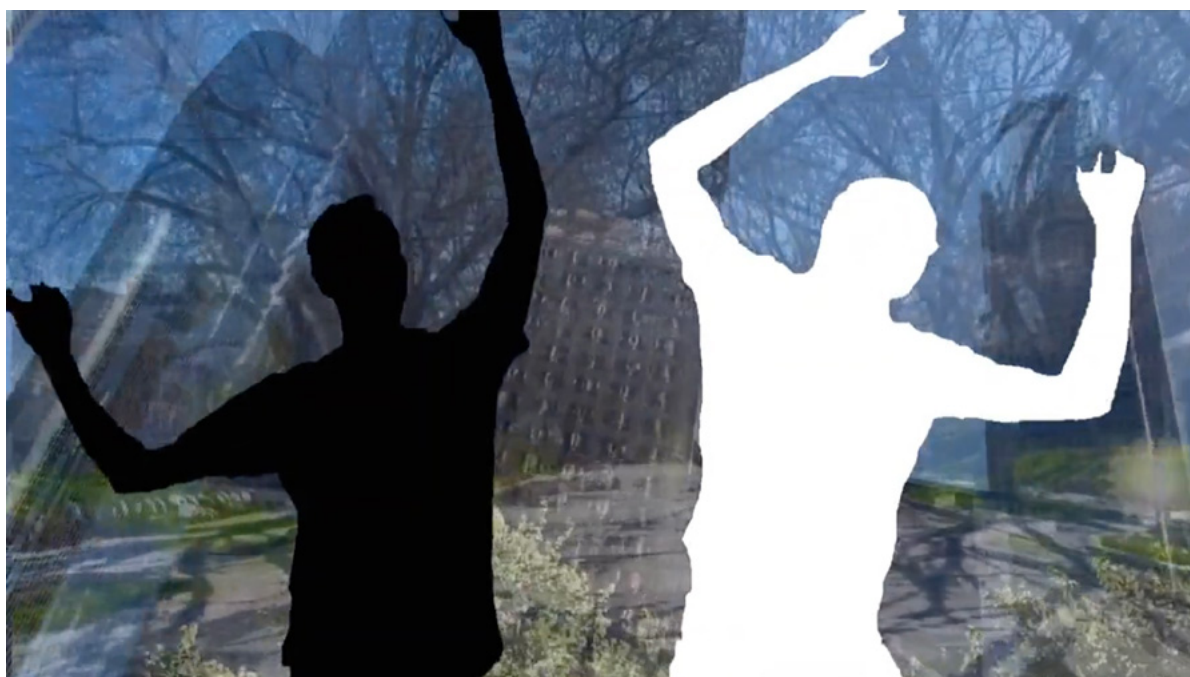


Image 7
Charles Lane (African American) performs as a white silhouette and Daniel Charon (White) as a black silhouette.

Description and Analysis



Image 8

The silhouette performers meet in the middle with the two neighbourhoods superimposed.



Image 9

The performers masked with each other's neighbourhoods encounter each other.

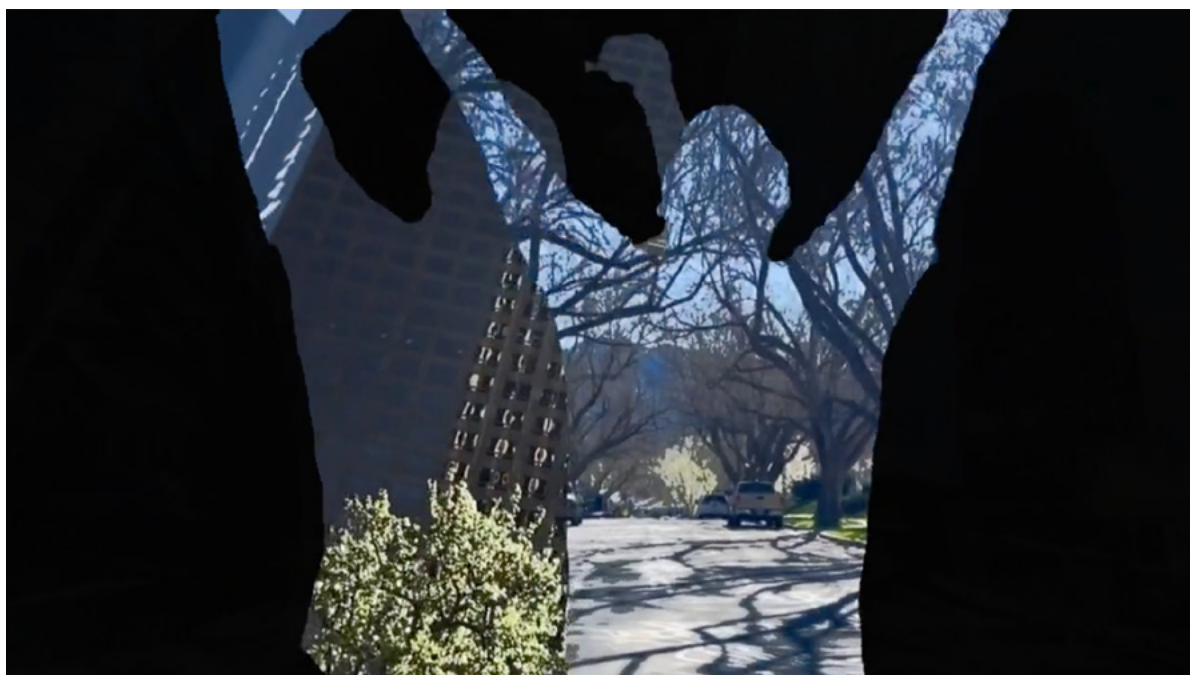


Image 10
The performers synchronise their movements, whilst masked with each other's neighbourhoods.



Image 11
The performers and their doubles without silhouettes or masks.

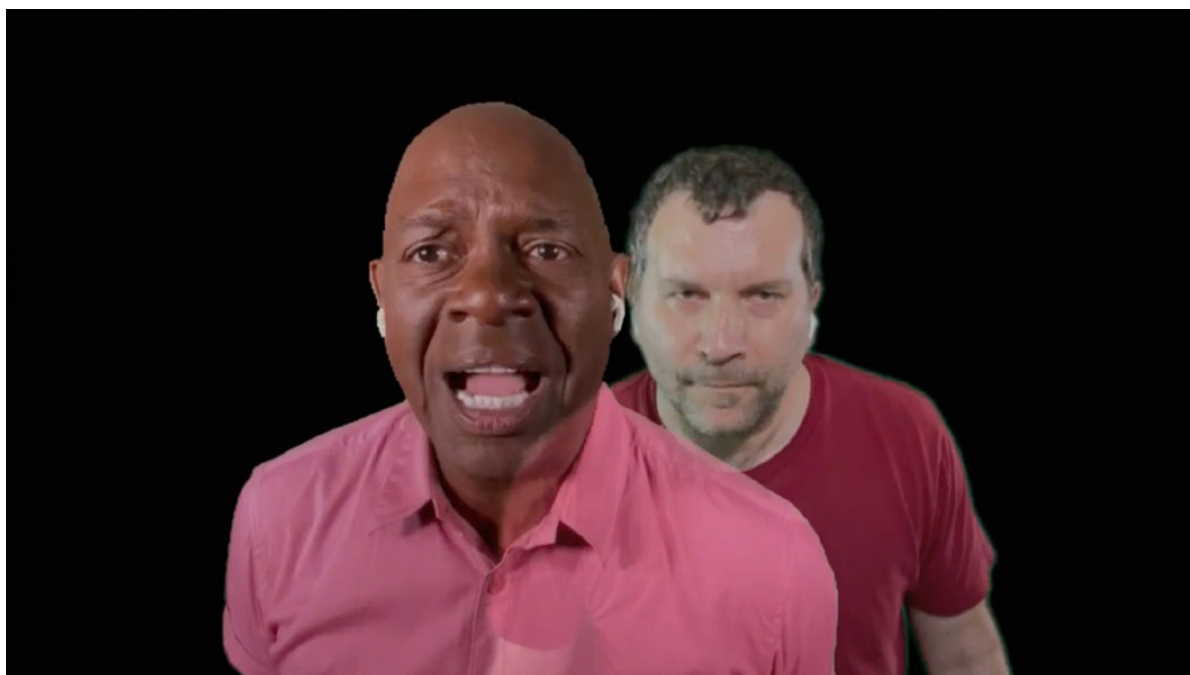


Image 12
Charles Lane performing the Nina Simone song "I Wish I Knew How It Would Feel to Be Free".



Image 13
A protestor kneels with a policeman at a Black Lives Matter rally while the two performers look on virtually.



The final public workshop/performance of Black|White, presented by the Third Space Network and the Ririe-Woodbury Dance Company on 15 July 2021, was broadcast via Crowdcast www.crowdcast.io, the streaming platform for 3SN events. Black|White was one of the most ambitious, technically complex works they had ever mounted. Like other productions, the project focused on political activism and cutting-edge technical and theatrical experimentation.

The performance was approximately 30 minutes in length, in which the two performers, Charles Lane, tenor, and Daniel Charon, dancer, engaged in a series of vignettes sharing their respective neighbourhoods, including: an Alexander Calder sculpture garden near the downtown Los Angeles apartment of Charles Lane (Image 4, pg.98); and suburban, tree-lined streets of Salt Lake City (Image 5, pg.98) where Daniel Charon lives. Each performer had taken video footage of their respective neighbourhoods, and this exchange of locales was intended to collapse distance and initiate relationship between the two (Image 6, pg.99). Charles (African American) performed as a white silhouette, and Daniel (White), as a black silhouette (Image 7, pg.99), thus exchanging racial identity. They each slowly traversed their own and each other's neighbourhoods, until meeting in the middle with the two neighbourhoods superimposed (Image 8, pg.100), a coming together of race and friendship. This was followed by additional traversals of the space, their bodies masked with each other's neighbourhoods (Image 9 & 10, p.100 & p101), a further coming together and sharing of distance and locale. They then performed a sequence without silhouettes or masks, acknowledging their bodies and skin (Image 11, pg.101), while performing a dance-music sequence that culminated with the Nina Simone song "I Wish I Knew How It Would Feel to Be Free" (Image 12, pg.102).

The final scene was composed of footage from a Black Lives Matter rally, in which a Black man implored a policeman to kneel as a gesture of comradery with the protestors (Image 13, pg.102). After extensive pleading, the police acquiesced and knelt, a cathartic moment of collapsing racial division, while the two performers together witnessed the event. Black|White ends with the hope that people can see beyond racial differences to acknowledge their commonalities and humanness.

After the performance ended, the collaborators staged a 30-minute Q&A session with the online audience, who asked the two performers questions about the process, challenges, and rewards of performing live music-theatre online. Many of the questions came from members of the dance community from around the world, while others from the general public.

Video Recordings

Black|White by 3SN and Ririe-Woodbury Dance Company - Trailer

4 minutes mp4

[Watch here](#)

Black|White by 3SN and Ririe-Woodbury Dance Company - Performance

25 minutes mp4

[Watch here](#)

3SN and Ririe-Woodbury Dance Company - Residency PLAYLIST

[Watch here](#)



Evaluation



Company Reflections

First and foremost, the two performers are now well versed in the complexities, challenges, and techniques of online performance. They have at their disposal the expertise to create an online installation in their studios for staging green-screened performance works. They learned how to adjust to the various instabilities of the network and to maximize its efficiency and bandwidth. One of the more challenging aspects of using a green screen, is adjusting the lighting, camera perspective, placement of reference monitor, etc. After completing the residency, both performers, neither of whom were particularly advanced in the use of technology, are now able to individually handle lighting, video, sound, and monitoring with a newly acquired skill set, without the help of a technician.

As a medium for live performance, both performers were exposed to telepresence techniques, how to situate their bodies and actions in composited, online space. This is not easy when you are essentially detached from your body as it appears on the screen composited into a virtual space. You have to stay attentive to the screen in order to calculate your proximity in relation to the other performer and to the set. This creates a kind of mind/body split that must be overcome for the performance to feel natural, for a true connection to be established with another performer. Calculating touch and movement in front of and behind another performer, in conjunction with the complex and changing layering of a virtual set, requires intense coordination, concentration and collaboration: requiring an ensemble approach that unites performers and engineers. This is a technique the collaborators have been developing for many years in live physical electronic theatre: the idea of truly collaborative performance art involving multi-disciplinary artists and technologists.

It is hoped that the performers will continue this direction on their own, working with other artists and companies to create new works of networked performance. The collaborators firmly believe that online theatre, which has been practiced on the margins for nearly 50 years, will now become a mainstream platform in the post-pandemic era, even when the pandemic is no longer a driving force.

“The Telepresence Stage is not just a substitute, it is its own medium with enormous potential for new creative directions in the performing arts.”

Randall Packer, 3SN



Research Team Reflections

The residency project was initially conceived to target two parallel agendas: To work collaboratively on a creative expression with and by remote performers, and to investigate the capabilities and limitations of networked performance given the technology available to the Third Space Network.

From the outset, the collaborative model drove the direction of the residency. As exhibited in much of the rehearsal recordings, performers routinely exchanged ideas, stories, feelings, and reflections on issues of racial divisiveness and on this era of the pandemic. Sometimes the conversations became personal and intimate. This social openness contributed to an increase in the emotional ease between the performers and to a decrease of the affective distance inherent to telepresence. The collaborative process empowered all four participants to contribute to and direct others in visual, sonic, or movement experiments, often pushing what were at that time new or newly discovered possibilities and performative “comfort zones,” in pursuit of expressive or theatrical concepts. This “trial and error” methodology alongside to what amounted to a consensual decision process proved very time consuming. Though not particularly efficient, this reliance on the collaborative process to generate content proved fruitful. In the final workshop performance, Black|White was able to utilise only a fraction of the techniques developed, and only about a third of the planned performance structure.

The triggering motivation for the residency, to discover the possibilities of live video compositing of remote participants, was never systematized in such a way as to allow for a comprehensive or summary evaluation. In other words, the emphasis was always on process, collaboration and experimentation. The various compositing and layering techniques featured in the workshop performance were the result of a collective approach through much of the residency process, where sonic, visual, or movement content was consistently varied and modified. Indeed, some artistically “successful” experiments were not reproduceable, or were simply abandoned for current investigations or performance strategies. Only in the final few rehearsal sessions was there an effort to create a final performance piece that was more or less reproduceable.

Since one focus for the residency was to investigate the expansive artistic palette available to networked performance, many interesting techniques were tested. Of note, most of those experiments had no intention of representing a three-dimensional perspective visual environment for performers to move within. The collaborators opted instead for a rich, multi-layered, abstract approach. And though the performers learned, practiced, and ultimately moved as if inside a virtual 3D space in which they physically related, the visual context, the *mise-en-scène*, was more of a shifting collage or kaleidoscopic video-scape of real outdoor spaces.



Key Takeaway Points

Like traditional theatre, online performance is a very challenging undertaking. There is a new set of technical challenges, particular in relation to the Internet, which introduces latencies, instabilities, and dependence on communications technology to interact and engage. However great the challenges are, it is well worth the effort. Despite these hurdles, the platform can reduce the labour-intensive nature of traditional theatre, which requires costly physical space and technicians to operate the venue.

Here, it is possible to create powerful theatre with a laptop, camera, and free networking software. However, to pursue higher production values, like traditional theatre, requires extensive technological resources. The collaborators foresee that theatre companies, especially those who have been exposed to new techniques through workshops such as the Telepresence Stage project, will incorporate these techniques into their facilities and repertoire, perhaps blending them with traditional and online theatre. Third Space Network view the future of theatre as a hybrid of the physical stage and the virtual environment: breaking down the boundaries between the local and the remote to create a theatre of the “third space”.

When the performers have never met in person previously it was necessary to spend a great deal of time allowing them to talk to one another on set, getting to know each other better, before spending time rehearsing with sets and music.



Guttersnipe Theatre

Guttersnipe Theatre

July – September 2021



Company Summary

Guttersnipe Theatre are a London based company, who describe their aims and productions as “Theatre with womxn [sic] front and centre, both onstage and off it. We are a femxle-led collaborative collective who make bold original theatre that celebrates womxn everywhere. Sometimes we write scripts, sometimes we devise, sometimes we see what happens in the rehearsal room”. The core Team are Grace Church and Molly McGeachin. Their current show ‘SHUGA FIXX vs The Illuminati’ is a collaboration with writer and performer Poppy Pedder. Guttersnipe’s previous productions include: Trip (Winner at One Act Festival 2018 and Brighton Fringe 2019), BITS (Forest Fringe 2018) and Moonface (Park Theatre, Edinburgh Fringe 2016, “Devised with precision and intelligence, and performed with honesty and joy. Not to be missed.” Broadway Baby).

Grace Church is a Lecoq-trained theatre-maker and performer from Brighton whose shows are performed at venues and festivals including Wilderness Festival, Edinburgh Fringe, Camden People’s Theatre, The Wardrobe Theatre Bristol and VAULT Festival. Molly McGeachin is a theatre-maker and actor who has performed at venues such as Park Theatre, Tristan Bates Theatre and features in the Kingsman film The Great Game (February 2020). Poppy Pedder is an actor, writer and workshop leader. She trained at the University of East Anglia and Bristol Old Vic Theatre School where she worked with Sally Cookson, Tom Morris and was Cordelia to Timothy West’s King Lear.

<https://www.guttersnipetheatre.co.uk>

GUTTERSNIPE THEATRE

Guttersnipe Theatre

July – September 2021



Residency Summary

The Guttersnipe Theatre residency was facilitated by project guest researcher Boyd Branch, utilising his online 3D compositing software Virtual Director, a particularly suitable telepresence solution for Guttersnipe's unique cabaret style of theatre. Boyd Branch, Lecturer in the School of Media and Performing Arts at Coventry University, developed and built Virtual Director to explore the effects of immersive visualisations on rehearsing and performing theatre online as part of his PhD at the University of Kent. By the time Boyd joined the project he had already undertaken research on improvisation techniques for telepresence performance and was able to provide a unique set of bespoke 3D solutions for Guttersnipe Theatre.

As part of their ongoing production of SHUGA FIXX vs The Illuminati, Guttersnipe Theatre explored and produced a telepresence staging of the Triple Threat Teen Awards, a 'behind the scenes' talent show parody of television's X Factor and Britain's Got Talent. The show took the form of a satirical black comedy that explores the dark absurdity of conspiracy theories, the poor treatment of young talent and the rise of fear culture through the eyes of SHUGA FIXX, a tween pop-band who have become prime targets of the ultimate inner circle. The three Guttersnipe Theatre performers, Grace Church, Molly McGeachin and Poppy Pedder played multiple parts that follow SHUGA FIXX, from nervous backstage preparations to their final performance, their humiliation by the judges and their success over fellow finalists The Muftiday Boys. They thought this would lead to fame and stardom, but finally it explodes to become the dark controlling world of the Illuminati.



Company Engagement

Guttersnipe Theatre were already engaged in rehearsals for their new production SHUGA FIXX vs The Illuminati in February 2020. Having just received Arts Council England funding, they were all set to go into production and secure venues and tour dates. But when lockdown struck in March 2020, like many performing arts companies, they were forced to put the show on hold. Whilst the company had previously worked on music video productions for the promotion of their live shows, as well as writing and producing their own music, their experience and preparedness to create alternative online performances was limited. Working with Zoom between the performers' homes and bedrooms provided very few options to realise the production they had envisaged.

Guttersnipe Theatre's founding member Grace Church attended a presentation by the Telepresence Stage research team in February 2021 for the WhatNext platform <https://www.whatnextculture.co.uk>, a UK-wide cultural and creative industries network. Following the presentation Grace approached the team, eager to explore the Telepresence Stage possibilities. Together with company co-founder Molly McGeachin and collaborator Poppy Pedder, the company were looking for a solution to develop and present an online episode of their delayed production of SHUGA FIXX vs The Illuminati. They also wanted to expand their ideas and experience of online theatre, and reach their audience and network through an alternative composited telepresence approach – in keeping with their particular unique *femxle-led* approach.

“We are so excited to be working with the Telepresence Stage team on this exciting venture into uncharted digital performance territory. Our company had received Arts Council funding for our show ‘SHUGA FIXX vs The Illuminati’ in February 2020, thus due to COVID-19 our rehearsals and performances were cancelled. We managed to make videos, do live sharing and make scenes, dances and music from our bedrooms. However, this certainly doesn’t compare to our experience of being composited in the virtual space all together.”

**Grace Church, Guttersnipe Theatre
co-founder and performer**



Ideas and Experiments

Following their first introduction session on the principles of the Telepresence Stage, Guttersnipe Theatre produced a concept/mood-board for the project team, drawn from their ongoing production SHUGA FIXX vs The Illuminati. The concept document provided costume and set design suggestions and script ideas, based on a fictitious talent show, the Triple Threat Teen Awards. Having established the theme and direction they wanted to explore, the research team were able to provide feedback and suggestions, delivering a more tailored residency. Six practical sessions took place between July and September 2021, facilitated by Boyd Branch, using Virtual Director as the main compositing solution for the residency.

For their first practical session, the company explored a range of telepresence interaction exercises, which they went on to use in their final performance. Using their preview monitors positioned stage right and stage left (so the performers could view themselves whilst appearing to look directly at the other remote performer in profile) they practiced 'high-fiving' (Image 1; pg.113), including a jolting 'tuck' of the hand mime technique to emphasise the point of contact. They perfected 'virtual hugging' and learned to position their arms according to the layered composition of their video images, performing a convincing group hug. They learnt how to perform 'virtual slaps' (Image 2; pg.113) by refining their coordination and timing, accompanied by a simultaneous, hidden slap to the thigh to provide a convincing sound effect. They practised a sleight of hand 'gift-giving' exercise, where both performers have identical props – one performer reveals the prop and then presents it just outside the camera's view to the other performer, who gestures to receive it and then reveals the same prop in view again. In order to develop their reaction and improvisation techniques they responded to objects and shapes (Image 3; pg.114) and explored tactile sensitivity using the 'Colombian Hypnosis' technique, developed by Brazilian drama theorist Augusto Boal. As if in a hypnotised state one performer faced and followed the hand of another (Image 4; pg.114), whilst maintaining a 20cm distance from it to develop and perfect their telepresence control and response for future practical sessions.

Guttersnipe Theatre

July – September 2021



Image 1
Molly McGeachin (left) and Grace Church (centre) perfect a virtual 'high-five' and Poppy Pedder (right) prepares for another.



Image 2
Molly (left) attempts to 'virtual slap' Grace (centre) whilst Poppy (right) provides the sound effect.

Guttersnipe Theatre

July – September 2021



Image 3
Playing and responding to shapes: Molly (left) and Poppy (right) apply pressure from the sides and Grace (centre) pushes from within.



Image 4
Exploring the 'Colombian Hypnosis' technique: Poppy (centre) leads with her hands as Molly (left) and Grace (right) follow.



Performance



Virtual Director is a compositing and video switching open-source software tool <https://github.com/Geitenkaas/VirtualDirector/> built by Boyd Branch to explore how existing video conferencing tools can be enhanced with telepresence features to facilitate rehearsing and performing online theatre (Diagram 1). The telepresence environment is generated by isolating separate video feeds from a video chat meeting such as Zoom or receiving individual video feeds directly via OBS Ninja <https://vdo.ninja>. Green-screen backgrounds are extracted from the participants' video feeds, who are then positioned as 2D planes inside a 3D environment. This is arranged by an operator in relation to selectable scenic elements in the space. Each object (including the performers) can be moved around, scaled, and rotated to simulate an appropriate sense of scale and depth between performers and the environment, whether they are seated or standing. The scenic elements can be dynamically replaced or changed with other objects available from a library of stored virtual elements and sets.

Virtual Director's graphical user interface (Diagram 2) presents an operator with a grid of players and controls to dynamically select, switch, and manipulate the individual performers' video feeds inside a three-dimensional space. The interface also provides the user with interactive menus to load images, videos, or 3D objects that fill the virtual environment in which the performers are positioned. Virtual Director stores up to sixteen scenes that can be immediately updated to provide seamless scene transitions during the performance. To facilitate real time interaction and response to the spontaneous behaviour of the performers, the software can be controlled via any attached 'musical instrument digital interface' (MIDI) devices, so that knobs, sliders, and buttons can manipulate the scenery and performers on the fly. The functionality of Virtual Director allows the operator to work with the performers by altering backgrounds, foreground elements, and positions of the performers based on their suggestions.

Branch, Boyd (2021) Tele-Immersive Improv: Effects of Immersive Visualisations on Rehearsing and Performing Theatre Online. Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems. May 2021 Article No.: 458, Pages 1–13 <https://doi.org/10.1145/3411764.3445310>

For the Guttersnipe Theatre residency (Diagram 3) Virtual Director was used in combination with OBS Ninja to receive individual high-resolution green-screen video feeds directly from the performers. Virtual Director composited the performers' video feeds within the 3D virtual environments and scenes and streamed the whole performance live into a Zoom meeting, along with music and sound effects. The performance was viewed by audience members in the Zoom meeting.



Video Conferencing Software (Zoom, Skype, MS Teams, OBS Ninja etc.)

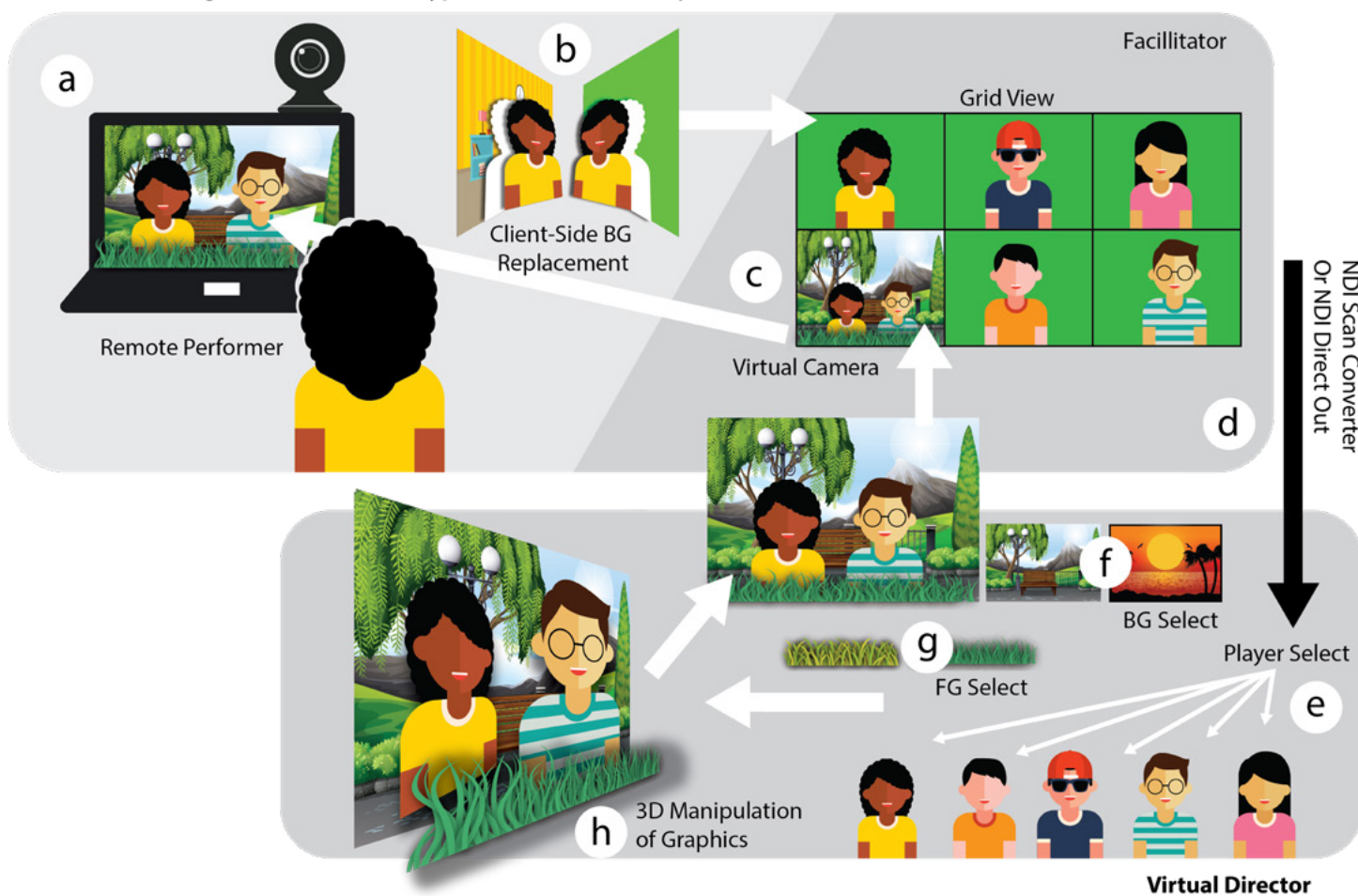


Diagram 1: System overview, Virtual Director 2020: (a) Remote performer connects via videoconference (e.g. Zoom) software, (b) Background green-screen is performed by videoconference software, (c) Performer sees a video of themselves co-located with partners in virtual space, (d) NDI sends videoconference video to Virtual Director,

(e) Automatic separation of videoconference call participants, (f) Virtual Director selects background and (g) foreground elements for compositing, (h) Each element appears as a 3D object that can be rotated, scaled, faded, and positioned dynamically.



Diagram 2: Graphical user interface, Virtual Director 2020: (a) Zoom screen capture, (b) Foreground select, (c) Player select, (d) Background select, (e) Preview.

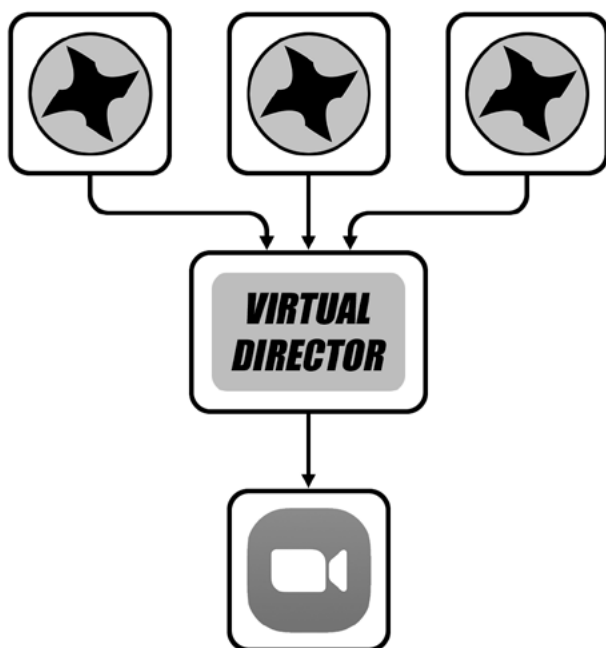
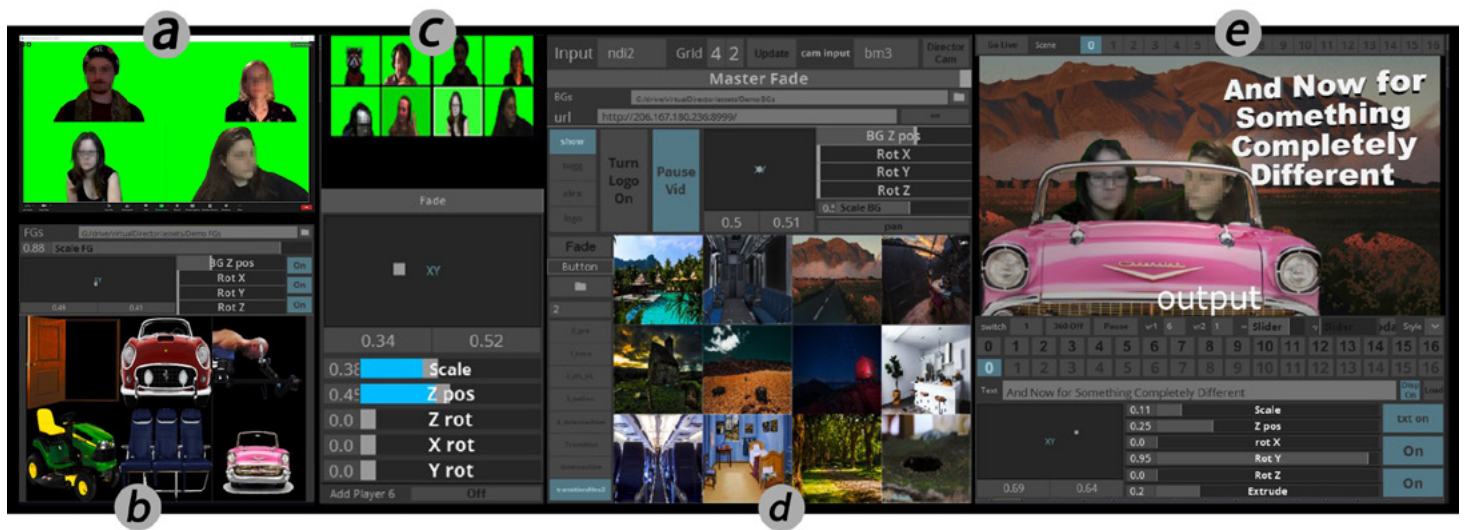
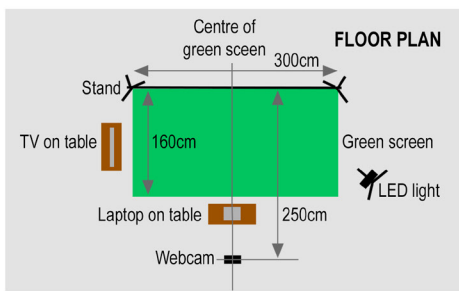


Diagram 3: Telepresence Stage system overview: Video communications via OBS Ninja, audio communication via Zoom, video and 3D set design compositing with Virtual Director, streamed on Zoom.

Participants' Technical Setup



Diagram 4: Green-screen studio setup instructions for each remote performer: Green-screen backdrop and stand, LED video light, webcam, laptop, ethernet connection and TV screen.



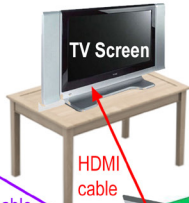
Use the SmallRig to mount your camera 1.8 meters high, using a shelf or door (or stand if you have one). Position it directly central to the green-screen, 2.5 meters away from it. Point the camera downward to get a full picture of the figure. See floor plan detail for info

If you have a TV screen its very helpful to use as a larger 2nd monitor to the left or the right of the green screen, position it on a table as high to your eye level as possible and connect it to your laptop with an HDMI cable

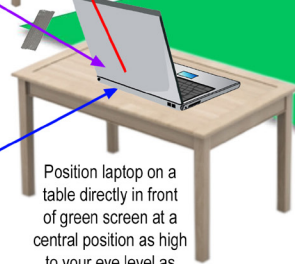


Webcam and mount (provided)

USB webcam cable



HDMI cable

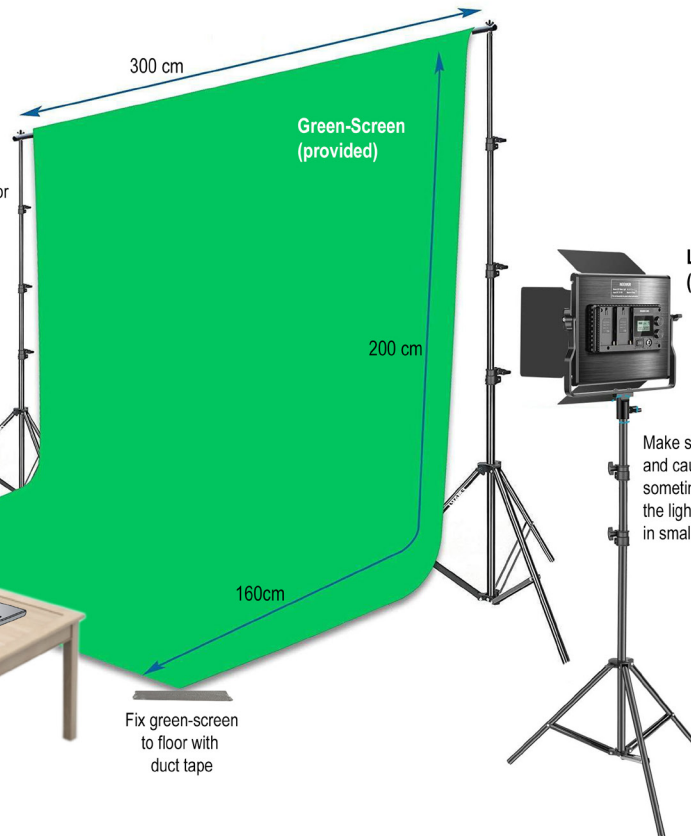


Position laptop on a table directly in front of green screen at a central position as high to your eye level as possible

Connect your laptop to your router with an ethernet cable, switch off WiFi on your laptop to make sure its using ethernet

Ethernet cable

Broadband Router



LED Light (provided)

Make sure your lights are not too close and causing, hot spots and shadows, sometimes pointing it up and bouncing the light off the ceiling helps defuse it in smaller rooms



Video studio resources supplied to each performer:

1 x Green-Screen Backdrop: Neewer 10 x 12ft / 3 x 3.6m PRO Photo Studio 100% Pure Muslin.
1 x Backdrop Stand: Fotga 2.1 x 3m Background Support System Kit.
1 x Video Lights: Neewer Advanced 2.4G 660 LED Video Light, Dimmable Bi-Colour LED Panel with LCD Screen.
1 x Webcam: Logitech C930e USB 1080p Full HD Webcam.
1 x Camera mount: SMALLRIG Cool Ballhead Clamp Mount with Mini Magic Arm.

