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Performer perspectives: managing the creative process in virtual environments. In conversation with the performers in *Dream*

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ABSTRACT

Performers are increasingly asked to navigate and create material for new hybrid performance situations. In their role, they are not only required to develop measurable content for digital processing, but in addition, they are expected to possess a wide range of practical knowledge and skills to navigate these new technological environments. Consequently, not only are performers having to generate meaningful content that is both readable and expressive in technological terms, but they are also having to adapt their performance making skills. Yet, there is still a lack of documentation that captures these insights and developing expertise specifically by the performers themselves. Therefore, based on a series of interviews with the performers in *Dream* (2021), who ranged from actors, puppeteers, dancers and movement experts, this interview-based article both captures and advocates for their expanding practical knowledge and skills. Furthermore, by highlighting some of the changing demands placed on performers, it will consider how, and in what ways, the development and creation of performance in virtual environments is impacting performer experience.

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Introduction

This interview-based article champions the rich knowledge that was gained by the performers who helped to create *Dream* (2021) – a collaborative endeavour between the Royal Shakespeare Company (RSC), Manchester International Festival (MIF), immersive art collective Marshmallow Laser Feast (MLF) and the Philharmonia Orchestra. *Dream* evolved from the Audience of the Future (AF) demonstrator programme¹, and was presented as a research and development project that explored technologically enhanced theatre. Combining live performance with virtual reality and gaming technologies, the piece was experienced as an on-line event, which could be accessed via a bespoke website (<https://Dream.online>). The multi-disciplinary project (which included technologists, programmers,

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performers, gaming developers, directors, movement directors, camera operatives etc.), used motion capture (Mocap)² technologies to translate the movements of the performers into avatar characters who then populated an online world. The RSC state,

The 50-minute online event was a shared experience between remote audience members and the seven actors who play Puck and the sprites with ten Dream performances scheduled so that audiences across the world could join the event. At key points in the play audiences could directly influence the world of the actors. (Audience of The Future 2021)

Essentially, the performers' live actions, which were captured using Vicon motion-capture cameras, are rendered into avatar characters that inhabit a virtual forest. As the performer's actions are being translated into the virtual on-line world (which the performers could also view as they were performing – see [Figure 1](#)), audience members could simultaneously experience what they were doing via the website using their laptops, phones, or other portable devices. Additionally, on two separate occasions during the event, paying audience members also had the opportunity to directly interact with the evolving narrative. On the first occasion audience members could click or tap onto their device to introduce digital fireflies into the virtual world. On the second occasion, members could release a digital seed, which helped to regrow the digital forest. On another occasion part way through the show, the image switches from the virtual scene back to the actors who are moving inside a purpose-built Virtual Reality (VR) studio, much like the curtain-drop moment in the film 'The Wizard of Oz' when the mechanics behind the illusion is revealed. So, even though the event was experienced remotely, there was some sense of it being live. This was also established early on when Em, who plays the character Puck, who is seen wearing a Mocap suit, introduces the event in person.



Figure 1. Dream 2021 Photo by Stuart Martin © RSC.



Figure 2. Dream Online (Royal Shakespeare Company) @ online. Image Peter Kirwan. Go to <https://blogs.nottingham.ac.uk/bardathon/2021/03/20/dream-online-royal-shakespeare-company-online/>

Now that the scene has been set, an image of a virtual forest appears and we watch as Em morphs into a humanoid avatar made up from a collection of floating stones, who then begins to move amidst a richly textured virtual forest floor (see Figure 2).

The tradition of digital performance is varied and well documented. VR and other technologies have proven to be rich grounds for enhancing and extending our connections with each other and with audiences for some time (see author's previous editorial Francksen 2018a). Whilst acknowledging the complex and multifaceted nature of using VR technologies to create Virtual Environments (VE) for performance, this interview-based article will concentrate specifically on the important knowledge acquired by the performers themselves from the process. There is much discourse surrounding the pervasive use of technologies in theatre and performance (for example Broadhurst and Machon 2011; Pitches and Popat 2011; Stern 2013; Lanier 2018), and as Andrea Giomi states,

Peculiar forms of aesthetic experience such as tele-presence, immersivity, responsivity, hypermediation and multimediality, progressively arise from digital arts and question not only the status of artwork but also, more generally, the foundational relationship between this latter and the recipient (2020:47–48).

As Giomi suggests, these new performance paradigms have been extending the 'foundational relationships' (Ibid) we have with art for some time now, especially in terms of using technology to reach audiences in new and innovative ways. Yet, whilst the integration of technologies into live performance has a long and varied past and can be traced as far back as the 1960s (see Steve Dixon's comprehensive historical account in his book *Digital Performance* [2007]), there is less evidence of the changing 'status' for performers, who are trying to navigate these new and 'peculiar forms of aesthetic experience' (Ibid).

Accordingly, this article acknowledges the huge body of work, artistic practices and theoretical discourse that has developed over the past few decades in digital theatre

and performance making. However, the focus here is to promote and identify how, and in what ways, performers have been adapting and responding to these new technological situations in transformational ways too. As described by Johannes Birringer who writes in relation to 'The expert performer as interactor',

Given such complexity, we must ask how performers and musicians regard the physical relations, the plasticity between performance and 'controlled' parameters, and how dancers can see their movement as a form of topological 'mapping' of the body's experience and proprioception within the interface (2005, 163).

Birringer raises a very important point, which centres on the changing nature of the environments, or interfaces, performers now find themselves having to negotiate. Indeed, how have performers continued to respond to these new paradigms – particularly as technologies continue to grow in responsiveness and complexity? By talking to the eight performers, as they explored 'the plasticity' (Ibid) of the new environment they found themselves navigating in *Dream*, I was afforded a unique opportunity to capture some of the important learning directly from the perspective of the performer.

