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Extending the Performing Space through Virtual Reality

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Abstract

In this work we present the challenges and opportunities for using Virtual Reality (VR) technologies as a medium to expand the space and time of the performing stage and storyline through the experimental collaborative performance. This interdisciplinary artistic and experimental exploration took the form of a theatrical production and a hybrid telematic theatrical play which took place simultaneously in the digital space as well as in four European cities in four countries (Poland, Greece, Ukraine, and Georgia) called *Brave New World*. This VR theatrical performance was conceptualised and directed and direction by Garbaczewski, and developed by the Digital Performance Network.¹ The narrative of hybrid performance expands in both these four physical spaces and countries, and virtual worlds of the platform, enabling a constant interplay between different world extensions and mappings as well as multiplicities of roles, acting events, and perspectives of the heroes. This also activates a hybrid stage for live direction and real-time interactions. In this work, we focus on the technical and artistic solutions that we adopted for the creation of the performance for the Greek audience in the physical space both during the rehearsals and the performance.

Keywords: virtual reality, technology, hybrid theatre, teleperformance

¹ <https://dreamadoptionsociety.com/digitalperformancenetwork/f/brave-new-world>

Virtual Reality and Theatre

In this article, through presenting the case study in which Virtual Reality (VR) and SocialVR Social Gaming Platforms are/is applied, we discuss how this approach can extend the performance, providing simultaneously different viewpoints for the audience as well as for the actors that are immersed in the VR scene. The combination of VR, i.e., hardware and software that enables the immersion, and the interaction within an imaginative world that is displayed through 3D models and objects, and theatre have been used the last decade from different aspects such as human-computer interaction and artistic experimentation.

About the BNW Performance

Brave New World is a hybrid VR theatre performance, conceptualised and directed by Garbaczewski, and developed by the Digital Performance Network, inspired by the book by Huxley (1932) with the same name. The project was co-created by the local theatre teams applying devised theatre, and functioning as synchronous, dislocated, satellite performances that were standalones and part of the main performance at the same time. The main idea driven by the director, developed around appropriating VRChat,² a VR Social platform for theatre making and expanding the narrative space of collaborative VR performance that was live simultaneously in four countries:

- Theatre Julius_Osterwa w Gorzowie Wielkopolskim (Poland)
- Royal District Theatre (სამეფო უბნის თეატრი) in Tbilisi (Georgia)
- Lithografeion Theatre (Θέατρο Λιθογραφείου) in Patras (Greece)
- Regional Academic Theatre in Ivano-Frankivsk (Ukraine)

The following framework outlines the key components for composing such a performance, including the technical aspects of VR and its application, as well as other relevant technical elements.

Setting, Hardware, and Software

To implement the VR component, an online virtual world platform like VR Chat is essential, as it allowed the creation of customised worlds and characters tailored for the performance's needs. VR Chat provides a SDK (Software Development-Kit) that supports the development of new environments using the Unity game engine.³ The world-building process begins with a three-dimensional space where all the elements necessary for the requirements of the