Hardware and software used by each performer:

1 x MacBook Pro / Laptop Windows 10 Broadband Internet (ethernet connected).
1 x 24" LCD HD TV.
1 x Google Chrome Browser: <https://obs.ninja>
1 x Zoom Videoconference application: <https://zoom.us>

Hardware and software used by the central compositing node:

1 x Desktop PC: Windows 10, AMD Ryzen 7 5800X CPU, Nvidia RTX Quadro 4000 GPU.
1 x 24" Computer Monitor.
1 x Virtual Director software: <https://github.com/Geitenkaas/VirtualDirector/>
1 x Zoom Videoconference application: <https://zoom.us>

Description and Analysis



Image 5
The spinning SHUGA
FIXX ident used
between scenes and
costume changes.



Image 6
Introducing SHUGA
FIXX on stage: 'Jude'
(left) played by Molly
McGeachin, 'Brooke'
(centre) played by
Grace Church and
'Gemma' (right) played
by Poppy Pedder.

Description and Analysis



Image 7
A heated argument breaks out between Jude (left) and Brooke (centre) in the dressing room, to Gemma's (right) horror.



Image 8
Realising they need to pull together, SHUGA FIXX make up with a 'virtual [group] hug'.

Description and Analysis



Image 9
Left on her own in the dressing room, Gemma (right) has a strange sensation of being watched.



Image 10
SHUGA FIX take the stage for their Triple Threat Teen Award performance, complete with pre-recorded videos insets of the band.

Description and Analysis



Image 11
Jude (left), Brooke (centre) and Gemma (right) drive through a techno landscape during their performance routine.



Image 12
Cool and confident, Jude (left), Brooke (centre) and Gemma (right) get behind the wheel of a car for their performance routine.



Image 13
The Triple Threat Teen Award Judges include the archetypal harsh judge (left) played by Poppy Pedder and the overly enthusiastic judge (right) played by Grace Church.



Image 14
SHUGA FIXX on stage with pre-recorded Muftiday Boys, played by (from left to right) Poppy Pedder, Grace Church and Molly McGeachin for the announcement of the winners.



Image 15
SHUGA FIXX's celebrations turn to shock as the stage abruptly explodes!



Image 16
Jude (left) and Brooke (centre) attempt to pull Gemma (right) from the rubble as they find themselves in a hellish landscape.

Description and Analysis



Image 17
A demonic pre-recorded Lizard King steps out from a mirror to menacingly welcome SHUGA FIXX to the Illuminates' lair.



Image 18
Dressed in Illuminati cloaks, SHUGA FIXX hail the Lizard King and succumb to his power and control.



For their final Telepresence Stage performance Guttersnipe Theatre portray the trials and tribulations of Triple Threat Teen Award finalists SHUGA FIXX. The online performance shifts between theatre and television, from backstage fly-on-the-wall drama to prime-time TV talent show, complete with graphic idents between scenes and costume changes (Image 5; pg.121). The performance commences with SHUGA FIXX on stage to introduce themselves, in a confident group plea for viewers' votes (Image 6; pg.121).

The action then moves backstage to the dressing room to reveal ongoing tensions between Brooke, played Grace Church and Jude, played by Molly McGeachin (Image 7; pg.122). Brooke snatches Jude's phone, using the 'gift-giving' technique, which escalates into 'virtual slaps'. The third [wheel] member of SHUGA FIXX, Gemma, played by Poppy Pedder insists they need to make up and 'virtual [group] hug' before going on stage (Image 8; pg.122). Agreeing, Brooke and Jude race off, leaving Gemma behind to encounter a (pre-recorded) visitation from SHUGA FIXX's demon, the Lizard King (Image 9; pg.123). The scene changes as Gemma catches up with Brooke and Jude on stage for their final performance routine (Image 10; pg.123). Through a rapid succession of 3D scene changes, including inset pre-recordings of SHUGA FIXX in the 3D stage set, they perform behind the wheel of a car as they drive through psychedelic landscapes (Image 11 and 12; pg.124). The performance routine ends to rapacious applause followed by a brief ident interlude and costume change. In the next scene the three archetypal judges, played by Grace, Molly and Poppy, give their feedback (Image 13; pg.125).

In the closing scenes, SHUGA FIXX are back on stage with fellow (pre-recorded) finalists The Muftiday Boys, also played by Grace, Molly and Poppy for the concluding announcement... "and the winners are... SHUGA FIXX!" (Image 14; pg.125). As the synchronised and disgruntled 'boy band' leaves and SHUGA FIXX thank their fans, the stage explodes (Image 15; pg.126). As the dust settles a hellish landscape is revealed as Brooke and Jude grapple to help Gemma back on her feet (Image 16; pg.126). Brooke tragically cries out "this isn't what I thought fame would look like!" just as a pre-recorded Lizard King appears from a mirror, laughing menacingly "you're mine now SHUGA FIXX" (Image 17; pg.127), satirically echoing a dark world of coercion and control. In the final scene SHUGA FIXX have accepted their fate and appear in ceremonial occult cloaks trapped in the Illuminates' lair, possessed by the Lizard King (Image 18; pg.127).

Video Recordings

SHUGA FIXX vs The Illuminati – Trailer

4 minutes mp4

[Watch here](#)

SHUGA FIXX vs The Illuminati – Performance

12 minutes mp4

[Watch here](#)

Guttersnipe Theatre – Residency PLAYLIST

[Watch here](#)



Evaluation



Company Reflections

This was unlike anything Guttersnipe Theatre had done before, presenting some fun challenges and providing opportunities for more ambitious ideas and staging configurations. As they progressed through the residency, they became more comfortable and natural working in telepresence space. Grace Church spoke about the difference between her work with physical theatre and the empty space of mime, which was in complete contrast to working with the limitless possibilities of telepresence. Poppy Pedder, who comes from a more classical theatre background was more familiar with having props and sets around her, and so had to rely on her imagination to place herself within the space, becoming less aware of her immediate surroundings. Molly McGeachin, similarly didn't think of herself at home, but rather considered herself as physically transported into telepresence space.

“Whenever I was thinking about what we had to do for the show I was always thinking of us within that space, I was never thinking of my body in my living room standing on a green bit of material.”

**Molly McGeachin, Guttersnipe Theatre
co-founder and performer**

Grace was surprised by the effects of ‘virtual hugging’, describing “a level of solace, it’s a weird feeling ... a sense of closeness I wasn’t expecting”. All three concurred, noting how they suddenly felt very alone on their green-screen after shutting down the laptop screen at the end of a session.

They also spoke about the ritual of setting up and preparing to enter the space, which they perfected as the residency progressed. Poppy spoke about how the experience was more like theatre than film, feeling the adrenalin of being live and present, “because in [her] head the screen was like a mini stage”.

Poppy also talked about being at ease with observing her own image. She thought this was partly due to her cartoon-like character and wondered how it might feel if she had a more emotional and vulnerable role to play. All three spoke about the future post pandemic possibilities of the Telepresence Stage, for script read-throughs, casting, preparing sets and reducing production costs, as well as new hybrid theatre forms, slipping between stage and screen.



Research Team Reflections

Guttersnipe Theatre were extremely ambitious and embraced the Telepresence Stage opportunities from the outset. Their decision to create a mood-board/ script early on was very effective in setting out their aims for the residency. Unlike previous groups, the performers chose to be in costume for every session, which aided them to get into character. It was particularly helpful from a telepresence point of view, allowing them to observe, experience and further embody 'Brooke', 'Jude' and 'Gemma' as members of SHUGA FIXX, rather than themselves. They played multiple roles including live and pre-recorded characters and they perfected quick costume changes, very convincingly switching characters, from naive 'tween pop-band' to egotistical judges. All three were particularly interested in performing with pre-recorded characters and especially enjoyed playing the 'Muftiday Boys'.

Aided by Boyd Branch's control with Virtual Director, they negotiated the latency and synchronised their interactions seamlessly with the pre-recorded boy band. They were particularly committed to rehearsing and learning a routine, repeatedly trying something out again and again until they had perfected a sequence of interactions and could reproduce them reliably. Sometimes, whole sessions concentrated on just one particular scene. Some actions proved easier to reproduce than others. The virtual group hug was particularly effective, while the fast face slap could be impacted by even the tiniest amounts of lag. However, the performers developed cues to help them manage the timing on most occasions. It was agreed that a small amount of time-slippage highlighted the liveness of the event without detracting from the ongoing narrative. The audience is accustomed to a certain amount of suspension of disbelief in live staged theatre, and the telepresence stage is no different in that respect, although the particular points of suspension differ slightly.

Before the residency Boyd had mainly used Virtual Director for improvisation, and this was the first time he had to follow a script and prepare specific scene changes in advance. In this capacity he had to work in partnership with the performers, rather than choose their scenography for them. Boyd had a complete view of all the performers' video feeds, even when off screen/stage, 'waiting in the wings' which he could use to cue scenes, so he had oversight of the entire production, both on stage and backstage simultaneously. Towards the end of the residency in September 2021, Guttersnipe were also starting physical rehearsals for a staged version of SHUGA FIXX vs The Illuminati, which included routines they had learnt and developed during the residency. But some scenes were just not possible to replicate on a physical stage. The two different performances represented a trans-media storytelling of the same production, but they were ultimately interested in how the two shows could perhaps converge in the future.



Key Takeaway Points

Commencing the first practical session with a series of telepresence interaction exercises introduces the performers to the space very effectively. They quickly learn how to orientate themselves, react and respond to virtual interactions, through techniques such as 'high-fiving', 'virtual hugging', 'virtual combat' and 'gift-giving'. The performers learn how to negotiate latency and develop a telepresence sense of proprioception in relation to themselves and other performers in the space.

Wearing a costume helps the performer get into character and further embody the role they are playing on screen in front of them. When the performer is dressed according to the scenography they are placed within, the experience becomes more intuitive, they immediately feel in context and a sense of freedom in performing in character.

Using video clips or 'idents' between scenes provides an opportunity for costume changes and scene setting interludes, as well as for the preparation of props or physical objects. Video clips of pre-recorded performers can be used to integrate additional characters. By rehearsing and synchronising interactions with a pre-recorded video it is possible to create convincing interactions between live and pre-recorded performers.



Red Ladder Theatre Company

Red Ladder Theatre Company

January 2022



Company Summary

Red Ladder is a radical theatre company with 45 years of history. The company is acknowledged as one of Britain's leading national touring companies producing new theatre, contributing to social change and global justice. Red Ladder is funded by Arts Council England and by Leeds City Council. Founded in 1968 in London, the company has a colourful history rooted in the radical socialist theatre movement in Britain known as agitprop. Born into an era of riots, demonstrations and revolts, Red Ladder has grown up, kicking and screaming, into the 21st Century, where it continues to fight, to entertain, and to agitate in as equal measures as possible. Their work now tours the UK playing in theatre studios and alongside this they take the same high-quality touring shows into community spaces

to engage audiences in non-theatre venues such as working men's clubs, community centres, public houses, trades union conferences and galas. Red Ladder's work aims to tell the stories of struggle and reach audiences who feel they have no voice on British stages.

www.redladder.co.uk





Residency Summary

This residency was configured within the Research and Development phase for Red Ladder Theatre Company's new production, TAXI. The show was based around the experiences of a taxi driver in Leeds, portraying issues of mental health and the fragility of society. The company intended to combine live stage performances with digital elements, to create a world in which strange and surreal events could happen in a believable way around the physical actors. They used the Telepresence Stage residency to experiment with the technology as a possible way to achieve this.

The residency consisted of two afternoons of practical workshopping with the research team, topped and tailed with an introductory session and a debriefing discussion. The Red Ladder group arrived at the

workshops with a prepared script and ideas for a series of "shots" or camera angles, in a manner and approach reminiscent of a television or film production. The entire scene took place in a car, involving dialogue and interaction between a taxi driver and their passenger in the back seat of the car. The group experimented with this scene over the two workshops, trying out different techniques and approaches. They produced a 3-minute version of the scene for the final residency performance.

The Red Ladder residency differs from others in the Telepresence Stage project, as the company brought considerable experience of working in television and film as well as live theatre. Their use of techniques from these contexts opened up some fertile areas for further experimentation.



Company Engagement

Red Ladder's aim in their production of TAXI was to blend reality and fantasy to make the audience question their perceptions of reality. They were interested in exploring how the Telepresence Stage might enable them to incorporate elements of surrealism or graphic novel aesthetics into the live stage environment. They wanted to know whether the technology could embellish, amplify or complicate the audience's perceptions of liveness within the theatre context. They were also interested in the actors' experiences, and whether actors in different spaces would still be able to relate to each other in human, physical, visceral ways. Overall, Red Ladder prides itself in its high production values, which its audiences have come to expect, so it was important to them for the digital elements to blend into a smooth, polished live stage performance.

The company held the practical workshops in two rooms in the same building, so that they could experiment with remote locations whilst also being able to meet physically if they needed. This decision was made for practical purposes as the group had limited time to devote to the residency due to their production deadlines.

The company members working on the residency and TAXI performance were:

Matthew Lewney – Actor (Taxi Driver)

Stefania Pinato – Actor (Lily)

Rod Dixon – Artistic Director

Andrea Heaton – Writer

Adam Foley – Video and Lighting Designer

Tom Blackband – Technical Manager

“We wanted the audience to experience or question what their understanding of reality is, and present to them the feeling that they’d either entered a film or even more fantastically entered a graphic novel ... to such a high quality so the audience actually couldn’t quite believe their eyes”

Rod Dixon, Red Ladder Theatre Company’s Artistic Director



Ideas and Experiments

The Red Ladder group commenced the residency with a prepared script and a set of virtual camera angles, similar to how they would approach rehearsals for television or film. They wanted the angles to change throughout the scene, as they felt that a single angle would lose the audience's interest. The prepared angles included views from the front of the driver and passenger (Images 1 and 2; pg.138), the passenger side door (Image 3; pg.139), into the rear-view mirror (Images 13 to 15; pg.148-149), and of the rear passenger seat (Images 4 and 5; pg.139-140). Background footage was recorded from a car driving in Leeds. Changes between viewing angles were used to add movement and dynamics to the otherwise static action. This choice produced some interesting results that brought a televisual style to the final performance, although the frequent changes of viewing angle created some challenges for the actors in maintaining eyelines between them. They worked with "spots" or points where they would look to recreate the illusion repeatedly, although sometimes this was difficult as small changes in seating positions could create inconsistencies. Over the course of the workshops, the group reduced the number of angle changes by approximately one third to reduce the variables whilst still maintaining the televisual aesthetic. The choice to work closely to a script with set angles over a short period of time reduced the opportunity for exploring the possibilities of the medium and improvising creatively. However, there were some moments of playfulness between "takes" (Image 3; pg.139).

As in other residencies, the Red Ladder group wanted to pass an object between the remote performers. The passenger (Stefania Pinato) passed a note to the driver (Matthew Lewney) (Images 7 to 9; pg.145-146). The actors found the most effective way to do this was for the object to be exchanged out of view. First Pinato held up the paper and moved it forwards and down out of shot, then Lewney reached behind him out of shot and lifted the paper into view to look at it.

Red Ladder Theatre Company

January 2022



Image 1
Adam Foley (left) sits in the driver's seat while Tom Blackband (right) sits in the rear seat to calibrate their scale.



Image 2
Stefania Pinato (right) indicates where Matthew Lewney (left) should stop the taxi.

Red Ladder Theatre Company

January 2022



Image 3
In a playful moment, two pairs of feet appear in the car boot behind Stefania Pinato's seat.



Image 4
Adam Foley (left) and Tom Blackband (right) sit in the rear seats of the taxi to arrange the shots and angles.



Image 5
Rod Dixon
discusses camera
positions whilst
sitting in the taxi.



Performance

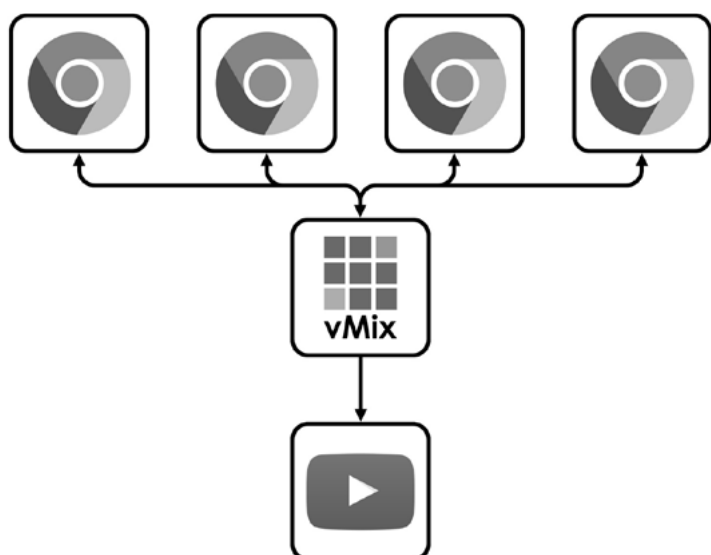


The Red Ladder Theatre Company used their own existing resources for the purposes of the residency. The only additional equipment they required were large green-screens and backdrop stands. They opted to use their own video cameras and capture cards, rather than webcams, connected directly to desktop computers in each space. They also provided their own lighting. However, they used two different types of lighting; older incandescent bulbs and newer fluorescent lamps. This created unwanted colour temperature differences between the two spaces, making one image appear cold and the other warm. On reflection, using the same type of lights and temperature in both spaces is highly advisable. The company also wanted to set up their connection between two rooms in the same location in order to combine the telepresence workshop with the development of their staged production. However, one of the rooms was a very large empty space, which created significant room echo. This was partly rectified by using a rifle-microphone for

a directional response, but the different acoustics and sound quality between the two rooms was noticeable. The problem could have been resolved by using a smaller room with carpets, furniture/ objects and curtains or drapes to reduce unwanted room echo effects.

Similarly to previous residencies, the Red Ladder Theatre Company residency was completed using the vMix system www.vmix.com, a software vision mixer that provides a complete Telepresence Stage solution, incorporating videoconference communications (vMix Call) with video mixing and chromakeying effects. Using a Google Chrome browser and vMix Call website <https://advanced.vmixcall.com>, the two actors, situated in their separate spaces in Leeds called the vMix software (operator) running on a computer in Brighton. The incoming video calls and virtual sets were chromakeyed together by the operator and simultaneously sent back to the remote actors and streamed on YouTube Live (Diagram 1).

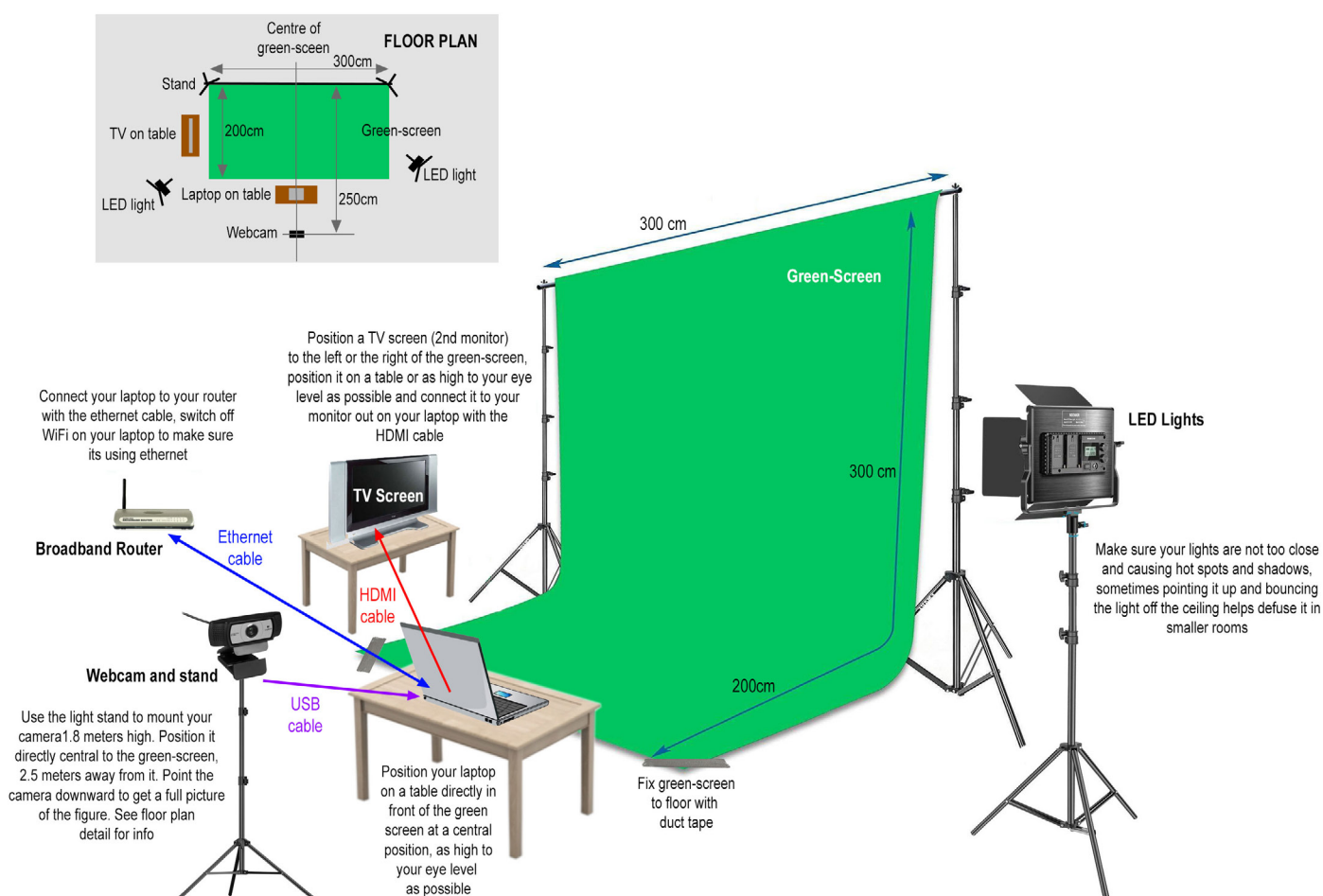
Diagram 1 –Telepresence Stage system workflow



Participants Technical Setup



Diagram 2 – Green-screen studio setup instructions for each remote performer: Green-screen backdrop and stand, video lights, video camera, computer, ethernet connection and TV screen.





The hardware and software used for the vMix operator in Brighton included:

- 1 x Software: vMix PRO version 24.0.0.72
- 1 x Desktop PC: AMD Ryzen 7 3700X 8-Core Processor 3.60 GHz, Windows 10 Pro, NVIDIA Quadro P2200, Blackmagic DeckLink Duo 2, Blackmagic DeckLink Mini Recorder
- 1 x Monitor 1: DELL U2421HE Monitor
- 1 x Monitor 2: Samsung 24" LCD HD TV

The hardware, software and green-screen equipment for each performer included:

- 1 x Desktop PC (Windows 10) and screen
- 1 x Google Chrome: <https://advanced.vmixcall.com>
- 1 x 24" LCD HD TV
- 1 x Video camera and capture card/device
- 2 x Video lights (incandescent / fluorescent)
- 1 x Camera stand, 2.1 metre high
- 1 x Rifle-microphone
- 1 x Backdrop stand with 3 metre crossbar
- 1 x Green-Screen, 3 metre width x 6 metre length

Description and Analysis



Image 6
The taxi driver
(Matthew Lewney)
thinks out loud.



Image 7
The passenger
(Stefania Pinato) holds
up a piece of paper
with an address on it.

Description and Analysis



Image 8

The passenger passes the paper to the driver.



Image 9

The driver looks at the address on the paper.

Description and Analysis



Image 10
The taxi driver drives the passenger through Leeds.



Image 11
The driver talks to the passenger whilst looking at her in the rear-view mirror.

Description and Analysis



Image 12
The passenger looks out of the window in contemplation as they travel.



Image 13
A close-up of the rear-view mirror shows both driver and passenger as they look at each other.

Description and Analysis



Image 14
Close-up of the rear-view mirror shows both driver and passenger as the passenger looks away.



Image 15
Close-up of the rear-view mirror shows both driver and passenger as the passenger points to where she wants the driver to stop.

Description and Analysis



Image 16
A shot from outside the car shows the passenger talking to the driver.

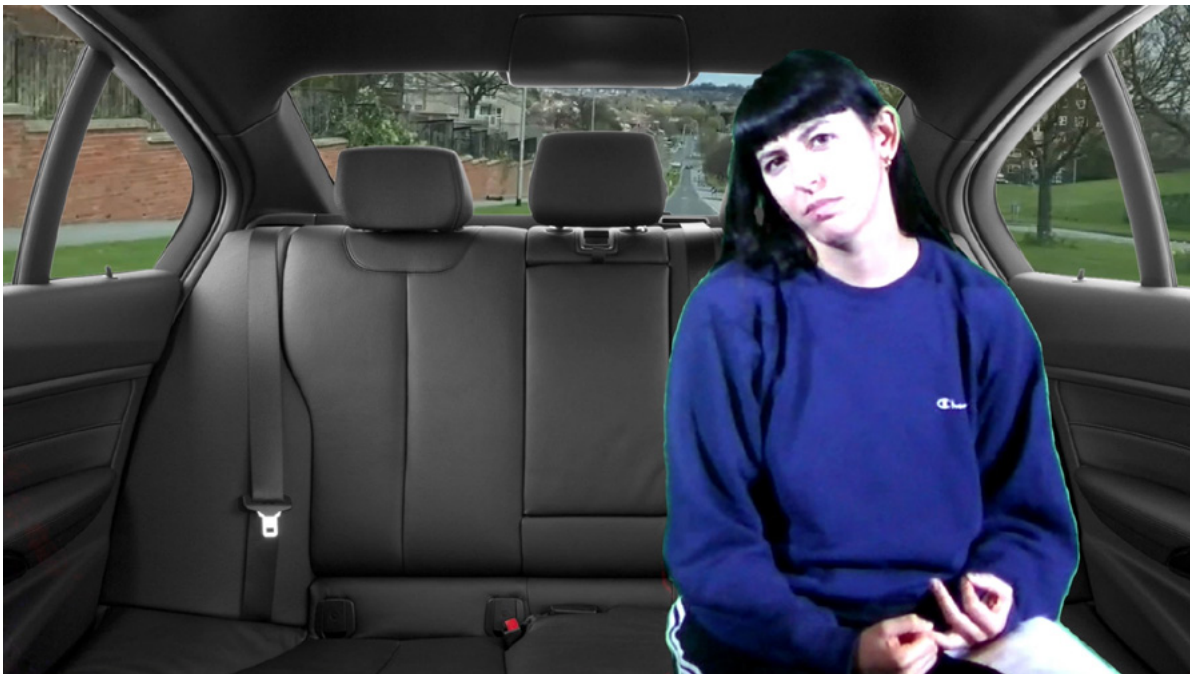


Image 17
The passenger sits on the rear seat and introduces herself as "Lily".



The final outcome of this residency took the form of a 3-minute performance, in which a taxi driver takes a passenger on a journey that ends in a philosophical discussion about the journey of life. The action remains static, with the driver in the front seat behind the steering wheel and the passenger sitting on the rear seat, while the images outside the car give the impression of driving along a road in Leeds. Different arrangements of the digital scenery result in the visual effect of various camera angles and shots in the format and style of a television or film production.

The performance opens with a close-up of the driver's face as he talks about an unusual woman who takes a taxi ride with him almost every weekend (Image 6; pg.145). As he describes picking her up and dropping her off at her destination, the viewing angle widens to reveal the passenger in the rear seat of the car behind the driver. He mentions that she always gives him an address on a slip of paper, at which point the woman leans forward and passes a piece of paper to the driver (Images 7 to 9; pg.145-146). The viewing angle pulls back so that the whole car is shown driving along the road (Image 10; pg.147). After a few moments of silence, the passenger strikes up a conversation with the driver, and the viewing angle changes so that the driver's eyes can be seen in the rear-view mirror as he replies (Image 11; pg.147). The passenger makes another comment, this time seen through the side window of the car (Image 12; pg.148). As the conversation becomes more intense, the angle changes again to show the driver's eyes and the passenger, both reflected in the rear-view mirror (Images 13 and 14; pg.148-149). Suddenly the passenger indicates that she wants the car to stop (Image 15; pg.149) and the car slows and halts. The view switches to the front of the car again, as the passenger introduces herself as "Lily" (Image 16; pg.150). As she speaks her final line, the view changes to show only the passenger on the back seat (Image 17; pg.150): "Our journeys have changed just by meeting each other, don't you think?"

Video Recordings

TAXI by Red Ladder Theatre Company - Performance

3 minutes mp4

[Watch here](#)

Red Ladder Theatre Company - Residency PLAYLIST

[Watch here](#)



Evaluation



Company Reflections

The Red Ladder group approached this residency as an opportunity to explore creative ideas for their new theatre production TAXI. They had specific notions about what they wanted to achieve, which was to use the Telepresence Stage technology to supplement the development of a stage show, providing ways to introduce surreal elements so seamlessly that “the audience wouldn’t quite believe their eyes” (Director, Rod Dixon). They were interested in smooth integration between the technology and the live performance. They felt strongly that high production values were important for the digitally literate audiences of today, who are used to Hollywood-standard CGI. Rod Dixon explained, “My job is to compete with Netflix”, to persuade people to get off their sofas and go out to the theatre. Dixon said that the Telepresence Stage offered an exciting element of “liveness” for remote work, but he believed there were too many variables to provide the repeatable slickness of performance that he wanted for TAXI. Actor Matthew Lewney also felt that repeatability was an issue, as even very small changes in positioning could throw out eyelines, making it hard for him to produce consistently completely believable eye contact with his fellow actor.

The Research team asked Rod Dixon about how Red Ladder had continued to develop performances during the pandemic. Dixon explained that they had tried filming three of their productions on stage and streaming them, “like a poor man’s NT Live”. However, the company had found this unsatisfactory as the result was neither a stage show nor a film, and they felt that people would rather watch Netflix. Instead they had moved to audio work, offering podcasts followed by a high-quality audio series based on a play. They had felt that their high production values could be supported in audio-only work, whereas they could not manage it to their satisfaction with visuals.



Research Team Reflections

The Red Ladder residency had a different approach to the other residencies in the Telepresence Stage Project, as the company wanted to integrate the technology into a live theatre production rather than doing an online-only performance. Other important factors were the group's experiences of working in television and film, and their strong emphasis on high quality broadcast production values coupled with reliable repeatability.

Reflecting on this residency, the Research team felt that the group's television and film experience may have been more limiting than enriching for the creative process. The group arrived having already blocked out the script with virtual camera angles, intending to realise it fairly quickly and moving forward. They chose not to spend time experimenting with and getting to know the telepresence medium and how it works for the performers. The assumptions they brought from television and film did not match in some respects, so they struggled with eyelines and they found the spatial orientations awkward. However, the use of multiple viewing angles and combinations of close-up and wider "shots" did prove effective at bringing dynamics and movement to an otherwise static scene. Overall, though, it took longer to get the polished performance that the group wanted to achieve, which they found a little frustrating. This experience highlighted for the Research team the importance of experimenting with the Telepresence Stage before making decisions about how to use it, in order to understand and make best use of its particular qualities.

The "suspension of disbelief" was an important part of what the Red Ladder group was trying to achieve, as it had been for Creation Theatre (see their residency case study for details). However, Red Ladder wanted to confuse the audience in a theatre show, making the digital elements seem "real" enough to affect the audience's perceptions of reality. This required smooth, seamless integration of technology into a live physical performance. By contrast, Creation Theatre work purely in live streamed online performance. For them, the glitchy surprises of working with the Telepresence Stage added to the audience's experiences by highlighting that the screen-based performance was NOT pre-recorded, but was happening live as they watched it. The different residencies in the Telepresence Stage Project highlight different approaches and ways of using the technology, but perhaps the most important takeaway point is that companies need to understand this medium and how it differs from other media in order to make effective creative use of it.

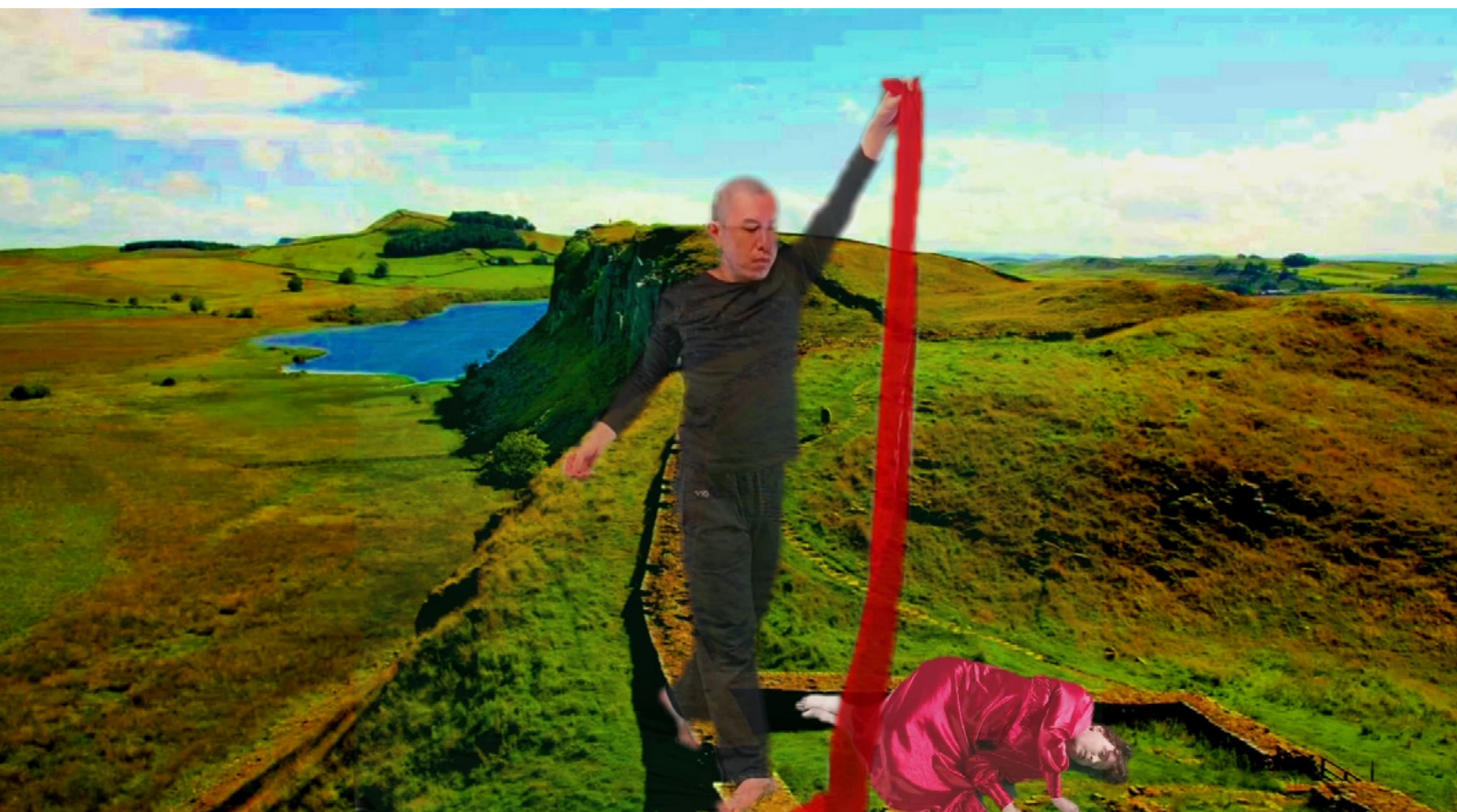


Key Takeaway Points

1. Working with the Telepresence Stage system is not the same as working with television or film. It is essential that companies working for the first time with this system allow at least a short period of experimentation in order to become familiar with the opportunities that it offers, and to prevent assumptions that could be counterproductive to creativity. The residency case studies in our project are also useful places to learn about the creative possibilities of the system.
2. Using “spots” or markers to line up eyelines between performers can be useful, but allow for some movement in those markers to accommodate slight changes in positioning due to the “liveness” of the medium.
3. Changes in viewing angle can give the impression of camera editing, adding dynamics and movement to an otherwise static scene in a similar way to television or film.
4. Passing objects between remote participants can be done simply but convincingly if the object is in view as much of the time as possible but is just out of view at the point where it changes between hands.
5. Use the same types of lighting in all remote locations and at the same colour temperature (Daylight Kelvin Value: 5600K) to avoid noticeable differences between lighting conditions and colours.
6. Be aware of acoustics and echo, particularly when using large spaces. To avoid unwanted natural echo, try to use rooms with carpets, furniture/ objects and curtains or drapes to reduce unwanted room echo effects.