In conversation

Primarily, this article recognises the generosity of spirit and intelligence of all the performers: EM Williams (Puck), Maggie Bain (Cobweb), Durrassie Kiangangu (Moth), Jamie Morgan (Peaseblossom), Loren O'Dair (Mustardseed) and Edmund Wood (Rehearsal assistant and understudy for Moth, Cobweb and Peaseblossom). I was fortunate to spend time with each performer discussing and talking about their experiences of the process. This was made possible through the generous support of Professor Sophy Smith, the Director of the Institute of Creative Technologies at De Montfort University, who was part of the AF consortium.³ The interviews were conducted in September 2021, when we were still living within a certain level of restraint and were thus conducted via zoom. All participants consented to their perspectives being captured and recorded, and all ethical considerations were considered and applied.

For most of the performers, working on *Dream* was an entirely new experience. Although many had undertaken workshops in VR, only one of the performers had direct experience of wearing a Mocap suit whilst moving in a VR volumetric space (also known as the volume). During our interviews it became apparent that many of the performers felt like they were working outside of their comfort zones. But rather than seeing this as a negative challenge, I was struck by their readiness to approach the situation as a possibility to learn, to remain open to new encounters, and to expand their own creative potential. In much of the dialogue surrounding the development of interactive technologies and performance, the knowledge performers both acquire and generously offer, is sometimes without full acknowledgement. By documenting their aptitude and resilience to adapt to these new performative situations, I hope to champion the performer's perspectives and growing knowledge as a critical element in the development of such work. Moreover, by recording their important insights here, I also hope to provide some evidence of what Birringer describes as a new 'topological 'mapping' of the body's experience' (Ibid).

Talking with the performers

Over the course of a week, I was lucky to spend around 1–2 h with each performer via zoom. Using a series of questions to help steer the conversation, each discussion point was posed individually, and each performer's answers were recorded, which I then transcribed. Whilst the discussions were initiated using the questions below, the conversations were free flowing. Due to the richness of the conversations, we found ourselves covering interesting topics such as liveness, audience engagement, what it means to be human, along with some of the potential considerations for VR performance practices in the future.

Documenting the full extent of our conversations goes way beyond the scope of this article and suffice to say I could have spent a whole day talking to each individual. To that end, I have tried to encapsulate the responses and to offer some of the key points and themes that arose from each of the questions posed (see below), in order. I have also anonymised the responses to provide clarity for the discussion points, as many of the performers expressed similar findings and we inevitably went off-piste on many occasions due to the richness and depth of the topics covered.

Given the newness of the process for *Dream*, the performers' tenacity, and I would even say hunger, to remain open and active in their capacity to absorb and extend the creative potential of the avatar's characteristics was palpable. I was impressed by the energetic way each performer expressed their growing abilities to not only manage the restrictions of the volume, but also their interest in pushing the boundaries of their own comprehension. I will now discuss each question in turn.

Q&A

1. Please describe your background and explain how they came to be working on *Dream*

This initial question acted as an ice-breaker and helped to establish a common-ground. As discussed earlier, most of the performers were relatively new to VR performance making and they all discussed how different working on *Dream* was to previous projects. My impression was that it took them some time to acclimatise to this unfamiliar world, which was understandable, given the logistics and protocols that are necessary to function in VR. Add to this, the restrictions posed during Covid, which meant they had to explore the initial stages either on their own, or in small covid-secure groupings. Many of them spoke about the need to understand the fundamental technicalities of the technology first and discussed how these new restrictions had a profound impact on how they interacted with the Mocap environment – i.e. the standard protocols of wearing the suit, calibrating the volume, understanding the sensitivity of the markers, and being aware of the physical restrictions imposed by the overall set-up.

Thus, the practical functionality of the technological set-up provided a whole new landscape for the performer. One performer was lucky to have spent a few days inside the volume prior to rehearsals, but the majority were thrust into this new world for the first time. One performer described wearing the suit and being in the volume as having an identifiable impact on his ability to move. He talked about sitting down to

rest, only to realise that all of his markers had moved. Wearing the suit and maintaining focus was a real discipline. He likened the initial setting up stages (moving into the T pose for example) as a choreography of sorts. He said,

'It's quite beautiful to watch when it's done really well, like watching a skilled motion capture actor ... it's almost like watching a dance. I began to appreciate how incredible difficult it all is'.

As with many of the performers, his movement background helped him to deal with the physicality of moving in the volume.

I was also struck by how many of the performers had expertise in puppetry. One performer talked about how to manage the translation of movement through the technology and identified an interesting relationship between the act of animation and his experience of being a puppeteer. He identified his previous experiences as a translative tool for conceiving of the extension of movement through the avatars. He said,

'There are aspects of puppetry involved because your movement makes something else move, and that's the focus ... there's a big crossover of all of these things. It was a real process to go through to see how to get the performers movements to respond with what was on screen'.

Understanding the limits and dexterity of a physical puppet seemingly helped him to identify with an extension of self through the avatars. Though, because the scope and range of movement is almost unlimited in VR (given there are no physical boundaries), this required a whole new process for conceptualising and managing movement. He continued,

'So, that's another thing – if you've got a physical puppet, for example, you can kind of work out what its limits are and what its capabilities are. But with this, it's kind of like, oh well, we want the eyelid to open and close. Well, it's done, that's cool, but can it do it just a little bit? Or how much more dexterity is there to be found? It would seem that they (the technologists) would find new things and expand the limits as it went on.'

