Digital Technology and Adapting Roles in Contemporary Scenography

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I declare that this **Critical Cultures Research Project** is all my own work and that all sources have been fully acknowledged.

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CONTENTS

INTERVIEWS

Keegan, G. (2022) 'Digital technology used in theatre'. Interview by Sára Rajnai [over Zoom on the 9th of December].

LIST OF PLAYS

The Boy Who Never Was (2022) by Brokentalkers (based on 'Moonstone' by Sjón). Directed by Feidlim Cannon and Gary Keegan [Samuel Beckett Theatre, Dublin. 14 October].

Rattledanddisappeared (Ledarálnakeltűntem) (2005) by András Vinnai and Viktor Bodó (based on 'The Trial' by Franz Kafka). Directed by Viktor Bodó [Katona József Theatre, Budapest, recorded on 5/6 June, 2010].
Recording available at: https://www.youtube.com/watch?v=rfkcIYi6fAo&t=6459s
(Viewed in 2020/21)

Phèdre (2009) by Jean Racine. Directed by Nicholas Hytner and Robin Lough [National Theatre Live, London].
Recording vailable at: https://www.ntathome.com/videos/phedre-full-play
(Viewed in 2020/21)

To Be A Machine (Version 1.0) (2020) adapted by Mark O'Connell and Dead Centre from the book by Mark O'Connell. Directed by Bush Moukarzel and Ben Kidd [streamed live from Project Arts Centre, 1 October].
Recording available at: https://vimeo.com/468260019
(Viewed in November, 2022)

Frozen the Musical (2017) by Jennifer Lee. Directed by Michael Grandage.

Bros (2021) concept written by and directed by Romeo Castellucci [O'Reilly Theatre, Dublin, 15 October, 2022].

XR Trilogy: Intermedial Play, Virtual Play and Augmented Play (2017-2019) 'Play' by Samuel Beckett. Directed by Nicholas Johnson [Dublin].
Recording available at: https://www.youtube.com/watch?v=R11lT65HCZg&t=813s
(Viewed in 2020/21)

Uncanny Valley (2018) concept, text and direction by Stefan Kaegi [recorded in 2019].
Recording available at: https://vimeo.com/339074946?login=true
(Viewed in January, 2023)

LIST OF ILLUSTRATIONS

Fig. 1: Augment3d, 3D virtual modelling software for lighting design
Source: https://www.etcconnect.com/About/News/Eos-gets-Augment3d-with-the-release-of-Eos-v3-0.aspx

Fig. 2: Brokentalkers: The Boy Who Never Was, performed at Samuel Beckett Theatre, Dublin 14 October, 2022
Source: https://www.facebook.com/photo/?fbid=805712480565214&set=pb.100033794091905.-2207520000

Fig. 3: Katona József Theatre: Rattledanddisappeared (Ledarálnakeltűntem), performed at Katona József Theatre, Budapest, 5/6 June, 2010
Source: https://www.youtube.com/watch?v=rfkcIYi6fAo&t=1s

Fig. 4: National Theatre Live: Phèdre, performed at the National Theatre, London, 2009
Source: https://www.imdb.com/title/tt1489229/mediaviewer/rm2778691840/

Fig. 5: Needs, motives and drivers matrix from Dr. Ben Walmsley's study
Source: https://core.ac.uk/download/pdf/29031133.pdf

Fig. 6: Disney Theatrical Productions: Frozen the Musical
Source: https://www.latimes.com/entertainment-arts/story/2019-10-05/projection-design-theater-national-tours

Fig. 7: Captioned show at the Abbey Theatre in Dublin
Source: https://www.abbeytheatre.ie/your-visit/accessibility/

Fig. 8: Dead Centre: To Be a Machine, live streamed from Project Arts Centre, Dublin, October 1, 2020
Source: https://www.biennalenemo.fr/en/event/dead-centre-to-be-a-machine-version-1-0/

Fig. 9: Romeo Castellucci: Bros, performed at O'Reilly Theatre, Dublin, 15 October, 2022
Source: https://www.barcelona.cat/grec/en/show/bros

Fig. 10: Major differences between AR, VR and MR
Source: https://www.weetechsolution.com/blog/everything-you-need-to-know-about-ar-vr-mr

Fig. 11: V-SENSE: Virtual Play
Source: https://www.contemporarytheatrereview.org/2018/beckettian-experiments-in-virtual-reality/

Fig. 12: Audience members experiencing 'Augmented Play' by V-SENSE
Source: https://www.irishtimes.com/business/innovation/volograms-making-beckett-come-to-life-with-augmented-reality-1.4012575

Fig. 13: Rimini Protokoll: Uncanny Valley
Source: https://www.theguardian.com/stage/2022/feb/21/robots-theatre-uncanny-valley-thomas-melle-electric-rosary-tim-foley

INTRODUCTION

Theatre does not settle

It seems that every assumption of rules that are meant to lay down standards for making theatre attracts examples breaking that pattern. *A performance happens on stage* – not necessarily. *A play tells a linear story* – it often does not. *Theatre plays have verbal dialogues* – sometimes they don't. It is simply futile to attempt to establish final and universal guidelines on what is and what is not possible in creating and carrying out performances.

While it is constantly changing, theatre makes new connections from other areas and disciplines. Art, science and design practices influence and inspire performances, and this often results in fascinating experiences for audiences. It seems that emerging new technologies inevitably affect our culture and with that, theatre. However, it is not always clear whether it is for the better. With this research project I aim to find out how creators, performers and audiences can benefit or be hindered by using digital technology in theatre.

This essay focuses on media affecting theatrical experience, narrative and the roles of people that are involved. Whilst I will mention forms of technologies that are undoubtedly beneficial, I primarily aim to examine digital solutions the suitability of which for the theatrical environment is more debatable. These are namely various experimental uses of projection, extended realities (XR), recording and streaming theatre online, artificial intelligence (AI) and robotics. The essay will discuss these structured in the following way:

The creators, the perceivers and the change of these roles

The first chapter will explore cases where digital technology affects the narrative and/or the production of the performance from the creators' points of view. The chapter will discuss how the accessibility of various forms of digital technology can determine the approach to telling stories on stage. Some undeniably beneficial uses will be mentioned, and then some other cases where innovation comes with undesirable factors too.