DAP-Lab



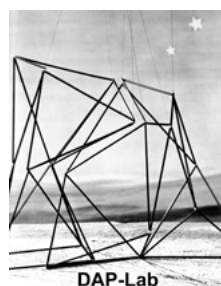
Company Summary

DAP-Lab (Design and Performance Lab) is a cross-media lab exploring the convergences between performance, telematics, textiles and fashion design, with movement, costume, choreography, visual expression, film, photography and interactive systems. Founded in 2004 by Johannes Birringer and Michèle Danjoux, the Lab has acted as a production company affiliated to Brunel University. It established the ADaPT (Association for Dance and Performance Telematics 2001-2006) network through research partnerships with multiple sites in the UK, Europe, USA, Japan, and Brazil. DAP-Lab continues to connect ongoing research investigations and productions in dance through performance and science collaborations, such as METABODY, an international partnership and knowledge transfer programme with performance, multimedia, electronic engineering and fashion research centres.

The DAP-Lab company is comprised of professional dancers, performance and visual artists, musicians, sound artists, designers, filmmakers, and engineers. The company have engaged in telematic performance projects since 2004, with Michèle Danjoux's series

of innovative wearable and choreosonic design prototypes, and have staged multimedia dance-theatre works and immersive installations, such as *kimospheres* from 2015. Their last public performance before the COVID-19 lockdown was *Mourning for a dead moon* in December 2019. The company also release short online films and regularly participate in art exhibition events. Since creating *metakimosphere no. 3* in 2016, DAP-Lab have developed collaborative research on Virtual Reality performance and disability culture, creating a performance for the blind and staging international workshops on Re-embodiment and Dis/ability, as well as presenting a lab on 'Somatechnics and Dis/ability' at the 2021 Body IQ Festival in Berlin.

<http://people.brunel.ac.uk/dap/>





Residency Summary

The DAP-Lab residency was facilitated by project partners Third Space Network (3SN) based in Washington DC, USA. The residency culminated in a new telepresence dance/music performance work entitled *The river of no one*, involving geographically remote directors and performers based in London and Bath in the UK. DAP-Lab are an experienced multi-disciplinary performance ensemble that bring numerous artistic skills and methods to their work. From the outset of the residency, they developed ecologically focused concepts particularly centring on the human relationship to water, its movement and places. These ideas were explored and developed using rural imagery, audio and movement ideas, as well as varied props and *mise-en-scène* elements, including the use of fabrics as objects and scenic elements.

Drawing on their previous experiences, DAP-Lab were well prepared for the residency and proved to be adept at investigating their artistic material, applying technology, and exploring the potential of the Telepresence Stage online media environment. Their final 30-minute performance, *The river of no one* was performed in six

parts and included multiple video and photographic images, scene transitions and audio accompaniments. This was a fluid performance that journeys through place and time, literally and figuratively, with a uniquely personal, yet collective voice.

“*The river of no one* is a meditation on the current climate crisis, linking regions and continents in a subtle and intimate exploration of “hydrocommons”, a shared ecological water and plant culture that needs to be imagined as a flow in which all life, not just human life participates. The work situates two performers in physical (outdoors) and virtual environments and asks them to explore intimate immersive movement and sound experiences.”

Johannes Birringer, DAP-Lab Co-Director



Company Engagement

The DAP-Lab company members in residence included:

Co-directors Johannes Birringer and Michèle Danjoux. Performer and composer Dee Kathleen Egan, in London. Choreographer and dancer Zhi Xu, in Bath. Research consultant Iwona Wojnicka.

In collaboration with the Third Space Network in Washington DC, led by creative director Randall Packer and multimedia designer Gregory Kuhn.

DAP-Lab have produced a substantial body of dance and performance work since their inception in 2004 and were interested in expanding their practice into online theatre. Whilst they already have experience exploring telematic and digital performance, they had not fully tested and incorporated current Telepresence Stage technologies and techniques into their work. They were eager to develop their artistic ideas using the Third Space Network platform, which offered them the opportunity to develop a highly sensorial telepresence approach, as well as produce an advanced online work of dance and music using virtual sets.

DAP-Lab's intention was to create a prototype telepresence performance based on environmental issues and the climate crisis, linking regions and continents in a subtle exploration of *hydrocommons*, a shared ecological water and plant culture. They were interested in seeing how they could incorporate scenes of devastation from recent flooding, scientific measuring devices and underwater environments to create a compelling narrative. *The river of no one* presents a journey that unites two remote performers, a dancer/choreographer and a composer/performer who explore intimate immersive movement, sound experiences and voices.

“This residency allowed the company to take their recent interest in VR technologies and the somatechnics of dis/ability one step further into questioning the connectability of the virtual (and real-time composited telematic performance space) with a sensual and sensorial as well as organic-experiential collectivity – now urgently envisioned since the 2020 Covid pandemic.”

Johannes Birringer, DAP-Lab Co-Director



Ideas and Experiments

From the initial residency sessions, DAP-Lab and the Third Space Network began introducing key materials and concepts into the process, incorporating photographs and video footage of recent flooding in Germany, Hadrian's wall, tranquil scenes of rivers and fields, deserts, underwater imagery and plants, as well as watercolour paintings. This material was gathered by DAP-Lab in preparation for the residency as a type of preliminary storyboard, to allow the performers to travel through an array of locations, spaces and water-related imagery. The viewer was invited to 'travel' alongside the two performers on their journey through multiple scenes.

Each scene utilised unique virtual sets made up of the composited video and photographic imagery, including a recorded video performance by Johannes Birringer. The two live performers were placed in various quadrants of the Telepresence Stage environment, and often scaled to be small or large. At times, special effects were applied such as different transparency/opacity ratios to create a ghostly ethereal presence, including fabrics used by the performers, with them gradually become transparent. Special attention was played to subtle transitions, and to the framing of visual elements including the blocking and positioning of performers within the virtual scenography, the placement and use of props, and interactions between physical and virtual objects. Much was made of a rich layering of visual content, for example, with images of watercolour paintings surrounding a performer, who appears to move within a painting in progress. DAP-Lab quickly identified these expressive opportunities through their working process, which they refined into their final performance.



Performance

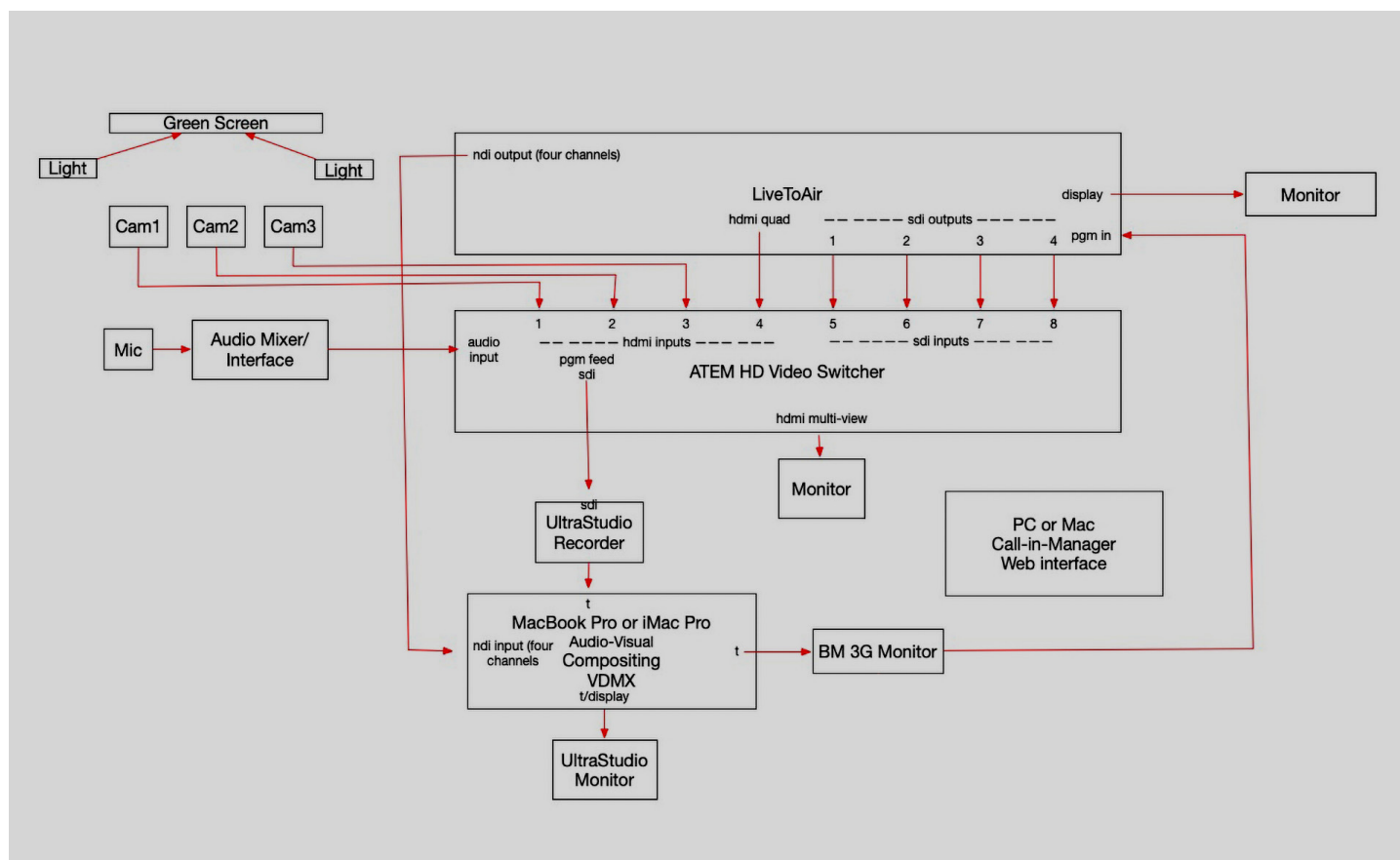


Diagram 1 – Third Space Network's custom setup for compositing

The technical setup at the Third Space Network (3SN) studios consisted of three networked computers that facilitated real-time audio-visual compositing and automation. The Gnural Net LiveToAir call-in hardware/software system was used to receive and send live audio-visual feeds to and from the live performers. The performer feeds were then composited using Cycling '74 Max/MSP/Jitter software, together with recorded media that was fed into the system via Blackmagic video switchers (Diagram 1; pg.162). Lastly, sonic material, both emanating from the 3SN studio as well as from performer Dee Kathleen Egan, was delivered to Ableton Live software for processing, mixing and automation. Additionally, Ableton Live was used to automate the video parameters in Max/MSP/Jitter, controlling various effects including colourisation, brightness, contrast, position and scaling, etc.

This performance required a precise cueing technique, in which each scene and its changes were laid out in a detailed spreadsheet. One of the biggest challenges for the DAP-Lab company was the need to translate and document their ideas into a cueing format in order to coordinate control and automation of multiple changes in video material, sound, colourisation, compositing, performer positioning, chroma key settings, and special effects. In order to execute their complex ideas on the virtual stage, the cueing system was an essential and creative tool for the precision and detail they desired. While this cueing method is not unlike that used in traditional theatre, every session during the process demanded a high level of technical coordination to ensure the success of the rehearsal.



The technical setup for the two performers consisted of a green screen and stand, iPhone camera with EpocCam App and tripod, laptop computer, additional monitors and earbuds. Each system was networked via Ethernet to assure maximum stability (Diagram 2; pg.164). In addition, performer and composer Dee Kathleen Egan had a custom setup that included an audio interface, synthesizer, Launchpad MINI control surface, professional microphone, and specialised software (Max/MSP/Jitter) in order to carry out live signal processing and manipulation of her voice and musical instruments (Diagram 3; pg.164). She also provided supplementary software that was used in the Third Space Network studio to generate the live manipulation of her voice.

Participants Technical Setup

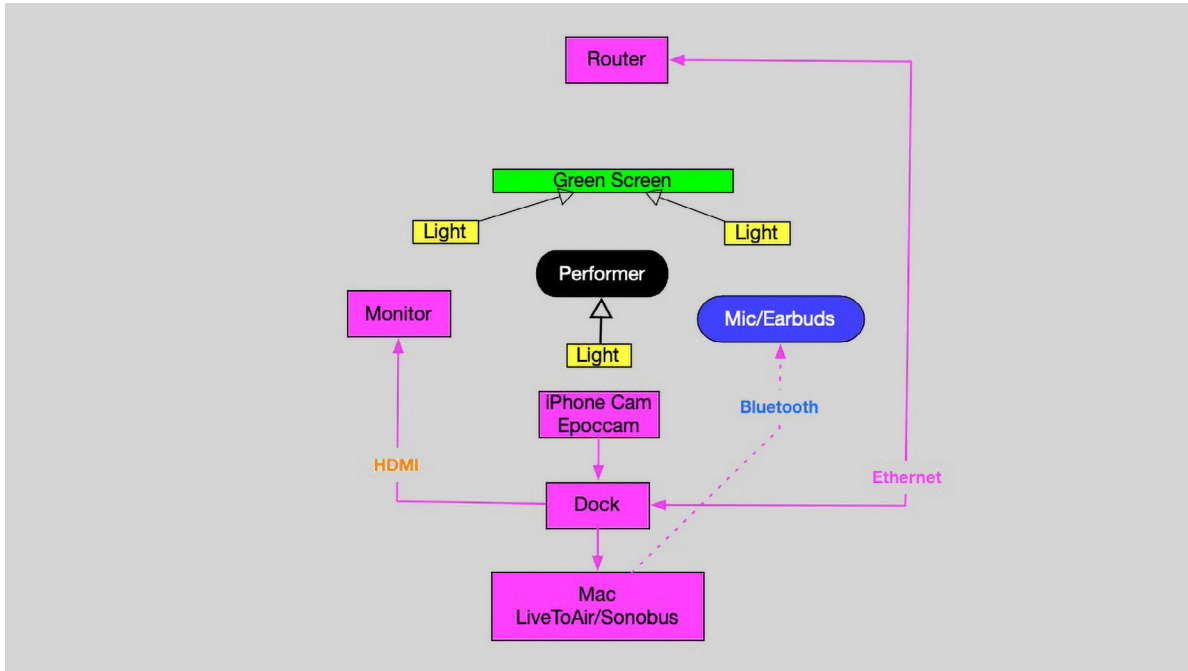


Diagram 2 – The “Satellite Node” setup designed for the project used by both performers

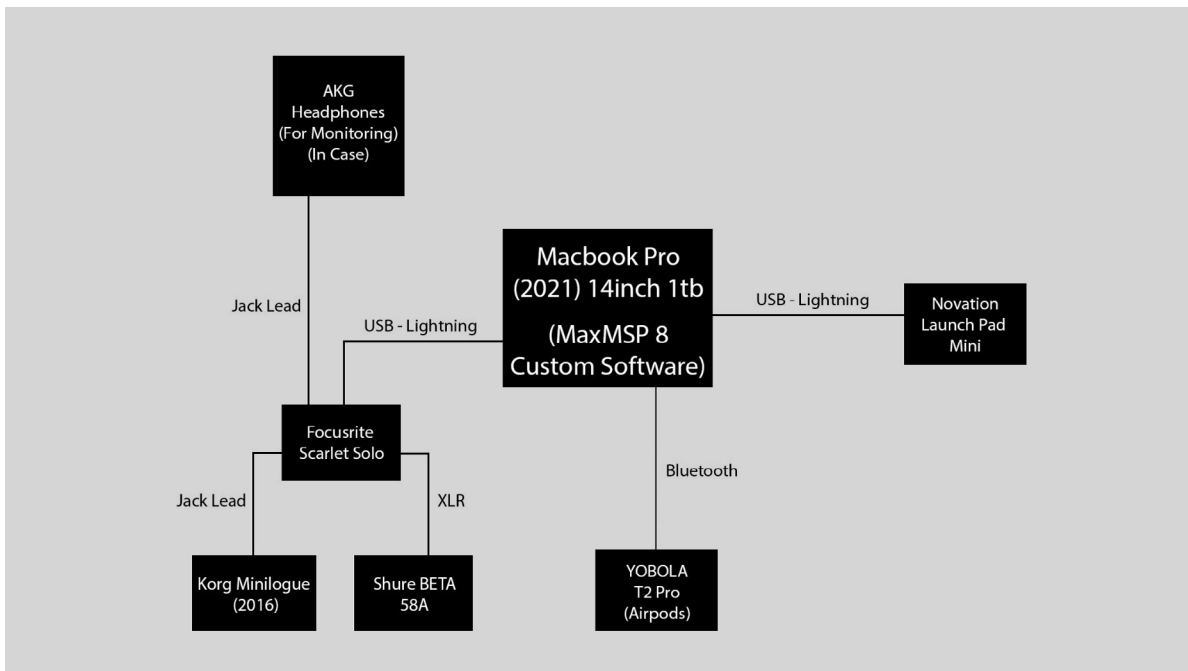


Diagram 3 – Dee Kathleen Egan's custom setup for musical performance



Resources supplied to each DAP-Lab performer:

- 1 x Selens 3 x 6 metre Green Screen Backdrop
- 1 x Vevelux Adjustable Backdrop Stand 2.6 x 3 metre
- 2 x Neewer 660 LED Video Light with APP Control
- 1 x Wireless Earbuds, Yobola Wireless Headphones IPX5
- 1 x HP P24h G4 23.8 inch Monitor FHD 1920×1080
- 2 x 5 metre HDMI to HDMI Cable
- 1 x USB-C Hub Lemorele 6-in-1
- 1 x Creatck 8" LED Ring Light

Resources provided and used by each DAP-Lab performer:

- 1 x MacBook Pro laptop
- 1 x Ethernet Cable
- 1 x USB cable
- 1 x iPhone 12 and EpocCam App / Logitech C922 Pro Stream Webcam

Resources used by the 3SN team:

- 1 x Gnural Net LiveToAir hardware/software system
- 1 x Cycling '74 Max/MSP/Jitter 8.2 software for image compositing, audio and control
- 1 x Ableton Live 11 audio and control software
- 1 x Apple iMac Pro computer (2017)
- 1 x Blackmagic Design UltraStudio Recorder 3G
- 1 x Blackmagic Design UltraStudio Monitor 3G
- 1 x Blackmagic Design ATEM Television Switcher
- 1 x Akai APC40 MKII MIDI Controller
- 1 x PreSonus FaderPort 16 MIDI Controller
- 1 x Motu 828es AVB Audio interface
- 1 x Nuendo 11 Digital Audio Workstation
- 2 x Apple Ultra Studio Monitors

Description and Analysis



Image 1
A Chinese botanist (centre) played by Zhi Xu, begins his ecological investigations of a river, looking for what a screen caption describes as “future data from archaeological undercommons of rivers and plants”.



Image 2
Hiding from and watching the botanist, Ariel (Dee Kathleen Egan, left) is suddenly seen by him, and they have a brief physical interaction.



Image 3
The botanist appears standing on the water and continually adjusting his balance, as though on a surfboard.



Image 4
Submerged under water, he explores the river and the rocks of its riverbed, which appear upside down, above him.



Image 5
The tiny figure of Ariel appears like a bee on a huge red flower ten times her size, while the VR-helmet wearing botanist observes and pokes at her with his finger.



Image 6
The Greek mythological 'ferryman of Hades', Charon (played by Johannes Birringer) uses a large branch like an oar as he wades through the river towards the botanist, who has covered himself in a fanlike piece of fabric.

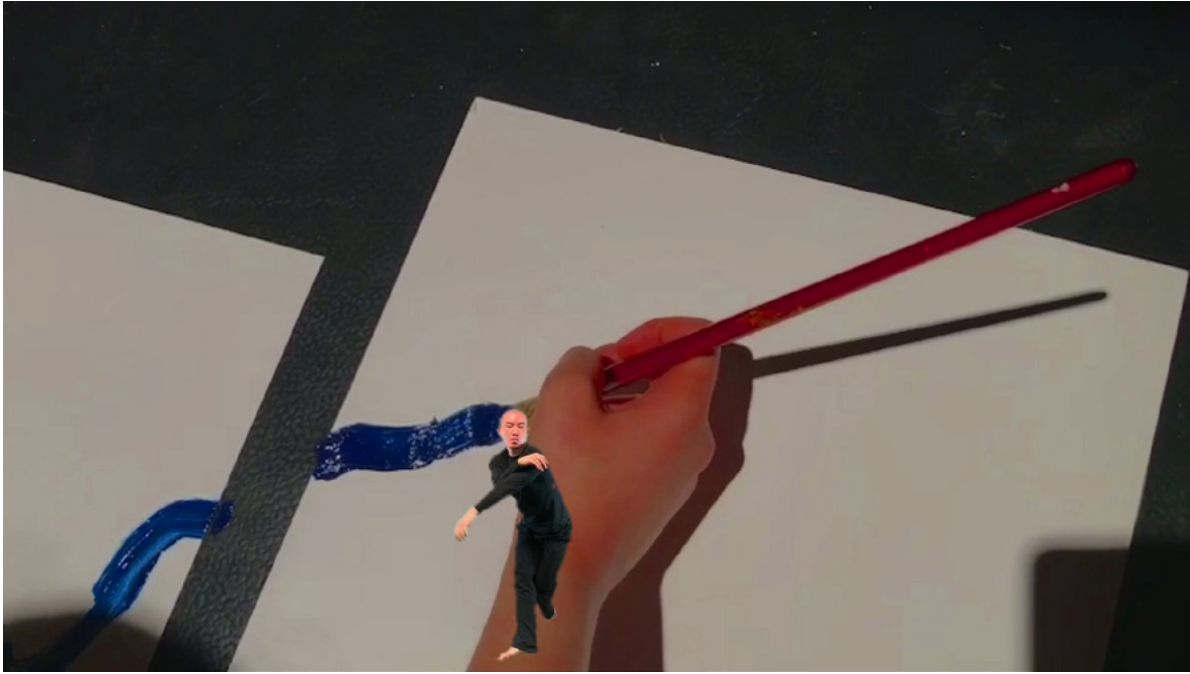


Image 7

The small figure of the botanist moves and dances on top of a pre-recorded video image of a hand painting the undulating line of a river.



Image 8

Standing on top of Hadrian's Wall, with the sleeping figure of Ariel to his right, the botanist slowly reveals and pulls out a long piece of red fabric from under his shirt.



Image 9

As he walks along Hadrian's Wall like it is a tightrope, the background image changes as it merges with, and is gradually replaced by an image of the Great Wall of China.



Image 10

Against changing desert images, the botanist uses his wooden tool to simulate digging the sand and making channels for irrigation.

Description and Analysis



Image 11
He finds himself next to a dead tree, which he observes and goes to (virtually) touch.



Image 12
The botanist wraps and ties a thin piece of green cloth around his eyes.



Image 13

The cloth blindfold has the (chromakey) effect of rendering that part of his head invisible, with the background image appearing through it.



Image 14

The botanist moves forward and into a camera close-up, while the colour of his image inverts to negative, and he repeats the words "I can help" like a mantra.



The final dance/music performance *The river of no one* consisted of 10 scenes performed in 6 sequential parts. Part 1 commences with a visiting botanist from North China, performed by choreographer and dancer Zhi Xu, on the banks of a rural English river with a measuring device to recover evidence of biodiversity chaos (Image 1; pg.166), where he discovers 'Ariel', played by performer and composer Dee Kathleen Egan (Image 2; pg.166). The botanist continues to explore and probe the river's currents and movements from above (Image 3; pg.167) and below the water (Image 4; pg.167). Using a VR head mounted display (as a costume prop) he further explores the riverside flora and fauna to encounter a miniature Ariel trapped like a bee in the stamen of a flower (Image 5; pg.168). In Part 2 the botanist ventures back into the river, draped in pink silk fabric where he interacts with a pre-recorded video of 'Charon' played by Johannes Birringer, who wades through the water as if on his boat (Image 6; pg.168). Following images of recent flood devastation in Part 3, the botanist finds himself scaled-down in Part 4 on a pre-recorded meandering painted blue line, where he traverses the painter's brushstrokes (Image 7; pg.169).

In Part 5, the botanist appears walking like a giant along Hadrian's Wall, where he discovers Ariel motionless on the ground. He reveals a shawl of red fabric, reminiscent of the flowing river and winding wall, and drapes it over Ariel (Image 8; pg.169). The penultimate part concludes as Hadrian's wall merges and transforms into the Great Wall of China and the giant botanist continues to 'tightrope' walk along it, holding out his red shawl as if to steady himself with it (Image 9; pg.170). The botanist's journey reaches the desert in Part 6, where he helps to try and cultivate the sand (Image 10; pg.170) and mourn the death of a desert tree (image 11; pg.171). The final part concludes with the botanist blindfolding himself with a piece of green screen cloth (Image 12; pg.171) to 'remove his eyes'. He makes a final hand gesture sign against a backdrop of sand dunes (Image 13; pg.172) as he repeats "I can help" and dissolves into an inverted image of himself (Image 14; pg.172).

Video Recordings

The river of no one by DAP-Lab - Trailer

5 minutes mp4

[Watch here](#)

The river of no one by DAP-Lab - Performance

30 minutes mp4

[Watch here](#)

DAP-Lab - Residency PLAYLIST

[Watch here](#)



Evaluation



Company Reflections

The residency project aimed to explore two parallel objectives: To work collaboratively on a creative performance between remote performers, and to investigate the capabilities and limitations of networked performance. The DAP-Lab performers succeeded in exploring a creative vision developed over 8 weeks, working towards weaving a visual and sonic narrative together. Working from their homes in cramped green screen spaces surrounded by monitors, laptops, cameras, microphones and lights meant they had to compromise on spatial dynamics and tactile interaction. However, during the course of the residency each of the performers became highly skilled in adapting to and working within these limitations and frameworks. They also realised that the technical demands were enormous, given the ambition to create a poetic dance work of high kinaesthetic quality in the short amount of time available for rehearsals. Whilst the Third Space Network's complex studio control system was contrary to DAP-Lab's aesthetic-organic rehearsal approach, they did appreciate the benefit of the experience of working in a more compositing based framework using green screen technologies and real-time mixing. The DAP-Lab team were satisfied in the end that their poetic vision had been sustained, and that the cooperation was enhanced even when troubleshooting technical issues became necessary.

Co-director Michèle Danjoux was aiming to work with green screen fabric to explore ideas of absence and partial presence, and the sensory awareness of a body in telepresence space. One example is in the closing scenes when Zhi Xu wraps his head with a strip of green screen cloth to create a blindfold that removes his eyes, and he is forced to use other parts of his body to 'see'. This is an area Danjoux hopes to explore further, with greater knowledge of and access to these technologies. Performer and composer Dee Kathleen Egan faced a number of challenges creating the live sound elements as she intended, due to the quality and latency of networked audio, which was resolved by controlling her audio input using systems in the Third Space Network studio. Choreographer and dancer Zhi Xu spoke about the desire to have "eyes all around my dancing body" to simultaneously observe the three monitors surrounding him in all directions. He wanted to further cultivate the relationships between his moving body and the technology surrounding him, as well as between the objects and fabrics he held. For Zhi Xu, the experience was very different from a traditional dance-theatre performance and as a result his choreography required a different approach, particularly given his confined domestic space, as well as more concentration and control.



Research Team Reflections

The project resulted in an aesthetically rich and poetic performance that explored many interesting capabilities of the Telepresence Stage platform. Among its memorable moments were those employing an imaginative and unusual sense of movement and perspective. For example, near the start of the performance, a background image of woodland begins to move and pan around, in synchronisation to the botanist as he turns his body to look around. But the background's rotation still continues even when he is still, creating a vertiginous effect; a similar technique is used later with the Great Wall of China. It is one of a number of sequences where a sense of unreality and uncanniness is conjured, including the tiny figure of Ariel as a bee on a giant flower, with the botanist towering over and touching her with his finger (Image 5; pg.168). Another visually 'unreal' and arresting episode combines a point-of-view video of walking feet (in high contrast black and white) superimposed with an image looking down on Hadrian's Wall, so that the feet appear to be walking high in the sky above it (Image 15; pg.177).

The residency experimented with automating performance cues with detailed scripting for music, voice, and movement, including fading in sound and video, and background changes. The content, script and timing of cues was decided by the DAP-Lab team, while the Third Space Network provided technical support and cue management to execute the performance. They shared a cue sheet script in the form of a spreadsheet detailing all the cues and content.

It took time and effort to ensure the effectiveness of this, and one stage of the process provides an example. The music artist created a piece of music running on a loop, and embedded the timings for cues and scene shifts on this. However, the main shared cue sheet was based on visual information, hence the research team also asked for a visual cue for music transitions that indicated clear shifts, e.g. making a gesture. The unfolding dialogue between the artists and research team enabled the cue changes to be clearly identified and successfully executed, with 'sounding time' and 'visualising time' becoming aligned with 'embedded gestures'. The research team also found techniques to script the temporal information using the clip countdown timer in the Ableton Live music software.

However, the artists still felt the technical demands of working through cue sheets were complex, with one describing it as 'an anxious affair'. Nonetheless, they developed what they described as an 'intelligence' for using the telepresence space, while making interesting observations about its varied demands. Dance artist Zhi Xu suggested he needed 'eyes around my body' to watch the monitor, camera, and laptop in order to 'observe everything'. He expressed a concern to try to progressively learn to 'feel through [his] dancing body to cultivate relationships with emotion with [these] devices' so as to 'find the freedom' to realise the performance potentials of this new platform fully.



Image 15
'Walking in the air'
above Hadrian's Wall.



Key Takeaway Points

1. Consistent physical layout and placement of lights, mics, green screens, cameras, monitors, etc., is critical for audio-visual quality and continuity and the ability to successfully repeat scenes, cues and transitions.
2. Stable high speed, low-latency internet is critical to consistent work flow productivity, and to facilitate ease of communication between remote participants. Decreases in the quality and speed of the connections proportionally reduce the effectiveness and breadth of participant communication.
3. Many physical theatrical staging elements, like blocking and placement, and many cinematic effects, such as multi-image content or degree of transparency, require carefully coordinated queuing between the participants.
4. Whether utilising photo-realistic or fantastical imagery, the crucial factor remains its effectiveness in maximising the artists' conceptual and expressive intentions.

Randall Packer noted that the ambitious technological nature of the residency resulted in some challenges that were time-consuming to resolve, reflecting that:

“In online performance, every step is technical, every rehearsal is a technical rehearsal, particularly when you try and go beyond a simplistic approach. While ambitious online theatre production is not for the faint of heart, it is hugely rewarding, almost like defying the physical laws of the world. When a performance can collapse geographical separation to create telematic engagement between performers and collaborators, there is a certain magic, an almost out of body experience. Any company that considers working on the telepresence stage must bear in mind that theatre is always a stage of constant emergency, but on the Internet, it is an emergency without the physical reassurance of your collaborators. But in this time of pandemic, war, misinformation, climate chaos, etc., the telepresence stage may be our only salvation.”



Sharp Teeth Theatre

Sharp Teeth Theatre

March – April 2022



Company Summary

Sharp Teeth Theatre are based in Bristol and are associate artists with the Wardrobe Theatre. In 2016 they were supported by Bristol Old Vic's Bristol Ferment and Camden People's Theatre to develop *The Fox and the Child*. In 2018 they made *Parlour Games* in a co-production with the Wardrobe Theatre which toured the South West and beyond, and began work with Marie Hamilton on *Polly: The Heartbreak Opera*, a radical adaptation of John Gay's sequel to *The Beggar's Opera* (supported by Arts Council England, Bristol Old Vic Ferment and Greenwich Theatres). They have co-run a stage at Valleyfest in 2017 and 2018, and curated a popular monthly night of theatre, spoken word, music and storytelling at The Wardrobe Theatre from 2014 to 2019.

Most recently they have been developing a series of interactive online murder mysteries called *Sherlock in Homes*, performing to international audiences on Zoom as a result of the COVID-19 lockdown.

The acclaimed *Sherlock in Homes* series began with *Murder at the Circus* in September 2020 and *Murder on Ice* in May 2021, receiving 5 Star reviews from The Stage, followed by *Sherlock in Homes III: Murder at the Games* in December 2021. *Sherlock in Homes* utilises the full potential of the Zoom platform and invites its audience to become detectives and study the crime, evaluate the evidence and join together in teams to interrogate the suspects in separate breakout rooms. Finally, the audience of detectives get the chance to present their theories and cast their votes on 'who done it'!

<http://www.sharpteeththeatre.org>

SHARP TEETH THEATRE

Sharp Teeth Theatre

March – April 2022



Residency Summary

The residency with Sharp Teeth Theatre consisted of nine 2-hour online sessions and took place over two separate periods of concentrated research and development during March and April 2022, allowing the team to reflect and prepare in between for their final performance outcome. The breadth of the team's experience from directing and acting to video design and streaming meant they could manage the entire production themselves, once initial guidance and support had been provided by the Telepresence Stage research team. For their Telepresence Stage residency, Sharp Teeth decided to rework their previous performance of *Sherlock in Homes II: Murder on Ice*, with two actors playing all the parts from their separate homes in London and Bristol.

Set in a 1920s Antarctic expedition base camp called 'Little England', the Sharp Teeth team explored cold isolated scenes and special effects including in Captain El Sharto's cabin aboard the 'good ship Sesacional', moored on the edge of an Antarctic ice sheet; in the base camp radio tower during a blizzard; and in the expedition crew members quarters. The *Sherlock in Homes* Telepresence

Stage final performance is ambitious and lasts 30 minutes. Captain El Sharto addresses the online audience as though they are detectives and sets the scene, describing the murder of renowned explorer Admiral Albert Ross. The audience of detectives are introduced to the suspects and set to work interrogating them in their quarters. The actors improvise in character to answer the audience's questions, denying any involvement categorically. The detectives are then invited back to the Captain's cabin to present their theories of who done it, before the truth is finally revealed.