Performance making in VR therefore requires a high level of physical awareness, as well as the capacity to keep extending beyond the limits of the physical, i.e. the reach of a puppet can only go as far as the object itself will allow. Yet, the ever-expanding capabilities of the characters in the virtual world had no physical limits. The avatars could literally morph and change as the programmers saw fit. In this situation, the experience of extending a gesture to enact a puppet acted as a scaffold for thinking about translating physical movement into data. In other words, the above performers used their physical 'know-how' (Nelson 2013, 37), such as being able to manage and extend their own physicality, to identify what might also be possible in the translation of their physical gesturing through the technology. This was not just about creating a cause and effect (i.e. moving a physical body part to make the avatar move), but it was more about how the nuances and the dexterity of their movements and actions could create an effective outcome in VR. In terms of developing a sensitivity for VR environments their previous knowledge in puppetry became extended as they learned how to be expressive within this hybrid world. This can be likened to Kareth Schaffer's notion of Flexible Performativity. She states, 'flexible performativity is characterised by an ability to navigate between different performative registers ... , and in general to adapt one's performance to the specific audience, location, and situation' (2023:207). The above example helps to highlight how the performers innately adapted their awareness and experiences to this situation.

2. Previous experience of working in digital environments, if any

Together with those performers being experienced in puppetry, others had a wealth of knowledge in immersive environments and in media performance, as well as being experienced as traditional Shakespearean actors. However, every performer expressed being highly skilled in a range of movement/physical practices (including aerial training). As the interviews continued it became very clear that the performers were selected for their dexterity in these terms, as one performer described, it was essential to have,

'People who really understand shaping and physically moving their bodies, and it's those skills that I think you need ... People who actually understand how to care for their bodies'.

The physical demands of working in the volume also became apparent. As one performer described,

'I mean physically it's weirdly quite demanding being in a motion capture suit all day, especially with the practicalities of getting in and out of it. It's all very time consuming. And it kind of doesn't look like much, but actually it is quite a thing, and if you're doing a show like this you have to be in it all day, every day'.

Another performer referred to the levels of concentration required too. They described an interesting parallel between the working processes of performers and technologists.

'I think from a logistical point of view, what I found in motion capture is there were times that I was up doing things for hours – because they will go on for 13 h. Do you know what I mean? They will just work and work and work and drink coffee ... whereas I had to sometimes remind them that I needed a break. And I needed to go to the toilet, which was obviously a feat in itself, because every time I had to take my gloves off, they had to recalibrate me and bring me back in, so logistically technology was the mainframe'.

So, not only was it important for the performers to be physically strong and continually focused, but the demands of this new world also required them to be engaged in a lengthy and arduous process that required real stamina (a different type of stamina to the physical stamina one might normally expect).

3. Description of the process from their perspective as a performer. Was it the same – if so, how? If not, how was it different to previous works they have been involved with?

Through our conversations, it became clear that their perception of normative theatre practices, i.e. dealing with the physical properties of stage space and being in proximity to fellow performers and the audience, was greatly changed. One performer talked about the need to be adaptive, especially in terms of their management and generation of creative content. She described the world as having different *rules*, where the volume dictates a certain kind of concentration. In many ways these performative rules are governed by the parameters of the technological set-up. In so far as, the performer must navigate and create content that is viable in technological terms (both in terms of their management of the system and in terms of the translation of their movements into avatars). However, it was interesting to hear her speak about the fundamental process of play for the performers – most noticeably in terms of the rehearsal process. This opinion was shared by many other performers too, who, in different ways, discussed the tensions between

enabling innovation and working within the restrictions of the volume. Many performers expressed the desire to have more time to play inside the environment beyond its technical boundaries, for example, seeing what might happen if they moved beyond the volume's spatial borders. A conceivable nightmare for the technologists for sure. But I was struck by all the performers' eagerness to push the boundaries of what might be possible. This presents an interesting tension. As one performer discussed,

'The biggest learning is that these two worlds are colliding. There's this tech world and then there's this theatrical world, this environment of creation. And of course, they have much more control over ... I guess, sort of putting exactly what they have in their heads on the screen. You know, and someone else can go, oh, I didn't see it like that I saw it like this, you know, can you make the eyes blue? Can you make them go this way? Whereas we as actors, we don't work like that. I know that a lot of people sometimes think that our job is to do what the director's got in their head, ... but in theatre the director is making you an offer. You're taking that offer and you're making your offer back and you need room to experiment and to play in order to do that, to find a way for you all to tell the story collectively using the very best of your skills. I think, at the start, this made our technical team really nervous because of course the volume is their space to create what it is they see, what they want, and that's their world to manage.'

So, the idea that the volume is the technologist's space doesn't perhaps offer the same scope for play as the performers might have been used to. What is interesting to note here, is the fundamental ways in which both groups (the performers and the technologists) go about their creative process. The idea of play, as described by the above performer, is suggestive of an ability to innovate and to think beyond what might at first be the obvious outcome. I have no doubt that this happens differently in both fields. But the above observation presents an interesting scenario where the sharing of practices comes together, almost by default – what Alistair Cockburn would describe as osmotic communication (2005, 24). The idea of an 'offer' is an intriguing way to think about the creative situation. Another performer mentioned,

'But for us, it's also our rehearsal space, whereas all of these technicians were sat right there with us watching the whole thing going, oh no, no, no, no they can't, they can't do that, that will make the technology go haywire whereas we go where the movement directs us.'

By allowing the technology to go *haywire* for a time, the above performer also mentioned her desire to find her rhythm and purpose within the volume. This perceptual intelligence, as she describes as a rhythm and purpose, is an indication of the acute embodied awareness experienced performers draw upon when they are faced with these new situations. These skills, which are somewhat intuitive and subliminal, are arguably crucial for the translation of data. Understandably, the technological system drives the creative process, and the environment must allow for the capture of relevant, clean data. Yet, it seems to me that it was the performers' ability and skills in being able to translate and perceive the potentiality for extending beyond the physical boundaries of such systems that helped breath live into the avatars and into the world. She continued,

'But their process is they need to do that to get to where we need them to be and because obviously, we need to go through familiar processes to us to make sure that we're arriving together at a story that we all agree upon. We have different ways of accessing our physical and emotional languages. For us that requires warmups and games and things like that. In the volume that must look like an absolute nightmare to the technicians.'