The second chapter will examine how implementing certain digital technologies in theatre changes the audience experience. It will look into the motives and needs of the audience and will look at opportunities where these can be enhanced and fulfilled by using

digital technology. This chapter will also explore the recent controversy over the recording and online sharing or streaming of performances and immersive audience experiences.

The third chapter will delve into the drastically changing roles of performers and audiences through emerging technologies. It will discuss how these extreme ways are altering shows and where are potential limitations where innovations might need to take a step back from theatre. This chapter will search for either validation or rejection of the discussed examples and mediate on alternative meanings of liveness, immersive and human qualities in performance to see what happens to these when introducing technology.

Searching for value

At the beginning of this research I was surprised by the large number of materials to be found concerning this topic. It became certain that this essay cannot and will not be an exhaustive history nor a detailed list of all digital solutions that exist in performance arts. With this research project, I aim to evaluate the role of those digital technologies most affecting creators and audiences of contemporary theatre. The main questions are: How certain forms of digital technology are beneficial and valuable to scenography and the people involved in it? What are the negative aspects of these technologies? When should we declare the failure of a digital solution in a theatre setting? How does digital technology change the roles of the participants of a performance?

Focusing on scenography and the people involved

This paper further focuses on the most recognised form of design practice associated with theatre; scenography. Although there is not one final definition of what scenography means, it certainly has to do with creating the environment and atmosphere in which the performance happens and is perceived. At the beginning of her book called *What Is Scenography?,* Pamela Howard dedicates a section to responses from her colleagues who give condensed answers to the question in the book's title. A few of these listed views go as follows:

> The spatial translation of the scene. (José Carlos Serroni)
> […] a physical manifestation of imaginary space. (Michael Levine)
> The dramatic solution of space. (Jaroslav Malina)

(Howard, 2009, p. XV-XIX).

Whilst these answers focus only on the physical, spatial aspect of theatre, other responses imply a much expanded view on what this field involves:

> The audiovisual world of performing arts. (Reija Hirvikoski)
> The transformation of drama into a system of visual signs. (Ioanna Manoledáki)
> Borderless pictorial space of the metaphoric world of the play. (Pawel Dobrycki)
> (Howard P., 2009, p. XV-XIX).

These answers suggest that scenography, as theatre design can go beyond the form of a physical set ("borderless"), and accept the influence of non-physical (even non-visual) elements (eg. audio) in the making of a performance. In the light of this essay topic, I find it important to examine views on what is considered a part of theatre design, as technology can either influence it *accordingly* or, breaking 'the rules', go against the definitions given. I question this because the way we think of technological influences on scenography, depends on what we *allow* scenography to be. At the end of the book, Pamela Howard also adds her own version to this collection:

> "The seamless synthesis of space, text, research, art, actors, directors and spectators."
> (Howard, 2009, p. 224)

Howard's holistic view of scenography suggests that all people are equally important elements of the performance. Therefore, when new ideas and technology start to infuse scenography in any way, they will have a great impact on the whole performance and on everyone who is involved in this "seamless synthesis".

Scenography does not settle either

In his book *Digital Scenography,* Néill O'Dwyer approaches digital scenography as a field by focusing on the intersection of digital media theory and scenography. (O'Dwyer, 2021, p. 1) To convey the scale of significance new digital technologies in theatre carry, O'Dwyer mentions Palmer's thesis about the first scenographic turn. According to Palmer, the first scenographic turn meant a paradigm shift in theatre practice, which happened due to the introduction of electrical lighting and Adolphe Appia's new approach to stage design in

the 1880's. (Palmer, 2015, p. 1) Based on this, O'Dwyer states that introducing digital technology to theatre-making means the second scenographic turn. (O'Dwyer, 2021, p. 1)

On its website, The Society for Arts and Technology, a non-profit organization dedicated to digital culture founded in 1996 introduces itself as follows: "[…] a place of collective learning that holds the promise of exploring technology to infuse it with more meaning, magic and humanity." (SAT) In a way, this is a reverse approach to the concept of this essay, as my research project is looking for values that digital technology adds to theatre and its participants. This quote is a reminder that value might work the opposite way too. Perhaps, in some cases, theatre and the people involved in it are what give value and meaning to technology.

CHAPTER I.

How does digital technology affect the creators?

This chapter will explore how digital technology can alter the creative process of theatre performances. I wish to briefly mention that in some cases, technological advances are obvious improvements to already existing workflows. Just to list a few practical examples; the internet helps with researching a topic for playwrights, directors, designers and dramaturgs; the writing process of a play on a computer is faster and allows immediate corrections; organising schedules and rehearsals, sharing documents and generally, staying connected is much easier for the team over social media platforms. The use of digital technology in this sense has become the norm in theatrical productions, just as it has outside of theatre in other areas of our lives. However, in some cases, new advances tend to require more adaptation and extension of skillsets.

Designers and new programs

Production managers, lighting and sound designers and stage technicians are for instance more affected by new advances. In a *Stage Left Podcast* episode of The Irish Society of Stage and Screen Designers (ISSSD), three lighting designers, namely Sarah Jane Shiels, Bill Woodland and John Gunning discuss how they experience technology affecting their artistic and design practice. In general, they seem interested and excited about new solutions to the creative and practical challenge of lighting a set for a performance, but difficulties in getting used to new methods are also clearly present in their conversation. For instance, frustrations over the use of software that is meant to enhance crafting a lighting plan [Vectorworks] or a large amount of time that was needed to create a virtual scale model of a theatre for preparing for a show when theatres were closed due to the Covid-19 pandemic.

Remote working in lighting design and previewing lighting plans are becoming possible since the launch of the EOS 3.0 version from ETC, which has an additional 3D programming environment [Augmen3d] that allows designers and artists to build virtual models of existing stages.