Sharp Teeth Theatre

March – April 2022



Company Engagement

Sharp Teeth Theatre wanted to build on their experience and success of their earlier *Sherlock in Homes* productions for Zoom. They were interested in exploring what more could be possible using the Telepresence Stage platform, with the actors being allowed the freedom to share the same screen space scenographies, rather than being confined to their individual Zoom windows. Audience engagement and interaction is a major part of Sharp Teeth's unique approach, significantly contributing to their previous success and rave reviews. They were therefore keen to share their final Telepresence Stage performance on Zoom, but also emphasise its liveness and include their Zoom audience in the Telepresence Stage output through live video and audio inputs as well as incorporating the chat from the Zoom audience.

The Sharp Teeth residency was led by Stephanie Kempson, director, writer and dramaturg, in collaboration with co-director Peter Baker, with actors Tom Fletcher and Alice Lamb and technical director Chloe Mashiter, a theatre-maker specialising in interactive, game-based performance.

“This medium feels like it wants to be more live than the way that we’ve been using it, so it will be really nice to look at how we can incorporate more audience interaction and improvisation into what we are doing”

Stephanie Kempson, Sharp Teeth Theatre co-director

Sharp Teeth Theatre

March – April 2022



Ideas and Experiments

Sharp Teeth's unique style of online theatre engaged directly with its live audience, allowing actors and audience members to break the 'fourth wall' through a highly interactive dramaturgical approach. In the opening scenes, Captain El Sharto introduces the audience to the suspects, who appear on a film projection screen in his cabin (as a screen within a screen), allowing them to act in character as if unaware of the audience (Image 1; pg.184). Sharp Teeth also allowed the Zoom audience members to visually participate in scenes, appearing through portholes and windows (Image 2; pg.184), and from under tables (Image 3; pg.185). This technique was used to great effect in the concluding scenes, when an audience member detective was invited to present their 'who done it' theory. By using a virtual green screen background in Zoom, their head was placed on a virtual character's body sitting in the Captain's armchair, from where they would present their theory, whilst the actors simultaneously attempt to visually play out the narrative on the projection screen (Image 4; pg.185). This was further augmented with use of a digital case file layer/prop, upon which the audience Zoom chat would appear, as if typed directly on the file, such as "Doug Spoddy is the Criminal!" (Image 4; pg.185). Other ideas and experiments included the effective use of silhouettes to disguise the identity of the characters as they played out possible murder scenarios (Image 11; pg.193), and rocking the entire scene and actors in the Captain's cabin, successfully simulating the motion effect of the ship rolling back and forth on the waves (Image 5; pg.186).

Sharp Teeth Theatre

March – April 2022



Image 1
In the Captain's cabin, Captain El Sharto (left), played by Alice Lamb introduces the first suspect Doug Spoddy (right), played by Tom Fletcher on a projection screen.



Image 2
Pen(elope) Gwynn (centre), played by Alice Lamb drops evidence to incriminate Getjør Berrings (right), played by Tom Fletcher as Zoom audience members (left) watch through the window aghast.

Sharp Teeth Theatre

March – April 2022



Image 3
Welsh zoologist Pen Gwynn in her lab with a Zoom audience member appearing from under her bench.



Image 4
Co-director Peter Baker (left) plays the Zoom audience lead detective to present the reasons behind his group's theory that Doug Spoddy was the murderer, whilst the two actors improvise to act out the theory on the projection screen.

Sharp Teeth Theatre

March – April 2022



Image 5
Captain El Sharto tries to keep his balance as the good ship Sesacional rolls back and forth, and a Zoom audience member watches through a porthole.



Performance



Similar to previous residencies, the Sharp Teeth Theatre residency was completed using the vMix system <https://www.vmix.com>, a software vision mixer that provides a complete Telepresence Stage solution, incorporating videoconference communications (vMix Call) with video mixing and chromakeying effects. Using a Google Chrome browser and vMix Call website <https://advanced.vmixcall.com>, the two actors, situated in their separate spaces in Bristol and London called the vMix software (controller) running on a computer in another part of London. The incoming video calls and virtual sets were chromakeyed together by the controller and relayed back to the remote actors and simultaneously streamed on Zoom via ZoomISO (Diagram 1).

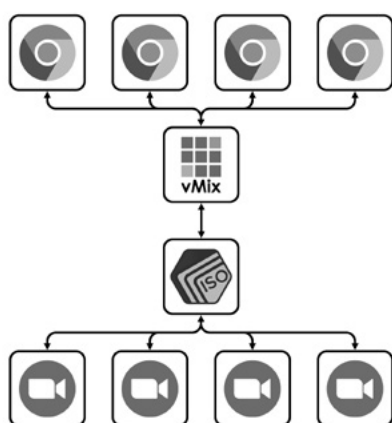


Diagram 1 – Telepresence Stage system workflow.

Video images of Zoom audience members using virtual green screen backgrounds were brought into vMix using ZoomISO <https://www.liminalet.com/zoomiso>, a development on the Zoom platform <https://zoom.us> that generates individual NDI (Network Device Interface) <https://www.ndi.tv> video outputs of the participants in the Zoom meeting, allowing them to be used as live video sources in the Telepresence Stage production on vMix. In addition, live chat from the Zoom meeting was placed within scenes as titles and text overlays using the vMix addon 'vMix Social' <https://www.vmix.com/products/vmix-social.aspx>. The addon integrates Twitter, Facebook, Twitch, YouTube and IRC social media content directly into the live production. In order to incorporate Zoom, the chat was copied and pasted into an IRC channel by a member of the production team watching the performance on Zoom.

Participants Technical Setup

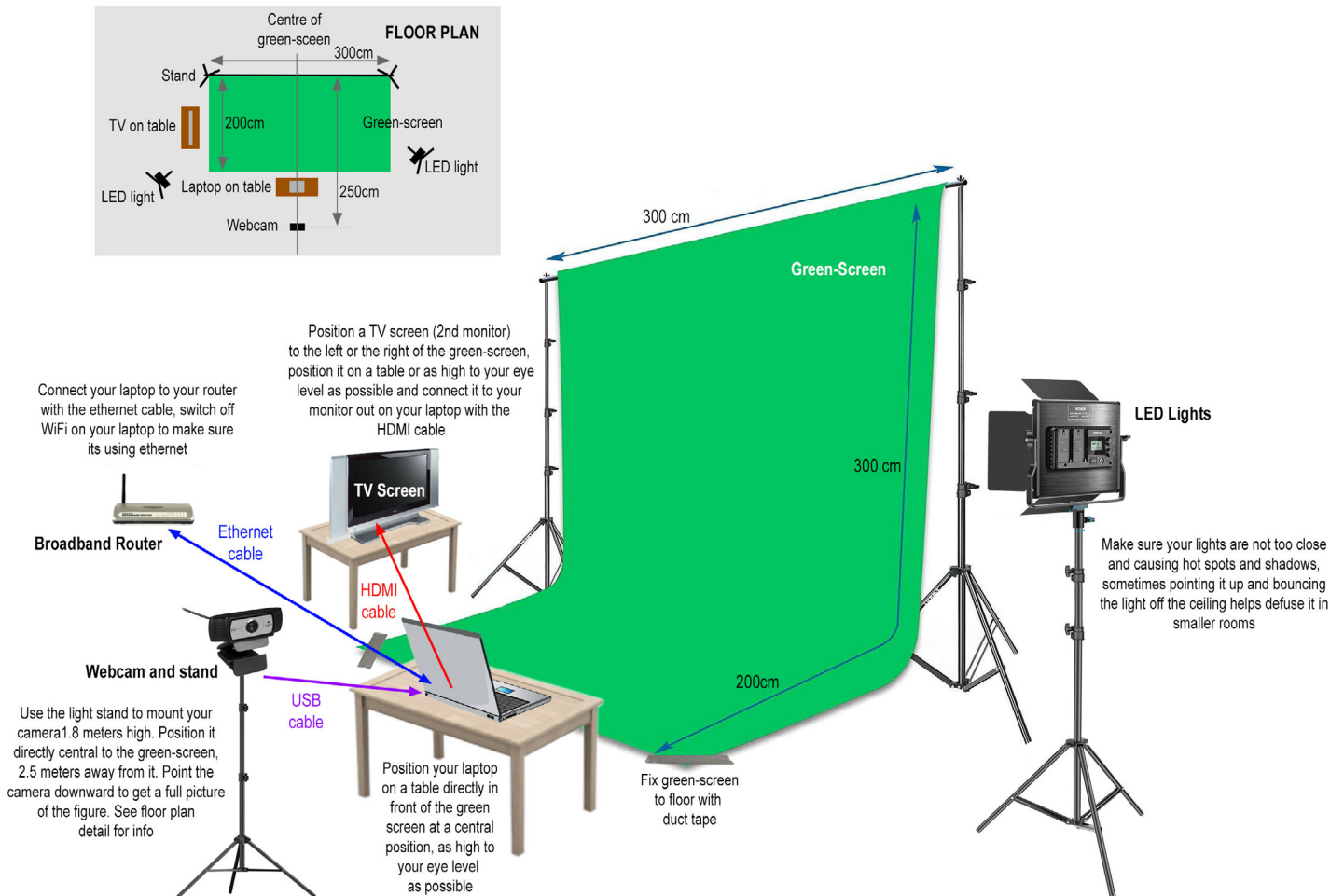


Diagram 2 – Green-screen studio setup instructions for each remote performer: Green-screen backdrop and stand, video lights, webcam, computer, ethernet connection and TV screen.



The hardware and software used by the vMix controller, Chloe Mashiter in London included:

1 x HP Pavilion 17.3in Gaming Laptop, with: i7 processor, 8GB RAM, NVIDIA GTX 1660 Ti graphics card (6GB RAM), 1TB HDD storage and 515GB SSD storage.

1 x Software: vMix PRO version 25.0.0.29, NewtekNDI Tools and VB-Audio cable.

1 x Macbook Air, Retina, 13-inch, 2019, running BigSur 11.5.2.

1 x Software: ZoomISO NDI5 version 1.1.1.

The hardware, software and green-screen equipment used by each performer included:

1 x MacBook Pro

1 x Google Chrome: <https://advanced.vmixcall.com>

1 x 24" LCD HD TV

1 x HDMI cable 5 metres

1 x Logitech C922 Webcam

1 x USB-C Hub

1 x USB Extension cable 3 metres

2 x LED Video light

1 x Camera stand, 2.1 metre high

1 x Ball Head mount for webcam

1 x Backdrop stand with 3 metre crossbar

1 x Green-Screen, 3 metre width x 6 metre length

1 x Ethernet cable 5 metres

Description and Analysis



Image 6
In his cabin, the Captain (left) introduces the second suspect Getjør Berrings (right) on a flickering projection screen.



Image 7
With a quick change of hat, Alice Lamb simultaneously plays Captain El Sharto in the armchair and Pen(elope) Gwynn on the projection screen, who is introduced as the third and final suspect.

Description and Analysis



Image 8

Outside the radio tower, the Captain explains where the suspects can be found on a map of the expedition base camp.



Image 9

Captain El Sharto (left) looks through the door of the radio tower, imagining the monochrome Getjør Berrings (right) making the desperate radio call for help that he received earlier in the day.

Description and Analysis

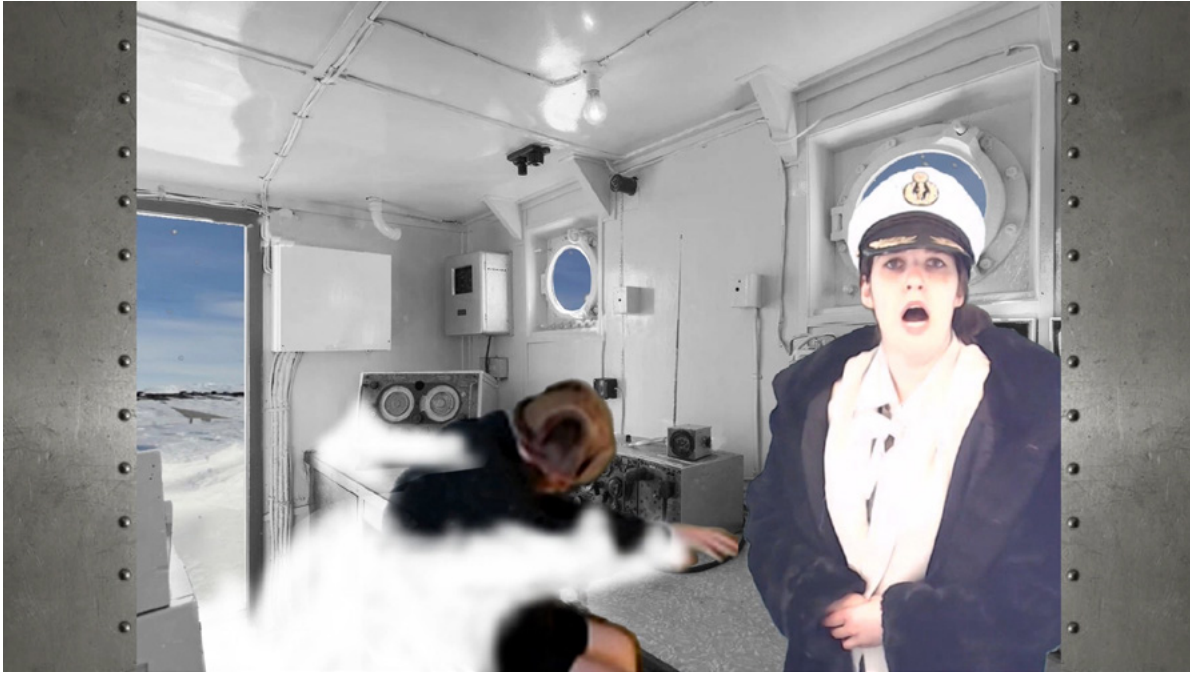


Image 10
Captain El Sharto (right) at the murder scene in the radio tower, with Admiral Albert Ross (left) slumped across the desk ... "quite dead!".



Image 11
Alice Lamb and Tom Fletcher re-enact different murder scenarios, silhouetted to disguise their identity.

Description and Analysis



Image 12
Doug Spoddy in the camp kitchen readies himself for questioning by the online audience of detectives.



Image 13
Getjør Berrings crawls out of a hole in the floor of the map room to meet the detectives for questioning.

Description and Analysis



Image 14
Zoom audience member and co-director Peter Baker (left) in the captain's armchair presents his 'who done it' theory, as Pen Gwynn massages Admiral Albert Ross, played by Tom Fletcher with poisonous seal liver oil.



Image 15
Pen Gwynn and Getjør Berrings on the projection screen act out the Zoom audience member's (left) theory of a secret love affair, with audience generated captions of a "Conspiracy" on a case file.

Description and Analysis



Image 16
Pen Gwynn (left) explains how she was poisoning Admiral Albert Ross with seal liver oil, as a displeased Zoom audience member (right) appears from under her bench.



Image 17
Pen Gwynn appears at a doorway and calls Getjør Berrings to come to the radio tower immediately, in her attempt to frame him.

Description and Analysis



Image 18
Pen Gwynn re-enacts how she strangled Admiral Albert Ross in the radio tower, with Zoom audience members watching through portholes and doorways.



Image 19
Captain El Sharto (right) attempts to shake hands with Zoom audience detective Peter Baker (left) to congratulate him on successfully solving the case.



Sharp Teeth Theatre, *Sherlock in Homes* cast and production members:

Alice Lamb – Captain El Sharto, Pen(elope) Gwynn, Admiral Albert Ross

Tom Fletcher – Getjør Berrings, Doug Spoddy, Admiral Albert Ross

Peter Baker – Zoom audience member detective and co-director

Stephanie Kempson – Co-director

Chloe Mashiter – Technical director, video designer and vMix production controller

The *Sherlock in Homes* performance is an interactive murder mystery comedy, demonstrating a variety of 'live action' layering techniques and effects. The audience plays detectives on the 1929 International Detective Booze Cruise, invited by Captain El Sharto (Image 5; pg.186) to solve the murder of Admiral Albert Ross in the nearby Antarctic expedition base camp. In his cabin, the Captain briefs the audience, presenting a list of three suspects - Doug Spoddy the camp cook and quartermaster (Image 1; pg.184), Getjør Berrings the Norwegian cartographer (Image 6; pg.191), and Pen(elope) Gwynn the Welsh zoologist (Image 7; pg.191). The suspects appear in their quarters on an old-fashioned projection screen in the corner of the cabin. The scene shifts to outside the camp radio tower. As the Captain describes the camp layout, a map appears indicating the location of the suspects quarters (Image 8; pg.192). The background changes again and Captain El Sharto recounts the radio message he received earlier that day from Getjør Berrings (Image 9; pg.192) who told him where the body of Admiral Albert Ross was found, exclaiming him "quite dead!" (Image 10; pg.193). The Captain attempts to hypothesise the murder and silhouetted characters appear enacting his potential murder scenarios that become increasingly ludicrous (Image 11; pg.193).

The audience is divided into teams and given five minutes to question each of the suspects on the camp - Doug Spoddy in the kitchen (Image 12; pg.194), Pen Gwynn in her lab and Getjør Berrings hiding in the map room (Image 13; pg.194). They each improvise and answer the detectives' questions, ensuring that key information is given as possible clues. Finally, the scene changes back to the Captain's cabin, and the audience teams are invited to offer their theories. Co-

director Peter Backer, watching on Zoom plays all three audience team leaders, with his head appearing on a lounging body in the Captain's armchair (Image 14; pg.195). He uses different accents to distinguish each team leader and describes three different scenarios, which are simultaneously played out by the actors on the projection screen in the corner of the cabin (Image 15; pg.195). Finally, Pen Gwynn admits that she is the murderer (Image 16; pg.196), describing and enacting what she did (Image 17; pg.196). The backgrounds switch behind the actors as she tells the tale, with audience members peering through windows and round doorways to watch (Image 18; pg.197). With the case solved, Captain El Sharto thanks the audience team leader and offers to shake hands. Discovering their hands are different sizes, they play the difficulty in (virtually) shaking hands to comic effect, with the Captain declaring "what enormous hands you have!" (Image 19; pg.197).

Video Recordings

Sherlock in Homes by Sharp Teeth Theatre - Trailer

5 minutes mp4

[Watch here](#)

Sherlock in Homes by Sharp Teeth Theatre - Performance

30 minutes mp4

[Watch here](#)

Sharp Teeth Theatre - Residency PLAYLIST

[Watch here](#)



Evaluation



Company Reflections

The Sharp Teeth company's technical expertise meant that, following initial support and guidance, they were able to manage the entire residency themselves. The vMix production was controlled by Sharp Teeth collaborator Chloe Mashiter, who commented that the functionality of vMix was easy to pick up. The actors also felt the telepresence solution was very intuitive and they were free to stand up and perform without the previous technical responsibilities, such as managing Zoom breakout rooms etc. However, their previous experience of performing in Zoom did provide direct visual access to all the audience in one place. They felt this was a limitation of the Telepresence Stage solution, but this could be resolved if they had two laptops, one for the vMix call and one for Zoom. However, bringing the Zoom audience into vMix with ZoomISO was really liberating and exciting. Chloe Mashiter remarked on how useful ZoomISO was, with lots of future potential. Actor Tom Fletcher spoke about his experience using it and the possibilities it provided:

“It was such a joy when [a member of the Zoom audience] got dragged in, for both him and for us because he was like, “oh my god I’m in!” and it was so lovely! I think there would be loads of scope ... in previous Sherlocks we’re asking the question to the camera, but with the Telepresence Stage idea it can be like, oh I’m asking the question to you here!”

Tom Fletcher, Sharp Teeth Theatre.

They also found the use of silhouettes extremely effective in aiding their telepresence interactions and totally appropriate for the murder mystery genre.

“I thought the silhouette [effect] was really useful for us as well, in a telepresence sense it made the telepresence really easy because you don’t have to do the awkward, ‘oh am I in the right place?’ it makes that much easier. And also, in a murder mystery we don’t know who these people are, so I thought that was really good. ... I could really see that being used in the future [as] a key part of the mystery, you have to watch this re-enactment, and ‘what is this thing in their hand, is it a cup?’ but actually it’s something else!”

Tom Fletcher, Sharp Teeth Theatre.

Actor Alice Lamb also spoke about the liberating effects of using a telepresence stage to perform in and relate to, as opposed to talking directly to camera:

“The thing that was most successful for the murder mystery was being able to immerse everyone in the world of it so easily, because before [in Zoom performances] it’s a lot of information for our audience to gather from just one person sat there telling them. The fact that I could go onto the radio tower and point to the thing, I just think immediately an audience is there with you.”

Alice Lamb, Sharp Teeth Theatre

On reflection they were keen to mix the aesthetic styles of digital and physical environments and props. Chloe Mashiter proposed future ideas using more props and objects, such as “a table or a tall stool covered with some green screen fabric and an appropriate looking box on top that has [physical] stuff in it.”



Research Team Reflections

Following a string of online theatre successes with *Sherlock in Homes*, Bristol based Sharp Teeth Theatre were highly recommended by the Bristol Old Vic to undertake the Telepresence Stage residency. They brought a significant amount of experience in online theatre from their previous productions and were well aware of its potential and scope. They had already developed a lot of unique methods, but many of these were shaped by Zoom, the platform of choice for *Sherlock in Homes*. Undertaking the Telepresence Stage residency meant they had to approach things quite differently using the vMix based solution, but they still managed to maintain the unique audience engagement aspects of their work, that has become their signature style.

Whilst other resident companies have also presented their Telepresence Stage performance to Zoom audiences, Sharp Teeth were the first company to bring Zoom audience members directly into the Telepresence Stage performance. The unique approach was largely made possible by using the ZoomISO application, in combination with Zoom audience members using virtual green screen backgrounds. This created a unique Wow factor for the Zoom audience members, seeing themselves composited into the performance came as a complete surprise. But Sharp Teeth didn't stop there, they were also the first company to utilise the vMix addon 'vMix Social', allowing the Zoom meeting chat to appear on screen in the Telepresence Stage performance. Although they were only able to trial this method of audience engagement, Sharp Teeth discussed ways this could be used in the future, such as typing out a telegram on screen from an audience member. This would also be particularly useful for Zoom audience members with limited bandwidth or for those who do not wish to show their video.



Key Takeaway Points

Monitoring the performance on multiple platforms:

If the performance is being presented live in a Zoom or MS Teams meeting it is helpful for the performers to have a second device, such as a laptop or tablet to join the meeting and monitor the audience and their response, in addition to the computer/laptop connecting to vMix. This is particularly useful if the actors need to interact with or address members of the audience, but they should also be aware of their available bandwidth to do so.

Adding audience video to the production: Zoom audience members can appear in the Telepresence Stage performance using the ZoomISO application, integrating their full screen resolution image in the production. If the audience members use virtual green screen backgrounds in Zoom it also becomes possible to chromakey just their image into the scene, appearing to look through windows or placed in picture frames for example.

Including audience chat in the performance:

Using the vMix addon 'vMix Social' makes it possible for remote audience members or producers, watching the performance on Zoom or YouTube etc. to add live social media chat to the production. The live chat can be overlaid in a range of fonts, styles and formats, appearing within the scenes as subtitles or handwritten letters, for example.

Using silhouetted actors in the production: Turning the actors into silhouettes provides them with the opportunity to interact together as a complete composition, without having to be concerned about being in front or behind each other. This effect can work well in physically-oriented scenes, such as fights, and particularly when the identity of the actors needs to be mysterious or disguised.



Improbable

Improbable

February – May 2022



Company Summary

Formed in 1995, the acclaimed UK theatre company Improbable have staged a diverse range of work; including epic outdoor spectacles such as *Sticky* to over 250,000 people in 1998; theatrical classics like *The Tempest* at Northern Stage and the Oxford Playhouse in 2015; intimate puppetry with *Animo* in studios across the country since 1996; adaptations including *Theatre of Blood* at the National Theatre in 2005; operatic triumphs like *Satyagraha* in 2021 and most recently with *Akhnaten* at the English National Opera in London and the Metropolitan Opera in New York in 2022; and female-led impro projects *Permission Improbable* since 2013 and online with *Outside the Frame* from 2021. At the heart of Improbable's creative practice is improvisation. Whether in performance, rehearsal or development, the practice and philosophy of improvisation is at the core of their creative process, even when working on classic plays and operas.

Improbable are principal supporters of initiatives like *Through the Door*, presented by ClerkinWorks since 2018, which seeks to nurture an improvisation culture grown by women and non-binary performers, through a series of workshops that explore improvisation in theatre, comedy, storytelling, devising, movement and making. Improbable are also one of the UK's most experienced facilitators of Open Space Technology events, with *Devoted & Disgruntled* since 2006, nurturing a nationwide community of artists and theatre practitioners, who have made shows, formed theatre companies, organised festivals and started new venues as a result of conversations, collaborative problem solving, improved communications and better networking.

www.improbable.co.uk

Improbable

Improbable February – May 2022



Above The threat of transportation as a punishment for even minor crimes was very real in the 19th century. Offenders were sentenced to serve terms in the convict colonies in Australia and their treatment on the voyage from England was very harsh. Even trespass and damage to the railways was met with such sentences, as can be seen from this reproduction (below) of a railway notice of the period.



Above right In the early 19th century small children were sent up chimneys to work as sweeps.

and for steps to be taken by the government to prevent mass unemployment.

When the war ended these proposals and many others became law.

The National Health Service was set up, providing free medical attention for everyone in Britain; the Industrial Injuries Act was passed to help factory workers and others who were injured as a result of accidents at work; and family allowances were granted to help poor people bring up their children.

The years between the Poor Law of 1834 and the Welfare State of 1945 had seen a great change in the public attitude towards poverty and the responsibility for its relief. These years also saw other very drastic changes.

Working conditions

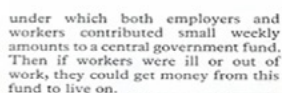
In the 19th century, life was certainly difficult for the unemployed, but it was not much better when people did have work.

In one Manchester cotton mill, men, women and children worked for fourteen hours every day without a break. The door of the mill was locked during working hours, and the workers inside were not even allowed to send for water to drink, although it was always very hot in the mill.

The wages were small – only a few shillings a week – and life was made even harder by penalties for misbehaviour: a cotton spinner who opened a window was fined one shilling! And if a worker fell ill and could not find anybody to take his place, he had to pay the mill owner six shillings a day until he returned to work.

As for small children, they had no chance of going to school or enjoying themselves. Children of four or five worked in coal mines opening and shutting doors. Older, stronger children hauled trucks full of coal, crawling on all fours with belts round their waists and chains passing between their legs.

Small children were also sent up chimneys to work as sweeps and were employed in factories to clean the moving parts of the machinery or tie up loose threads in cotton spinners. Here, they were in constant danger of getting caught in the machines, for none of them was protected. Many a



under which both employers and workers contributed small weekly amounts to a central government fund. Then if workers were ill or out of work, they could get money from this fund to live on.

The Welfare State as we know it today was planned during the Second World War (1939-45). In 1942, William Beveridge (1879-1963) published a report called *Social Insurance and Allied Services*, which was known as the Beveridge Report. Among its recommendations were plans for children's allowances and health services,



man, woman and child lost a hand or an arm when they got too close to a machine or stumbled against it.

Factory workers protested strongly against their conditions. They staged demonstrations, smashed machinery or refused to work. But they were met with even greater violence from the authorities.

Very harsh prison sentences were imposed even for minor crimes. Many offenders were transported to Australia to serve sentences in convict colonies. Some Manchester weavers, who set out on a march to London taking nothing with them but blankets to sleep in, were arrested and imprisoned.

The government considered this kind of protest a danger to law and order and increased the number of offences punishable by death to as many as 200. So severe were some of the penalties that juries refused to convict many prisoners who were tried before them.

Peterloo
In Manchester in August 1819, a large crowd gathered to hear speeches

demanding a change in the government's attitude. Soldiers were ordered to break up the meeting and in the panic which followed six people were killed and some four hundred injured.

This tragic event happened in a large open space called St Peter's Fields, and came to be known as 'Peterloo', a sarcastic reference to the battle of Waterloo which had been fought four years earlier. At least it shocked people into taking notice of the dreadful conditions of workers in particular, and the poor in general. During the next ten years people who were determined to improve those conditions – the social reformers – attracted more and more attention.

These were people like Elizabeth Fry (1780-1845) who devoted herself to improving prison conditions, and the Earl of Shaftesbury (1801-85) who worked to have the employment of children in factories banned.

There were also members of Parliament who had the same ideals, such as Sir Robert Peel (1788-1850) who created the 'peelers' or 'bobbies' (the first Metropolitan Police Force) and

Above When a large crowd assembled in St Peter's Fields in Manchester to demand parliamentary reforms, soldiers were called out to disperse it. In the conflict several people were killed and many injured.



Elizabeth Fry (1780-1845) English prison reformer and Quaker. In 1813 she visited Newgate prison, and was so horrified by the conditions there that she devoted the rest of her life to prison reform.

Residency Summary

The Improbable residency took place between February and May 2022 and included five full days of experimentation and rehearsal with the Telepresence Stage research team, in addition to their independent development work on the project. Having worked together previously, the team brought a unique improvisation style of research and development to the residency. Riffing off each other, the company explored concepts and techniques, continually evaluating their progress and discussing their direction and preparations for the following sessions, as well as regularly meeting outside the residency online to discuss the script and scene ideas. The team also included an experienced video designer and animator, contributing to the scenography throughout the residency, as well as a technical stage manager assisting the performers with their green screen setups.

They commenced the residency wanting to explore moving in and out of boxes, breaking down the barriers that separated them in their previous Zoom performance work. They sought to create a spacious open space

to speak from and to identify and explore what they described as “the fun, the creativity, the outrageous, the intimate, the beautiful, the human, the theatrical, the unexpected and unlikely”. Reflecting on what was technically possible whilst maintaining their original dramaturgical approach, they refined their ideas towards a final 20-minute performance outcome, entitled *Outside the Frame*. It combined improvisations and scripted scenes with animated sequences and transitions, to create a world of shared autobiographical storytelling. Their scenographic techniques imaginatively juxtaposed digital settings with physical backgrounds, as well as using novel visual effects such as full-body live action sequences being framed by close-up shots of hands that create the scenes in real time by moving physical layers.



Company Engagement

The Telepresence Stage project and residency opportunity was brought to the attention of Improbable's Executive Produce Kathryn Bilyard, who immediately saw its potential for their current online project *Outside the Frame*, reflecting on the effects of the COVID-19 lockdown. The initial Zoom based project began in March 2021 with an ensemble of women and non-binary performers whose skills crossed cabaret, clowning, writing and performing, and was brought together by co-directors, Angela Clerkin and Adedamola Bajomo. They conceived *Outside the Frame* as a digital improvisation lab – a company of artists who delve into hidden histories and salacious stories through improvisation, autobiographical stories, spoken word, devising, movement, song and puppetry. For their Telepresence Stage residency, their primary aim was to coexist and perform *Outside the [Zoom] Frame* and develop a handmade aesthetic and tactile approach that uses the technology in a unique way, whilst maintaining that sense and attributes of live theatre.

“I really wanted it to still feel like theatre, and to me it did! ... This really opened up a world for us, that we could use different techniques that felt real ... ‘you could feel the set wobble’ you know, that’s what I really liked about it. ... It felt really right with the type of work that we were developing.”

Angela Clerkin, Co-Director and Actor

Improbable

February – May 2022



Ideas and Experiments

Taking their previous Zoom performance as a point of departure the company wanted to explore the paradox of a simulated Zoom meeting as a Telepresence Stage scenography, being able to quite literally move outside of their Zoom frames and into each other's boxes, passing objects between them (Image 1; pg 208), suspending the audience's disbelief. They had already tried out camera views of overhead projections in their earlier work and were keen to experiment with overhead 'copy stand/rostrum camera' views of live action as environments they could improvise within. They explored live hand painted scenes, collages and books with turning pages. This particular effect was further developed and used as a pre-recorded transition between scenes, with green screen inserts to place the performers within the pictures of the book, with one particular scene in the picture of a locket (Image 2; pg 208).

Live drawing was a particular effect and motif they explored. Scenes were created and assembled from paper cut-outs and materials following the performers' dialogue, with the artist's hands appearing larger than life in the scene. As the performer reads from a book "scrub, scrub, scrub" the artist's hands rub white chalk onto a green screen piece of paper, chromakeyed over a digital campfire scene in a forest made of printed type (Image 3; pg 209), eventually changing the entire scene to the one being described in the story. They also combined these techniques, positioning a performer in the book, who is revealed by the artist's green paint, using the chromakey effect, aided by an animation of a crow landing on the edge of the picture in the book (Image 4; pg 209), which was another motif that continued throughout their research and development.

Improbable February – May 2022

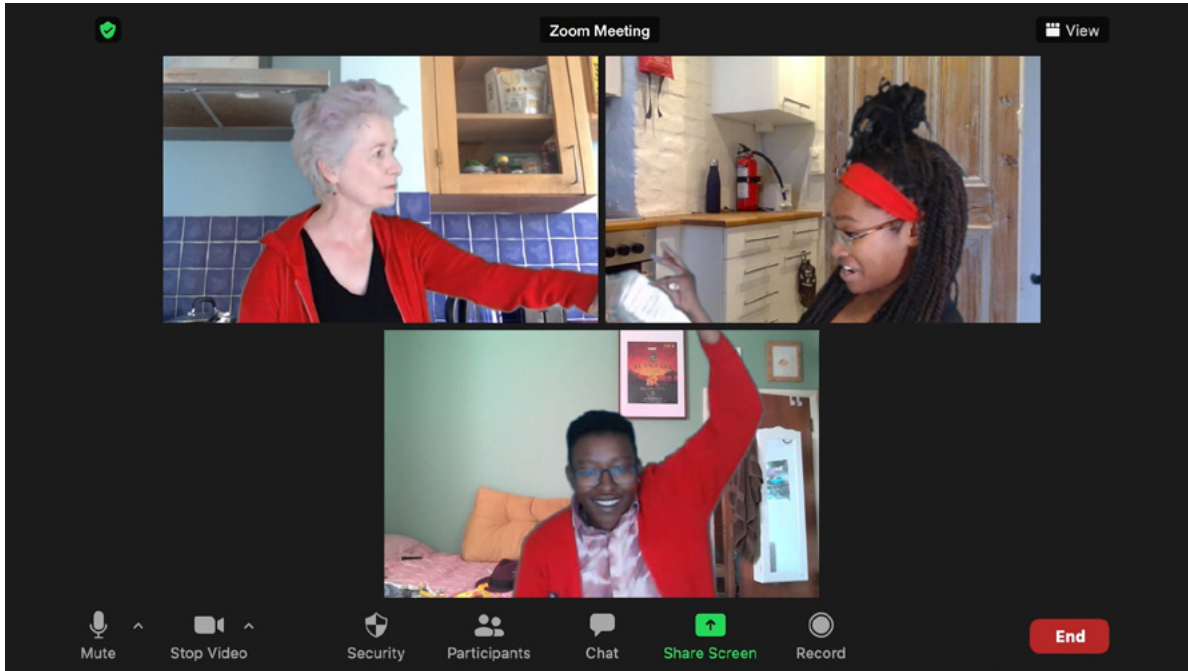


Image 1
The three actors, Angela Clerkin (left), Cassie Hercules (right) and Adedamola Bajomo (centre) reach out of their simulated Zoom boxes to share some mushrooms.