Another performer mentioned,

'You can do anything, it's just a question of what is achievable in the time frame that we have and it's crazy to think that a lot of the compromises are not about what's possible, they're just about what's possible in that set amount of time. We go live then, and so this takes three weeks of rendering, you know, but it's not impossible. It's much less direct than any other medium.'

What is noticeable here is the juxtaposition between constraints and possibilities. There's an interesting dichotomy between, on the one hand being limited by the physicality of navigating the volume itself, and on the other, experiencing the boundless possibilities of the virtual avatars. This is supported by Susan Broadhurst who states,

'The experience of the corporeal schema is not fixed or delimited but extendable to the various tools and technologies that may be embodied. Our bodies are always open to and intertwined with the world. Therefore, technology implies a reconfiguration of our embodied experience.' (2011, 148–149)

The creative potential for these types of works is surely dependent on the 'reconfiguration' (Ibid) of all who embody, make, and ultimately experience the work (including the performers, the technologist, and the audience).

4. Did they feel the novelty of the VR environment enabled them to develop new working practices and ideas, or, because it was new did you rely more on established methods for creating performance material? Did your previous training equip you to deal with the nuances of a VR environment?

In one conversation a performer discussed the interesting challenge she faced with her character, whose movements were so restricted (given the motion capture was triggered by the slightest movements of her face), that she had to think very hard about character development and how best to deliver the text. Again, I was impressed by her resilience to adapt and to find a creative response to the challenge. She mentioned,

'I always find limitations as creative possibilities ... Because I was the only person whose face was captured, I think that's an interesting thing in terms of communicating a character. You know, putting across a character when you are an Avatar ... it's how you're communicating emotion when the audience can't see your face ... I think it's quite interesting how an audience does connect with a character whose facial expressions you can't read ... I mean I did a lot of mask work about how you convey emotions with your body, and you know with your whole body, and I only had my face. And there was a limit in terms of how much I could turn my head ... Beyond that, it doesn't read.'

Again, it became clear that many of the restrictions the performers faced became opportunities to rethink their own practices. Hearing her discuss how to create depth in the characters expression as she was delivering the text was fascinating, especially given how restricted her facial movements were by the technology. She said,

'And the bit of my face that wasn't tracked was my actual eyes. So, the blinks register, but ... I would have liked my eyes to be tracked too, because actually so much comes from that itself. And actually, I was sort of trying to translate what I couldn't do with my actual pupils into blinks and eyebrow movements. If I don't blink at all, can you even tell that it's a face? Can you even tell that it's animated and breathing? Because there wasn't really any breath

that I could put into that character, which again is, you know, that's kind of the baseline of animating a character.'

Even for such a highly skilled actor, such restrictions posed a very difficult challenge. In effect, the physical restrictions meant that she had to translate meaning from the eyes (which performers learn to do very effectively, especially in film) into blinks and eyebrow movements that would have been almost unnoticeable to the naked eye. This not only required her to think differently about character development and gesture creation, but it also left her so constricted that she had to fundamentally rethink how to achieve the desired outcome. Yet, like previous comments, her ability to manage these restrictions, not just physically, but creatively was testament to her adaptability.

As Susan Broadhurst discusses, 'The ability of humans to recognise facial expressions is so sophisticated that even very slight differences are noticed and made meaningful' (ibid: 142). So, it was even more impressive that she was able to translate such nuances into her character. She continued,

'But in a way the breath was my blinking. Yeah, in some ways I certainly felt straitjacketed and there were things I couldn't do but it was about how the things I did could translate, which again felt a bit like puppeteering my own face. You know, it was very interesting to be part of the development of these characters and seeing how the avatars were developing and how what we did was translating. At one point the mouth movements were absolutely ginormous, and they would be like, can you move your mouth less? And I was literally hardly moving at all, but then the opposite was also the case, and there's the challenge ... delivering text whilst not moving a great deal, but also then the sound that I wanted to make with the text was not the same as the mouth movements I wanted to make for the visual – Urgh.'

It is interesting to note here how bodily movements are transformed through technology, especially when the restrictions on the performer are either almost totally incapacitating or infinite. Our abilities as humans to recognise the smallest nuances of expression, as Broadhurst describes, meant that the performer really had to think about expressing meaning in a different way.

The challenge of the disconnect between what is physically happening and what is being translated virtually, as discussed earlier, is a fascinating feature of virtual reality performance. Especially for the performers who generate the expressive content, which is then translated into data. As one performer described,

'In motion capture you're focusing so hard on just making sure that your virtual hand is making contact with the virtual tree in a realistic way, that, you know, it can get in the way ... how do I feel about this story and what do I want to communicate to the audience about my character ... so, there is a level of precision that is required to make room for some storytelling aspects that we take for granted in theatre. And again, it's not impossible to get there, but you know that's a whole new set of skills for everybody, I think.'

This suggests that performers working in these environments will need to extend their abilities to create material for performance as it becomes 'manifest as both live and digital in nature' (Francksen 2018b, 73). Thus, managing the technological precision, whilst simultaneously exploring the imaginative possibilities (the storytelling) of any digital theatre environment, requires a new sensibility of the creative process.

Furthermore, the importance of positioning, and understanding the spatial orientation of the volume, meant that the performers had to constantly re-negotiate their physical

alignment in space as they became translated in the virtual world. For many of the performers the screen provided a useful tool. Not just in terms of being able to align and position themselves, but also to explore the extended possibilities of the avatar's potential movement in the virtual world. One performer usefully described this as trying to pat your head whilst rubbing your tummy!

Another said,

'So, there's this strange removal, and in my scene, I couldn't make eye contact with EM playing Puck because I needed to have eyes on the screen to ensure that what I was doing with my character, EM was able to follow ... uhm that's a very different job to the one that I'm used to doing. And of course, for me, I'm only dealing with that one screen at the front. My scene in many respects was relatively simple. I imagine for EM it was very different because they had to look at various screens around the volume. So, that's different – I'm used to being watched, but I'm not being watched in a way that I'm familiar with, so I'm still figuring that out a bit. Your head is in two places – your head has to be in the volume with your fellow actors, making sure you don't bump into anybody. Nobody dropped a marker thankfully, there's a very practical aesthetic to it, which is not dissimilar to stage.'