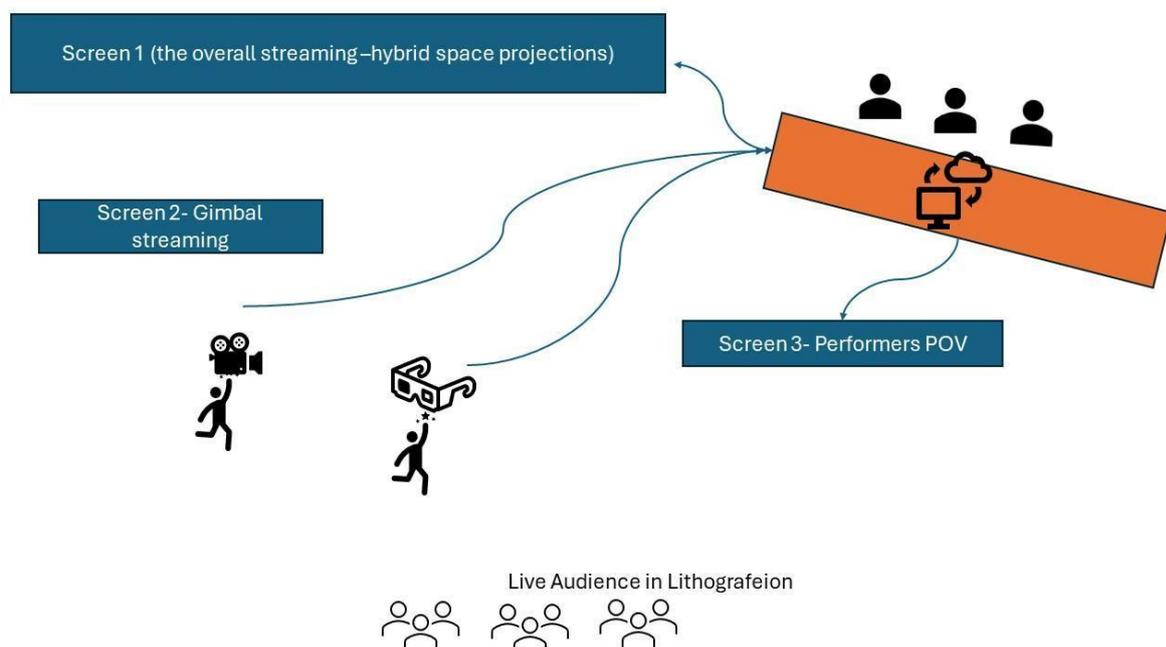
² VRChat online virtual world platform, <https://hello.vrchat.com/>, last accessed at 16/01/2025.

³ Unity cross-platform game engine, <https://unity.com/>, last accessed at 16/01/2025.

performance's scenography are integrated. This space also facilitates the merging of video streams from the real world with those from the virtual world. By strategically incorporating green surfaces into the virtual environment, specific areas can be removed during post-processing to produce a final composite stream that seamlessly integrates both sources. Additionally, a virtual camera was added within the virtual environment to broadcast live streams of the events taking place. This technique can also be applied to combine live streams from both the virtual and real worlds, creating a cohesive viewing experience for the audience.

Figure 1

Setting in Lithographeion Theare. Diagram by K.El Raheb.



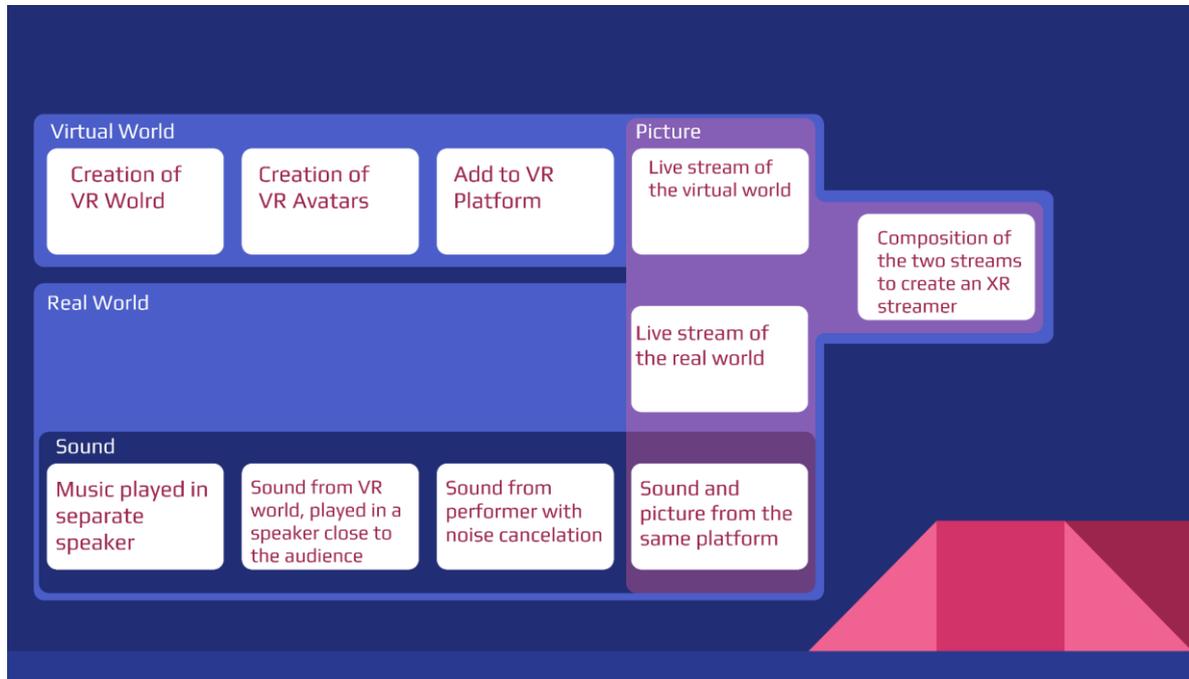
Performance and Rehearsals in the eXtended Reality Space