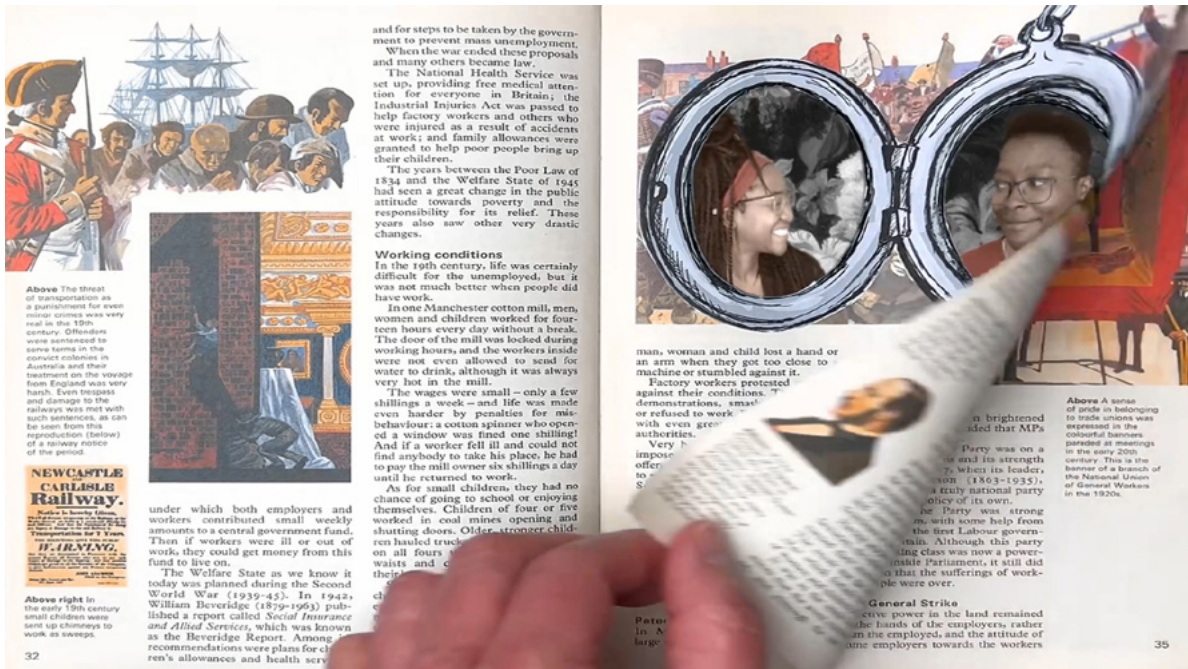


Image 2
Positioned in a picture of a locket, Cassie Hercules (left) and Adedamola Bajomo (right) take a last look at each other before the page is turned to reveal the next scene.

Improbable February – May 2022



Image 3
Caroline Partridge's hands rub chalk marks over a digital background of a forest scene, as Cassie Hercules in the foreground reads a story from a book.

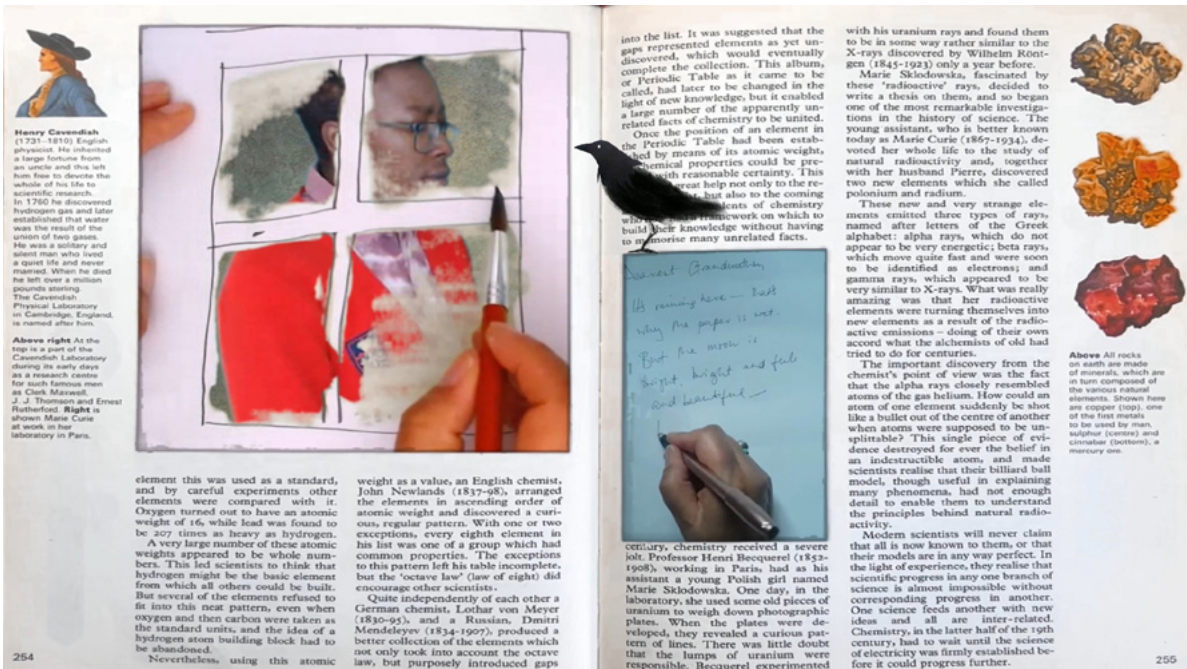


Image 4
A multi-layered scene within the pages of a book: A crow sits on a picture frame (centre right) on top of the frame of a pre-recorded video of a letter being written, as Caroline Partridge paints a window (left) to reveal Adedamola Bajomo behind it.



Performance



The Improbable residency was completed using the vMix system <https://www.vmix.com>, a software vision mixer that provides a complete Telepresence Stage solution, incorporating videoconference communications (vMix Call) with video mixing and chromakeying effects. Using a Google Chrome browser and vMix Call website <https://advanced.vmixcall.com>, the three actors and one artist, situated in their separate locations across London called the vMix software (operator) running on a computer in Brighton. The incoming video calls and virtual sets were chromakeyed together into specific scenes by the vMix operator, who used an Elgato Stream Deck XL to automate the scene transitions at the touch of button according to the cues provided. The final programme output was relayed back to the remote actors and artist, and simultaneously streamed on YouTube Live and Microsoft Teams to a live audience (Diagram 1).

The three performers, Adedamola Bajomo, Angela Clerkin and Cassie Hercules were each supplied with a green screen backdrop, LED video lights, a preview monitor, webcam and stand, and various cables, which were set up in their homes according to the green screen studio instructions provided (Diagram 2; pg 212). From the outset, the performers found the preview monitors positioned to one side of the green screen very helpful in orientating their remote interactions. At their request, a further preview monitor was supplied to each performer, providing them with the ability to monitor the performance on both sides of the green screen, left and right, as well as straight ahead using their laptop screens, giving them complete observation and control of their telepresence performance from all three available angles.

Following experiments using live drawing and painting techniques in their second session, a further performer/artist, Caroline Partridge was introduced to create live hand drawn scenes and effects. By means of a 'copy stand/rostrum', a webcam and light ring was positioned above the artist's paper and their hands, and was connected to the vMix production in exactly the same way as the other performers, monitoring their interactions on a laptop screen. Using a range of drawing and collage materials, including green screen paper, the artist's vMix connection was chromakeyed by the vMix operator to combine the drawings and painting within the scene (Diagram 3; pg 213).

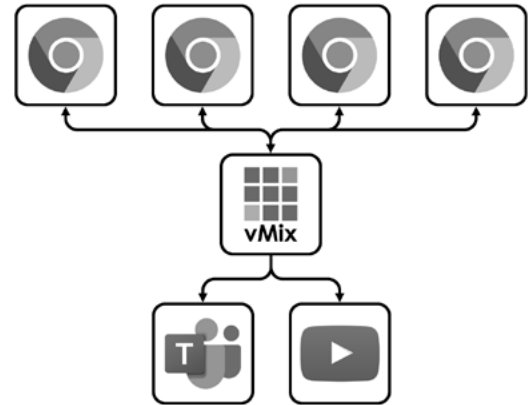


Diagram 1 – Telepresence Stage system workflow.

Participants Technical Setup

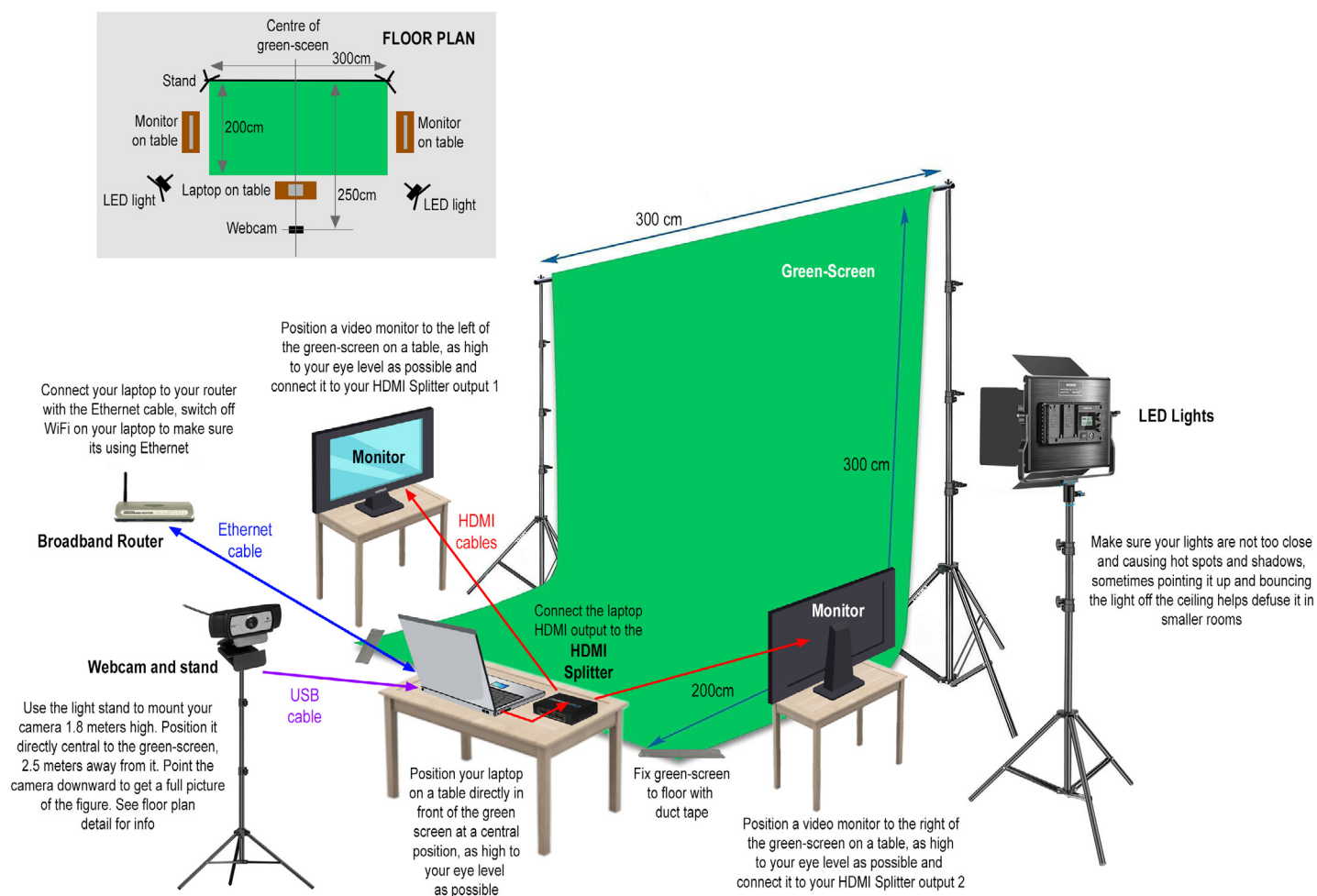


Diagram 2 – Green screen studio setup instructions for each remote performer: Green screen backdrop and stand, video lights, webcam, laptop, ethernet connection, HDMI splitter and video monitors.

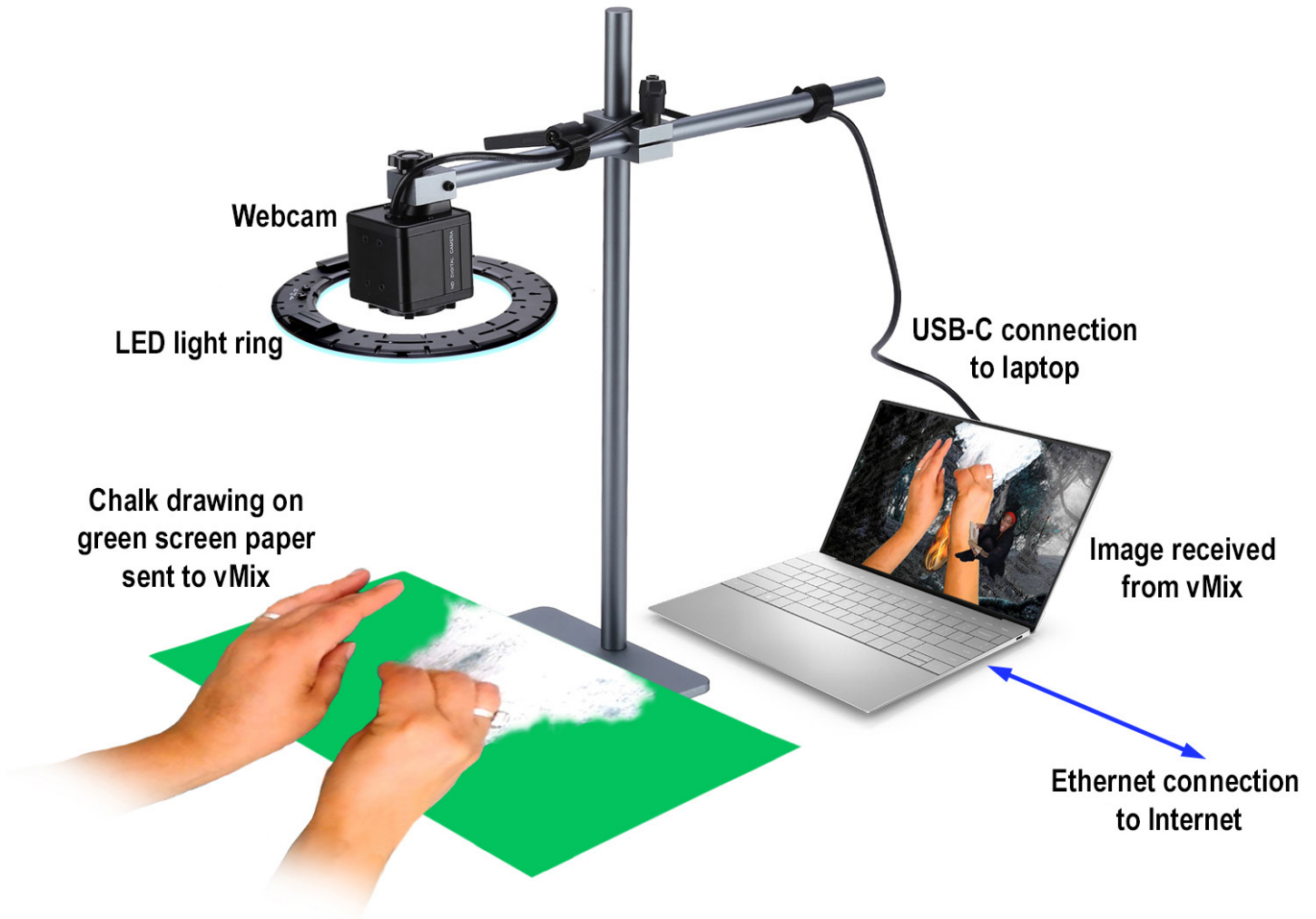


Diagram 3 – Copy stand/rostrum with webcam and light ring, connected to the production via vMix Call.



The hardware and software used by the vMix operator in Brighton included:

1 x Software: vMix PRO version 25.0.0.29
1 x Desktop PC: AMD Ryzen 7 3700X 8-Core Processor 3.60 GHz,
Windows 10 Pro, NVIDIA Quadro P2200, Blackmagic DeckLink Duo
2, Blackmagic DeckLink Mini Recorder
1 x Monitor 1: DELL U2421HE Monitor
1 x Monitor 2: Samsung 24" LCD HD TV
1 x Elgato Stream Deck XL

The hardware, software and green-screen equipment used by each performer included:

1 x DELL Inspiron 15 3502 Laptop / Microsoft Surface Book 3,
Windows 10
1 x Google Chrome: <https://advanced.vmixcall.com>
2 x 24" LCD HD TV
2 x HDMI cable 5 metres
1 x HDMI cable 1 metre
1 x HDMI Splitter - 1 in 2 out
1 x Logitech C922 Pro Stream webcam
1 x USB-C Hub
1 x USB Extension cable 3 metres
2 x LED Video light
1 x Camera stand, 2.1 metre high
1 x Ball Head mount for webcam
1 x Backdrop stand with 3 metre crossbar
1 x Green-Screen, 3 metre width x 6 metre length
1 x Ethernet cable 5 metres

The hardware, software and green-screen equipment used by the artist included:

1 x MacBook Pro, Mac OS Big Sur
1 x Google Chrome: <https://advanced.vmixcall.com>
1 x Logitech C930e webcam
1 x LED Light Ring
1 x Tripod and overhead holding arm for webcam
1 x Ethernet cable 5 metres

Description and Analysis

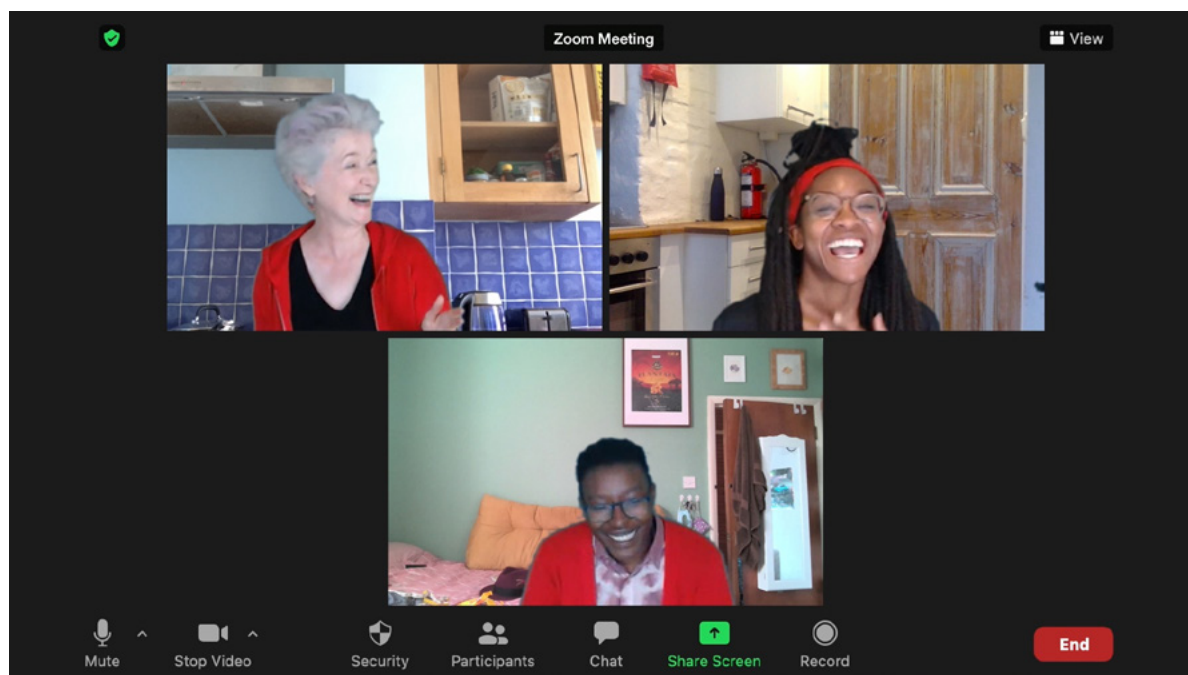


Image 5
The three actors, Angela Clerkin (left), Cassie Hercules (right) and Adedamola Bajomo (centre) introduce the performance from their separate Zoom boxes.

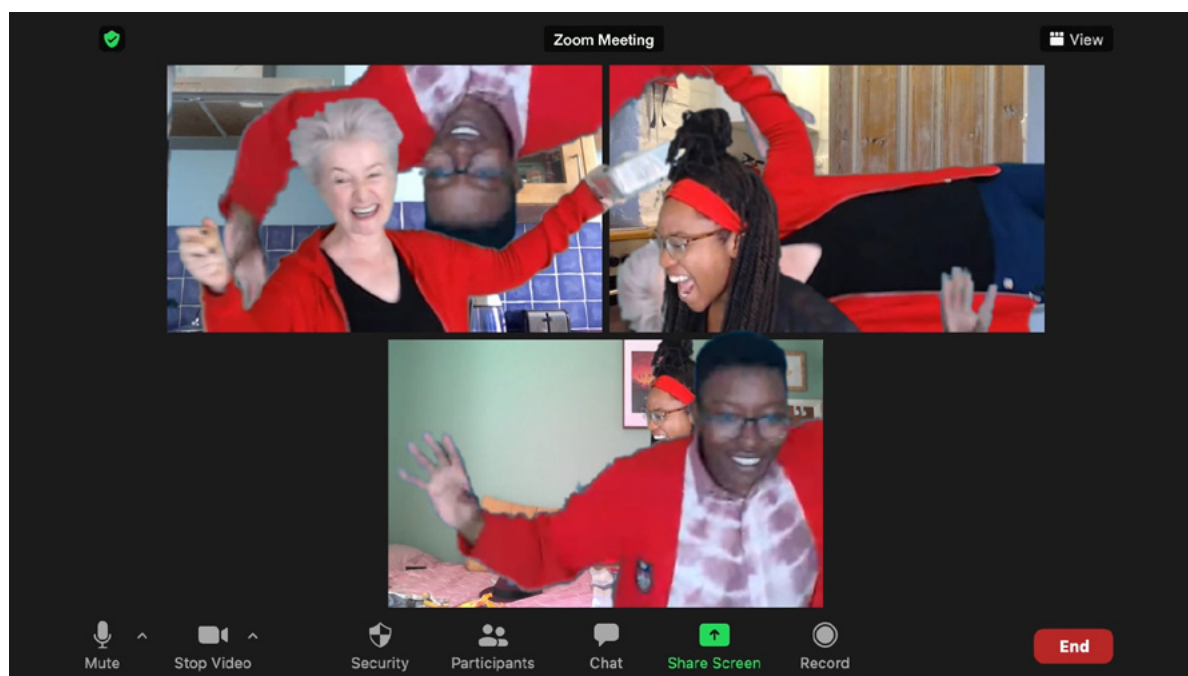


Image 6
After sharing some 'magic mushrooms' the three actors laugh hysterically as they appear strangely doubled in each other's Zoom boxes, turned upside down and on their sides.

Description and Analysis

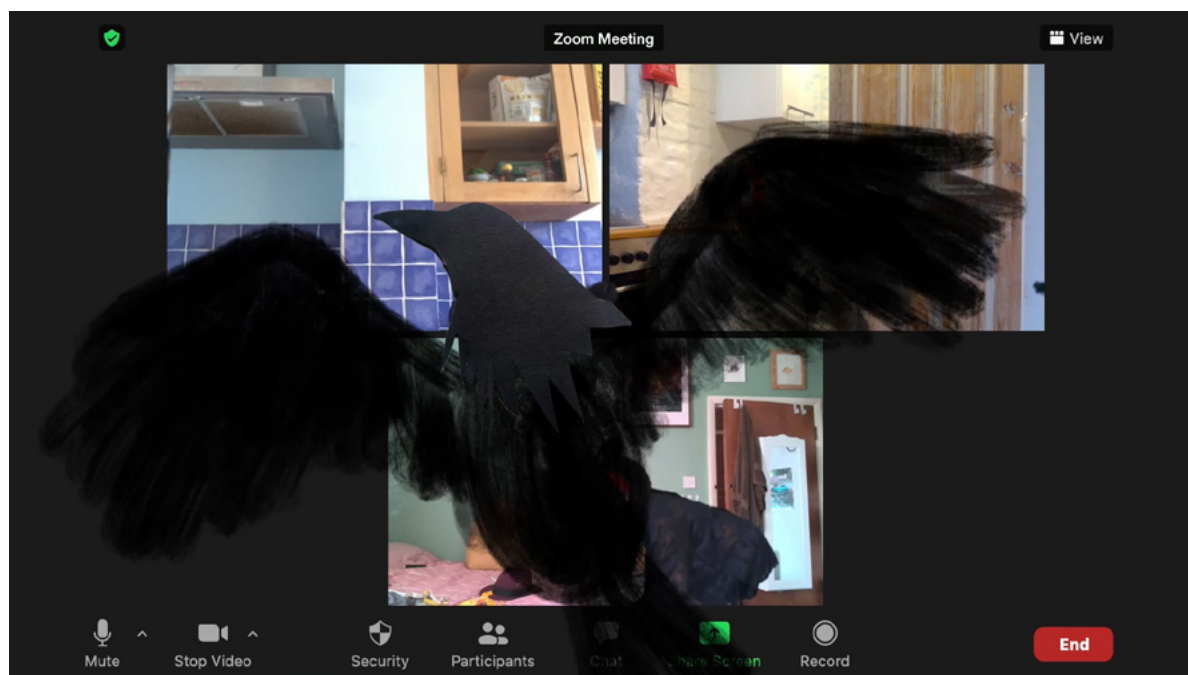


Image 7

An animated hand-drawn crow flies out across the screen, and as the image briefly blacks out, the scene changes.



Image 8

To their complete surprise, Angela (left), Cassie (right) and Adedamola (centre front) find themselves in a forest glade in the moonlight and warm their hands by a campfire.



Image 9
Caroline Partridge reaches into the scene with her hands and picks up the 'moon', which turns out to be a locket with green screen inserts, making it possible to see Cassie inside it.



Above The threat of transportation as a punishment for even minor crimes was very real in the 19th century. Offenders were sentenced to some terms in the convict colonies in Australia and their treatment on the voyage from England was very harsh. Even trespass and damage to the railways was met with such sentences, as can be seen from this reproduction (below) of a railway notice of the period.



Above right In the early 19th century small children were sent up chimneys to work as sweeps.

and for steps to be taken by the government to prevent mass unemployment. When the war ended these proposals and many others became law. The National Health Service was set up, providing free medical attention for everyone in Britain; the Industrial Injuries Act was passed to help factory workers and others who were injured as a result of accidents at work; and family allowances were granted to help poor people bring up their children. The years between the Poor Law of 1834 and the Welfare State of 1945 had seen a great change in the public attitude towards poverty and the responsibility for its relief. These years also saw other very drastic changes.

Working conditions
In the 19th century, life was certainly difficult for the unemployed, but it was not much better when people did have work.

In one Manchester cotton mill, men, women and children worked for fourteen hours every day without a break. The door of the mill was locked during working hours, and the workers inside were not even allowed to send for water to drink, although it was always very hot in the mill.

The wages were small – only a few shillings a week – and life was made even harder by penalties for misbehaviour: a cotton spinner who opened a window was fined one shilling! And if a worker fell ill and could not find anybody to take his place, he had to pay the mill owner six shillings a day until he returned to work.

As for small children, they had no chance of going to school or enjoying themselves. Children of four or five worked in coal mines opening and shutting doors. Older, stronger children hauled trucks full of coal, crawling on all fours with belts round their waists and chains passing between their legs.

Small children were also sent up chimneys to work as sweeps and were employed in factories to clean the moving parts of the machinery or tie up loose threads in cotton spinners. Here, they were in constant danger of getting caught in the machines, for none of them was protected. Many a



man, woman and child lost a hand or an arm when they got too close to a machine or stumbled against it. Factory workers protested strongly against their conditions. They staged demonstrations, smashed machinery or refused to work. But they were met with even greater violence from the authorities.

Very harsh prison sentences were imposed even for minor crimes. Many offenders were transported to Australia to serve sentences in convict colonies. Some Manchester weavers, who set out on a march to London taking nothing with them but blankets to sleep in, were arrested and imprisoned.

The government considered this kind of protest a danger to law and order and increased the number of offences punishable by death to as many as 200. So severe were some of the penalties that juries refused to convict many prisoners who were tried before them.

Peterloo
In Manchester in August 1819, a large crowd gathered to hear speeches

demanding a change in the government's attitude. Soldiers were ordered to break up the meeting and in the panic which followed six people were killed and some four hundred injured.

This tragic event happened in a large open space called St Peter's Fields, and came to be known as 'Peterloo', a sarcastic reference to the battle of Waterloo which had been fought four years earlier. At least it shocked people into taking notice of the dreadful conditions of workers in particular, and the poor in general. During the next ten years people who were determined to improve those conditions – the social reformers – attracted more and more attention.

These were people like Elizabeth Fry (1780-1845) who devoted herself to improving prison conditions, and the Earl of Shaftesbury (1801-85) who worked to have the employment of children in factories banned.

There were also members of Parliament who had the same ideals, such as Sir Robert Peel (1788-1850) who created the 'peelers' or 'bobbies' (the first Metropolitan Police Force) and



Elizabeth Fry (1780-1845) English prison reformer and Quaker. In 1813 she visited Newgate prison, and was so horrified by the conditions there that she devoted the rest of her life to prison reform.

Image 10
Positioned in the locket, Angela (left) confesses her love for Adedamola (right) opposite, who finds it a rather awkward situation.

Description and Analysis



Image 11
Cassie reads the story of 'The Washerwoman' by a campfire at a clearing in the woods.



Image 12
Caroline creates a background street scene according to the story Cassie is reading and completes it with lines of white washing hanging between the houses.

Description and Analysis

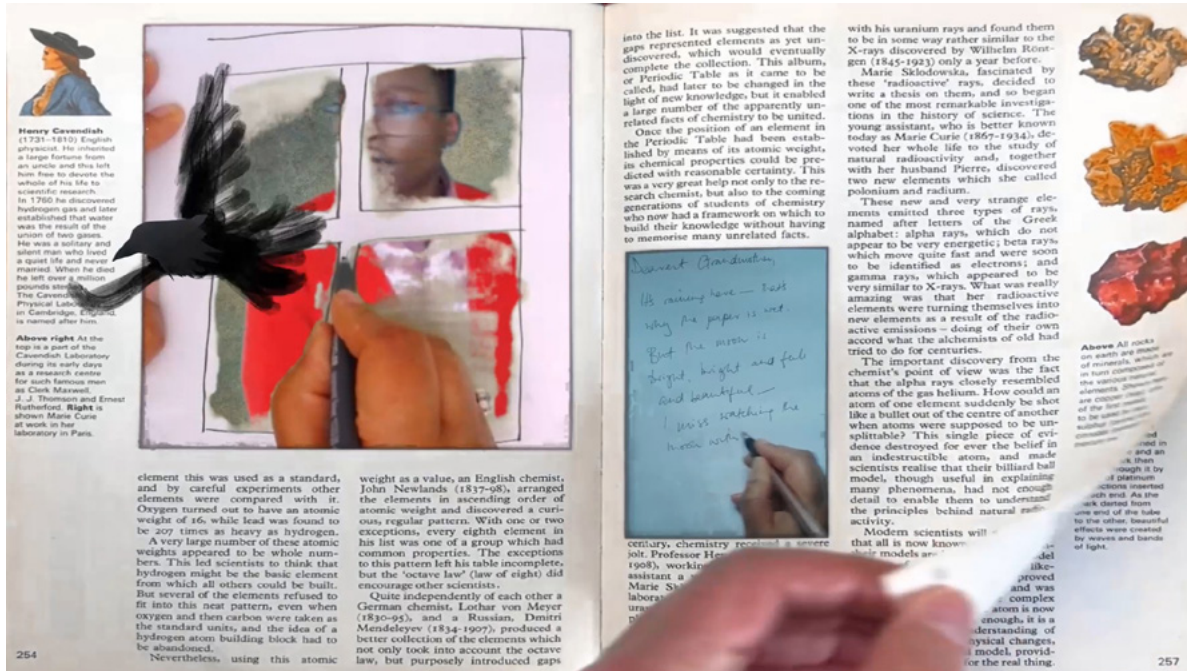


Image 13 After Adedamola has been revealed behind the window with green screen paint the pages of the book are turned, which scares the animated crow who flies off.



Description and Analysis



Image 15
A green screen circle is placed on the corridor floor, creating a dark hole through which Cassie appears, holding a rolled-up painting.



Image 16
Cassie (left) shows her painting to Adedamola (right) who is sweeping the floor, and asks if they could help put it up.

Description and Analysis



Image 17
Angela stands in front of animated flapping wings and holds her fingers out like talons, with a paper cut-out crow's head placed over her head.

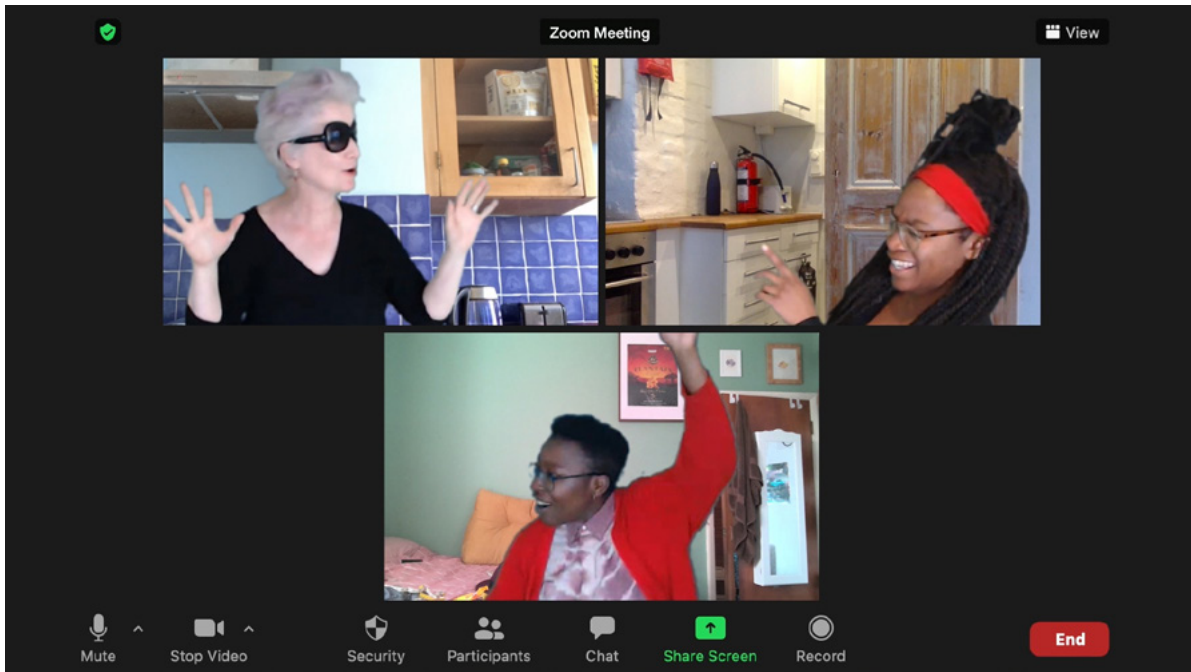


Image 18
The actors dissolve back into their Zoom boxes as the effects of the mushrooms start to wear off.