And another performer questioned,

'What is this body? Coming in from the physical world to the virtual world as me as the actor, it's like OK, how does this work first, OK, then I can figure it out?'

The above insights are proof that the performer's ability to deal with the translation of space and time cannot be underestimated. In addition, talking about the translation from the physical to the virtual world, another performer discussed their ability to connect with the avatars, they said,

'I think it's a bit different because there are many guises of myself ... And I remember one day coming in and being like OK, the Avatars have got female and male bodies and I was like interesting. So, one has a more protruding chest and smaller hips, and one looks very much more athletic and broader, and wider shouldered. And I was like interesting.'

From our conversations, it became apparent that certain hidden hierarchies and stereotypes, especially with regards to the gender specificity of the evolving avatars, was potentially restrictive in creative terms. As discussed earlier, how important is it that we identify with the characters in the virtual world and to what degree do we need to feel connected with them? Moreover, can the virtual world help us to identify some of the stereotypes that clearly exist in society, and which seemingly still appear in the design of technological systems. What is noteworthy about this performer's experience is that to identify and translate the characteristic qualities of their character/avatar, the less normatively human the better. They described,

'The twigs, the twigs and the stick – they have this kind of ethereal, kind of like sprites like properly Puck is a Sprite like nature, but as it became rocks, I was like I've got this because I can think about rocks and how they move in space and time. Again, back to space and time and how they swing and how if you throw them like pebbles and how if you allow the weight of what it would be like carrying a big one around your centre ... because it was a really big rock around the centre and it just really helped to inform all of that weight.'

What is exciting here is the possibility for bodies to become translated as 'other'. The performer's focus on the properties of movement, such as the mechanics of how best to translate weight for example, is what drove their movement responses and creative

reasoning. Not because they were prescribing a humanoid character, but because they were trying to deal far more intelligently with what it feels like to be embodied virtually, in whatever guise or form that might be (i.e. as a twig or a rock). Perhaps an important milestone for such work is that it allows for more acceptance of what a body is and what it can be – and in consequence question stereotypes in the process.

5. The effect of working in two environments simultaneously (i.e. acting in both physical and digital worlds)

Many of our discussions centred around the relationship between the physical and the virtual. As has been touched on previously, the very nature of having to negotiate both worlds simultaneously presented several challenges and opportunities. One performer said,

‘You know technology doesn’t necessarily have a soul ... you’re not supposed to think too much about the technology, it’s supposed to amplify the story. However, I had to understand the logic and how and why we had to do things a certain way.’

Whilst another mentioned,

‘I had a wonderful time, but there were moments when I was almost sort of desperate to be hanging off something or climbing up the walls or leaping off something, whereas in fact it became very, you know, distilled into blinking an eyebrow ... So, it was a very different challenge.’

Again, the apparent restrictions in this observation are palpable. It is worth recognising again how the technological environment impacted upon the performers ability to literally move. In their responses many of the performers advocated being able to acclimatise to the different worlds by listening. Listening in the sense of being aware of the alternative dynamics and opportunities these new environments afford, as well as how they might translate and experience these new situations through the body. As one performer described,

‘LISTEN, it is just everything, especially if you are a newbie or if you are a complete novice. I mean obviously you will make mistakes, which is fine. But listen, the more you listen, the healthier mistakes you’ll make, which will not affect others. Trust and allow yourself to be a bit more vulnerable – like, think, I don’t quite know what I’m doing, but what can I do?’

The capacity to find a shared knowledge, or a shared understanding in VR seems to be one of the strongest messages. This leads usefully into the next topic, collaboration.

6. Was the technology an equal collaborator?

Given the nature of this project the technology was, of course, fundamental to the construction and reception of the work. Without it, the work would quite literally not exist. However, building on what had been gleaned so far, I was interested to learn if the performers felt that the nature of this project (over and above the restrictions already discussed) had any other discernible influence on their experience. One performer spoke of the differences in language and highlighted some of the conventions between the disciplines. He said,

‘Yes, I think education on the technology in both respects for the performer and for the tech team, because for one thing, we’re coming at it from 2 very different angles, and I know that as performers we’re using vocabulary that the technical side of it aren’t accustomed to. And

vice versa. They are also using terminology that we are not as accustomed to either, and I think it's building between those two departments so that there's not as much technical jargon, and it makes the communication a lot easier. And I guess the conversation flows much more easily when both sides are clearer about what's going on, and I think that that would certainly help.'

Given the R&D nature of this project, it is helpful to identify such insights, especially in terms of establishing methods for enabling discussion and a shared vision. Moving forwards, I wonder if the identification of a new type of language between all involved will arise as collaborations, such as this one, continue to emerge. Moreover, the very act of working together in-situ seems to offer real scope for shared learning (this builds on Cockburn's learning through *osmosis* as discussed earlier). He continued,

'Yeah, that was a really lovely challenge, it was wonderful to come in and to be both in a blank canvas and to look up on that screen and see that you're in this amazing world that's being created. You know, I can hide behind this tree. I can step up onto this rock. I can jump from this rock to this rock and that time to be playful was so important. Yeah, that meant that we could influence this scenario and then the tech team would go, OK. We can actually make that happen, and that's really nice to be able to come to work with the tech department who are also willing to come and listen to the performer's insights. Then they would take it away and change the environment to suit what the performers have come up with. I think it's lovely when both sides, the tech and the performers content, can influence each other's decisions.'