Fig. 1: Augment3d, 3D virtual modelling software for lighting design

In this conversation, it was claimed that virtual set models allow better presentation of ideas and clearer communication with other team members in the production and to start working on the lighting more freely and earlier in the process. (ISSSD, September 30, 2020)

Designers, performers, directors and projections

Lighting and stage design "has to have a strong relationship", says set designer Caitríona McLaughlin in another podcast episode of the ISSSD in conversation with her colleague, Sarah Bacon. (ISSSD, December 10, 2020) A predominant use case of digital technology in scenography is the use of projections, which is either using projected visuals in the background, or on objects as an extension for the set. In some cases, creators exclusively rely on projected backgrounds to establish an environment for a performance. Designing such visuals strongly affects both set and lighting design since it influences the whole visual of the scene, interfering with all light sources and demanding surfaces from the physical space.

Whether projections should be used in theatre or not, is also a much-debated topic in general, given that projected images and videos are different media on their own. From the stage designers' point of view, it has a definite practical advantage, not having to build heavy sets and source physical elements, but having the versatility, ease and limitlessness of projecting anything.

When Sarah Bacon mentioned the challenges of touring performance with, as she calls them, "ambitious sets" to different scales of spaces (ISSSD, December 10, 2020, at ca. 22:50 minutes), made me think, that touring with a few projectors, cables and laptops and a simple set of props certainly would make the build of every theatrical show easier. Although practicality is important, it is not the priority when it comes to performance: the set has to support the storytelling and artistic vision. For theatre companies with a smaller budget, using projection could mean an advantage since it is inexpensive compared to purchasing materials and building complete physical sets for each production. Another advantage is that projecting is endlessly versatile, however, this carries the possibility of overusing the technology and discarding experimentation with other creative visual languages in a performance.

A great combination of the use of projections and an essential, minimal set of props can go a long way in telling a story. In their recent performance of 'The Boy Who Never Was' at the Dublin Theatre Festival, Brokentalkers Theatre Company used projection and digital media in a finely balanced way in combination with essential props. They used the plain background for multiple purposes, such as placing the characters in various locations or showcasing realtime images from the perspective of a film camera that was used in several scenes. This enhanced tension and enriched the dynamics of the action. Another example of creative use was when the actors were sitting on chairs as if they were in a car, one of them holding a wheel, in front of a projected footage of a receding street. (**Fig. 2**)

Fig. 2: Brokentalkers: The Boy Who Never Was

In this case, projection supports the scene by visually calling attention to time passing during an awkward conversation in the 'car'; a sense of movement that is in contrast with silent moments.

To find out how the creators decide about using digital technology in their productions, I reached out to one of the directors of 'The Boy Who Never Was', Gary Keegan:

> It's never our first impulse to have video design. We have it probably in 90% of our shows, but we are never sure at the beginning if we are going to have it. With that particular show [The Boy Who Never Was] it would seem wrong to make an adaptation of the novel where the basis of the character is obsessed with the screen – the cinema. So we knew early on that a screen would be present. (Keegan, December 9, 2022)

He explained that the AV (audiovisual) design of that show received good feedback. However, the original idea was to use live feed generated by the ensemble of performers projected, not archival, edited footage as it was, due to cost.

The use of projections is not new. They have been used in experimental and political theatre since at least the 1920s. Erwin Piscator brought film into the theatre space in the 1920s: he "transformed the dramatic framework so that a didactic play (Lehrstück) could be developed […] to be a spectacle-play (Schaustück)". (Dixon, 2007, p. 77) This implies that he prioritised showing, rather than telling the message and that introducing film in theatre serves the purpose of creating a narrative with visuals rather than verbal explanation. Joseph Svoboda, co-founder of Laterna Magika, used a combination of theatre and film to achieve a "unique cross-disciplinary art form" (Dixon, 2007, p. 83). Steve Dixon, in a chapter called 'Multimedia Theater, 1911-1959' in his book *Digital Performance*, cites Svoboda: "The play of actors cannot exist without the film and vice-versa – they become one thing. One is not the background for the other; instead you have a […] synthesis […] of actors and projection." (Dixon, 2007, p. 83) As he uses the word synthesis, as the idea of two elements of a performance working together, aligns with Pamela Howards' definition of scenography (cited in the introduction) where she also uses the same word to join the elements that make scenography. With this thought, we can assume that in theatre, anything goes, until one component, technology or medium does not overpower other components of the show but works in harmony with them.

However, theatre is without a question first and foremost a live art form. There are strong arguments against using projection in theatre. Dixon, in a chapter called "Liveness", cites the philosopher Walter Benjamin's essay from 1935, 'The Work of Art in the Age of Mechanical Reproduction': "Even the most perfect reproduction […] is lacking in one element: its presence in time and space." (Dixon, 2007, p. 116) In a more recent essay in Arnold Aronson's book, *Looking Into the Abyss*, a chapter called 'Can Theatre and Media Speak the Same Language?', Aronson states that projection in theatre with a few exceptions just does not work. He suggests that "projections draw upon a fundamentally different vocabulary from that of the stage; it is not a scenographic vocabulary" and that the "content is overwhelmed by form" (Aronson, 2005, p. 86-87). His reason for regarding projection as an inappropriate component is that it "has no presence", whereas physical objects ("decor") on set will remain even if the electricity goes out. (Aronson, 2005, p. 93) Reflecting on "decor", as his word of choice, in my view, a physical object (even though as he says, will remain after fulfilling its purpose in a play), will no longer mean the same, as it will not serve the same function anymore. In my view an object in a theatrical scene is more than "decor", and projection is more than "light and shadow". They are both equally capable of carrying narrative regardless of being two different media. On the other hand, I can agree with him that physical and projected images can have very different meanings: "Two similar images are subject to vastly different interpretations". (Aronson, 2005, p. 93)

As Gary Keegan put it in our interview, the use of a projection is successful in a performance, if it is "in service of the story". When Brokentalkers Theatre Company is working on a performance their goal with projection is to give a visual representation of a place and people who could not be there and to create an atmosphere, to make it more tangible for the audience. "I don't think you use it [projection] merely to make the things look more impressive, I think you do it to communicate something that you're struggling to communicate in its absence." (Keegan, December 9, 2022)

Recording performances and online theatre

A significant problem, creators had to face recently was when they did not have the physical presence of an audience. Due to the lockdown during the Covid-19 pandemic, theatre companies relied on recording and streaming their shows. Online theatre became the

only way to continue performances without risk. Creators had to adapt in various ways to this scenario as suddenly they became dependent on technology, and with that, they had to familiarise themselves with options to share their work online. The easiest way to do this was to create one recording of a performance to make it accessible to viewers. This takes a very important quality of theatre because in this form it will no longer be a live medium but a film of a play.