Description and Analysis

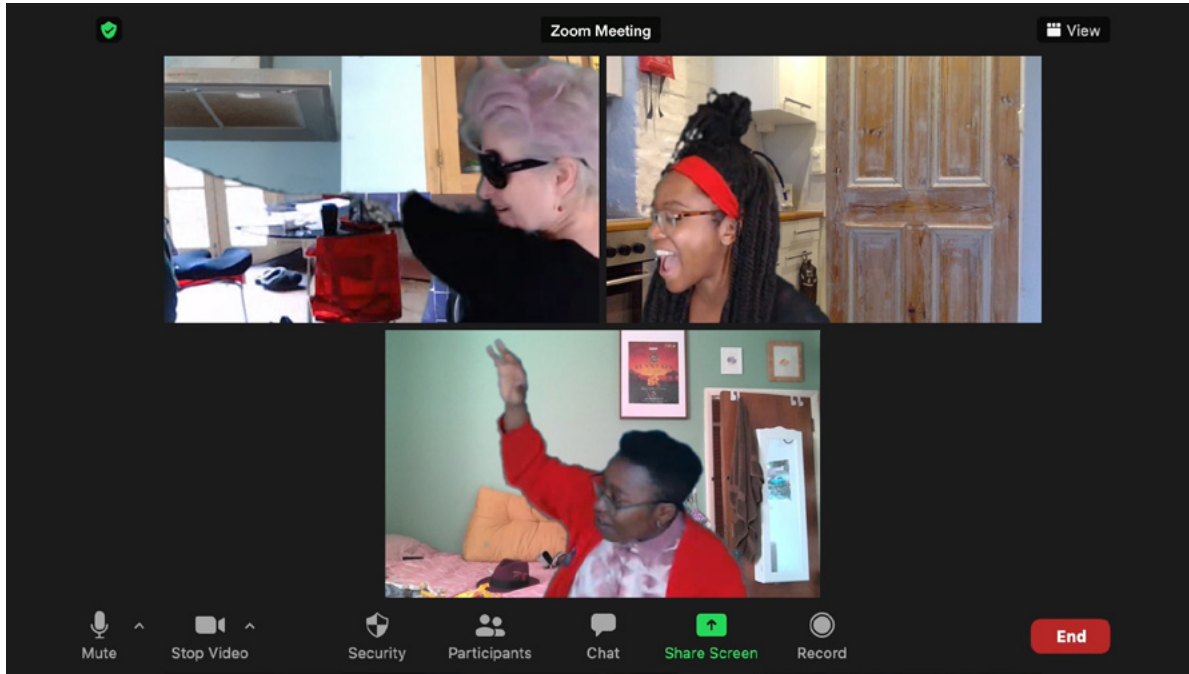


Image 19
Angela (left) lifts up her green screen to reveal the real room behind her virtual kitchen background.



The residency team from Improbable Included:

Co-Director and Actor, Adedamola Bajomo

Co-Director and Actor, Angela Clerkin

Actor, Cassie Hercules

Artist performer, Caroline Partridge

Video Designer and Animator, Nina Dunn

Technical Stage Manager, Henri T

The performance begins with the three actors in a (simulated) Zoom meeting, each in their individual windows, recreated as a digital scenography (Image 5; pg 215). They discuss the effects of isolation and separation through the pandemic, and discover they can actually reach into each other's Zoom windows. They decide to share some 'magic mushrooms' (Image 1; pg 208) to 'meet in their imaginations'. Suddenly they appear doubled in each other's frames at different angles or upside down (Image 6; pg 215). As they play and laugh hysterically, an animated crow flies across the screen and out towards the viewer (Image 7; pg 216). The scene transitions to a moonlit forest glade inscribed with stories, and a campfire around which the three actors sit (Image 8; pg 216). Cassie Hercules takes a book from the fire and opens it at a story called 'The Grief Crow', spurring Angela Clerkin to tell a story about sitting by her aunt's deathbed when a crow flew in and stole her locket. She remarks on how the moon in the scene reminds her of the locket, just as Caroline Partridge's hands appear in the scene, picking up the locket moon and opening it to reveal green screen inserts, through which the actors can be seen (Image 9; pg 217).

Animated pages of a book are turned to transition into another scene, where switching between different framing devices the actors find themselves situated in a locket, pictured in the book (Image 10; pg 217). Looking at each other in profile, Angela declares her undying love for Adedamola Bajomo opposite. The pages of the book turn again (Image 2; pg 208) and we arrive back at the campfire, where Cassie tells her story of 'The Washerwoman' (Image 11; pg 218). "Scrub, scrub, scrub", she says, as Caroline synchronises rubbing chalk across the scene, and then places layers of cut-out paper in the background, creating a dark silhouette of a street, complete with washing lines strewn between the houses (Image 12; pg 218). The pages of the book turn again and stop at a double page spread containing two blank pictures. A pre-recorded video of a letter being written appears in one,

as Adedamola begins to read the story. An animated crow walks in and sits on the edge of the picture (Image 4; pg 209) and Caroline paints a window in the other blank picture space. Using green screen paint to fill the window panes, she reveals Adedamola behind. Finally, the animated crow flies off out of the picture and the page turns once again to the next scene (Image 13; pg 219).

The narrative returns to the silhouetted street background as Cassie continues her story of 'The Washerwoman'. Caroline transforms the street into a corridor in a King's palace, complete with tiled floor and postage stamp portraits hanging on the walls (Image 14; pg 219). Cassie exists the scene and Caroline places a green screen circle in the centre, making a dark hole in the corridor floor. When Cassie returns, she is now positioned to appear as though coming out of the hole holding a painting (Image 15; pg 220), and asks Adedamola to help put it up (Image 16; pg 220). Cassie ducks back down quickly when Caroline's hands fold the paper circle away and proceeds to remove all the pieces of paper from the scene. This reveals Angela Clerkin with animated black wings, and Caroline places a cut-out paper crow's head on Angela's head, while the 'Grief Crow' story is narrated (Image 17; pg 221). Finally, the effects of the mushrooms wear off, and the actors are back in their Zoom frames (Image 18; pg 221). In a final twist, they draw aside their green screens to reveal their real-life rooms behind, as if still in their imaginations (Image 19; pg 222).

Video Recordings

Outside the Frame by Improbable - Trailer

5 minutes mp4

[Watch here](#)

Outside the Frame by Improbable - Performance

20 minutes mp4

[Watch here](#)

Improbable - Residency PLAYLIST

[Watch here](#)



Evaluation



Company Reflections

Improbable were eager to experience a feeling of theatre in every sense, establishing the Telepresence Stage as a performance space ‘fit for purpose’. Whilst they fully engaged with the digital scenography and technical possibilities, they wanted to expand and celebrate the Telepresence Stage’s material aspects, physical capabilities and analogue aesthetics.

“I’ve loved having the sort of really low-tech things being made, but also with the high-tech. So, being able to have a crow coming on and flying off and have [animated] wings that are hand drawn, is a sort of high-tech and low-tech all in one. There’s something to me, [that] makes it feel more in the theatre world than in the film or animation world, there’s something that ... helps us think about theatre and what we’re trying to create.”

Angela Clerkin, Co-Director and Actor

They were particularly focused on developing their own unique dramaturgical approach with the technology available, rather than being directed by it.

“What I found with all the stuff we’ve done since the beginning of *Outside the Frame* till now, is that it feels like to get the most out of the tech you have to use the tech as a glue, and not centralise it. It’s like how does the tech help to make the story? ... but not trying to force the tech into the story.”

Adedamola Bajomo, Co-Director and Actor

The company members reflected on the imperfections and mistakes in a positive light, as reaffirming the theatrical experience they were aiming for. Actor Cassie Hercules spoke about walking into a scene she wasn’t supposed to be in, and how “it did feel like theatre when things went wrong”. Angela Clerkin experienced the reality of it as if “you could feel the set wobble”, and reflected how even from a technical

perspective the process felt akin to a traditional stage production. Their intention to recreate a theatrical setting relied heavily on additional preview monitors surrounding the actors’ green screens. This helped them monitor and adjust their positioning, enhance their stage presence and interact with each other in a more immersive and intuitive way, sometimes forgetting where they were.

“I got used to talking to them as if they were here, and there were times I forget that actually they weren’t, and that could be quite disorienting. But as long as everyone’s in, you do get pulled into it. Like you do really have a feeling of sharing an energy, which I was surprised that we were able to feel, which is really cool. Yeah, that’s a really good thing.”

Adedamola Bajomo, Co-Director and Actor

Even without additional preview monitors, Caroline Partridge spoke about the kinaesthetic experience of watching her own hands create and change scenes as a feeling of physical coexistence.

“You just feel like you’re in the performance with other people, it’s so interesting! ... It’s a kind of physical experience, because you’re sitting there separate but actually you’re moving things about, I thought ‘god I’m so involved here!’, I’ve got to get that into the right angle, and move that, and make sure Cassie is not in a window, but sitting on the edge of the road. ... Placing all of these things, it’s weird how your brain just accepts it and visually the eye, brain and hand connect.”

Caroline Partridge, Artist Performer



Research Team Reflections

The Improbable team brought a wide range of skills and experiences to the residency, including directing, acting, making, design and stage management. Their unique style of research and development took an ‘action research’ approach, using improvisation to work through their ideas. By utilising all the resources and technical capabilities available to them, they would propose a scenario, try it out, reflect on it, adapt it and try it out again. Their residency programme gathered momentum as it developed, by spontaneously exploring different ideas during the sessions (reflecting in action) and by preparing scenography elements and script ideas between sessions (reflecting on action). It resulted in a rich and original layering of scenography, animation, painting and live action for their final performance, *Outside the Frame*.

The residency with Improbable was rather like working with a jazz improvisation ensemble, which works together in unison and riffs off each other to develop ideas, and compositional scenes and dialogues. But they were also learning how to use the new technologies (instruments) and effects to create the particular aesthetic they wanted, whilst pushing the technology in new and original directions, which is an ongoing process. After completing the residency, Improbable were keen to develop further productions with the Telepresence Stage, wanting to learn more about what to expect from the technology and what resources and skills they might need in the future. They talked about requiring additional human resources; a role somewhere between a director, stage manager, controller and QLab operator, with streaming media knowledge, as a resource that will become more and more essential to enable and expand digital productions. They also spoke about future uses of the Telepresence Stage platform to enable international collaborations and further research and development.

“A potential other use of this could be a regular improv space ... on a larger scale. If Improbable had these sorts of locations all over the world. ... Maybe you need three green screen walls, but they could be pull downs on each side, so the space is multi-use, where every two months or so there’s a virtual improv space that people can show up in at various places in the world.”

Adedamola Bajomo, Co-Director and Actor



Key Takeaway Points

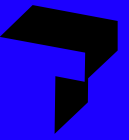
Aim to include a full production team: Like all theatre performances the involvement of a full production team will help guarantee a successful outcome. Alongside directors and actors consider the inclusion of a video designer/ animator, an artist and technical stage manager, as well as a Telepresence Stage/vMix operator and sound engineer.

Use a copy stand/rostrum camera for live artwork: Hand painted scenes, assemblages of objects and collage can be added as a live background using a 'copy stand/rostrum' to mount a webcam and light ring above the artist's paper and their hands. Green screen paper can also be used to chromakey paintings and objects as foreground props/sections.

Adding preview monitors to both sides of the green screen: Adding further preview monitors will provide the actors with the ability to monitor their performance on both sides of the green screen, left and right, as well as straight on using their laptop screen, giving them complete observation and control of their telepresence performance from all available angles.

Embrace the mistakes as a part of live theatre: Both human and technical mistakes will occur, as with all theatre productions. Be prepared to adlib and embrace the mistakes, it reaffirms the 'liveness' and unpredictability of the theatrical experience for the performers and audience members.

Consider an 'action research' approach: Develop ideas as a team at the research stage and in rehearsals. Work together to propose a scenario using the resources available, try it out, reflect on it, adapt it and try it out again. Keep repeating the action research method to finalise a scene or to expand and develop further ideas from it.



Follow-on Case Studies



Follow-on research with two leading disability-led performing arts companies in 2024 developed new effective telepresence solutions specifically for the disability performing arts sector.

This follow-on research has developed unique case studies, documenting the Telepresence Stage residencies with CRIPtic Arts and Birds of Paradise Theatre Company. Their outcomes widen the scope and impact of the project beyond its original focus on lockdown solutions, to advance wellbeing and opportunities for collaboration, creativity, and communication amongst disabled and non-disabled people.



CRIPtic Arts

CRIPtic Arts

March – August 2024



Company Summary

CRIPtic Arts is a disabled-led arts organisation working to create a sector in which disabled people can flourish. They offer bespoke training and development programmes for disabled people across the arts, stage work at local and high-profile venues, and carry out research and campaigns to improve access for disabled people across the arts industry. Founded in 2021 by Jamie Hale, following a showcase they produced at the Barbican Centre in 2019, they have since grown to employ six people, with an annual turnover of around £400,000. Their ethos is to be a disabled-led organisation, with a focus on prioritising people whose access needs they are well positioned to meet and whose needs may not be met elsewhere. Their performances range in scale, from industry

sharings to performances at local venues such as Camden People's Theatre (seating 80), to larger high-profile venues such as the Barbican Centre, the Lowry, and HOME Manchester. Many of these performances are the culmination of programmes developing the participating artists, reflecting their commitment to creative growth and engagement. Most of the work they produce is for live performance, primarily in theatre but also including music and live art. Much of their work is led by the people who apply to participate in their programmes and the people with whom they are working or have previously worked.

www.cripticarts.org



CRIPtic Arts

March – August 2024



Residency Summary

The CRIPtic Arts Telepresence Stage residency commenced with a Knowledge Exchange Workshop in February 2024 involving all project team members and partners; facilitating introductions, presentations, and panel discussions to help establish CRIPtic Arts' residency aims and objectives. A full video recording of the workshop is available on the Telepresence Stage YouTube channel <https://youtu.be/SI-SOIDDcSs>.

By reflecting on previous Telepresence Stage examples, from a post COVID-19 lockdown perspective, CRIPtic Arts were very keen to explore the possibilities of hybrid (online telepresence/in-person theatre) productions. Their initial plan for the residency was to work with either a show they were developing at the time, *The Crip Monologues* for Camden Peoples Theatre in May 2024, or a solo show by CRIPtic Arts Artistic Director Jamie Hale, initially titled *Not Dying*

and later renamed *Quality of Life Is Not a Measurable Outcome*. Due to the production timelines, available rehearsal space and performers, it became clear that it was more practical to focus on a section of Jamie Hale's solo show.

Following discussions on their unique technical requirements and necessary acquisition of skills, a bespoke toolkit of Telepresence Stage equipment was provided to undertake the residency and production. After initial technical experiments, the residency sessions took place at Theatre Deli rehearsal studios in London from 5 to 9 August 2024. CRIPtic Arts produced a 15-minute section of *Quality of Life Is Not a Measurable Outcome* as a proof-of-concept performance, involving live online actors in the UK and a performer from Singapore, as well as pre-recorded performers and digital scenography, as a potential hybrid production.



Company Engagement

CRIPtic Arts were particularly interested in participating in the project because they had previously developed digital work for the stage and observed that it enabled them to work with a wider range of participants. However, they recognised that their skills and equipment for further developing and delivering digital and hybrid performance were lacking. Therefore, they aimed to utilise the Telepresence Stage residency to build their expertise in integrating remote performance technology into their performance toolkit, and to train the wider team in these skills, enabling them to work with a more national or international range of performers, regardless of the physical location of the theatre.

CRIPtic Arts recognise one of the major barriers for disabled performers arises from the need to appear on stage in person: for example, through the inaccessibility of theatre environments for people with physical impairments, and a lack of flexibility in working with people who have chronic, long-term, and ongoing impairments who may or may not be able to attend the theatre on any given day. The company saw the Telepresence Stage project as a way to overcome these barriers for performers and audiences, and moreover to confront wider access barriers and the stigma attached to disabled led performance, including assumptions about their ability to work and the quality of their work. Telepresence provided them with a range of innovative solutions to work on equal terms and overcome such issues, including through real time observation and control in telepresence video monitors, and choreographing interactions between a performer and BSL interpreter/performer.

“I am finding it so much easier performing like this than any other way I have done performance. ... The thing about being able to see it on monitors in real time is ... it’s incredible I notice that my eyeline has wandered slightly and I can just correct it whereas I wouldn’t know that otherwise. ... How can we use this with BSL, letting DL [the BSL interpreter/performer] lead almost as if I am translating for DL”

Jamie Hale, Artistic Director at CRIPtic Arts



Ideas and Experiments

CRIPtic Arts were interested in physical interaction and remote performance, particularly the ways in which physical space could be occupied in an apparently tactile manner. They continued to explore movement, perspective and depth in the telepresence space. In one scene, a performer from Singapore, Jade Ow Yanhui, was able to walk around Jamie Hale in a full circle, crossing in front and behind them, and finally reaching out to touch Jamie's hand (Image 1). Whilst positioned stationary in their wheelchair on the green screen, Jamie was able to follow Jade's movements around them on preview monitors surrounding them (Image 2), enabling Jamie to adjust their eyeline and head movements in precise correspondence. This set up the illusion of Jamie watching Jade circle around them in real space, and a strong sense of Jamie coexisting and interacting in the same screen space as Jade. The ability for Jade to visually appear to cross in front of Jamie (i.e. be in the foreground) and then behind him (to be in the background) involved a video vision-mix switching of Jamie's 'layer' from back to front in the composite shot.

The company were also particularly interested in integrating live and recorded material, such as when working with British Sign Language (BSL) interpretation. This included a pre-recorded BSL performer, DL Williams for a section of the show, synchronously delivered with spoken dialogue from Jamie Hale and a graphic 'sparkle' overlay (Image 3), with corresponding words and signs occurring at the same time. This was explored for the first time on a Telepresence Stage, integrating and synthesising these two elements as an accessible and effective translation.

CRIPtic Arts were curious about the impact of integrating live digital elements into the performance and the boundary-breaking possibilities this offered – for example, performers 'escaping' from apparent Zoom windows. They wanted to test how a virtual stage could maintain a sense of live energy and how this might interact with other access provisions, such as captioning.

CRIPtic Arts

March – August 2024



Image 1
Jamie Hale (left) in London looks at their Carer, performed by Jade Ow Yanhui (right) in Singapore, who reaches out to hold Jamie's hand.



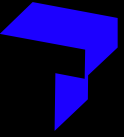
Image 2
Jamie Hale on the green screen observes themselves with their Carer performer, Jade Ow Yanhui on two preview monitors, at Theatre Deli studios in London.

CRIPtic Arts

March – August 2024



Image 3
Jamie Hale (left) watches BSL performer, DL Williams (right) standing behind a purple courtroom dock with sparkles emanating from their hands as they sign.



Performance



The CRIPtic Arts residency was completed using the vMix system <https://www.vmix.com>, a software vision mixer that provides a complete Telepresence Stage solution, incorporating videoconference communications (vMix Call) with video mixing and chromakeying effects. From the outset, the company wanted to explore hybrid techniques and solutions, combining online telepresence with theatre space productions. Their residency experiments reshaped and transformed the staging of Jamie Hale's *Quality of Life Is Not a Measurable Outcome* to create an arresting hybrid experience.

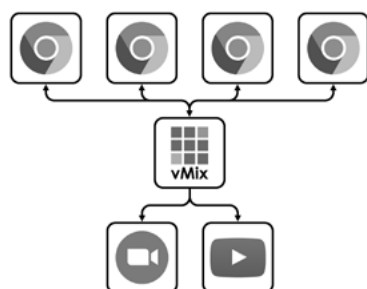
Initial experiments in April 2024 were conducted between Jamie Hale at their home in London, confined to their bed at the time, and Paul Sermon based in Brighton, running the vMix system. Using a Google Chrome browser and vMix Call website <https://advanced.vmixcall.com>, Jamie called the vMix system, running on the computer in Brighton. The incoming video call was a head and shoulders shot of Jamie that included their head support and surrounding background. This vMix Call image of Jamie was fed to the virtual camera app NVIDIA Broadcast (or ManyCam) which removed and replaced the background with a green screen (using 'background segmentation', a common function in many video chat apps) before it was fed back to the vMix system. This allowed Jamie to participate without having to physically place a green screen background behind their head. It was then possible to scale and position Jamie's head and shoulders anywhere within the virtual set, often onto a pre-recorded video or image of Jamie's body positioned in a wheelchair, allowing Jamie to perform within the scene in a visually full-body form, from their restricted bed location. This was born out of necessity at this particular time during the residency. It provided a viable solution to how to present a live performance in the circumstances of the performer being confined to their bed. This was in line with one of the project's key aims – to overcome some of the barriers associated with disabled led performance, as noted in 'Company Engagement' on page 6.

The final residency sessions at Theatre Deli rehearsal studios in August 2024 were conducted by CRIPtic Arts and the University of Brighton research team together in person. Jamie Hale was positioned on a vinyl green screen floor, against a three metre wide green screen backdrop (Image 4). Jamie's full body image was captured on a camera in front of them and fed directly to the vMix system, running on a computer in the studio, operated by CRIPtic Arts Lighting Designer, Al Simpson. LED video lights and telepresent preview monitors were positioned around Jamie, supported by CRIPtic Arts Production Assistant, Luke Rogers.

Using a Google Chrome browser and vMix Call website <https://advanced.vmixcall.com>, external remote performers called in to the vMix system at Theatre Deli studios. The performers in the simulated Zoom meeting (health and welfare professionals), called in from their separate laptops using standard built-in webcams and natural backgrounds, in keeping with the Zoom call aesthetic. However, the Carer, played by Jade Ow Yanhui at LASALLE College of the Arts in Singapore was standing in a green screen Cyclorama (infinity cove), a studio space with a seamless curved green wall and floor, surrounded by LED video lights and three telepresent preview monitors (Diagram 2). This provided Jade with the ability to monitor her performance and interactions with Jamie on both sides of the green screen, left and right, as well as straight ahead, giving her complete observation and control of her telepresence performance from all three available angles.

For both the initial experiments and the Theatre Deli sessions, virtual sets were chromakeyed together into specific scenes by the vMix operator, who used an Elgato Stream Deck XL to automate the scene transitions at the touch of a button according to the cues provided. The final programme output was relayed back to the remote actors and streamed simultaneously on YouTube Live and Zoom to a live audience (Diagram 1).

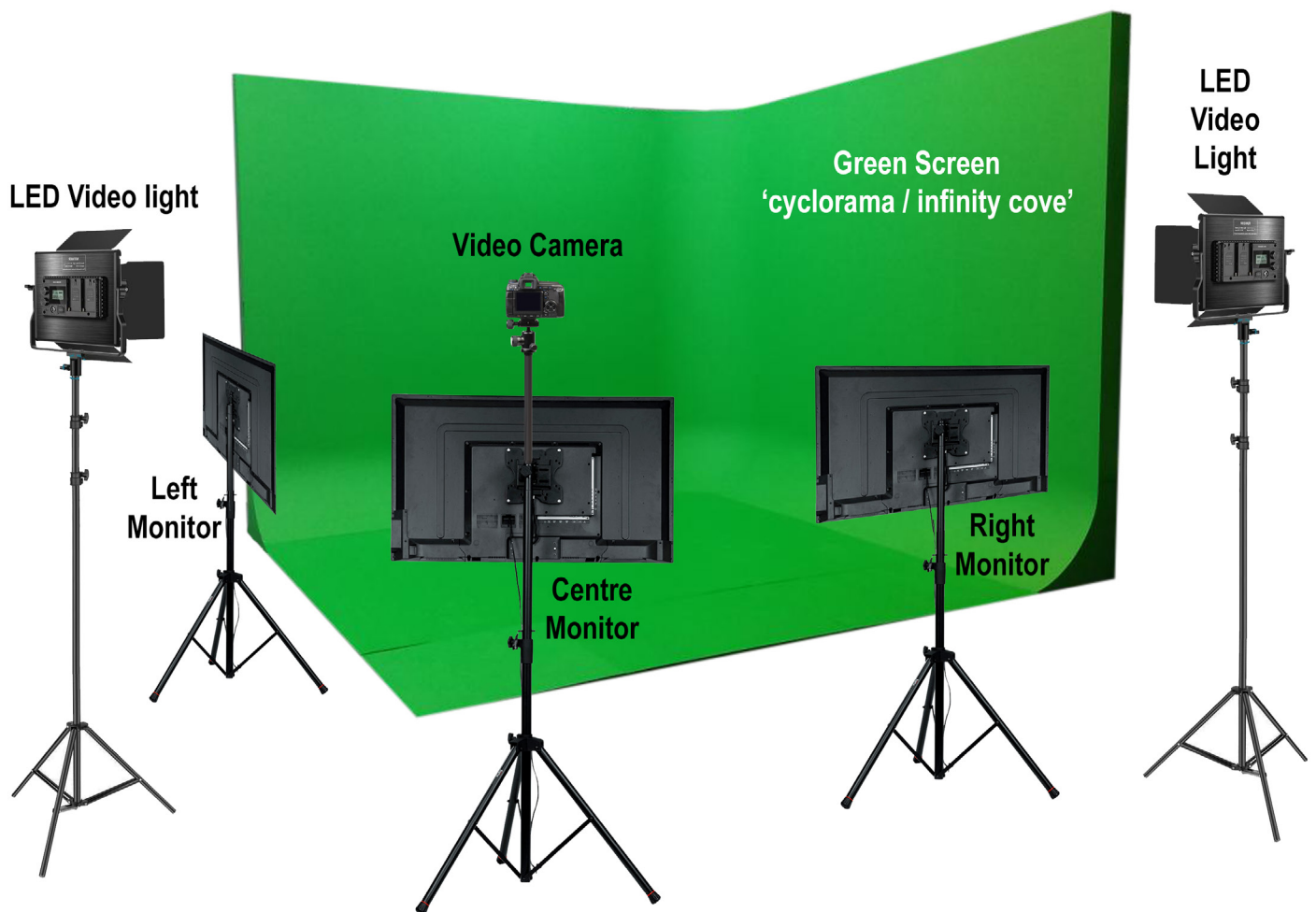
Diagram 1 – Telepresence Stage system workflow.



Participants Technical Setup



Diagram 2 – Green screen studio setup for performer at LASALLE College of the Arts Singapore: Green screen Cyclorama (infinity cove), LED video lights, video camera, and video monitors.



Participants Technical Setup



Image 4
Green screen studio setup at Theatre Deli studios in London, in use by CRIPtic Arts. From left to right: Jamie Hale - Writer and Performer, Luke Rogers - Production Assistant, and Al Simpson - Lighting Designer.



The hardware and software used by the vMix operator/producer at Theatre Deli studios in London included:

- 1 x Software: vMix PRO version 27.0.0.72
- 1 x Laptop PC: HP ZBook Studio 16 inch G10 (i7-13800H GeF RTX 4070)
- 1 x USB Hub: HP USB-C Dock G5
- 2 x Monitor 27": HE Iiyama ProLite XUB2792HSU-B5 27inch IPS LCD LED
- 1 x Razer Kiyo Pro - USB Streaming Webcam Full HD
- 1 x Monitor 2: Samsung 24" LCD HD TV
- 1 x Elgato Stream Deck XL
- 1 x HDMI Splitter: 1 In 4 Out, Full HD
- 2 x GVM LED Chroma-key (daylight white) video light and stand
- 1 x Neewer Green-screen backdrop and stand 3 x 3 metres
- 1 x Manfrotto Green-screen Vinyl Floor Strip 1.37m x 4m
- 1 x USB Extension cable 3 metres
- 2 x HDMI cable 5 metres
- 1 x HDMI cable 1 metre
- 1 x Camera stand, 2.1 metre high
- 1 x Ball Head mount for webcam
- 1 x Ethernet cable 5 metres

The hardware, software and green-screen equipment used by performer at LASALLE College of the Arts Singapore included:

- 1 x MacBook Pro or PC desktop/laptop computer
- 1 x Google Chrome: <https://advanced.vmixcall.com>
- 2 x 24" LCD HD TV
- 2 x HDMI cable 5 metres
- 1 x HDMI cable 1 metre
- 1 x HDMI Splitter - 1 in 2 out
- 1 x Logitech C922 Pro Stream webcam
- 1 x USB-C Hub
- 1 x USB Extension cable 3 metres
- 2 x LED Video light
- 1 x Camera stand, 2.1 metre high
- 1 x Ball Head mount for webcam
- 1 x Green screen Cyclorama (infinity cove) 4 x 4 metres
- 1 x Ethernet cable 5 metres

The hardware, software and green-screen equipment used by each performer in Zoom Panel meeting scenes included:

- 1 x MacBook Pro or PC desktop/laptop computer
- 1 x Google Chrome: <https://advanced.vmixcall.com>
- 1 x 24" LCD HD TV
- 1 x Logitech C922 Pro Stream webcam
- 1 x LED Video light or light ring
- 1 x Ethernet cable 5 metres



The residency team from CRIPtic Arts:

Jamie Hale – Writer, Performer, and Artistic Director
Jack Wakely – Performer (Zoom Doctor)
Lewis Bray – Performer (Zoom Panel Member)
Jacqui Adeniji-Williams – Performer (Zoom Panel Member)
Mark Lane – Performer (Zoom Panel Member)
Jade Ow Yanhui – Performer (Carer), ART:DIS Singapore
DL Williams – BSL Performer

Creative Captioning: Ben Glover
Photographer: Shona Louise
Lighting Designer: Al Simpson
Production and Creative input: Caitlin Richards,
Jack Wakely, Luke Rogers, Chris Bond, Ben Glover,
Louise Atkinson

The final telepresence performance, developed and rehearsed at Theatre Deli studios was a 15-minute reworking of *Quality of Life Is Not a Measurable Outcome*, originally a 40-minute theatre stage performance titled *Not Dying*, written, directed, and performed by Jamie Hale. The show explores and exposes the interiority of Jamie's experiences with disability and mortality, framed against the social context of disableism. The telepresence show opens with a painterly textured scene, with Jamie in a hospital bed, surrounded by healthcare workers, nurses, and surgeons, all staring out at the audience, against a collaged backdrop of hospital ward, intensive care unit, and waiting room (Image 5). The scene darkens and Jamie is spotlighted in their bed (Image 6) to reveal their inner thoughts to us. The hospital scene brightens again. All the time, it is only Jamie's head that is being utilised onscreen within the telepresence stage, positioned on the body in the hospital bed. The same live video head image is then overlaid onto a torn-out piece of paper, which is slapped down onto the face of different members of the medical staff surrounding him as Jamie lists the medications being received from them (Image 7).

The hospital scene is ripped away using a tearing paper effect (Image 8) to reveal Jamie on a green ethereal stage. Still only using video of Jamie's head, they now appear in a wheelchair, dressed in a hospital gown, complete with a catheter strapped to their leg. As Jamie exclaims 'I welcome these wings', animated wings made of torn hospital gowns appear and flap up and down, transforming the image to an angel-like figure (Image 9). A fade to black announces a dramaturgical change of approach. A computer desktop image, complete with a stereotypical family photo for its wallpaper fills the screen (Image 10), as if it is the online audiences' computer desktop. A Zoom meeting starts (Image 11) and the host is revealed as the same person in the centre of the family photo, presumably the father. The meeting continues as the host invites the participants to join and their Zoom windows open one-by-one (Image 12).

The entire scene is a completely simulated Zoom meeting, constructed as a virtual scene in vMix, and the live performers are calling into vMix directly. It becomes apparent they are a panel of health and welfare professionals, meeting to review and potentially reduce Jamie's care package, and ultimately concluding that Jamie's *Quality of Life Is Not a Measurable Outcome*. It was Jamie's intention to draw the viewer into the production and purposefully disorientate them, as if the Zoom meeting was taking place on their own computer, and they were participating in it, making them complicit in the plot, as Jamie explained in rehearsal.

“I want it to feel like a Zoom meeting because I want people to feel like they have been thrown into a zoom meeting ... into a really weird complicity”

Jamie Hale, Artistic Director at CRIPtic Arts



The Zoom meeting desktop scene shrinks in size and moves to the background to reveal Jamie in a wheelchair, still dressed in a hospital gown, but now in the centre of a purple lit stage overlaid with smoke, with the Zoom screen positioned at an angle to their right. The scene conveys Jamie's online and offline presence, and remains on screen for a Zoom conversation with their doctor, with Jamie's online presence on another angled screen to their left. The full figure of Jamie is caught in the middle between the two zoom windows/ screens talking to each other (Image 13). The same virtual set is used for Jamie to eavesdrop on the review panel meeting (Image 14), while sometimes popping up on a different camera input in the Zoom meeting itself (image 15).

The remainder of the performance cuts between the Zoom panel meeting scene and Jamie on the purple lit stage. Sequences are activated in response to the panel's discussions, for example, a patronising comment about how 'brave' Jamie is, leads to a scene of Jamie smashing through the word BRAVE (Image 16). Dressed in jeans and leather jacket, Jamie appears as a live full body image in their wheelchair, overlaid with an animation of the word BRAVE shattering like glass.

Jamie then remembers a time paragliding. Using layers of green-screen clouds, the live Jamie is positioned in a wheelchair up in the clouds while a curled photographic

image of Jamie paragliding circles around them (Image 17). Jamie was also keen to explore creative captioning, using handwritten typography. Words such as 'tenacious' were synchronised with their dialogue and overlaid on their full body image (Image 18), as a creative alternative to subtitles. Toward the closing scenes we are presented with the desktop scene again, this time a folder is opened to reveal a live video of Jamie on the purple lit stage, inside the folder on the desktop (Image 19), as if they have hacked into the Zoom panel host's computer, or broken through a digital fourth wall. The scene fades to full screen and the surrounding laptop screen disappears. Jamie wears a red, black, and blue t-shirt, with black trousers. As Jamie continues to speak, the Carer performer in Singapore, referred to in 'Ideas and Experiments' on page 7, walks around Jamie, finally reaching out to hold Jamie's hand (Image 1). The performance concludes with Jamie's final piece of dialogue, synchronised with the BSL performer (Image 3), also referred to in 'Ideas and Experiments' on page 7, with the final line 'These laws don't give me equality' presented as a closing title screen (Image 20).

Description and Analysis



Image 5
Jamie Hale (centre) sits up in a hospital bed and narrates, surrounded by images of hospital spaces and ICU equipment as seven distant and disgruntled healthcare professionals look on.



Image 6
Jamie, under a spotlight in a hospital bed wearing a virtual hospital gown, sits up and continues to narrate the performance.

Description and Analysis



Image 7
Jamie continues to narrate from the hospital bed with ripped out images of Jamie's face stuck on the heads of the seven healthcare professionals, all reciting the words "and they're always telling me underneath it, you're just not trying hard enough".



Image 8
The hospital bed scene is ripped away like paper from left to right, revealing Jamie in their wheelchair, dressed in a hospital gown, in the centre of a dark empty stage.



Image 9
Jamie, dressed in a hospital gown surrounded by an ethereal green glow. As smoke rolls in from the left, angel wings made from hospital gowns spread out from behind and begin to flap and swoop.



Image 10
The computer desktop of the Zoom meeting host/ chair, Lewis Bray, in the centre of the family photo desktop wallpaper.

Description and Analysis

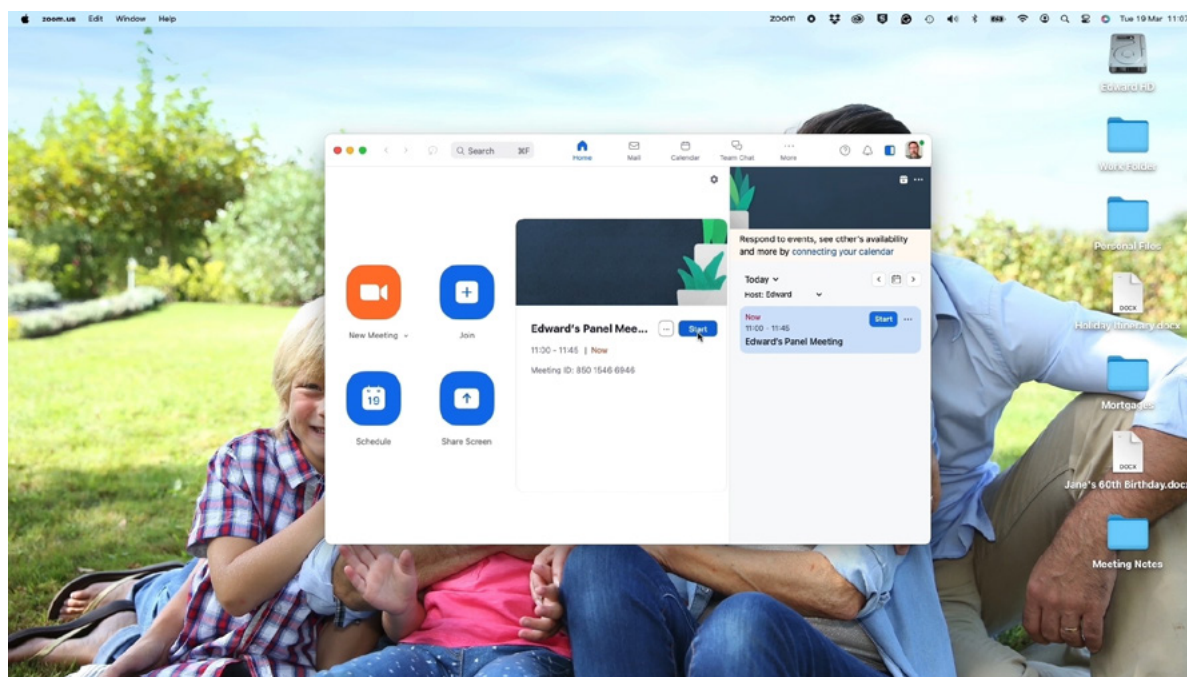


Image 11
The Zoom meeting opens and the host proceeds to invite the panel members into the meeting.