Another performer mentioned,

'I think it would help to be more playful ... actually giving the technicians time to play with us ... I don't think technicians always get that. I don't think they've ever had that space to be able to be part of a conversation. I think they always feel like we shut the door and we all do our work separately and then come in and say here it is ... it's the humans behind the tech and letting them be part of the conversation to re-educate people in all different places in the hierarchy, because it's a fluid conversation. It's not set roles like the technicians who do the sound. No, they're not just that, they're an equal collaborator because I need to understand what you're doing so that I can change what I'm doing.'

Whilst another said,

'I think it was mutually collaborative. Because I think both inspired the other, and I think that when I joined even a month before it had been going on for a long time and things were always changing. Performances were being affected by the technology changing and the technology was being affected by the performance changing and that was completely collaborative.'

Enabling more opportunities for collaboration and creating a shared vision was very important for all of the performers.

7. Can you identify anything novel about your experience of performing Dream? Perhaps in relation to your fellow performers/avatars, or your relationship to your audience (who were present remotely). What impact did this have on your experience?

Beyond the novelty of being in the volume for the first time and experiencing the differences between the physical and digital landscapes, many of the performers also alluded to the complex nature of interactivity itself, as described by Nic Allsop who writes,

Bodies, texts and technologies then are no longer isolated elements but are distributed, diffused and disseminated through performance ... This sense of ephemeral inscription, of transformation, is no longer limited to bodies or texts transforming within a fixed or static scene or place. Recent technology enables a more complex interactivity between elements that constitute the work ... (2009: xi).

It was interesting to hear from one performer who talked about the unique nature of this experience. Given the technical requirements, there was a tendency to sometimes feel *'a little bit out of the loop'*. My sense was, at times, many of the performers felt an added pressure to conquer something out of nothing. One performer said, *'it's your imagination ... you have to create it all out of nothing'*, whilst another talked about interacting with the audience, *'The moments of interaction to me were absolutely vital just to reconnect with what was there. Like the moments of the fireflies.'* From the performers' perspective, the physical/performative environment itself was not only constraining, but I would imagine relatively bland and uninspiring in creative terms. One performer talked about her experience of being at the Globe performing in front of a live audience. Her descriptions of the stage and of her connection to her surroundings – the grandeur of the building, the colours of the lights and costumes, the energy coming from the audience as they hustled in to find their seats – made me think about how sterile and uninviting this space was. Again, this emphasises the skills and abilities of the performers to literally create something out of nothing. Another performer discussed the responsibilities of performing in such works,

'I think that the responsibility you have as a performer, and we know this from being on stage, which is probably the main live experience you have had as a performer, is the responsibility that people have come and joined you for that moment in time ... I think subconsciously you're probably a little bit more assertive because you haven't got a choice to go, oh, that's not right or I'm going to do this again.'

Another interesting discussion point was the connection between the performers and the audience. Many spoke about the difference and similarities of performing on stage, which led to some very interesting discussions about connecting with an audience. As one performer described,

'I think in Dream specifically, the notion of a live audience was felt so remotely that I actually felt a lot more comfortable than I normally do ... I didn't really feel that same adrenaline spike that I would get before a show ... and there's also a sense that I felt in a position to forgive myself for a lot of things, so I was like I could walk up there, and the technology might not work, and I just have to be OK with that because there isn't really anything I can do to save this. That's the thing you know when you go on stage. If something goes wrong, you have to keep the story going. The audience only knows that something is going wrong if you let them know. In Dream, if anything went wrong, there was literally nothing I could do – it probably means the audience does not see me or can't hear me or my camera is not reacting, so I just have to stay there and do my job. It's pretty simple, and it's a pretty quick job.'

Again, the role of the performer was, in many ways, purely practical. Another performer said,

'I feel like this particular project was a demonstration of the technology rather than a demonstration of the performance or of the narrative. I think this was very much showcasing what the capabilities of the technology was. And it very much did that. I would say in this example

and with it being R&D it wasn't so much about the narrative, it was about the technology, and I think that definitely played a precedent for this project.'

Given the question earlier about the technology being an equal collaborator, the above comment suggests that the performer's role was to be an important conveyer for the artistic production of the avatars; for it was the sprites who guided us through the computer-generated forest. And yet, without the performer's presence the avatars would be lifeless. This again indicates the delicate nature of performing *between* the live and the digital and highlights the often under acknowledged skills of the performers in making the work happen. Another performer said,

'It was lovely for us to feel like we were in a live performance. I think part of that was because of the pandemic and it was nice to feel that we were connecting with people and that the show did feel, you know, fresh in a different way every time ... It was nice to be able not just do it once and that be it, and then it just goes out pre-recorded. The liveness was important, I think. Particularly for performers, I think it's important whether the audience know it or not. I think from a creative and a performance point of view, it is important and if some audiences don't understand that, but they equally enjoy it then that's still a win.'

This raises another important question regarding how such work is both presented and received. This leads to the following topic.

8. Was it important to you that the audience were able to experience a 'live' element in the online show?

It seems that it was the collaborative relationships that began to build between the performers and the technologists, which brought about the most fruitful outcomes (from a performers point of view anyway). Thus, it surely follows, that such considerations also need to be accounted for when it comes to creating an effective relationship with an audience also. One performer discussed,

'But we know it's live and for us it's an amazing experience. But the audience were probably never aware of it apart from perhaps if someone's arm goes weird, but they don't know necessarily where that comes from ... I was talking to some people who watched the show live. Some of them, I mean, this would perhaps break the magic of it, but some of them actually wanted the Q&A section to be before the performance so that they had a sense of what we were doing because I think then if we went into it, maybe you would have more sense of it's live, and also more sense of how technical and difficult it is. But then there's something about taking away the magic that you're already showing the making of before you've shown the thing.'