> We record our performances for archival purposes. I don't think they are watchable, as pieces of art. If you want to make a film, make a film. We make live shows for that condition of 200 people all looking at the same thing at the same time. During Covid we got a company to come in and record our show so it would look better than us recording it, but there was no audience and there was no atmosphere. It almost didn't make any sense. I think it only works in front of an audience, as they are the final, vital ingredient. (Keegan, December 9, 2022)

The quality of the recordings of plays (and streamed performances) is indeed a significant factor. In the lockdown, I came across an unfortunate example of poor image quality negatively affecting an otherwise unique theatre experience. It was the published recording of 'Rattledanddisappeared' ('Ledarálnakeltűntem') by Katona József Theatre. (**Fig. 3**) Since the recording itself dates back to 2010, I assume that it was originally made for similar "archival purposes" as Gary Keegan and Brokentalkers Theatre Company did. Publishing it to audiences on YouTube granting free access in 2020 supposedly was an attempt to maintain publicity and to attract viewers to watch more of the theatre company's ticketed performances on other platforms.

In comparison to Katona József Theatre, the National Theatre in London (with a significantly larger budget and prior experience in recording, streaming and publishing performances) had an advantage during the pandemic in publishing high-quality recordings of their shows of that time as well as previously recorded performances. While watching pieces, like Phèdre (**Fig. 4**) from their repertoire, it is evident that to achieve these recordings, essential adaptation was required from multiple creators. Directing had to accommodate a film crew in mind; cameramen, editors and sound engineers worked on the recording; the actors had to perform keeping in mind that close-ups of their facial expressions would be shown on camera so they had to cultivate both theatrical and film acting skills.

Fig. 3: Katona József Theatre: Rattledanddisappeared (Ledarálnakeltűntem)

Fig. 4: National Theatre Live: Phèdre

CHAPTER II.

How does digital technology affect the audience?

Despite that Pamela Howard's view of scenography as the synthesis of all elements (text, research, art, actors, directors and spectators) (cited in the introduction) from the viewer's perspective, certain elements are naturally more prominent; while all aspects affect the whole experience, these prominent elements are those providing the most direct experiences for the viewer such as the actors' performance and visual design. Therefore, when I talk about digital technology being used in theatre, visual effects are the first that comes to mind as primary influencers of the viewers' experience. However, I find that using technology only to create grandiose visuals (eg. set design, excessive special effects or projections) could be limiting, as digital solutions can enhance other areas of audience experiences too that are worth mentioning.

Audiences' Needs & Motivations	Driver & Type of engagement
Feeling part of a special community of interest Ritual Escapism & immersion Being ethically challenged Reflection Access to creative people & process Aesthetic pleasure & development Passing on a legacy to children/grandchildren Quality me-time	Spiritual
Tingle-down-the-spine moments Having a visceral response Feeling the chemistry and buzz	Sensual
Empathy Getting an emotional hit Being moved Being drawn in and engaged Mimesis & personal relevance Exploring human relationships Nostalgia Exploring or celebrating cultural identity Storytelling	Emotional
Developing world view Being intellectually challenged Self-improvement Learning about history or current issues Stimulating others	Intellectual
Enhanced socialisation Quality time with family and friends Partaking in a live experience Entertainment; a "good night out" Dinner with a show Comfortable seating & good sight lines Good customer service & venue facilities	Social

Fig. 5: Audience's needs & motivations matrix by Dr Ben Walmsley

The audience's needs and motives

To have a better understanding of what types of audience experiences can benefit from technology, I use the "Needs, motivations and drivers matrix" (**Fig. 5**) from Dr Ben Walmsley's study *Why People Go to the Theatre: A Qualitative Study of Audience Motivation* (Walmsley, 2011). Dr Walmsley himself adapted this matrix from the 2007 research of Morris Hargreaves McIntyre (an international strategy and insight consultancy) regarding museum visitors' experience that builds on Maslow's Hierarchy. Scenographic elements, such as visual design, narrative or acting potentially cohere with various needs and motives listed in the matrix, in different combinations. When looking at the audiences' needs and motives column, it can be easily recognised that the following experiences are largely (but not exclusively) affected by visual design: "Aesthetic pleasure", and "Escapism". When digital technologies are used to enhance these aspects, other motives might get pushed into the background. Examples of such cases are broadway musical adaptations of movies that offer entertaining productions rich in visual stimuli by applying special effects, for instance, the 2018 'Frozen' musical adaptation by Disney Theatrical Productions. (**Fig. 6**)

Fig. 6: Disney Theatrical Productions: Frozen the Musical

Such high-budget shows tend to use digital technology to build heavily on visual effects but mostly rely on stories already existing in their own rights, for instance, in their original movie formats. While these shows can be entertaining experiences for the audience, they put other types of audience engagement (eg. Emotional, Intellectual, Social) in the background, since those are supposed to be covered by the story that was originally written for the movie. In these productions, like 'Frozen', digital technology is well used by highly skilled designers and technicians, but it is limited to only enhancing the visual experience and not caring for other needs. However, digital technology should and can offer more to audiences than only visual effects from the table of motives.

Accessibility

A great example of that is to make plays accessible for theatregoers who are visually impaired, deaf or hard of hearing. This is undoubtedly a greatly beneficial use of digital technology that makes theatre experiences more inclusive and tackles the fundamental needs of audiences.

Fig. 7: Captioned show at the Abbey Theatre in Dublin

There are various ways in which theatres achieve better accessibility. At the Abbey Theatre in Dublin, for instance, subtitles are displayed by using screens placed near the stage.