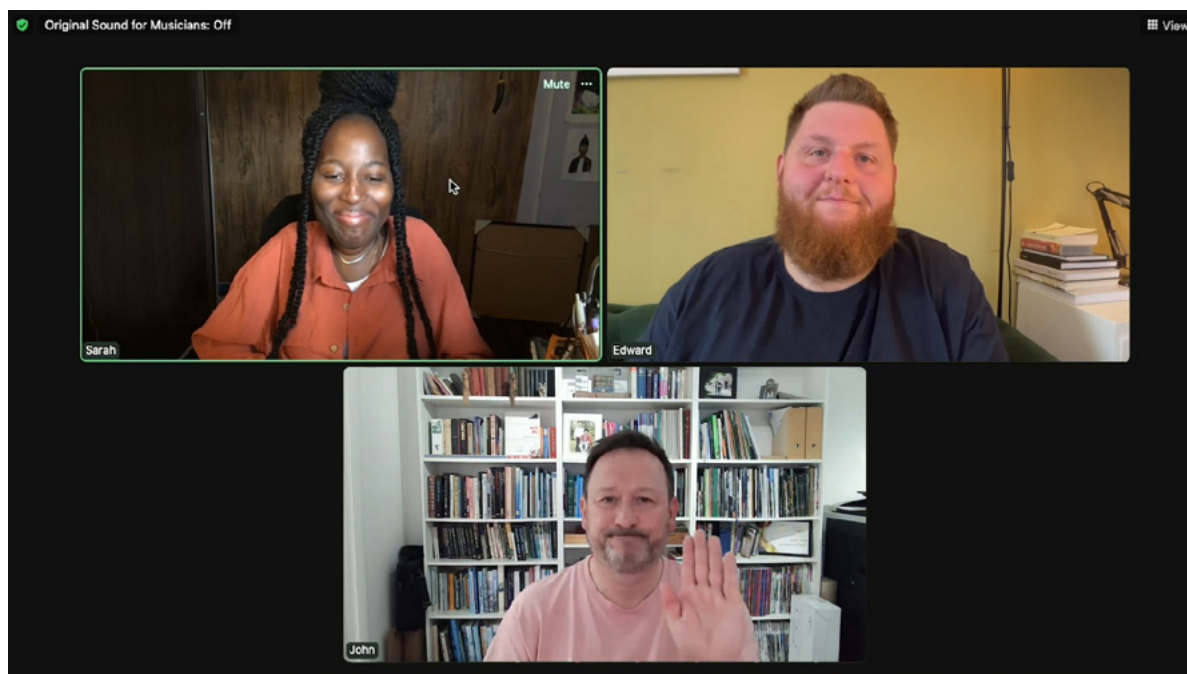


Image 12
The Zoom meeting review panel of health and welfare professionals are assembled: Jacqui Adeniji-Williams (top left), Mark Lane (centre), and Lewis Bray (top right).



Image 13
Jamie in hospital wheelchair, centre stage, with the head of the doctor, performed by Jack Wakely, just above and behind him. They are caught in the centre of their own Zoom meeting, video-projected either side



Image 14
Jamie is in the centre of a purple-blue lit stage, dejectedly observing the Zoom panel meeting (left) decide on the future of their care package, whilst Jamie also appears in another Zoom meeting window (right) looking on.

Description and Analysis

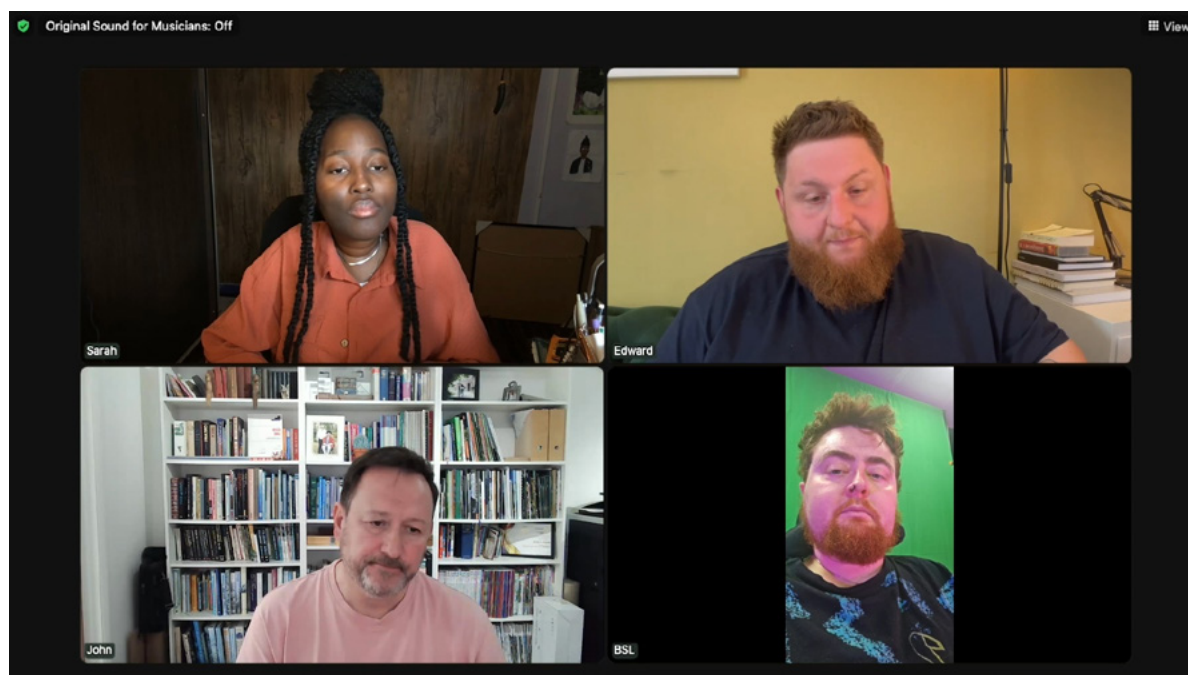


Image 15

The Zoom meeting review panel, Jacqui Adeniji-Williams (top left), Lewis Bray (top right), and Mark Lane (bottom left), are briefly joined by Jamie Hale (bottom right).

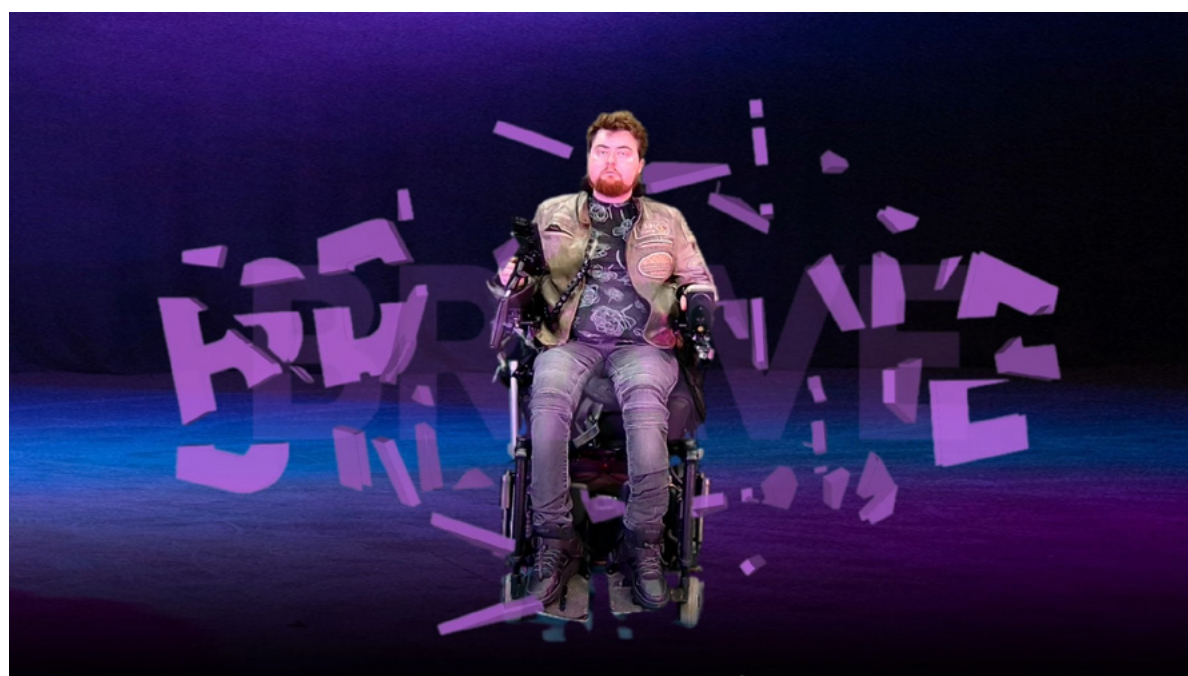


Image 16

Jamie is dressed in jeans and a leather jacket, on an empty stage bathed in purple light. They move forward, smashing through the glass typographic caption BRAVE.



Image 17
Jamie is located in the sky surrounded by billowing clouds, as a former Jamie paraglides around them.



Image 18
Jamie Hale on a dark, empty stage. The floor is lit purple-blue and smoke floats in around them as the word 'tenacious' is written.

Description and Analysis

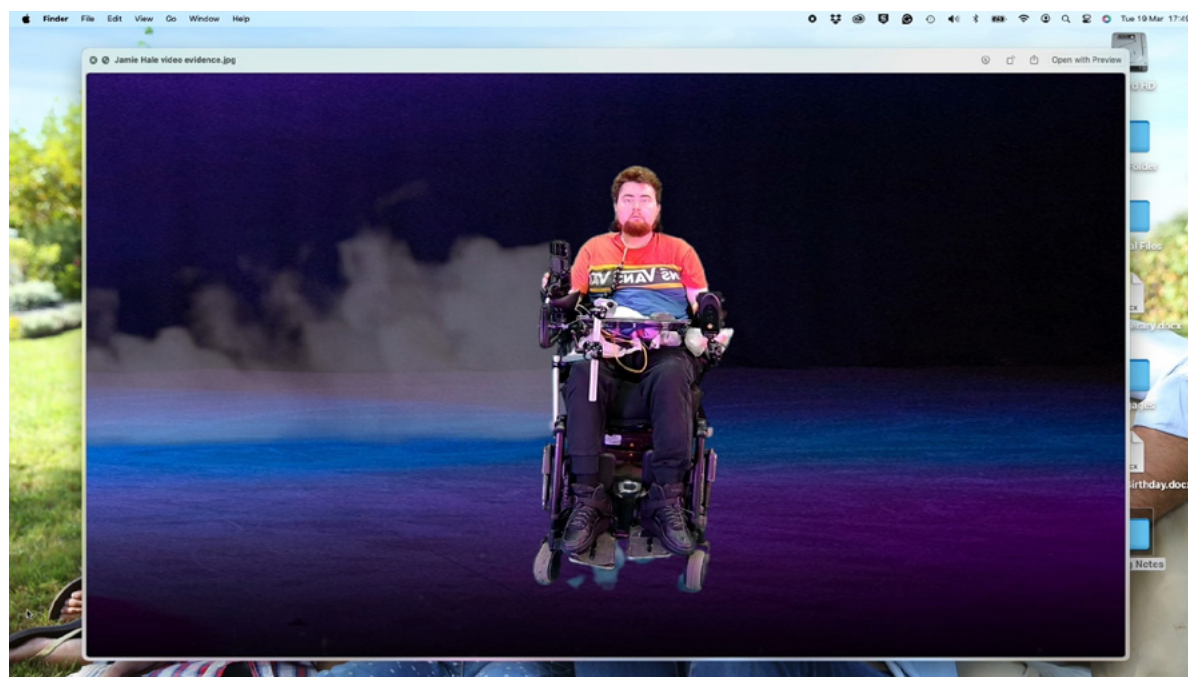


Image 19
Jamie appears unexpectedly in an open document window on a computer desktop.



Image 20
The title 'THESE LAWS DON'T GIVE ME EQUALITY' in blue capital letters on a black background, accompany Jamie's final sentence.



Video Recordings

Quality of Life Is Not a Measurable Outcome - Performance

15 minutes mp4

[Watch here](#)

Quality of Life Is Not a Measurable Outcome - Performance with BSL

15 minutes mp4

[Watch here](#)

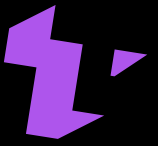
CRIPtic Arts Knowledge Exchange Workshop

3 hours and 40 minutes mp4

[Watch here](#)

CRIPtic Arts Residency PLAYLIST

[Watch here](#)



Evaluation



Company Reflections

The Telepresence Stage residency experience reshaped many of CRIPtic Arts ideas about staging Jamie Hale's *Quality of Life Is Not a Measurable Outcome* performance. The residency led them to explore ideas such as embedding performers in the audience space, live-streaming them to the stage, and developing methods for interactive performances with performers in any location. For CRIPtic Arts, the project provided multiple options for remote, live, hybrid, synchronous and asynchronous presence, which could be layered into one scene. This flexibility makes it an even more useful tool for some disabled performers who may not be able to plan far in advance which form of access will work best for them or be possible. It can also remove uncertainty for venues and commissioners about whether a performance will go ahead or not, providing them with the reassurance they need to confidently programme more work by disabled performers and companies. The residency turned out to be a valuable experience in more ways than one, given Jamie's unstable health at the time, and the possibility they might have to withdraw from a live show. The Telepresence Stage solutions would allow them to continue staging the show as long as Jamie was capable of performing, even if not physically present in the theatre.

“This is my proof of concept for wanting to develop ... a fully scenographed version that only relies on me being able to bring my face to the theatre, because then there's basically no worries about my reliability anymore, wherever I am, I can just like Facetime in, and if I can't we can use all the other performers live and use my face from a previous recording”

Jamie Hale, Artistic Director at CRIPtic Arts

The residency programme was initially daunting, in the first session of the residency Jamie commented...

“For me it had been quite hard to work out how that might even look until I had started to see what you were doing with this.”

By the middle of the residency, following their interactions and rehearsal with Jade Ow Yanhui in Singapore, Jamie watched the recording of when they were brought together on the Telepresence Stage, and observed:

“When this comes together it's so good isn't it. You really can't imagine it. There's a kind of magic to it isn't there.”

In the final residency session Jamie reflected on the rehearsals and complete recording:

“It looks so good on screen doesn't it. At the beginning of the week I was like, how does this actually come together into anything and now it's like this is bloody fantastic.”

CRIPtic Arts raised questions about the possibilities and limitations of off-the-shelf technology. Jamie commented that it was not designed for disabled people and this was evidenced by the green screen background-segmentation technology not recognising the wheelchair as part of their body in some scenes. Jamie also commented that a longer set up time was needed and this should be factored into production proposals. Furthermore, the vinyl green screen floor used for the residency snagged and puled under the movement of Jamie's wheelchair (Image 21). Different materials should be tested to provide a safe green screen floor surface that a wheelchair can move across more freely. Before the end of the residency, CRIPtic Arts were already putting the Telepresence Stage solutions to use for another production at the Barbican Centre.

“This has been an incredible opportunity for us. The lessons we learned enabled us to incorporate a pre-recorded performance from a remote performer in our most recent show at the Barbican Centre, after that performer contracted COVID-19 and could not participate in person”

Jamie Hale, Artistic Director at CRIPtic Arts



Image 21
Jamie Hale and wheelchair on snagged and stretched vinyl green screen floor at Theatre Deli studios London.



Research Team Reflections

The research team learnt from CRIPtic Arts how access can and should be addressed as an integral part of the creative process to inform the outcome. Their approach was in stark contrast to a performance made without access in mind, requiring captioning, BSL, and audio description to be added later as an afterthought and at odds with the scenographic style of the performance. CRIPtic Arts created a uniquely formed performance of *Quality of Life Is Not a Measurable Outcome* with accessible elements integrated within it. For example, the BSL was not an interpretation of the spoken English added afterwards. Instead, the script was co-written to work as a performance in both languages and the rhythm of the scene responded to the grammatical rhythm and emphasis of each language. In rehearsal, Jamie described being happy with a final take of a scene because it felt like they were “letting DL [the BSL performer] lead almost as if I am translating for DL”. The company embraced the opportunity to use digital scenography techniques, noticing the graphic and illustrative possibilities the Telepresence Stage solution affords. The inclusion of hand written captions and titles, and Jamie’s interactions with them, situated the captioning directly within the performance as a significant part of the scenography.

The Zoom meeting scenes ‘on screen’ contrasted with Jamie’s scenes ‘on stage’ and were consciously cut together and combined to create a Brechtian ‘jolt’ in the dramaturgy that held the audiences’ attention, giving the audience a sense of the different levels and forms of participation and access that were open to the performers. The approach provides novel ways of playing with audience engagement, some of which were experimented with during the residency and some were identified for future development. During the final residency session Jamie Hale and Paul Sermon discussed different ways video screens could be positioned in a theatre to immerse the audience and reveal the ‘scaffolding’ (the technicalities of the telepresence stage) behind the show, and questioned the extent to which the live theatre version of the show was the piece itself or more of a live art piece in which the audience had a greater sense of being part of the production of it. As Paul commented in response to Jamie.

“I find it really interesting what you were saying about, if you were doing this in a live theatre exposing the scaffolding, the framework, to the audience, that they become integrated into the system almost, they’re inside the camera”

Paul Sermon, Telepresence Stage Principal Investigator

Throughout the performance there is a tension between an experience of telepresence space and coexistence, and a revealing of the edges and slips in that reality. A collaged approach to editing and working with images was taken and this was something that the Telepresence Stage made possible (that would not be possible in a theatre) and addressed issues around sourcing/filming realistic footage. It opened up possibilities to cut, paste and rip images that went beyond translating the stage performance for a remote platform. The rough/unblended edges (for example Jamie’s head on a doctor’s body) maintained a theatrical feel and a liveness, rather than that of an overly polished film production. As Jamie commented in rehearsal “It almost makes me look more realistic for everything being a bit weird”.

The medical care Jamie receives during performances also informs the pacing of the piece and was at times choreographed and performed in rehearsals, with one performer taking on the dual role of Carer/performer. This blurred the boundaries between real care and care performed for an audience and raises questions for a production that combines remote, live and pre-recorded performances about who needs to be in the same room to provide care.



Key Takeaway Points

Use virtual green screens instead of backdrops to improve access:

Using third party background segmentation apps such as NVIDA Broadcast or ManyCam will allow you to use a virtual green screen instead of setting up a physical green screen and chroma-key lighting. This is very useful for participants who would have difficulty setting up a green screen backdrop or do not have the space for it. However, background segmentation apps are intended for head and shoulder shots and cannot easily distinguish some foreground objects from the background, such as wheelchairs.

Embed access creatively as part of the production:

Consider access such as British Sign Language (BSL), captioning, and audio description as a creative part of the production, including and embedding access creatively in its own right, rather than making it a compromising afterthought. Telepresence digital scenography provides an opportunity to explore a wide range of access facilities, including illustrated handwritten captions and BSL performers taking roles within the production.

Provide safe and secure green screen spaces: Use a solid green screen floor, either a painted floor or interlocking green floor tiles to allow safe full body movement on the green screen stage. Avoid using roll out vinyl floors which will snag and stretch under the weight of a wheelchair. Test the green screen floor with the intended access requirements before deciding which material is preferable.

Secure best conditions for telepresence rehearsal space:

When hiring a temporary rehearsal space, try to book the space in one uninterrupted period of time to avoid having to set up and take down equipment for each separate rehearsal session. Do not underestimate the set up time required and avoid having to repeat the setup in a temporary rehearsal space.

Aim to include a full and inclusive production team:

Where possible aim to have a team of staff or volunteers available to support the production. Alongside directors and actors consider the inclusion of a video designer/ animator, an artist and technical stage manager, as well as a Telepresence Stage/vMix operator and sound engineer and production assistants.



Birds of Paradise Theatre Company

Birds of Paradise Theatre Company

June – October 2024



Company Summary

Birds of Paradise Theatre Company (BOP) were established in 1993 and are Scotland's first disability-led touring theatre company, known for their pioneering work in making theatre accessible to everyone, particularly disabled artists and audiences. BOP creates critically acclaimed touring theatre that focuses on creatively embedded access (CEA) to support storytelling and reach diverse audiences, including those who may not traditionally be theatregoers. BOP offers career opportunities for disabled people in the arts, training, and consultation to help the arts sector become more inclusive. Led by Artistic Director Robert Softley Gale and Executive Director Màiri Taylor, they have toured their distinctive inclusive productions from the Dundee Rep Theatre to the Brighton Festival. They are a force for change, promoting the stories and experiences of disabled individuals on stage.

BOP's mission is to challenge stereotypes and empower disabled artists, offering them a platform to showcase their talent and create engaging, inclusive theatre productions. They achieve this

through three main strands: **BOP Theatre** producing innovative productions that entertain, inspire, shock, represent and connect, **BOP Development** providing support and training opportunities that empowers, enables progression and generates role-models for disabled artists, and **BOP Strategic** offering training and consultation to the wider industry that leaves everyone they work with more aware, fired up and ready to realise the disability equality justice that they have ignited.

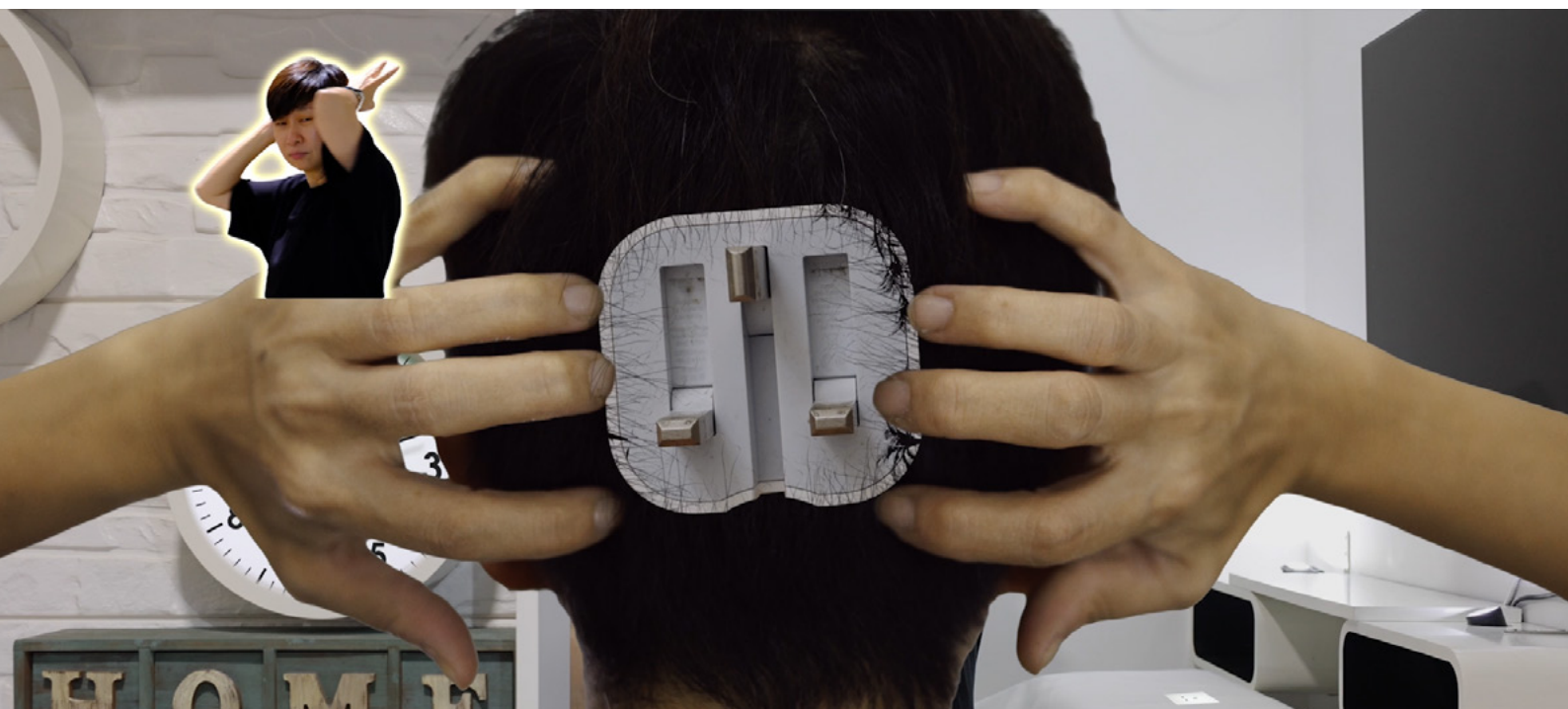
BOP's expertise in inclusive theatre and accessibility is recognised internationally and they have worked with a range of organisations and individuals in other countries, most recently in Hong Kong and Nepal, to promote similar initiatives.

www.boptheatre.co.uk



Birds of Paradise Theatre Company

June – October 2024



Residency Summary

The Birds of Paradise Theatre Company (BOP) residency commenced with an online Knowledge Exchange Workshop in June 2024 involving all project team members and partners, facilitating introductions, presentations, and panel discussions to help develop and support BOP's aims and objectives for their residency. A full video recording of the workshop is available on the Telepresence Stage YouTube channel <https://youtu.be/q9p03zbwAco>. The residency proceeded with an in-person practical workshop and demonstration with BOP in Glasgow on 19 and 20 August 2024, that included the supply and setting up of telepresence equipment/hardware, digital tools/software, and tutorial support.

Given the networking possibilities of the Telepresence Stage, BOP saw the residency as an opportunity to build on their current international partnerships. In collaboration with 'Arts with the Disabled Association Hong Kong' (ADAHK), BOP had already been selected to present a co-commissioned/co-produced artwork for the British Council's SPARK Festival 'Healthy Futures' (The impact of arts, culture & education on our well-being) in Hong Kong from 18 to 20 October 2024. BOP and ADAHK produced a call to commission a D/deaf, Disabled and/or Neurodivergent Hong Kong artist, to create a new piece of accessible interactive digital storytelling for the 2024 SPARK Festival, hosted on BOP's newly launched digital platform *Locked World*.

Deaf artist, Jack Li was selected and commissioned to work with BOP, ADAHK, and the research team to develop an interactive Telepresence Stage public performance for the SPARK Showcase exhibition. After several meetings and development sessions throughout September 2024, that included complex translations between Cantonese, Hong Kong Sign Language (HKSL), and English, BOP presented *The Importance of Sleep* by Jack Li, a 7-minute telepresence video performance based on the Chinese folktale of Zhou Gong, the God of Dreams. In Jack Li's performance, Zhou Gong cleans and restores the human body's organs whilst asleep, assisted by two telepresent audience participants, who appear in playful reconstructions of the brain, liver, lungs, and intestines.

www.adahk.org.hk



香港展能藝術會
Arts with the Disabled
Association Hong Kong

www.britishcouncil.hk/en/programmes/spark-2024



Birds of Paradise Theatre Company

June – October 2024



Company Engagement

Shortly before the residency, BOP had completed and launched their most ambitious digital project to date, *Locked World*, a fully adaptable and accessible platform for digital artworks. BOP were keen to combine the Telepresence Stage residency with the platform, making their final interactive telepresence performance outcome *The Importance of Sleep* by Jack Li, the first live event hosted on the *Locked World* platform, co-produced with ADAHK for the British Council SPARK Festival Hong Kong.

In recent years BOP have been working increasingly internationally, and were very familiar with the pitfalls and limitations for live performance of using video chat platforms such as Zoom. They were therefore eager to explore alternative telepresence solutions for disability-led performing arts. The BOP Telepresence Stage residency commenced with a demonstration of pilot studies and experiments by the research team, using standard webcam headshots and background segmentation. Inspired by these demos, the team from BOP aimed to commission and co-create a telepresence performance/experience, purely for audience participation.

Their call for proposals attracted a wide range of designs and concepts, based on the research team's pilot studies and BOP's focus on creatively embedded access (CEA). The call resulted in the successful development and launch of Jack Li's *The Importance of Sleep* at the SPARK 2024 Showcase exhibition (Image 1).

www.boptheatre.co.uk/projects/telepresence-at-spark-festival/

“Having our first demo with you ... was a bit of a lightbulb moment for us, ... and then going ‘ahh, this is what it is, and this is what the potential is’ ... and it’s that element that we want to use telepresence for, so that we can create experiences and explore ideas in different ways and we’re very excited about the channels that offers for a much more embodied and experimental space.”

Màiri Taylor, BOP Executive Director

locked-world.boptheatre.co.uk

Locked World

Birds of Paradise Theatre Company

June – October 2024



Image 1
BOP and ADAHK commissioned artist Jack Li at the opening of the SPARK Showcase exhibition in Hong Kong, 18 October 2024.



Ideas and Experiments

The BOP team firmly believed in learning by experience and used the in-person practical demonstration sessions at their studio in Glasgow on 19 and 20 August to do exactly that. The research team set up a 3-metre-wide green screen backdrop and floor, LED video lights, LCD preview monitors, a video camera, and the laptop (HP ZBook Studio 16 inch) running vMix PRO version 27.0.0.72. The team from BOP created digital sets and experienced mixing telepresence scenes using vMix, as well as performing and interacting with geometrical objects and layers as masked performers (Image 2), to better understand the layering process and their agency in the telepresence space.

Following their practical introduction, BOP worked with the research team, ADAHK, and the commissioned artist Jack Li, to turn Jack's 7-minute video into a telepresence performance sequence. Each scene had to be reconstructed in vMix with separate video layers, so that the live participants could be added into each scene. Diagram 1 illustrates the layering process involved in a scene where a remote participant appears inside the lungs. From background to foreground, the layers included:

1. The image of the lungs, a clock, and a HKSL interpreter.
2. A remote participant scaled and rotated, on a green screen background.
3. The green screen is removed from the participant's video, placing them on top of the background scene.
4. A stencil is made from the background, with the lungs cut out of the image.
5. A video of dirt and dust cleaned from the lungs on a green screen background.
6. The stencil of the lungs and the video of the cleaned lungs, with green screen removed, are layered together.
7. The layered stencil and lungs cleaning video are placed on top of the original background and the remote participant.
8. A video recording of the character Zhou Gong (God of Dreams) on a green screen background.
9. The green screen is removed from the Zhou Gong video, placing them on top of the entire background scene.

This completes the layering process, placing the participant inside the Lungs, behind Zhou Gong and the layer of dust, allowing them to playfully improvise cleaning it away.

BOP adopted a unique approach to the Telepresence Stage residency and produced an original outcome with *The Importance of Sleep* by Jack Li, that was both a live telepresence performance and an interactive digital art installation. It was described by the British Council as a 'Live in-person/online screening and exhibition' in their SPARK Showcase communications (Image 3). They remarked in their online programme that *The Importance of Sleep* was 'an artwork that transcended reality while remaining connected to our everyday life. Through telepresence technologies, the artist leads the audiences into a world of boundless imagination, allowing them to experience how the human body prepares for a new day during our sleep.'

<https://www.britishcouncil.hk/en/programmes/spark-2024/events/locked-world-commissions-2024>

Birds of Paradise Theatre Company

June – October 2024



Image 2
Wearing facial expression masks, BOP team members participate in a practical tutorial, learning how to interact with geometric shapes and objects, 19 August 2024.

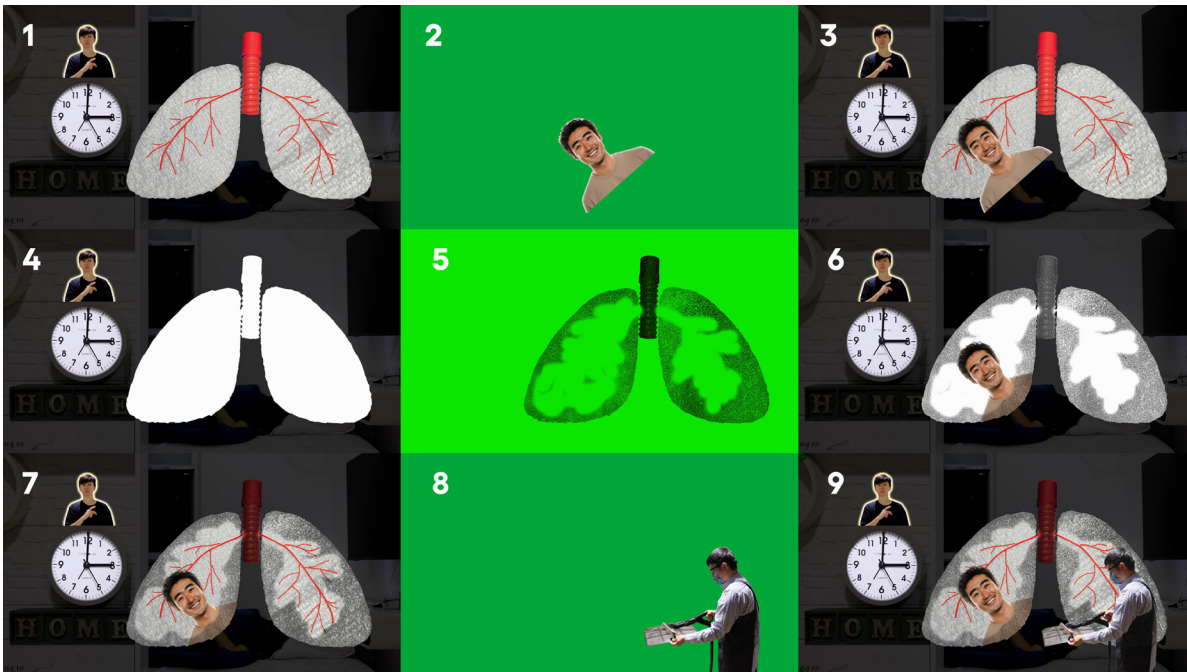


Diagram 1
Nine video and image layers, from the background (1) to the foreground (9), that make up a single telepresence scene.

Birds of Paradise Theatre Company

June – October 2024



 BRITISH COUNCIL

Sponsored by  滙豐 HSBC  卓越理財 Premier

The Importance of Sleep

Locked World Commissions 2024

睡覺的重要性

Creative Partners
Jack Li (commissioned artist), Birds of Paradise Theatre Company (UK) and Arts with the Disabled Association Hong Kong (HK)

Genre
Live in-person/online screening and exhibition

Theme
Participate

製作單位
李業福 (委約藝術家)、Birds of Paradise Theatre Company (英國) 和香港展能藝術會 (香港)

節目類別
線上和線下的投映及展覽

主題
積極參與

 EN

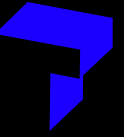
 CH

焦點展覽

SPARK Showcase

Image 3

In-person/online screening and exhibition poster for *The Importance of Sleep* at the SPARK Showcase in Hong Kong.