Performers know how to engage and connect with audiences in the theatre. It is one of their many special powers (eye contact, projection etc., even building relationships through the camera in film by looking down the lens, for example). However, the ability to connect is very different in VR situations. As I listened to many of the performers contemplate the nature of being live, I found myself thinking about performer presence. In many ways, the performer is one-step removed from the situations they are used to. This creates a layering of obscurity – or some might even say a dilution – of the physicality of the performer. However, as Philip Auslander discusses,

We go to live performances to be in the presence of the performers, but we acknowledge that such presence can take on a wide variety of forms ... For an audience to share space with

performers does not in itself guarantee any sort of intimacy, connection, or communication between performers and spectators ... Furthermore, one can ask: what, exactly, is the value of presence? It certainly is not an absolute value. (2008, 66)

In many ways, the performers sensitivity to this changed situation highlighted a shift in their feelings of being present with the audience. VR performance making perhaps goes some way to challenging what Auslander identifies as an 'absolute value'.

Another performer said,

'There's something unique about it being a live performance, whereas we're not used to seeing stuff that looks animated in this way. You know that's why it was quite important to have that curtain drop moment – when you can see the performers doing it live and I think that was a big challenge to try and get people who are watching it to get that.'

It is interesting to note the desire for the performers to have the audience understand their process and to see how much work was going on, behind the scenes, as it were. A different performer mentioned,

'You could really feel their eyes through the lens, and I really could feel the people were there, especially in that first Firefly collection moment, and I think it kept me very grounded ... I had to deliver a performance to a certain level every night. Without, you know the audience interaction that I usually get from being on stage – that's a two-way street – because I think you learn a lot from having the audience interaction in this space ... You learn a lot about grounding and getting the job done and doing it right through, not being too influenced from that energy from an audience, so I feel like it has really helped me in terms of my acting style for the next jobs that I'm going on to.'

Perhaps acknowledging that 'presence can take on a wide variety of forms' (ibid), is a crucial learning curve for anyone experiencing VR performance. Particularly since such works are created from a multitude of viewpoints/perspectives and experienced in multiple locations.

Another performer usefully concluded,

'I think as this technology evolves it will allow us to communicate. There are so many different people who maybe haven't experienced this before because they don't feel maybe theatre, film or whatever is for them because of the way they see it, but if they can see it in a way that suddenly resonates with them, it's not the actual story that matters and the fact that they've connected and why are they connected because it's new people. Yeah, it all boils down to that sort of fundamental core part of it, and I think if people got to see how it's made, they would enjoy it even more because then their imaginations start to go, and they think I could do this.'

Summary of key insights

For any artist it is important to keep fresh and to remain relevant in one's own craft. The performers discussed here are clearly master technicians, but as their insights prove, their tenacity and willingness to keep pushing the limits of their own practices is particularly impressive. Moreover, it was jumping into the world of VR with two feet (or with one real and one virtual foot), which helped them to deal with some of the key challenges of navigating and connecting with an audience in these new worlds. Given how rich and engaging our discussions were, it is impossible to detail all that was uncovered. However, I offer the following key insights as a starter for considering the important

role performers have in the process. Their knowledge and insights will be crucial for anyone wishing to manage the creative process in virtual environments.

- Importance of the performer's embodied knowledge and agency

The technological environment created several restrictions and constraints, both in terms of the physical and spatial parameters of the performance environment, and in terms of the transformation of the visual and perceptual field synonymous with VR. The spatial restrictions of the volume, as described by many of the performers, was very real. Yet, the process for them was not only about getting used to wearing the Mocap suit and adapting to the physical confines of the volume, which was initially important. It was their ability to extend their appreciation and understanding of some of the fundamental principles of performance making, such as, the proxemics defined by these digital landscapes and the need to adapt to, as one of the performers said, the *'different ways of accessing our physical and emotional languages'* (see pg.9 above), which became most significant. The performers were not only drawing upon their normative theatre practices, i.e. skills in puppetry, movement creation and analysis, expression of narrative content, audience engagement, projection etc., but they were also searching for ways to extend their creative practices further to create meaningful and imaginative content that was useful for digital processing. As Nadja Masura recognises,

The essential nature of the actor is her body. The experience of being that actor in space is an ever-changing temporal and spatial dance involving words, gestures, and other people. The finer the actor's tool, the more awareness and range they have in their ability to control their face, voice, and movement ... The actor's art and responsibility lies in her control of her body in an ever-evolving imagined space/time of the stage. This bodily control is a primary expression of the actor's agency. (2020:203–204)

The performer's sense of agency was, therefore, essential for managing the changing temporal and spatial dimensions of this new hybrid performance space. Essentially, the performers' ability to navigate between the 'ever-evolving imagined space/time of the stage' (Ibid), which in *Dream* was comprised of both live and digital elements, is what helped facilitate an embodied connection between many of the components in the production. As Masura continues, 'Digital Theatre, as we have seen, muddies this distinction at the same time as it enhances the actor's potential control ...' (2020:204). Therefore, the performers had to be ready and willing to engage with this novel space/time by opening themselves up to the exciting opportunities it afforded, and to explore their bodily agency beyond what they already knew. This resulted in an awareness and aptitude to read and respond intuitively to a simultaneous live and digital stage space.

As discussed previously, the knowledge performers both acquire and so generously offer – in both an embodied and perceptual sense – can sometimes be so imperceptible, i.e. as one of the performers mentioned 'I was sort of trying to translate what I couldn't do with my actual pupils into blinks and eyebrow movements' (see page 8), that they are either taken for granted or missed altogether. These embodied and tacit⁴ cognitive developments cannot be underestimated. This also suggests that any performer wishing to engage with these new creative situations will not only need to be masters of their craft, but, more importantly, they will need to be ready to relearn and to continue adapting this craft. Furthermore, they will also need to be clear

about the important role they play and to be aware of the insights they have to offer. As performers begin to appreciate the importance of ‘their movement as a form of topological ‘mapping’ of the body’s experience and proprioception within the interface’ (Birringer 2005, 163), then perhaps they can be empowered to advocate for themselves as key contributors moving forwards.