(Abbey Theatre) Captions can also be achieved by using projections. Another solution is what the National Theatre in London implemented in 2018. It uses smart caption glasses that display the dialogues and descriptions of sounds on the lenses using augmented reality (AR) and artificial intelligence (AI) technologies. (National Theatre) (Freethink) (Accenture) For visually impaired people, many theatres offer headsets that give audio descriptions of the action on stage.

Digital technology can support the understanding of a play in different scenarios too. It is very useful when a performance is on an international tour or is a part of a festival programme. Captions help audiences to understand a play that is performed in a foreign language. This helps to make theatre international.

Online theatre

When considering performance, digital solutions and accessibility, it is necessary to mention the recent pandemic and its impact on theatres during the lockdown. Recording and publishing or streaming performances online was the safest way to reach out to audiences. In her article, Maria Chatzichristodoulou offers three main types of digital content production during this time:

- Pre-recorded content being streamed, either through bespoke platforms or existing streaming services;

- Live intra-media performances making use of new popular technology like Zoom and occasionally including interactive elements;

- Live streaming entirely new content, either free to view or to paying audiences. (Chatzichristodoulou *et al.*, 2022)

While they existed before the pandemic, these options became the norm, demanding fast adaptation from both creators and audiences. According to an article that reports research findings carried out by AudienceNet, the number of online theatre audiences significantly increased. (Snow, 2020) This article cites Hasan Bakhshi (director of the Policy and Evidence Centre, led by Nesta[1]) as he says that half of the adults who were watching theatre, concerts and/or dance performances online, are doing so more frequently or even for the first time since the lockdown, and 38% of them are engaging with these contents in a similar amount. (Snow, 2020)

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[1] *Nesta*: National Endowment for Science, Technology and the Arts, an innovation foundation based in the UK.

This shows that there certainly is a demand for theatre to fulfil audience needs, and digital technology does help audiences to access performances. However, these numbers only show results of a forced scenario and therefore cannot be seen as proof that online theatre would be favoured by these responders if they had a choice. When looking back at Dr Walmsley's matrix (**Fig. 5**) there are motives (Emotional, Sensual and Spiritual, especially Social) that are critically altered by moving theatre experience online.

In a 2016 (pre-Covid) study, responses show that common reasons for choosing event cinema or streaming over attending a live show were cost, distance and convenience. Audiences see Cinema Events and streamings as "significant and distinct experiences" of theatre performances but cannot see them as substitutes for live performances. (AEA Consulting, 2016, p. 12-13) A 2021 article on UK theatres says that since the lockdown ended, 50% of the theartes went back to in-person only and that the majority of theatre companies that continued publishing performances online are large theatres, which suggests smaller companies cannot afford to have resources and extra costs to maintain digital presence. This negatively affects providing accessibility to audiences who cannot make it to live theatre. (Sherwood, 2021)

Unusual audience participation

> On the spectator side, there is an increasing public interest in performances that seek to enhance audience engagement through immersive, tactile, experiential, exploratory and location-based theatre, all of which heavily depend on an innovative approach to mise-en-scène using new materials, technologies and techniques. (O'Dwyer, 2021, p. 2)

As Chatzichristodoulou refers to them as "intra-media performances" in her listing (Chatzichristodoulou *et al.*, 2022), digital media and the restrictions during the pandemic resulted in unique experimental shows pushing boundaries. As it is both the creators' and audiences' interest to search for methods that accommodate a richer experience, many performances that were created during this time utilised opportunities of different media, various online platforms and technology to tweak the ways of delivering plays. Some of these ideas allowed and/or required audience members to contribute to performances in unusual ways, for instance, to comment or even participate during a show:

One night in April, I found myself holding my cat up to my laptop, eagerly showing her off to a group of strangers on Zoom. I was, in fact, an audience member immersed in a production of Shakespeare's The Tempest by Creation Theatre, based in Oxford, U.K. […] I, for instance, eagerly read the comments of my fellow audience members during a YouTube livestream of 'Blind Date', a show from Toronto-based Spontaneous Theatre centred on a virtual first date. (Jacobson, 2020)

These examples show that audience engagement can be enhanced by offering interactive participation and mimicking liveness and presence to compensate for the lacking sense of social engagement.

A remarkable example of facilitating an unusual audience engagement during the pandemic was the performance called 'To Be A Machine' by Dead Centre Theatre Company.

Fig. 8: Dead Centre Theatre Company: To Be A Machine

Prior to the live streaming of the show, audience members were asked to partake in the preparation process by uploading video clips of their faces with different expressions for each sequence. Technical director Jack Phelan designed a platform for this purpose and added short instructive videos of the performer Jack Gleeson greeting participants and walking them through the recording process. (Phelan) The reason for this procedure was that the creators

decided to build an artificial auditorium for the show which consisted of tablets mounted on stands, playing looped sequences of the recordings (**Fig. 8**). This audience of 110 tablets was not only made to display people viewing the show but were also used in various dramatic scenes, generating unusual, alienated interactions between performer, machine and audience.

Although Dead Centre refers to this production on its website as a "Version 1.0" and an "early iteration of a future project" (Dead Centre), the inventive experience they have created already makes the production stand out. It is also worth noting how the original material, Marc O'Connell's book (with the same title as the show) on transhumanism, that this performance adapted was a great match with the mixture of media that were used as well as to mediate about what was currently affecting everyone during the time. "The digitally assisted survival of this theatre piece in the time of Covid acts as a neat metaphor for the process by which computers may allow our thought streams to outlast physical annihilation." (Clarke, 2020)

Returning to Dr Walmsley's matrix, it is clear that with this performance (besides being a novel experience), the artistic team of this show successfully tackled the following types of audience engagement by using this unique combination of technology: Spiritual (escapism and immersion, reflection, access to creative process); Sensual (tingle-down-the-spine moments); Emotional (personal relevance, exploring human relationships); Intellectual (developing world view, being intellectually challenged); Social (partaking in a live experience, enhanced socialisation). "Sitting at home before a streaming computer, you cannot control your avatar, but, as a few reverse shots clarify […], you are there in some cybernetic sense." (Clarke, 2020) "It was an uncanny sensation to sit back and see my face in an audience that didn't really exist. Except of course in some way it did – those tablets were there in the space, and we were all watching on our own screens. [...] Even though we are not present in the room, the audience is a second character in the show [...]. If this company's work is about making something out of an absence, then 'To Be a Machine' is really about us." (Allin, 2020)

CHAPTER III.