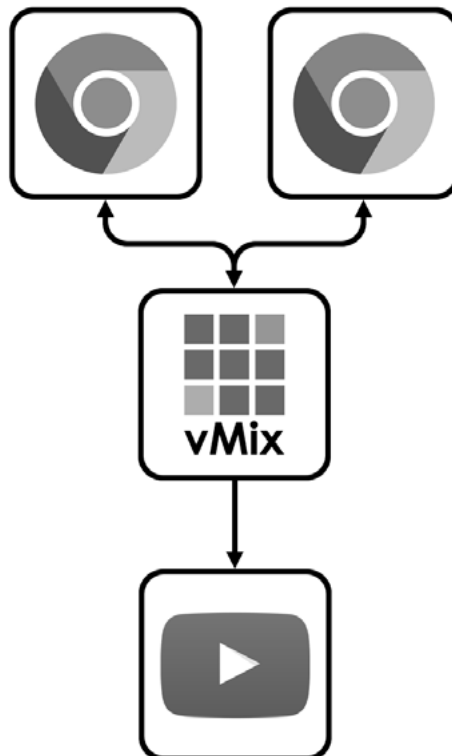
Performance



The BOP residency was completed using the vMix system <https://www.vmix.com>, a software vision mixer that provides a complete Telepresence Stage solution, incorporating videoconference communications (vMix Call) with video mixing and chroma keying effects. The two audience participants, situated in their separate locations in Hong Kong and the UK, used a laptop, webcam, light ring, and headphones (Image 4), and the vMix Call website <https://advanced.vmixcall.com> to call the vMix software (operator) running on a computer at BOP in Glasgow. The two incoming video calls were 'head and shoulder' shots, which included their surrounding backgrounds. The incoming vMix Call images of the two participants were fed to the virtual camera apps NVIDIA Broadcast and ManyCam, which removed and replaced the background with a virtual green screen, using 'background segmentation' (Diagram 3) a common function in many video chat apps, before they were fed back to the vMix system. This technique provided access

to participants who would not normally be able to install a green screen backdrop. The incoming 'head and shoulder' video images were scaled, positioned, and chroma-keyed within The Importance of Sleep virtual sets by the vMix operator, who used a vMix Script to automate the scene transitions. The final programme output was relayed back to the remote participants via vMix Call and simultaneously streamed on YouTube Live (Diagram 2). The live YouTube stream was presented at the SPARK Showcase exhibition in Hong Kong on a large 40" LCD screen, together with two sets of headphones as a performance installation display, accompanied by a QR code and information cards to take away (Image 5). The SPARK Showcase audiences were able watch *The Importance of Sleep* performance, including live interaction from participants in Hong Kong and the UK between 18 and 20 October 2024, from 11:00 to 20:00 HKT daily.

Diagram 2 – Telepresence Stage system workflow: Internet communications via Google Chrome and vMix, audio/video compositing with vMix, streamed on YouTube Live.



Participants Technical Setup



Image 4
A participant using a laptop, webcam, light ring, and headphones to take part in *The Importance of Sleep*.

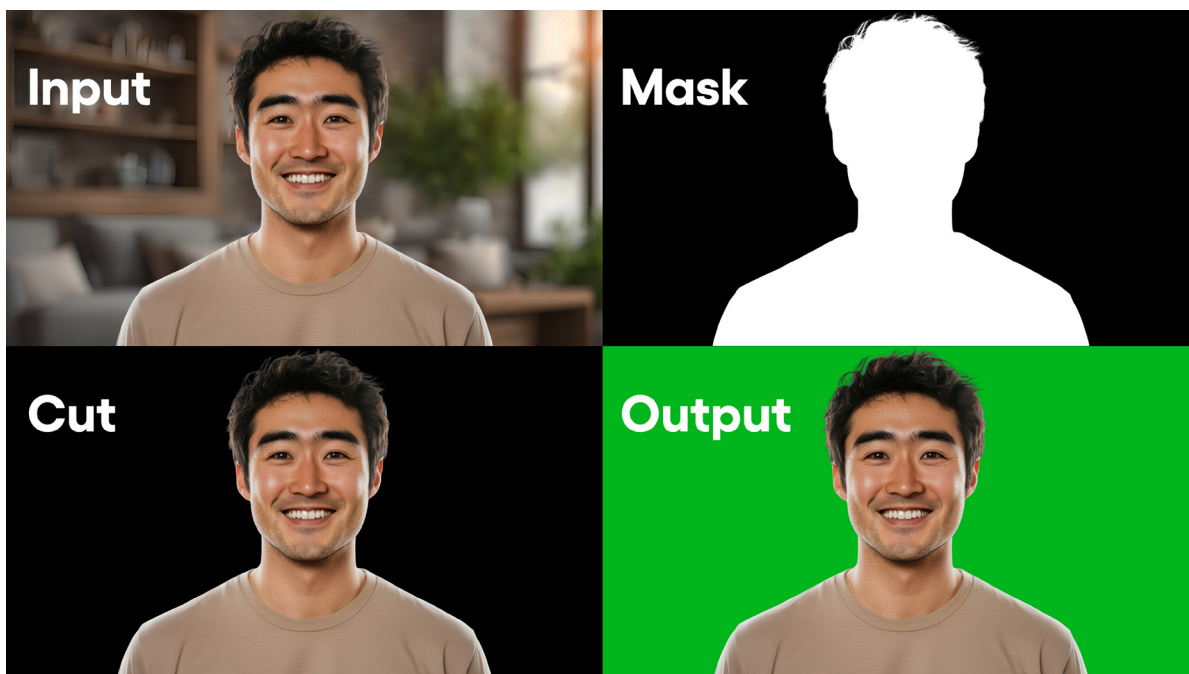


Diagram 3
The Background Segmentation Process, from left to right. Input: webcam head and shoulders image. Mask: created from background. Cut: background cut out. Output: background replaced with green screen.

Participants Technical Setup



Image 5
The Importance of Sleep performance/
installation display at
the SPARK Showcase
exhibition in Hong
Kong.



The hardware and software used by the vMix operator/producer at Birds of Paradise Theatre Company in Glasgow included:

1 x Software: vMix PRO version 27.0.0.72
1 x Laptop PC: HP ZBook Studio 16-inch G10 (i7-13800H GeF RTX 4070)
1 x USB Hub: HP USB-C Dock G5
2 x Monitor 27": HE Iiyama ProLite XUB2792HSU-B5 27inch
1 x Elgato Stream Deck XL
2 x HDMI cable 1 metre
1 x Ethernet cable 5 metres

The hardware and software used by each remote participant/performer included:

1 x MacBook Pro or PC desktop/laptop computer and 27" LCD screen
1 x Google Chrome: <https://advanced.vmixcall.com>
1 x Logitech C922 Pro Stream or Razer Kiyo webcam (recommended)
1 x LED Video light or light ring (recommended)
1 x USB headphones and microphone (wired)
1 x HDMI cable 1 metre
1 x Ethernet cable 5 metres

The hardware and software used for the performance display at the SPARK Showcase exhibition in Hong Kong included:

1 x MacBook Pro or PC desktop/laptop computer
1 x 40" LCD display screen/HD Television
1 x Google Chrome: <https://www.youtube.com/@BOPTTheatre>
2 x USB headphones (wired)
1 x HDMI cable 1 metre
1 x Ethernet cable 5 metres



The Importance of Sleep, written and created by Jack Li

Commissioned by Birds of Paradise Theatre Company (BOP) and Arts with the Disabled Association Hong Kong (ADAHK) for the British Council SPARK Festival 'Healthy Futures', in Hong Kong from 18 to 20 October 2024.

Produced by Morna McGeoch and Màiri Taylor for BOP *Locked World*.

The Importance of Sleep is a creative composition of captions, audio description, Hong Kong Sign Language (HKSL), video, photography, graphic design, and illustrations that provides multiple ways of accessing the 7-minute-long narrative. The performance opens with the scene of a small compact bedroom, the side of the bed is in the foreground, with a window behind it. On the left, occupying a third of the screen, is a wall with a large clock above a shelving unit with the word HOME written on it. Throughout the performance, a head and shoulders shot of a HKSL interpreter, highlighted with a bright yellow glowing outline, appears above the clock. Captions in Cantonese and English appear at the bottom of the screen in unison with dual-language audio descriptions throughout.

The story begins with a person sitting on the bed looking tired and exhausted, wearing a black t-shirt and shorts, the time is 11 pm and it is dark outside (Image 6). A flat still image of the back of the person's head flies out and fills the screen. It shows them parting their hair to reveal a three-pin electrical plug protruding from the back of their head (Image 7). The image of the head returns and then a still image of the pillow flies forward, with an electrical socket in the centre of the pillow (Image 8). The image of the pillow peels back and reveals the person sitting up in bed. A bolt of electricity strikes between the plug in their head and the socket in the pillow (Image 9), indicating they have plugged their head into the pillow when they subsequently lie down (Image 10). The scene darkens and a graphic symbol of a charging battery appears on screen, and its green bars start to fill (Image 11).

The scene remains dark as the Chinese legendary character of Zhou Gong is introduced, commonly known in China as the 'God of Dreams' who lived in the 11th century BC and was revered for his ability to interpret dreams. The audio description and narration explain that Zhou Gong takes on different forms to clean and restore organs in the person's body whilst they sleep. Zhou Gong's hand appears, and he starts rebuilding the brain symbolically by placing walnut pieces in a pile, as the head and shoulder images of the two online participants rise from behind the walnuts (Image 12) and

attempt to help and give advice. As more walnuts are placed, duplicate videos of the two participants peer over the growing mound to inspect the final construction (Image 13). When the brain is completed, it flies towards and disappears into the sleeping person's head, as an image of the liver covered in a dark layer of waste and toxins appears on screen and looms into the foreground. With his back to the audience, wearing a white shirt and blue overalls, Zhou Gong stands in front of the liver and starts wiping away the toxins with his cloth. The two participants appear inside the liver looking out, and as the waste is wiped away they are prompted to join in with the cleaning (Images 14) until all the visible toxins are removed (Image 15) and their own images become clear. The liver flies back and into the sleeper's body and an image of the lungs peels off and flies into the foreground to fill the screen. Zhou Gong appears in front of the lungs with a vacuum cleaner to remove the dust from a filter, meanwhile the two participants are inside the lungs and play at finding ways to stop breathing in the dust (Image 16), while scrubbing the dust off with cloths until the lungs are completely cleaned (Image 17). Finally, the intestines (made from a coiled plastic conduit tube) appear for cleaning. Zhou Gong kneels in front of the intestines, filling bags with rubbish as the participants' heads start rolling around the intestines above him (Image 18). Zhou Gong holds open a bag under the larger down-facing outlet of the conduit tube (the colon) and all the heads roll off into the bag and are cleaned away (Image 19). The image of the conduit-intestines zooms out and the scene brightens.

It is now 7 am and daylight is seen outside. A graphic image of an alarm bell rings (Image 20), and the person wakes up and stretches (Image 21) feeling revived and recharged, now wearing a white t-shirt, symbolic of their revitalised being. The scene fades out to black, and the performance starts again. The entire piece, including scene transitions and timings was controlled by a vMix script and programmed to automatically repeat several times during the exhibition, allowing different remote participants to join each performance.

Description and Analysis



Image 6

It is 11 pm on the clock and dark outside, as a person sits on their bed looking tired and distant.



Image 7

A large image of the back of the person's head appears, with them parting their hair with their hands to reveal a large UK-style electrical plug.

Description and Analysis



Image 8

We are presented with a close-up of the pillow with a UK-style electrical socket in the centre.



Image 9

The person sits up in bed and a bolt of lightning strikes between the electrical plug in the head and the socket in the pillow.

Description and Analysis



Image 10

The person lies down on their back, plugging their head into the socket on the pillow.

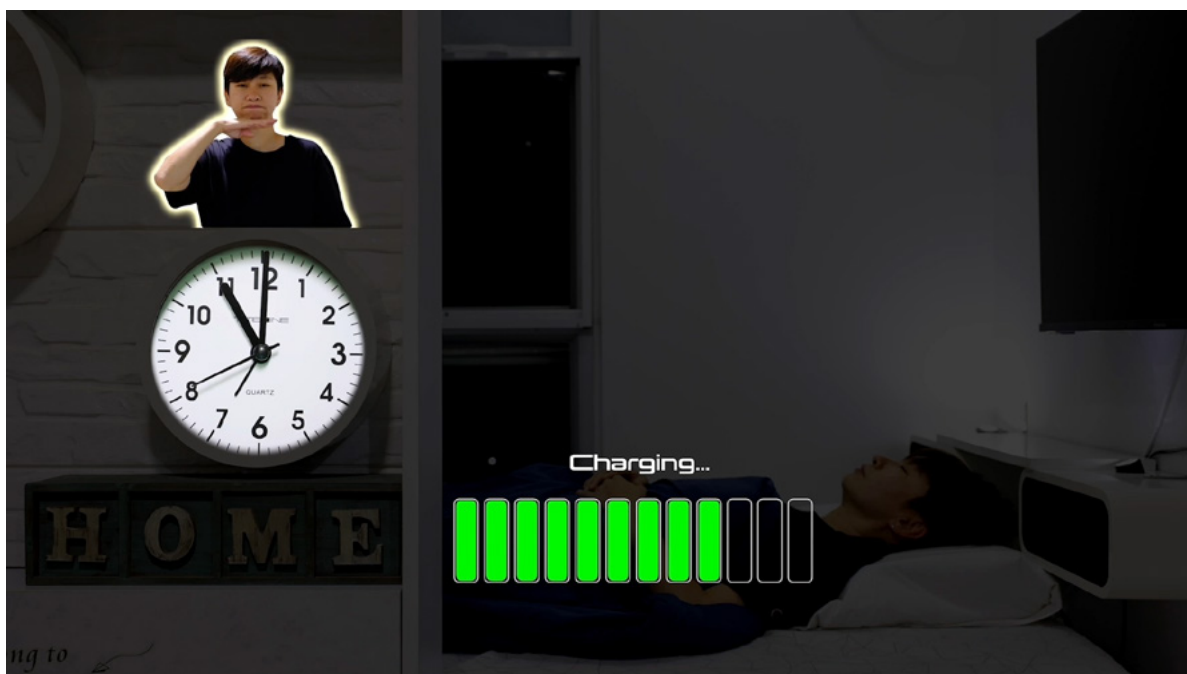


Image 11

The scene darkens and a graphic battery charging indicator appears on screen, filling up with green bars.

Description and Analysis



Image 12
At 12 am Zhou Gong's hand appears and builds a brain out of walnut pieces, as a remote audience participant pops up from behind the pile of walnuts and appears to check the quality of the construction.



Image 13
Zhou Gong completes the construction of the brain, whilst the two participants use their phones to mimic a telephone conversation.

Description and Analysis



Image 14

With his back to us, Zhou Gong wipes away the toxins from the liver and two participants inside the liver (one upside down) face us and join in from the inside, using their hands to wipe away the waste.



Image 15

At 3 am Zhou Gong completes the cleaning of the liver, assisted by the two participants inside the liver, one of them using a squeegee for greater effect.

Description and Analysis

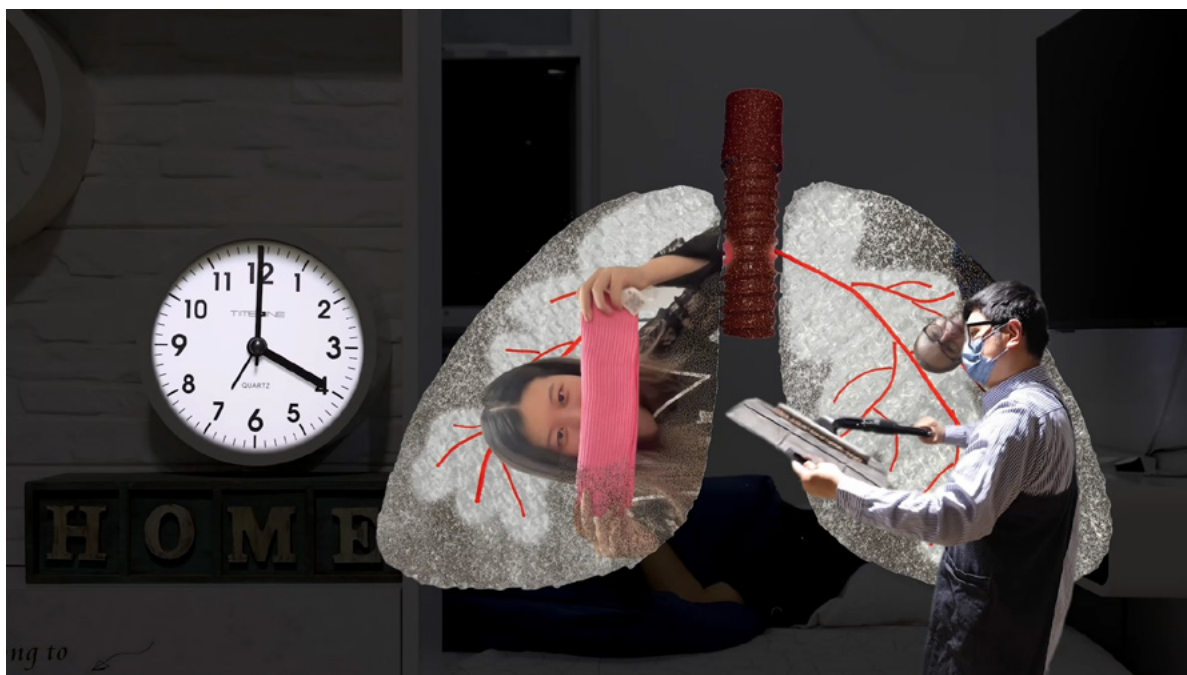


Image 16
With a mask over his face for protection from the dust, Zhou Gong stands in front of the lungs with a vacuum in his hand cleaning a large filter, while the two participants appear in each lung as one of them attempts to make a mask out of their pink dusting cloth.

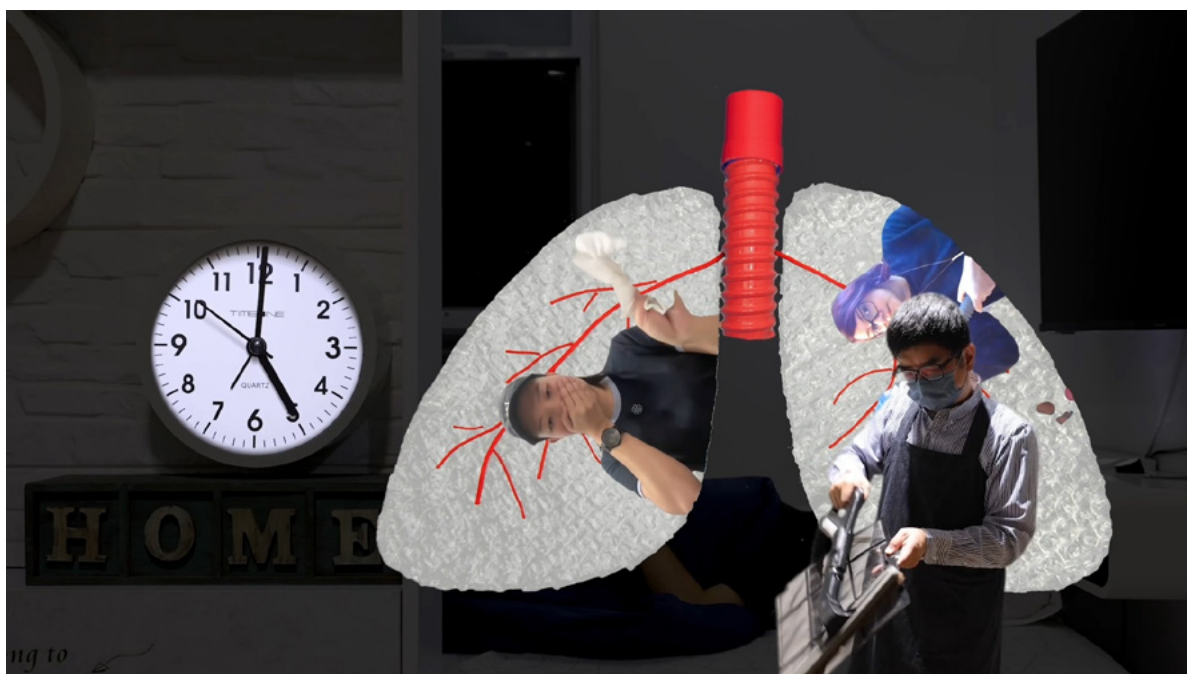


Image 17
At 5 am Zhou Gong continues to vacuum a large filter, and the participants appear to have removed all the dust to reveal the cleaned lungs, made from bubble wrap, red sticks, and a plastic pipe.

Description and Analysis

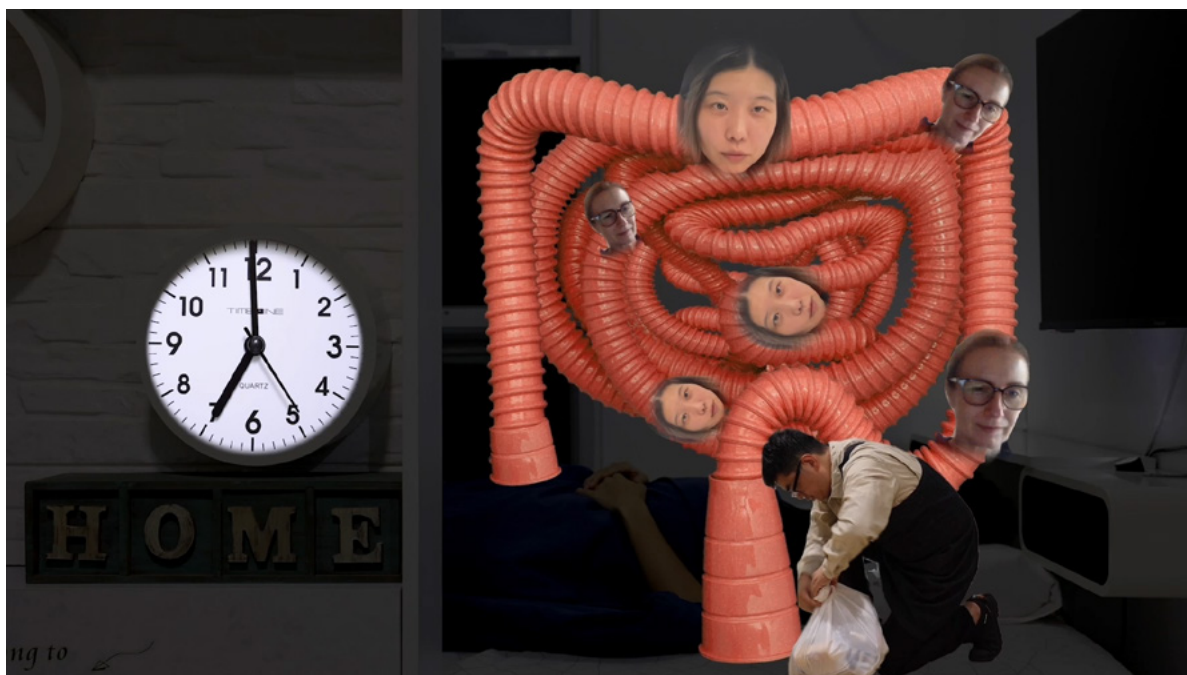


Image 18

The intestines appear, made from orange plastic conduit tubes. Multiple copies of the participants heads start rolling around over the conduit-intestines, as Zhou Gong kneels beneath the colon and ties up a bag of rubbish.



Image 19

Zhou Gong holds a bag open under the end of the conduit-colon and all the participants heads roll off and disappear into his rubbish bag.

Description and Analysis



Image 20
At 7 am the person is lying in bed and daylight fills the room, as an animated icon of an alarm bell rings above their head.



Image 21
The person wakes up and sits on the side of the bed, stretching their arms. They are now recharged and wearing a white t-shirt.



Video Recordings

The Importance of Sleep - Performance

8 minutes mp4

[Watch here](#)

The Importance of Sleep - Performance with BSL

8 minutes mp4

[Watch here](#)

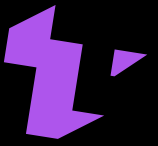
BOP Knowledge Exchange Workshop

3 hours and 13 minutes mp4

[Watch here](#)

BOP Residency PLAYLIST

[Watch here](#)



Evaluation



Company Reflections

BOP were initially drawn to the Telepresence Stage by the possibilities of working collaboratively with remote partners, as an embodied experience. They frequently work with disabled artists who, for a range of reasons, are unable to attend activities in person, and BOP saw the Telepresence Stage as a unique opportunity to overcome these barriers and bring people together live to explore ideas and co-create in more embodied and playful ways. Remote working has always been a major access requirement for BOP and their members, even before the COVID-19 lockdowns.

For Morna McGeoch, BOP Development Officer and Màiri Taylor, BOP Executive Director ‘the best way to understand Telepresence was to use it’. They first experienced telepresence in a demonstration by the research team from the University of Brighton and could immediately see its potential for online performance and exploring access, but also for bringing people together in a coexistent learning environment. They found that ‘the telepresent storytelling experience only really came to life when the audience member was a performer’ improvising and engaging in the narrative. This informed their approach to the commission during which they observed the audience participants performed and interacted more confidently when another participant was present.

“We noticed that audiences really needed someone else. If there was one person in the piece they really needed someone else there to sort of play off and work out what was going on and allow themselves to feel free enough to play.”

Morna McGeoch, BOP Development Officer

It was very important for BOP that commissioned artist Jack Li understood the full potential of telepresence creativity and how narratives can be conveyed through digital scenography. They requested that their partners ‘Arts with the Disabled Association Hong Kong’ (ADAHK) and Jack Li could have the opportunity to experience telepresence first-hand in their initial onboarding sessions. It was particularly useful for Jack

Li to understand the potentials of telepresence and importance of audience interaction and access. Using their experience and training BOP were able to convey the telepresence storytelling techniques and how audience participants can be involved as actors and encouraged to improvise. Jack responded extremely well to the telepresence brief and adopted a unique, playful DIY aesthetic by using everyday household materials to create the human organs in *The Importance of Sleep*: a brain made of walnuts, lungs made from bubble wrap and sticks, and intestines made from plastic conduit tubes. The work was playful, provocative, and engaging, which was evidenced in the feedback they received.

“We had some really great feedback, after the audience [participants] ... had spoken about how they felt really part of the artwork and it helped them to engage with the story more because they were ... active participants in it, ... [A] particular audience member really enjoyed the way that we had embedded accessibility into the piece when people were engaging with it.”

Morna McGeoch, BOP Development Officer

Creatively embedded access (CEA) was a priority for BOP, but it was not without its challenges. Creating a telepresence work for the first time involving multiple partners and languages, including Cantonese, HKSL, and English was ambitious and time consuming. It was particularly challenging and interesting for Jack, as a D/deaf artist who did not have any lived experience of audio description or need for it. Màiri Taylor commented that ‘it was really fascinating for him [Jack] to be speaking to us and taking on advice about thinking about the access requirements of other audience members.’ CEA should be embedded in the very early stages of the telepresence design and development and the learning from this residency will support BOP to do this in future projects.



Research Team Reflections

Before commencing the Telepresence Stage residency, BOP's digital engagement strategy was successfully implemented through their platform *Locked World*. As a research team, we were particularly impressed by the online platform and the opportunities it presented for hosting the outcomes of their residency. *Locked World* was a very user-friendly and fully customisable platform for hosting recorded and live performing arts, with a complete range of creatively embedded access (CEA) throughout. BOP were also working internationally, and they used the residency as a unique opportunity to work with their existing international partners, collaborators, and current projects/ commissions around the world. They immediately saw the Telepresence Stage residency as an opportunity to overcome physical borders and mobility restrictions that they regularly encountered, but also for reducing travel costs and the complex logistics involved in international collaborative productions. This aspect of their residency was in complete accord with the original aims and objectives of the research project.

BOP took a very different approach to previous resident companies. They relied heavily on digital scenography, automated scene changes, pre-recorded video characters, narration, and captions

to convey *The Importance of Sleep* storyline. The only live video contributions were provided by two audience participants, unlike other Telepresence Stage performances that involved trained actors. Taking them by surprise, the public participants appeared as head and shoulder shots inside human organs where they were prompted to improvise together, which they perfected as the story developed. To achieve this BOP made innovative use of background segmentation and virtual green screens, enabling online participation without having to prepare a physical green screen backdrop in advance. The project's success also relied upon their distinctive and inventive scenography. Jack Li's makeshift DIY aesthetic worked perfectly with the improvised nature of telepresence performance, establishing a playful environment and providing participants with a great sense of agency and freedom to interact in any way they chose.

BOP's focus and commitment to creatively embedded access (CEA) and their mission to challenge stereotypes and empower disabled artists, offering them a platform to showcase their talent and create engaging, inclusive theatre productions, rang true throughout their residency.



Key Takeaway Points

Consider learning by doing

The BOP team firmly believe in learning by experience and used the in-person practical demonstration sessions at their studio in Glasgow to do exactly that. They created digital sets and experienced mixing telepresence scenes using vMix, as well as performing and interacting with geometrical objects and layers to better understand the layering process and their agency in the telepresence space.

Consider alternative telepresence installation outcomes

BOP adopted a unique approach to the Telepresence Stage residency and produced an original outcome involving two audience participants, who were the only live performers improvising in the narrative, making it both a live telepresence performance and an interactive digital art installation, exhibited in the SPARK Showcase, Hong Kong.

Consider using background segmentation instead of a physical green screen

BOP made innovative use of background segmentation and virtual green screens, facilitating online participation without needing to prepare a physical green screen backdrop in advance, enabling wider access and surprise encounters for those taking part.

Consider creatively embedded access (CEA)

BOP used creatively embedded access (CEA) to support storytelling and reach diverse audiences, including those who may not traditionally be theatregoers. Remember, CEA should be included in the very early stages of the telepresence design and development.

Consider using playful DIY design aesthetics

Jack Li's makeshift DIY aesthetic, using everyday household materials to create a brain made of walnuts, lungs made from bubble wrap and sticks, and intestines made from plastic conduit tubes was highly effective for the improvised nature of telepresence performance. It established a playful environment and provided participants with greater agency and freedom to interact in any way they chose as well as bringing a feeling of materiality and the handmade to the digital space.

Consider international opportunities

BOP saw the Telepresence Stage as an opportunity to overcome physical borders and mobility restrictions that they regularly encountered, but also for reducing travel costs and the complex logistics involved in international collaborative productions.



Project Team



Prof Paul Sermon
Principal Investigator

University of Brighton, pioneered telematic video art since 'Telematic Dreaming' in 1992. Produced over 100 internationally exhibited installations, including commissions from ZKM Karlsruhe and the Millennium Dome UK. Directed AHRC telepresence art project '3x4' in 2014 and advisory editor for 'International Journal of Performance Arts and Digital Media' (Routledge).



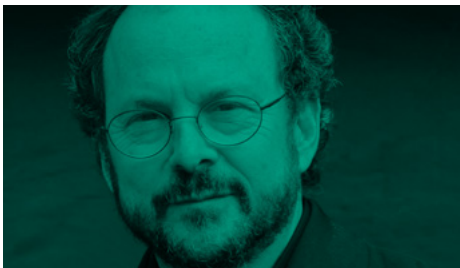
Prof Steve Dixon
Co-Investigator

President of LASALLE College of the Arts Singapore, theorist, practitioner and author of 'Digital Performance' (MIT Press 2007) and 'Cybernetic-Existentialism' (Routledge 2020). Director of digital performance company 'The Chameleons Group'. Co-director of the AHRB 'Digital Performance Archive', journal editorial boards include 'Body, Space and Technology', 'CTheory' and 'Global Performance Studies'.



Dr Sita Popat Taylor
Research Consultant

Former Professor of Performance and Technology, University of Leeds, background in dance and choreography. Co-editor of 'Digital Movement' (Palgrave 2015). Director of AHRC 'Error Network' project on dance and HCI design and advisory editor for 'International Journal of Performance Arts and Digital Media' (Routledge).



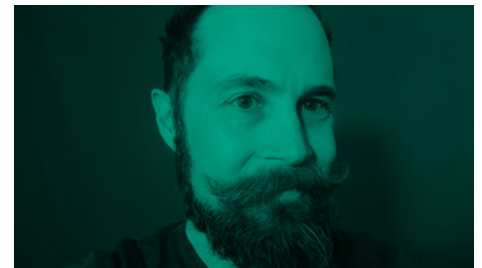
Dr Randall Packer
Research Consultant

Composer, media artist and co-author of 'Multimedia: From Wagner to Virtual Reality' (Norton 2002). Developed the Open Source Studio learning environment and networked performance art research at Nanyang Technological University in Singapore. Founder of the Third Space Network Internet broadcast channel for performance and creative dialogue, in Washington DC.



Dr Satinder Gill
Research Consultant

Research affiliate in the Centre for Music and Science at the University of Cambridge, researching the body in sense-making and presence, author of 'Tacit Engagement' (Springer 2015), editor of 'Cognition, Communication, and Interaction' (Springer 2007), associate editor of 'International Journal AI & Society'.



Boyd Branch
Guest Researcher

A technologist for XR and live performance. He is the creator of VirtualDirector, a software platform for creating remote virtual theatre, and founder of the Improvisational Media & Performance Lab, which explores how improvisational pedagogies can be utilised to create accessible, adaptive, and socially supportive technologies.

Tom Truscott
Technical Assistant

University of Brighton, Information and Digital Technologies.

Hina Patel
Project Manager

University of Brighton, Research Enterprise & Social Partnerships.



Follow-on Project Team

Follow-on Project Team



Prof Paul Sermon
Principal Investigator

Professor of Visual Communication at the University of Brighton, pioneered telematic video art since 'Telematic Dreaming' in 1992. Produced over 100 internationally exhibited installations, including commissions from ZKM Karlsruhe and the Millennium Dome UK. Directed AHRC telepresence art project '3x4' in 2014 and advisory editor for 'International Journal of Performance Arts and Digital Media' (Routledge).



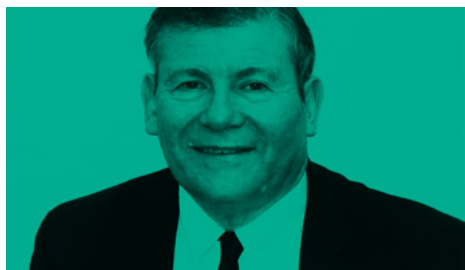
Prof Steve Dixon
Co-Investigator

President of LASALLE College of the Arts, University of the Arts Singapore, theorist, practitioner and author of 'Digital Performance' (MIT Press 2007) and 'Cybernetic-Existentialism' (Routledge 2020). Director of digital performance company 'The Chameleons Group'. Co-director of the AHRB 'Digital Performance Archive', journal editorial boards include 'Body, Space and Technology', 'CTheory' and 'Global Performance Studies'.



Dr Jayne Lloyd
Co-Investigator

Senior Lecturer in Fine Art and former Course Leader of MA Inclusive Arts Practice at the University of Brighton. An artist and researcher who works across sculpture, drawing, and performance in her own arts practice and in the development and realisation of inclusive arts projects. Her research focuses on the role of arts and artists can play in the lives of disabled people and people living with dementia.



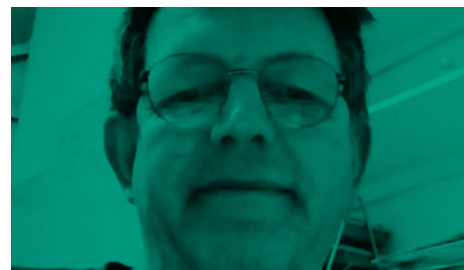
Richard Rieser
Research Consultant

A UK-based disabled teacher, activist, researcher, writer and consultant. His interests are enhancing disability equality, especially inclusion in education and the media. Richard is the Director of World of Inclusion Limited, Founder and Coordinator of UK Disability History Month, now in its 15th year, and elected General Secretary of the Commonwealth Disabled People's Forum.



Trish Wheatley
Research Consultant

Chief Executive at Disability Arts Online and co-chair of John Hansard Gallery. Co-founded We Are Freewheeling Ltd, specialising in accessible 360° technology and underwater live art performance. Has worked in various roles in the disability arts field since 2005, producing, curating and developing projects with and for disabled artists.



Colin Hambrook
Research Consultant

Founder and editor of Disability Arts Online. He has worked as a manager/ editor/ researcher/ sub-editor for a variety of web and print-based disability arts and mainstream publications since 1994. He established Disability Arts Online in 2004 as a place which publishes professional arts writing, arts media and discussion, giving a voice to arts practitioners who identify with disability as a creative, artistic and political force.

Tom Truscott
Technical Assistant

University of Brighton, Information and Digital Technologies.

Siobhan O'Dowd
Project Manager

University of Brighton, Research Enterprise & Social Partnerships.

Contact

www.telepresencestage.org
telepresencestage@brighton.ac.uk



University of Brighton



Arts and
Humanities
Research Council