- Practical functionality versus creative play

Another key observation is that whilst the production environment required a certain level of practical functionality (i.e. the effective calibration and management of the technology was paramount for the capture and subsequent rendering of data), it was the imaginative and playful responses of the performers which helped to translate these results into something intelligible as a live and digital encounter. This is not to say that the technologists were not generating imaginative and complex results; the arresting beauty and textures of the virtual forest and the avatar characters are testament to that. However, as one performer mentioned, ‘The biggest learning is that these two worlds are colliding. There’s this tech world and then there’s this theatrical world, this environment of creation.’ (see page 9). So, even though the technology provided the scaffold for producing *Dream’s* environment, I suggest that it was the performers who provided the lynch-pin to bring these two worlds together. As another performer discussed, ‘What is this body? Coming in from the physical world to the virtual world as me, as the actor, it’s like OK, how does this work first? OK, then I can figure it out’ (see page 12). The very fact that the performer’s instinct was to continually ‘work it out’, seemed key to how the resulting work was both developed and expressed. As another performer described,

‘The twigs, the twigs and the stick – they have this kind of ethereal, kind of like sprites like properly Puck is a Sprite like nature, but as it became rocks, I was like I’ve got this because I can think about rocks and how they move in space and time.’ (see page 13)

In so far as the performers were in a constant state of innovation and play, their ability to observe and then translate the technological into something readable in an embodied sense, was vital for the expressive potential of the work. Thus, the skills needed to observe the characteristic features of a collection of digital boulders and twigs and to extend these forms and structures into something that resembles the spirit of a human form, again cannot be taken for granted. This relates back to Schaffer’s ‘Flexible performativity’ discussed earlier and signifies an enhanced sensitivity in VR environments. Whilst I did not speak to any of the technologists, I am sure that these delicate and intuitive responses will have been observed by them, and, as such these osmotic⁵ observations will have fed back into the programming design. Enabling more space and time for these creative exchanges could also be a key consideration for those wishing to pursue this type of work in the future.

- Extending beyond normative expectations and experiences

A resounding memory from speaking to the performers was their passion and hunger to extend beyond their own expectations and experiences, and to connect deeply with

the different elements of the process. I remember speaking to one performer at length about the concept of liveness, as well as the idea of connecting as something 'other' (both in terms of what it means to be human/non-human and how society is still bound to certain stereotypes). Such fascinating concepts and discussions are beyond the scope of this article. However, it is worth stating here that the performers' depth of questioning and inquisitive nature is what, in my opinion, makes them such a rich and vital source for this type of work. As one performer said, 'You know technology doesn't necessarily have a soul ... it's supposed to amplify the story' (see pg.13).

In further support, Auslander states,

The idea that we can appreciate a performance as live without being in the place where it is occurring is fundamental, for I believe that the power of liveness is in fact a function not of proximity but of distance, or more precisely, the power of the live resides in the tension between having the sense of being connected experientially to something while it is happening while also remaining at a distance from it. (2016, 296)

In many ways, this is exactly what the performers seemed to be grappling with; how to encapsulate 'the power of the live' as they were transformed into avatars, whilst simultaneously having to perform at a perceived distance from each other and from their audience. And yet, they remained connected experientially as their avatars played out online. This is akin to what I have come to observe myself as a 'fresh perceptual experience, which is fundamentally transformed through technology' (Francksen 2018b, 76). Managing these altered states within the performance environment itself is another area that is crucial for any performer wishing to engage in such work.

It also seemed very important to the performers that the audience understood that the resulting avatars were created by 'real' people. This led to further discussions regarding exchanges of knowledge and how we begin to develop a shared language, both as makers (technologists, creatives, actors, designers, game developers etc.), and as audience members. One of the many purposes of the AF⁶ project was to understand the nature of the potential future audience and their modes of interaction and engagement. I suggest that it is equally important that we continue to explore and highlight the embodied insights and experiential knowledge of the performers too. This will not only enrich the discussion, but, as evidenced here, is vital for fully understanding the mechanics and wonder behind such works.

To close, it feels fitting to present one of the performer's take away moments,

'And that's where I think this technology can go is going further and further into immersing people into worlds and to giving people access in ways that they never have before. Whether it is this virtual world, whether we could do a whole production, whether we could do a production where people wear headsets, where it cuts from this virtual forest into live action, how far can it go?'

It strikes me that these new types of environments, where both physical and digital practices converge, presents several profound and fundamental questions regarding the nature of performance making. All performers have clearly been on an exciting journey; a journey that feels inescapable not only for upcoming performers, but for all who are involved in creating these new worlds. It really does feel like we must ask 'how far can it go' and signifies the importance of equipping performers to continue venturing into these new and developing technological worlds.

Notes

1. Audience of the Future 2021Dream. Available at <https://audienceofthefuture.live/d>
2. Go to <https://artanim.ch/category/mocap-equipment/> for a useful description of the Mocap process by Artanim who are based in Geneva.
3. Go to <https://www.dmu.ac.uk/about-dmu/news/2021/march/dmu-helps-bring-shakespeare-production-to-life-in-a-virtual-forest.aspx>
4. See Robin Nelson's model titled 'Modes of knowing: Multi-mode epistemological model for PaR' (2013, 37). Using this model Nelson highlights how 'knowing-in-doing' is evidence of the experiential and tacit 'know-how' skills practitioners possess, which are not as readily accessible in traditional research approaches. By highlighting 'knowledge in action' he advocates for the many different modes of knowing, which include 'embodied cognition'. These skills can often be taken for granted by practitioners.
5. Alistair Cockburn states, 'Osmotic communication means that information flows into the background hearing of members of the team, so that they pick up relevant information as though. By osmosis' (2005, 24). The fact that the technologists were present whilst the performers were exploring and responding to their digital material fits with Cockburn's description.
6. Go to <https://www.ukri.org/what-we-do/browse-our-areas-of-investment-and-support/audience-of-the-future/> for further details.

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