How can digital technology drastically alter roles?

The first two chapters discussed examples where digital technology affected the roles of theatre makers and audiences. In this chapter, I wish to analyse such cases where the use of technology results in unusual and new ways of making theatre. I find that introducing digital technology to theatre creates such new opportunities that can drastically alter both the creators' and the audience's roles. In some scenarios, this means that tasks can be replaced, done by someone else, or perhaps some roles would disappear. It is also a possibility that experimental media invents new roles. Whilst these novel experiments surely draw attention, do they have the potential to last or are they one-time novelties only?

Following orders as action

Fig. 9: Romeo Castellucci: Bros

To achieve powerful and unconventional results, we don't always have to think of the most excessive and costly technology. A simple device such as an earpiece can contribute to a show in a way that demolishes conventional practices. In an Italian play called 'Bros', which I have recently seen as part of the Dublin Theatre Festival at the O'Reilly Theatre, the

use of earphones allowed the director to instruct their wearers, (recruited participants from town) on stage. Although I could mention the captivating visual effects that were more prominent during the show in terms of technology, learning about the use of earpieces (as the audience was informed about that as well as about the instructions given to the partaking *actors* before the show via distributed leaflets) made me think about the notion of the directing and the acting more. I remember that it was a large-scale show; on stage, there were only a few professional actors that travelled with the crew, and the rest of them were people recruited from the current location.

> Wherever the play tours, it recruits a group of local people as 'the legion' – participants who have agreed to wear the police uniform and follow all instructions given to them. In casting unrehearsed actors to carry out actions blindly, Bros tries to expose a structure of aggression, an anthropology of violence: There is no time to have a judgment or opinion. No time for a conscience. The order becomes the action. (McCormack, 2022)

In this case, merely the use of earpieces creates a situation where the traditional mode of direction is altered and the role of actors in the play drastically changes as they do not act but are to follow orders immediately, without question. There is a distinctive difference between stage acting and following orders on stage. Using technology in this case allows an unprecedented reinterpretation of the roles both in directing and acting. Given that these characters following orders were policemen on stage, the narrative and the use of technology are in synchrony. There is a good reason for using this type of technology in this particular performance, highlighting the themes of brutality and obedience, however, in other productions it would not make much sense. This example, therefore, is a one-time novelty that uses technology to support the narrative.

Immersiveness and extended realities

> Immersive theatre is a theatrical experience where the audience is not a passive viewer but is actively involved in the act. […] Because of this informal setup away from a conventional theatre, immersive theatre blurs the boundary between the viewer and the actor and between life and performance. (Iyengar, 2017)

There are non-technology-based ways to make a performance immersive, for instance, by encouraging the audience to participate in making decisions or giving prompts during a performance. Technology can also offer interesting options to engage viewers in unusual

ways. A recent advance to make performances immersive to audiences and involve the viewers to participate in controlling elements is the use of various extended reality (XR) technologies. That includes virtual (VR) augmented (AR) and mixed (MR) reality technologies, which are currently being investigated by a research group called V-SENSE at Trinity College Dublin.

V-SENSE has made an experimental trilogy of Samuel Beckett's 'Play' from 1963. The original play is a 15 minutes long performance featuring three actors on stage. They are all giving their fast-paced monologues, only talking when in the spotlight. Given that Beckett himself was engaged with technologies of his time, such as radio, film and television (Ulrika, 2006), the response of the V-SENSE team is to use this play to push experiments with the same narrative, but multiple types of recent technology (mainly VR and MR) to research possibilities for narrative, audience engagement and interactivity. (V-SENSE, 2020)

Major differences between AR, VR and MR:

	Augmented Reality	Virtual Reality	Mixed Reality
Technological Set-up	It has a mix of real world and virtual settings.	It is completely Virtual.	It is a hybrid version that includes both and adds the interaction between both.
Controls	The user can control their presence in reality.	The experience is controlled by the software.	It can be partially controlled by use and software both.
Device	It can be operated with smartphones and headsets.	It requires headsets only.	It needs holographic and immersive headsets. Eg: Microsoft HoloLens.
Experience	It provides the virtual experience in real-life.	It only gives a fictional experience.	It is a mix of real life and fictional experience.

Fig. 10: Major differences between AR, VR and MR.

V-SENSE's first experiment, as part of the 'XR Play Trilogy', was 'Intermedial Play' in 2017, which was "screened live using a pan-tilt-zoom webcamera in combination with Wirecast and YouTube webcasting technologies". (O'Dwyer, April 16, 2021) That was followed by 'Virtual Play' in 2018 using VR technology. In this adaptation of 'Play' the viewers are replacing the light that "interrogates" the characters and become active *controllers* of the play by using their gaze and movement to *activate* and *switch between* monologues. (V-SENSE TCD, December 17, 2018)

Fig. 11: V-SENSE: Virtual Play

This is an extremely unusual scenario for a theatrical performance, for both creators and audience members; even if it is done with a difference in technology (meaning the end product is not *just* a video of the performance), actors are prerecorded and because of that, 'Virtual Play' cannot be considered as live theatre. On the other hand, audience members are invited to the virtual space in which the characters are present and are given the opportunity to explore 'Play' themselves and listen to the monologues in whatever order and combination

they like. The viewers' choices make this experience unique and unrepeatable. The version each person sees happens *there and then* (from their point of view), which is a typical trait of an actual live show. It is interesting, how a physically non-existing space and a time that is controlled by a viewer who is virtually present, can result in an experience that somehow still fulfils expectations that would be assumed from live theatre. This experiment of the V-SENSE team brings back liveness into recorded plays in a paradoxical way by inviting audiences to actively engage with the performance.