This collaboration and production, within an interdisciplinary and multidisciplinary team with exchanging roles, allowed to identify some of the challenges and opportunities in working with VR for the live performance stage which can be summarised as follows:

Interactive, dynamic direction was a necessity to connect the virtual and physical performing space. To do so, we were on stage, including the ones of us who had more technical roles, supporting the option of making the mechanisms and tools more visible to the audience. In fact, we chose to play with the terminology of games, and virtual worlds, creating a more transparent workflow. Most of the dramaturgical and technical choices were highly interconnected, manifesting and intriguing constant exchange or roles for the team.

Figure 2

Description of the stages of preparing the different streams: the virtual world (digital display), the real world (stage) and the sound which combined both the live voice of the actor and the streaming. Diagram by P. Papadopoulos.

**From Feelies to VR theatre**

While one of our concerns was that the “wow effect” (i.e. the impressiveness of the high-end technologies and innovation) would dominate the dramaturgy and the whole theatrical experience, the narrative and texts of Aldous Huxley describing a technocratic dystopia where societies are dominated through the constant illusion of happiness not only justified the use of such technologies but Virtual Reality acted as a metaphor for the *Brave New World*. This presented a live, contemporary version of the “Feelies”, the sensory films that are described by Huxley and are considered by many to be an inspiration for VR theatre (Grossi 2023, Milz 2019). Another challenge was making the actors’ interactions with the virtual environment visible to the audience. In interactive or digital performances, it is common for live displays to be mistaken for videos or pre-recorded animations. To address this and make the interactions more visible, we invited the audience to try on the Virtual Reality headset and explore the virtual worlds of the performance both before and after the show, as shown in Figure 3.

Figure 3

Preperformance experience. Image by the author's team.



Directing Multiple Spaces

The local team at Lithografeion Theatre had to direct a.d play a performance that was happening simultaneously in different spaces: (1) the physical theatrical stage, (2) the Virtual Networked Environment (VRChat Worlds), and (3) the Imaginary spaces of the storyline i.e. the places that are implied by the narrative. One of the main challenges was that these stages continuously interchange, creating multiple spatial body stage relationships that might be different in each space.

The use of VR allows provided the opportunity of seeing the same role played by different actors that are in different theatres and countries simultaneously. This multiplicity of the role gave the chance of embodying different aspects of the character's personality. As shown in Figure 5, the role of *Mustapha* was displayed simultaneously by two different digital avatars that corresponded to two different actors playing the role live in two different cities (Georgia and Greece) while the role of *Lenina* was displayed by an *avatar played by an actress in Poland in the same virtual space*. The movement and voice of the avatars corresponded to the live actions of the three actors in the corresponding live stages in each city.

Conclusion

It is worth mentioning that the term "virtual reality" has been used by Artaud in 1938 in *The Theatre and its Double* to describe theatre as a technique of illusion that uses characters, objects, and images as symbols to project on them imaginary worlds and realities. VR technology in theatre is creating an emerging field of exploration on the border of computer science, cinematography, performing and digital arts with a large potential for future artistic explorations.

Figure 4

Different spatial relationships in the same storyline moment: while the actor in Lithografeion is alone on stage, his avatar touches the hands of the avatar of the actress in Poland, while she plays with a real actor on the same stage. Image by the author's team.

**Figure 5**

Three avatars and two roles in the same scene played by three actors each one in a different physical space. Image is a screenshot from the virtual projected scene.



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