> It is believed that by placing the viewer (audience) at the centre of the storytelling process, they are more appropriately assimilated to the virtual world and are henceforth empowered to explore, discover and decode the story, as opposed to passively watching and listening. […] This project attempts to investigate these new narrative possibilities for interactive, immersive environments. (V-SENSE, 2020)

The third experiment of the team is called 'Augmented Play'. With this project, V-SENSE in collaboration with Volograms (a company specialised in AR), uses the same 3D scan recordings of the performers, similarly as in 'Virtual Play', except this time they experimented with augmented reality; they decided to place the virtual actors into a real environment in which the audience is physically present. To achieve this, V-SENSE uses Microsoft HoloLens or Magic Leap head-mounted displays." (**Fig. 12**).

Fig. 12: Audience members experiencing 'Augmented Play' by V-SENSE

Using AR, allowed the creators to get rid of the border between virtual and real and blend location with projection into one: "Considering the technology's suitability for site-specific drama, we launched it in the cavernous vaulted stone basement of the CHQ building which is appropriate to crypt-like, posthumous setting originally envisaged by Beckett". (V-SENSE, 2020) Viewers were also capable of exploring the scene from any angle as opposed to being enclosed in a virtual space.

> As you turn your gaze on one, it begins to talk, move your line of sight to another head and they start to speak. As the viewer your gaze controls the narrative and therefore becomes part of the experience. I imagine this non-linear flow of the play works as a Beckettian device; you walk away from it having experienced a unique version and can make of it what you will. What was most impressive was the detail of the actors' faces, allowing the viewer to walk up close and around the urns in 360 degrees, seeing Play in a way it has never been experienced before. (Boran, 2019)

It is clear that this must have been a novel site-specific experience, however, the question for the future is: how can it be decided that using AR is a good choice to deliver other performances, especially if it is possible to perform them the traditional, live way? Although never tried AR headsets myself before, I assume that besides being immersed in the performance, there is an alienating effect of AR holograms that is inevitably altering the experience by highlighting what's real and what is not in the scene. Allowing viewers to interact with a play creates a fascinating possibility to further experiment with narratives, however, there are a lot of factors that need to be considered to develop this form of immersive theatre without turning performances into games.

In an article that discusses the evolution of digital technologies in theatre, Igor Golyak the artistic director of Arlekin Players Theatre is quoted as follows: "How do you impact an audience if they're not in the room with you?" (Sherman, 2022) V-SENSE's research trilogy is one possible answer to that question; by adding interactivity and by blending virtual and physical presence.

The Uncanny Valley[2] of theatre and AI

Nowadays, technology evolves at an extremely fast pace and theatre vigorously responds to innovations. A great example of that is 'Uncanny Valley' by Rimini Protokoll a German theatre group that often uses various forms of technology in their performances. Premiered in 2018 as part of the 'Münchner Kammerspiele', the performance doesn't feature living actors on stage but one humanoid robot. (**Fig. 13**) This, again challenges the traditional liveness that is a core feature of theatre.
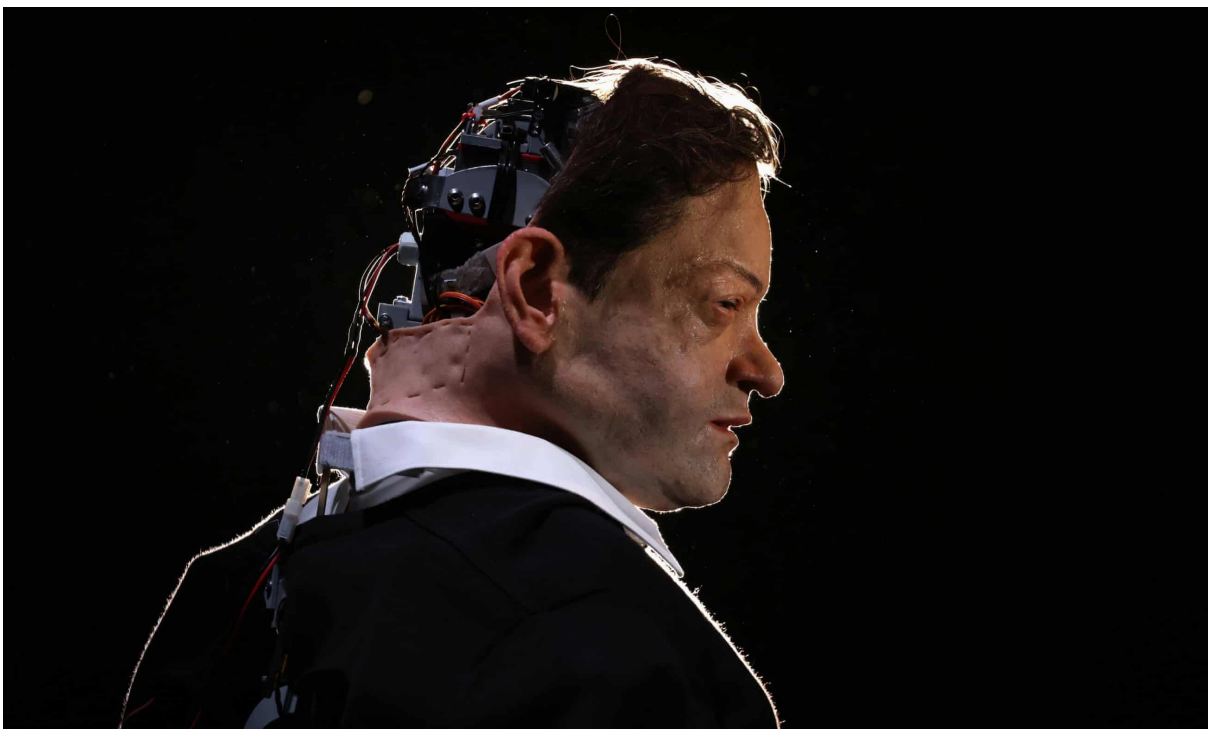

Fig. 13: Rimini Protokoll: Uncanny Valley

The robot does not make any mistakes on the stage; it runs a program and delivers the performance precisely the same way, each time. The only element that is changing and adds liveness to the experience is the audience's presence – how they perceive and respond to the show. As the robot on stage called Melle 2 at some point asks the viewers: "How do you feel having to sit here and listen to me?" (Uncanny Valley at ca. 10:00 minutes). Odd situation indeed, being asked about feelings by a robot who cannot understand the concept of feelings. There is an interesting similarity between the way *actors* act in 'Bros' (mentioned previously

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[2]*Uncanny Valley*: phenomena of unsettling emotional responses towards artificial yet human-like robots and simulations (originated in a 1970 essay by Japanese roboticist professor Masahiro Mori). (Kendall, 2022)

in the chapter) and a robot *acts* in 'Uncanny Valley', as neither of them is an artist, but both follow orders (commands). A robot as an *actor* is (in a way) like a puppet in a theatre. An object resembling something or someone else, animated by the creators (puppeteers). Only, this time there is no physical contact between the object (Melle 2) and creators, but the program that was written to execute the performance. The director, having no living actor to instruct on stage, works closely with those engineers and programmers that are responsible for the movements, gestures and sounds of the robot. They are the *puppeteers*.

Clearly, the creators intended to make the artificial quality of Melle 2 obvious to the viewer, leaving the back of the head completely uncovered, and showcasing the electronics inside. During the show, the robot Melle 2 explains Thomas Melle's (the author on whom the robot replica was based) feelings and concerns about making mistakes while being exposed on a stage. Doing so, brings the vital question of what makes humans *human*, asking if the human quality is in our vulnerabilities, mistakes and randomness. (Rimini Protokoll)

In my view using robotics in this performance supports the narrative around both topics of humanness and robotics. The show successfully evokes thoughts around vulnerability, randomness, as well as the feeling that the phenomenon of uncanny valley causes: "As the lights go down, we applaud - we clap for a writer who isn't there, for a director in a different country, for a robot that can't appreciate it, but it is expected of us, and so we do it […] Melle 2 proved, can still elicit an emotional reaction from its audience." (Moore, 2022) Through this example, I see a great opportunity of using artificial elements in scenography, but only with a clear sense of the aim that's behind the choice of technology. It is also vital that the narrative and the humanness of performances are not overshadowed by technology. Otherwise, creators might fail to address the audience, turning the show into an attraction that displays technology but fails to make theatre.

This also applies to AI (Artificial Intelligence) that gained popularity in various artforms and is a much-debated topic recently. Scenography can be aided by AI in various ways: writing text, generating music, or visual design (eg. for set and costume). In an interview regarding this topic, Jason Jamerson, scenic and production designer explains how an AI-generated design is still the work of the artist by clarifying that it is (and, in my view should remain) merely a powerful tool for research and ideation; feeding inputs to AI, the decision-making and design process is still very much the creators' responsibility. "I think A.I. is a lantern. As long as we're in charge of where we're going." (Schweikardt, 2022)

CONCLUSION

In drawing to a close, I wish to summarise how the examples in the chapters address my questions raised in the introduction.

There are obvious cases in which creators and audiences both benefit from the use of digital technologies; using new software that aids the design process (Augment3d), or technology that makes theatre more inclusive to theatregoers (using captions or audio descriptions). However, in other scenarios, where applying technology challenges theatre as a medium, a more mindful approach is needed to find a balance between mixtures of different (visual) languages. Narrative, artistic views and the audiences' motives and needs all have to be considered to achieve a successful synthesis between digital and analogue elements of scenography. Unfavourable outcomes tend to appear when technology is either superfluously used in performance or applied in a way that it overshadows other elements of scenography.

Both creators' and audience members' roles, experiences and behaviours can change when affected by technology. The extent of these changes depends more on the way the technology is applied than on its rarity or novelty (see 'Bros' in Chapter III.). Collaborations with engineers, designers, programmers and other experts from scientific fields, as well as adapting of theatre practitioners become essential to achieve inventive results (see 'Uncanny Valley' in Chapter III.). Making theatre immersive to the audience is a popular aim, and various technologies are proven to be powerful in adding interactivity to performances (see 'To Be a Machine' in Chapter II. and 'XR Play Trilogy' in Chapter III.).

Liveness and human qualities inherent in theatre need to be preserved in order not to deviate permanently from this artform. However, there are possible ways to tweak these concepts. For instance, placing performers and audiences in the same physical space is not the only condition to achieve experiences that have live elements. Remarkably, confronting our humanity during a play is also possible when no human is appearing on stage (see 'Uncanny Valley' in Chapter III.).

In my view, one of the best features of theatre as an artform is that it continuously reflects on our present. Considering that we are dealing with various new technologies in the everyday life, it is appropriate to include them in contemporary performances. Theatre is not supposed to be a sterile environment fenced off from the real world, on the contrary: it should offer a safe playground for experimentation. Therefore, when we are facing recent technologies such as robotics, AI, and extended realities in real life, theatre offers ways to test

our relations to them. As mentioned (regarding a quote from The Society for Arts and Technology) in the introduction, there are two ways of looking at the combination of digital media and theatre; we can search for what technology offers to artistic practices, or explore how art can give meaning to technologies. Among several cases listed in the essay ('The Boy Who Never Was', 'To Be a Machine', 'XR Play Trilogy', 'Uncanny Valley', etc.) it appears to be true that both art and technology add value and meaning to one another.

To wrap up this thesis I wish to leave the reader with one last quote from a 2022 article, in which Princeton University theatre lecturer Elena Araoz speculates about a possible future of digital theatre by comparing its evolution to the development of cinema and film production:

> Right now, virtual theatre is like another moment. […] It's like when silent film was invented. […] Somebody had a technology that could do a trick […]. They had a semblance of an idea to tell a story and you see them using that technology, [with] barely viable ways of capturing moving images; and you see them taking a story and smashing it into the technology or smashing the technology on top of the story. It didn't always work, but you see the birth of what today is this massive industry. (Sherman, 2022)

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